

Economic Challenges Facing Pakistan in the Regional and Global Environment 2017-2019

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(Editors)



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Lahore School of Economics

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Contents

Editors' Note	iii
SECTION I. MACROECONOMIC ISSUES	
1. Balance of Payments Constrained Growth in Pakistan <i>Azam Chaudhry and Gul Andaman</i>	1
2. Breaking out of Pakistan's Stop-Go Economic Cycles: Do the "Twin" Fiscal and Current Account Deficits Hold the Key? 1999-2019 <i>Rashid Amjad and Almazia Shahzad</i>	17
3. Pakistan: Fiscal Crisis Management 2019-24 – The Revenue Perspective <i>Muhammad Ashfaq Ahmed and Inayat U. Mangla</i>	33
4. Pakistan's Recurring Fiscal Crisis – Institutional Strategies for Fiscal Consolidation <i>Jamshed Y. Uppal and Mahmood Khalid</i>	63
5. Increasing Exports through Tariff Reductions on Intermediate Goods <i>Nida Jamil and Rabia Arif</i>	93
SECTION II. CHINA-PAKISTAN ECONOMIC CORRIDOR (CPEC)	
6. What's So Special in Special Economic Zones (SEZs) under the China Pakistan Economic Corridor (CPEC)? <i>Muhammad Muzammil Zia and Cui Yong</i>	117
7. The China-Pakistan Economic Corridor (CPEC): Considering Contemporary Pakistan through Old-Fashioned Economics and Historical Case Studies <i>Matthew McCartney</i>	135
8. Maximizing the Impact of Chinese Investment in Pakistan <i>Khalil Hamdani</i>	161
9. Agriculture Development Options under China Pakistan Economic Corridor (CPEC) <i>Mahmood Ahmad and Sana Khalid</i>	177

SECTION III. AGRICULTURE AND WATER

10. **Consequences of Varying Exchange Rates on Agriculture in Punjab – Pakistan**
Abdul Salam 201
11. **Promoting Growth in Livestock Sector- Issues and policy reform**
Talat Naseer Pasha 223
12. **Survey on Water Resource Management in Pakistan National and Provincial Perspectives on Institutions and Policies**
Mahmood Ahmad and Mahira Khan 235

SECTION IV. FINANCIAL SERVICES

13. **Role of Financial Services in Economic Growth: Policy Implications for Pakistan**
Jamshed Y. Uppal and Inayat U. Mangla 251
14. **Is Pakistan Ready to Embrace Fintech Innovation?**
Syed Kumail Abbas Rizvi, Bushra Naqvi and Fatima Tanveer 285
15. **Cryptocurrencies, Blockchain and Regulation: A Review**
Ayesha Afzal and Aiman Asif 313

SECTION V. IMPORTANT SECTORAL ISSUES

16. **Social Safety Net Program – the BISP in Pakistan: Effectiveness, Challenges and Future Agenda**
Nasir Iqbal and Saima Nawaz 339
17. **Pakistan Energy Sector Overview and Challenges**
Daud Ahmad 357

Editors' Note

This volume presents papers presented at the 15th and 16th Annual Conferences of the Lahore School of Economics on the Management of the Pakistan Economy representing contributions by leading national scholars who have a deep grasp of the various aspects of the country's economy. It is intended to promote knowledge, discussion and debate amongst economic policymakers, practitioners and students.

This publication comes at a time when such analyses are fundamental to defining a pathway out of the current economic morass. The choice of the papers and the timing of this conference were deliberate and critical. The 16th Annual Conference, held in the end of March 2019, came at the conclusion of a long run and difficult negotiation between the IMF and the Government of Pakistan. A month later, in early May of this year, the IMF came to an agreement with the Government of Pakistan on an economic program supported by an Extended Fund Arrangement (EFF) of about US\$6 billion. The program to move the Pakistan economy out of its downwards spiral is now under implementation.

The thrust of the major areas of deliberation and the recommendations emerging from the papers presented at this conference provide insight and analytical support for effective policy and implementation required to ensure the success of this program.

The papers in this volume represent several critical areas that are crucial for ensuring the success of the reform program. In particular, the first paper analyzes how Pakistan repeatedly experiences balance of payments crises if its growth rate rises above a threshold level of 4.4%. The paper also estimates the export and import functions for Pakistan and uses these to perform simulations for the impact of the stabilization program. The papers also focus on issues such as improving economic management through better fiscal and monetary policy; promoting sustainable and inclusive growth especially through the China Pakistan Economic Corridor and proposed Special Economic Zones; On CPEC, for example, one paper looks in detail at the package of transport, energy and

manufacturing projects and questions how we can effectively analyze the impact of a transformative expansion of such highly priced infrastructure. Based on this analysis, the paper sets out the conditions under which the CPEC could promote sustainable long-run economic growth in Pakistan. Of equal importance is an understanding of the implications of required exchange rate adjustments on the growth of crop agriculture and the constraints to accelerating Livestock sector growth. The papers also cover key aspects of water and energy sector management that are so critical for the sustainable growth of the economy.

Focusing on trade policy, another paper proposes a strategic reduction of tariffs on high quality intermediate inputs in order to increase the value of the country's exports by moving up the export value chain.

Also covered in this volume is a brief background of the theoretical and empirical literature on the linkage between the financial services sector and economic growth. The paper discusses the challenges Pakistan faces in making its financial services sector become an effective driver of economic growth. A qualitative assessment of economic, demographic and technological factors that are conducive for the penetration and growth of fintech is also given. Included as well is an article on the risks involved with cryptocurrencies that provide various regulatory solutions to improve the management of financial innovations and the creation of a safer environment in which financial innovation can continue.

As the economy stabilizes and adjusts to a process of rapid economic growth, social protection mechanisms including safety net schemes become more and more important to support those who cannot be included in the process of growth. One of the papers in this collection presents a review of the safety nets initiatives under the Benazir Income Support Program.

The analyses reported in this collection further the understanding on each of the subjects discussed and contain useful implementable recommendations. However, many of the studies also highlight the need for *a priori* institutional reform before any of these recommendations can be implemented; and positive change can take place. The need for a positive and supportive governance environment as an essential pre-condition for reform appears again and again in the studies reported here.

There are numerous obstacles on the country's path to progress and development. Skirting these obstacles requires structural changes. The latter has more often been avoided; and the easy route adopted instead. This is not the solution to the country's problems. This volume identifies various solutions and will hopefully provide adequate ideas to assist the country in its progress to high rates of sustainable economic growth.

The successful management of Pakistan's economy to attain the goals of macroeconomic stabilization, sustainable and inclusive economic growth and social risk management require on going and in-depth analyses of the required policies and implementation. There is consensus, however, on the existence of adequate strength in the economy as well as its people to extricate the country from its current slump. This volume is an important step in the ongoing efforts of the Lahore School of Economics to support this process.

December 18, 2019



(Azam Chaudhry)



(Theresa Thompson Chaudhry)

1

Balance of Payments Constrained Growth in Pakistan

Azam Chaudhry* and Gul Andaman**

Abstract

This paper examines whether economic growth in Pakistan is constrained by the balance of payments. By taking into account the growth of remittances, the export demand function and the import demand function, our model shows that the balance-of-payments (BOP) constrained growth rate in Pakistan is equal to 4.41 % per annum. The evidence further indicates that as Pakistan's economic growth rate increases above this BOP equilibrium growth rate of 4.41 %, the import bill increases significantly which in turn leads to a balance of payments crisis. Eventually, in order to control the unsustainable current account deficit, policymakers are forced to reduce aggregate demand which in turn leads to a contraction in imports until the growth rate falls back to the equilibrium growth rate. The results of the model also explain how instead of relying on exchange rate depreciations, the long-term solution to this problem is for Pakistan to transition towards higher value-added exports.

1. Introduction

While there are many positive and negative aspects of Pakistan's economy, the one thing that no observer of the economy can deny is its predictability. A balance of payments crisis forced the government to enter into an IMF stabilization package a decade ago as did another crisis five years ago. Now, again, the country is faced with an unsustainable balance of payments crisis and has entered another stabilization program.

While there is a tendency to blame the different policy makers, this ignores the fact that the problem is not simply one of policy-making. Rather, the problem is a

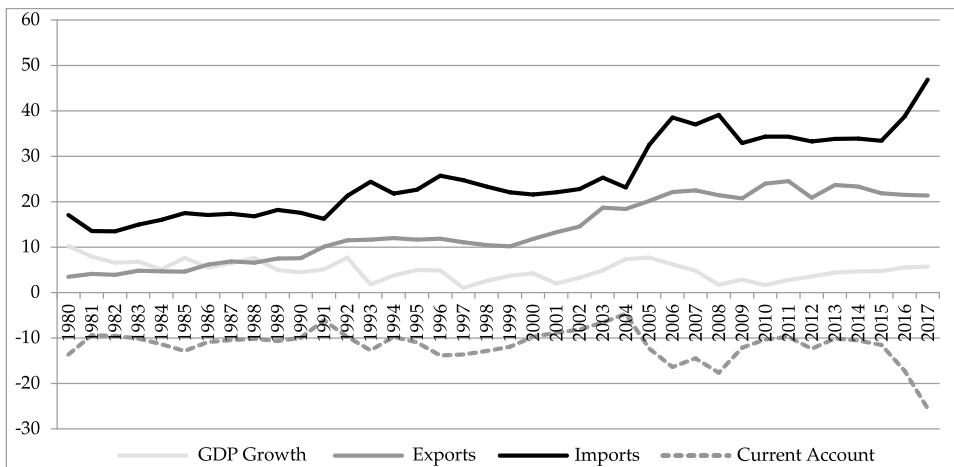
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structural issue in the economy which if left unaddressed will lead to a continuation of the cycle of balance of payments crises.

The idea behind this paper is that because of the structure of Pakistani exports and imports, there exists a maximum balance of payments constrained growth rate in Pakistan. More specifically, because of the narrow Pakistani export base (concentrated on low value-added textile exports) and a relatively inelastic import base, as the GDP growth rate of Pakistan exceeds a threshold value imports rise to unsustainable levels while exports only increase marginally. This leads to a balance of payments crisis which is addressed by the usual troika of policies: devaluation, monetary contraction and fiscal contraction. This is illustrated in Figure 1.

Figure 1: Pakistan's Macroeconomic Situation (1980-2017)



Source: IMF, World Bank, Government of Pakistan

While the narrow export base and the composition of imports provides an explanation for the reoccurring balance of payments crisis, the objective of this paper is to calculate the balance of payments constrained growth rate of Pakistan. In order to do this, one must estimate the Pakistani export and import functions and also decompose the Pakistani growth rate.

While the estimating export and import functions are critical for calculating the balance of payments constrained growth rate in Pakistan, they are also useful in themselves. We use the estimated elasticities from these functions to see if the Marshall-Lerner conditions are met in the case of Pakistan (these conditions relate improvements in the balance of payments to the elasticities of imports and exports). We also use these estimated equations to come up with rough estimates of imports, and exports based on projections of domestic growth, foreign growth, real exchange rate in Pakistan.

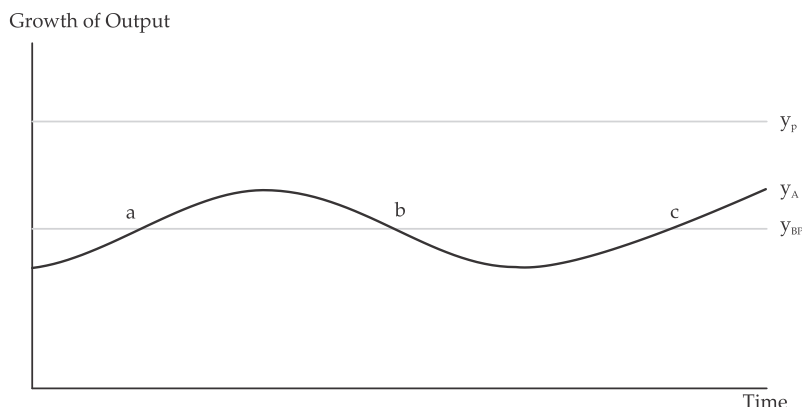
The structure of the paper is as follows: We start with an explanation of our methodology followed by estimates of the Pakistani import and export functions. We then use these estimates to calculate the balance of payments constrained growth rate for Pakistan. This is followed by simulations for exports and imports based on projections of key economic variables. Finally, we present conclusions and policy recommendations.

2. Understanding Balance of Payments Constrained Growth

According to Thirlwall (1979), the basic assumption behind BOP-constrained growth model is that a country cannot grow more than the rate consistent with the balance on current account unless there are excessive and continuous external borrowings. Current account deficit has to be maintained by borrowing from abroad and it is not possible to do so for an indefinite time period. This is because if the growth of financial inflows exceeds the growth of GDP, it would lead to high foreign debt to GDP ratio over time and increase the risk of private and public default. If the external financing is short-term, then there would be high danger of capital flight leading to collapse of exchange rate. This would lead to capital losses in terms of foreign currency and domestic liquidity problems.

Therefore, there is an economic growth rate that a country cannot exceed for any extent of time period as it would lead to BOP problems. This is known as the BOP equilibrium growth rate. In other words, an increase in economic growth rate would lead to higher demand of imports whereas the export demand, determined by the overseas market, would remain largely unaffected. The resultant current account deficit either has to be financed, which may lead to BOP difficulties, or has to be quickly reduced. Since the former is not a sustainable option, to implement the latter, the economic growth rate is reduced. Felipe et al. (2009) state that a country is said to be "BOP-constrained" if its actual growth rate (y_A) is such that the current account is in balance in the long run and y_A is below the growth of productive potential (y_P). This is termed the BOP equilibrium growth rate (y_{BP}). Figure 2 shows a graphical representation of the BOP equilibrium growth rate (y_{BP}).

Figure 2: Illustration of Balance of Payments Constrained Growth



Source: Felipe et al., 2009

The actual growth rate, y_A , fluctuates around the BOP equilibrium growth rate, y_{BP} . In economic boom, when $y_A > y_{BP}$, there are short term capital inflows to finance the current account deficit. Subsequently, since that is not sustainable due to exceeding debt levels, y_A falls until it is equal to y_{BP} . Alternatively, if $y_A < y_{BP}$, then the country will have current account surplus leading to accumulation of foreign exchange reserves almost indefinitely. This imparts a strong deflationary bias into the world economy (Felipe et al., 2009). Hence, economic growth rate is constrained by the BOP growth rate.

The BOP constrained growth model implies that if a country faces BOP problems, then aggregate demand has to be curtailed. This indicates lower employment, restricts capital accumulation and reduce country's export potential further deepening the BOP crisis. However, if the export growth is fast, then it would lead to appropriate amount of imports, encourage investment and enable a structural change which increases the export of high value added products. Hence, instead of relying on higher import growth to increase aggregate demand and encounter BOP crisis which eventually forces the growth rate to fall, the policy makers must focus on increasing exports so that BOP crisis can be avoided and real economic growth can increase sustainably.

Felipe et al. (2009) state that focusing on export growth leads to numerous benefits. It increases scale of production leading to economies of scale, it leads to higher competition which propels the local producers to develop their skills and innovate for gaining higher market share, it enables local investors to employ latest technologies and it also increases the growth of essential imports. Additional benefit of export growth in the BOP constrained model is that it relaxes the BOP growth constraint. It reduces the gap between y_{BP} and y_P and allows y_A to get

closer to potential growth rate. This is because higher export growth can employ underutilized resources in the economy leading to sustained increase in the investment rate, capital accumulation and aggregate demand.

The theoretical model that derives determinants of the BOP equilibrium growth rate follows Thirlwall and Hussain (1982). Equation 1 shows the definition of BOP.

$$P_d X + F = (P_f E) M \quad (1)$$

F is the value of net capital inflows in the domestic currency (including the net change in foreign exchange reserves), $P_d X$ is the value of exports measured in nominal domestic currency, and $(P_f E) M$ is the value of imports also in domestic currency. P_d and P_f are the domestic price of exports and foreign price of imports, and E is the nominal exchange rate (the domestic price of foreign currency).

Export and import functions are shown in equations 2 and 3 respectively.

$$X = AZ^\varepsilon \left(\frac{P_d}{P_f E} \right)^\Psi \quad (2)$$

$$M = BY^\pi \left(\frac{P_f E}{P_d} \right)^\eta \quad (3)$$

where Z is world income (the income of major trading partners), ε is the world income elasticity of demand for the country's exports, $\Psi (< 0)$ is the price elasticity of demand for exports, Y is domestic income, π is the domestic income elasticity of demand for imports, and $\eta (< 0)$ is the price elasticity of demand for imports. A and B are constants.

BOP equilibrium growth rate requires growth of exports and net flows equals that of imports. Expressing equations (1), (2), and (3) in growth rates and substituting the export and import functions (in growth rates) into the BOP equation (also in growth rates) gives equation 4 for the growth of output.

$$y = \frac{\theta_x \varepsilon z + (1 + \theta_x \Psi + \eta)(p_d - p_f - e) + \theta_f (f - p_d)}{\pi} \quad (4)$$

where θ_x and θ_f are the share of exports and capital flows in total foreign earnings, or $\theta_x = (P_d X)/(P_d X + F)$, $\theta_f = F/(P_d X + F)$, respectively, and $\theta_x + \theta_f = 1$. Lowercase letter show growth rates in the equations.

The BOP equilibrium growth rate equation would depend on various assumptions. There are many countries that sustain current account deficit for many years because their capital inflows comprise of FDI which builds productive capacity of a country or they rely on foreign aid and remittances that can finance

deficits in the long term. If such long term financial flows (f_{LT}) are included, the BOP-constrained growth equation would be equation 5.

$$y_{BP} = \frac{\theta_x \varepsilon z + (1 + \theta_x \psi + \eta)(p_d - p_f - e) + \theta_F (f_{LT} - p_d)}{\pi} \quad (5)$$

As opposed to equation 4, equation 5 includes both long-term capital flows, such as FDI, as well as short-term speculative capital flows, and excludes volatile short-term speculative capital flows.

If all the capital flows are short-term (f_{ST}), then for the foreign debt to GDP to stabilize at any given θ acceptable to the international financial markets, $f_{ST} - p_d$ must equate y . For this case, y_{BP} is shown in equation 6.

$$y_{BP} = \frac{\theta_x \varepsilon z + (1 + \theta_x \psi + \eta)(p_d - p_f - e)}{\pi - \theta_F} \quad (6)$$

The third possibility is that the current account is in equilibrium and the share of capital inflows in total overseas receipts is negligible. The BOP-constrained equilibrium growth rate for this case is shown in equation 7.

$$y_{BP} = \frac{\theta_x \varepsilon z + (1 + \theta_x \psi + \eta)(p_d - p_f - e)}{\pi} \quad (7)$$

Another possibility is that if the growth of relative prices has little systematic effect on the growth of exports and imports and there are no net capital flows, the BOP equilibrium growth rate reduces to 'Thirlwall's law' (Thirlwall, 1979) whereby BOP growth rate is equal to the growth of world income multiplied by the ratio of the income elasticities of demand for exports and imports. This is shown in equation 8.

$$y_{BP} = \frac{\varepsilon z}{\pi} = \frac{x}{\pi} \quad (8)$$

Felipe et al. (2009) modify the theoretical model discussed above to the specific to the case of Pakistan. This paper follows their estimation of augmented BOP-constrained equilibrium growth rate. Before that is elaborated, it is important to distinguish between 'strong test' and 'weak test' (Thirlwall, 1979). If the country is at or close to its BOP equilibrium growth rate, then y_{BP} should be a good predictor of the actual growth rate, y_A . This is known as the 'weak test' and can be calculated as $y_{BP} = x/\pi$ whereby x is the actual export growth rate. The BOP-constrained growth rate for the 'strong test' is $y_{BP} = \varepsilon z/\pi$. It takes into account the estimated export growth rate based on the estimations of price and income elasticity of export in the export demand function. This paper uses both tests to analyze if Pakistan's growth rate is BOP-constrained or not.

The equation for augmented BOP growth rate is given in equation 9. It includes the share of remittances as that is an important source of capital inflows in Pakistan.

$$y_{BP} = \frac{\theta_x x + \eta(reer) + \theta_R(r - p_x) + \theta_F(f - p_x) + (p_x - p_m)}{\pi} \quad (9)$$

r is the growth of remittances, $reer$ is the growth of the real effective exchange rate, and p_x and p_m are the rates of change of the export and import prices, and so $(p_x - p_m)$ is the rate of change in the terms of trade. The θ 's are the shares of exports, unrequited transfers, and capital flows (including changes in reserves), and $\theta_x + \theta_R + \theta_F = 1$. It is a weak test because it is derived using the observed growth of exports directly rather than the weighted growth of the country's trading partners. The corresponding strong test equation of y_{BP} is shown in equation 10.

$$y_{BP}' = \frac{\theta_x \varepsilon z + (\eta + \theta_x \psi)(reer) + \theta_R(r - p_x) + \theta_F(f - p_x) + (p_x - p_m)}{\pi} \quad (10)$$

In augmented version of y_{BP} , instead of relative prices of imports and exports growth, to specify growth of imports, the ' $reer$ ' is taken into account. This does not make any significant difference if the growth of domestic prices and those of Pakistan's trading partners (weighted by the trade shares) do not differ greatly from the growth of export and import prices in Pakistan (Felipe et al., 2009).

Furthermore, $\theta_F(f - p_x)$ has been omitted from equations 9 and 10 as they form a negligible proportion in the aggregate foreign capital inflows in Pakistan. Hence, for the purpose of calculating BOP constrained growth rate, equation 11 has been employed for weak test and equation 12 has been used for strong test primarily. The former uses the actual growth rates whereas the latter uses the estimated elasticities from import and export demand functions and the income growth rate of major trading partners. In these equations, $\theta_x' + \theta_R' = 1$.

$$y_{BP} = \frac{\theta_x' x + \eta(reer) + \theta_R'(r - p_x) + (p_x - p_m)}{\pi} \quad (11)$$

$$y_{BP}' = \frac{\theta_x' \varepsilon z + (\eta + \theta_x' \psi)(reer) + \theta_R'(r - p_x) + (p_x - p_m)}{\pi} \quad (12)$$

The export and import demand functions has been estimated using ARDL technique on equations 2 and 3 respectively. The export demand function is shown in equation 13.

$$\Delta \ln X = \alpha_0 + \beta_1 \ln X_{-1} + \beta_2 \ln Z_{-1} + \beta_3 \ln REER_{-1} + \gamma_1 \ln \Delta Z + \gamma_2 DUMMY \quad (13)$$

X and Z are the volume of exports and the level of GDP of Pakistan's trading partners, weighted by their trade shares. $DUMMY$ is a dummy variable to capture the structural break in the data. It takes a value of one from 1992 to 1999 and from

2008 to 2017 and zero otherwise. The coefficient of Y represents the short-term dynamics while the terms with β s correspond to the long-run relationship. In the above model, the null hypothesis that $\beta_1 = \beta_2 = \beta_3=0$ is tested through the Wald test. Significance implies cointegration and an evidence of a long run relationship between exports of Pakistan, world income and real effective exchange rate.

The import demand function has been estimated in a similar fashion and is shown in equation 14.

$$\Delta \ln M = \alpha_0 + \beta_1 \ln M_{-1} + \beta_2 \ln Y_{-1} + \beta_3 \ln REER_{-1} + \gamma_1 \ln \Delta Y + \gamma_2 \ln \Delta Y_{-1} + \gamma_3 \ln \Delta REER + \gamma_4 \ln \Delta REER_{-1} + \gamma_5 DUMMY \quad (14)$$

M , Y , and $REER$ are the volume of imports, GDP and the real effective exchange rate respectively. The $DUMMY$ is a dummy variable that takes the value of one from 2001 onward, and zero otherwise to capture the structural break in the data. γ s are the short-run coefficients whereas β s are used for estimating the long run coefficients. The null hypothesis of $\beta_1 = \beta_2 = \beta_3=0$ is tested through the Wald test. Significance implies cointegration and an evidence of a long run relationship between imports of Pakistan, local GDP and real effective exchange rate.

In the next section, we look at the results from our analysis.

3. Estimating the Export Demand Function for Pakistan

Recall from above, the export function as shown in equation 2 is:

$$X = AZ^\varepsilon \left(\frac{P_d}{P_{fE}} \right)^\Psi \quad (2)$$

where Z is world income (the income of major trading partners), ε is the world income elasticity of demand for the country's exports, $\Psi (<0)$ is the price elasticity of demand for exports, and A is a constant.

The export function has been estimated using an ARDL specification for equation 2 and is shown in equation 13:

$$\Delta \ln X = \alpha_0 + \beta_1 \ln X_{-1} + \beta_2 \ln Z_{-1} + \beta_3 \ln REER_{-1} + \gamma_1 \ln \Delta Z + \gamma_2 DUMMY \quad (13)$$

X and Z are the volume of exports and the level of GDP of Pakistan's trading partners, weighted by their trade shares. $DUMMY$ is a dummy variable to capture the structural break in the data. It takes a value of one from 1992 to 1999 and from 2008 to 2017 and zero otherwise. The coefficient of Y represents the short-term dynamics while the terms with β s correspond to the long-run relationship. In the above model, the null hypothesis that $\beta_1 = \beta_2 = \beta_3=0$ is tested through the Wald test. Significance implies cointegration and an evidence of a long run relationship between exports of Pakistan, world income and real effective exchange rate.

The estimation results of equation (13) are given in Table 1:

Table 1: Export Demand Function

	Coefficient	Standard Error
Constant	-0.1932	0.8967
X(-1)	-0.1741**	0.0768
REER (-1)	-0.0553	0.0821
Z(-1)	0.1216	0.1016
D(Z)	-0.4030	0.2191
Dummy	-0.0167	0.0393
Long Run Equation		
Price Elasticity of Exports	-0.3177	0.4879
Income Elasticity of Exports	0.6986*	0.3652
F-Statistic	6.4206	

Source: Authors' Calculations

These estimates can be used to derive the long run income and price elasticities of exports. The income elasticity of exports (with respect to the income of Pakistan's trading partners) is 0.6986 (0.1216/(0.1741)) while the price elasticity of exports is -0.3177 (0.0553/0.1741) though the latter is not significant. This implies that Pakistan's exports are relatively sensitive to foreign income but less so to the real exchange rate. Also, note that the error correction term (-0.1741) is significant and shows a relatively low speed of adjustment of exports.

Note that our estimate of the income elasticity of Pakistan's export are lower than those find by Felipe et al. (2009) who calculated an income elasticity of 1.41; our estimate of price elasticity is in line with the estimate of Felipe et al. (2009) who obtained an estimate of -0.34. Since we follow a similar methodology, one can draw the conclusion that export demand has come more inelastic with respect to foreign income which may reflect the fact that Pakistan exports tend to be lower value-added goods whose demand may respond less to changes in foreign income. Also, our results reflect the relative inelasticity of exports with respect to prices, which may again reflect the low-value added nature of Pakistan's exports.

4. Estimating the Import Demand Function for Pakistan

The import demand function as shown in equation 3 is:

$$M = BY\pi\left(\frac{P_f^E}{P_d}\right)^\eta \quad (3)$$

where Y is domestic income, π is the domestic income elasticity of demand for imports, η (< 0) is the price elasticity of demand for imports and is a constant.

The import function has been estimated using an ARDL specification for equation 3 and is shown in equation 14:

$$\Delta \ln M = \alpha_0 + \beta_1 \ln M_{-1} + \beta_2 \ln Y_{-1} + \beta_3 \ln REER_{-1} + \gamma_1 \ln \Delta Y + \gamma_2 \ln \Delta Y_{-1} + \gamma_3 \ln \Delta REER + \gamma_4 \ln \Delta REER_{-1} + \gamma_5 DUMMY \quad (14)$$

where M , Y , and $REER$ are the volume of imports, GDP and the real effective exchange rate respectively. The $DUMMY$ is a dummy variable that takes the value of one from 2001 onward, and zero otherwise to capture the structural break in the data. γ s are the short-run coefficients whereas β s are used for estimating the long run coefficients. The null hypothesis of $\beta_1 = \beta_2 = \beta_3 = 0$ is tested through the Wald test. Significance implies cointegration and an evidence of a long run relationship between imports of Pakistan, local GDP and real effective exchange rate.

The estimation results of equation (14) are given in Table 2:

Table 2: Import Demand Function

	Coefficient	Standard Error
Constant	0.4086	0.8021
M(-1)	-0.4070***	0.1449
REER (-1)	-0.0980	0.1105
D(REER)	0.1552	0.1247
D(REER)(-1)	0.1732	0.2782
Y(-1)	0.2530*	0.1287
D(Y)	0.6611	0.9871
D(Y)(-1)	3.2257***	0.9283
Dummy	0.0405	0.0340
Long Run Equation		
Price Elasticity of Imports	-0.2407	0.3054
Income Elasticity of Imports	0.6215***	0.1744
F-Statistic	5.3317	

Source: Authors' Calculations

As was done for the exports, these results can be used to derive the long run income and price elasticities of imports. Here we find that the income elasticity of imports is 0.6215 (0.2530/0.4070) while the price elasticity of imports is -0.2407 (0.0980/0.4070). Also note that error correction term (-0.4070) is significant though it does not indicate a high speed of adjustment.

Felipe et al. (2009) estimated the income elasticity for Pakistan's imports to be 0.91 and a price elasticity of -0.24. Comparing results implies that Pakistan's imports have become less sensitive to changes in domestic income over time, and have remained as sensitive as before to changes in prices.

Next we use the estimates from the import and export demand equations to estimate the balance of payments constrained growth rate in Pakistan.

5. Estimating the Balance of Payments Constrained Growth Rate for Pakistan

In the methodology section above, we derived the equation for augmented BOP growth rate which was given in equation 9.

$$y_{BP} = \frac{\theta_x x + \eta(reer) + \theta_R(r - p_x) + \theta_F(f - p_x) + (p_x - p_m)}{\pi} \quad (9)$$

Where r is the growth of remittances, $reer$ is the growth of the real effective exchange rate, and p_x and p_m are the rates of change of the export and import prices, and so $(p_x - p_m)$ is the rate of change in the terms of trade. The θ 's are the shares of exports, unrequited transfers, and capital flows (including changes in reserves), and $\theta_x + \theta_R + \theta_F = 1$. It is a weak test because it is derived using the observed growth of exports directly rather than the weighted growth of the country's trading partners.

The corresponding strong test equation of y_{BP} is shown in equation 10.

$$y_{BP}' = \frac{\theta_x \varepsilon z + (\eta + \theta_x \psi)(reer) + \theta_R(r - p_x) + \theta_F(f - p_x) + (p_x - p_m)}{\pi} \quad (10)$$

In augmented version of y_{BP} , instead of relative prices of imports and exports growth, to specify growth of imports, the 'reer' is taken into account. This does not make any significant difference if the growth of domestic prices and those of Pakistan's trading partners (weighted by the trade shares) do not differ greatly from the growth of export and import prices in Pakistan (Felipe et al., 2009).

Table 3 shows the growth rates of the various parameters of the balance of payments constrained growth rate equation and also shows the balance of payments constrained growth rate for 1980-2017 period. It can be seen that the balance of payments equilibrium growth rate for the period is 4.4% while the actual growth rate of this period is approximately the same (4.6%) which suggests that Pakistan has been growing at approximately the same level its BOP equilibrium growth rate.

Another important point to note is the sum of the import and export price elasticities is approximately 0.56 which implies that the Marshall-Lerner conditions are not satisfied¹. The Marshall-Lerner conditions imply that a change in the exchange rate would have little impact on the balance of payments in the short run if the elasticities sum to less than 1 (in absolute value terms). Though

¹ Note that in strict terms the Marshall Lerner conditions require that the growth rate of the real effective exchange rate is equal to the growth rate of the terms of trade (a condition that is approximately satisfied in our case) and that trade is originally balanced which is not the case for Pakistan.

there is a possibility that the import and export demand functions may suffer from issues of omitted variables and measurement errors, the estimates of these functions cast doubt on using the exchange rate as the only tool for handling the balance of payments problem in Pakistan.

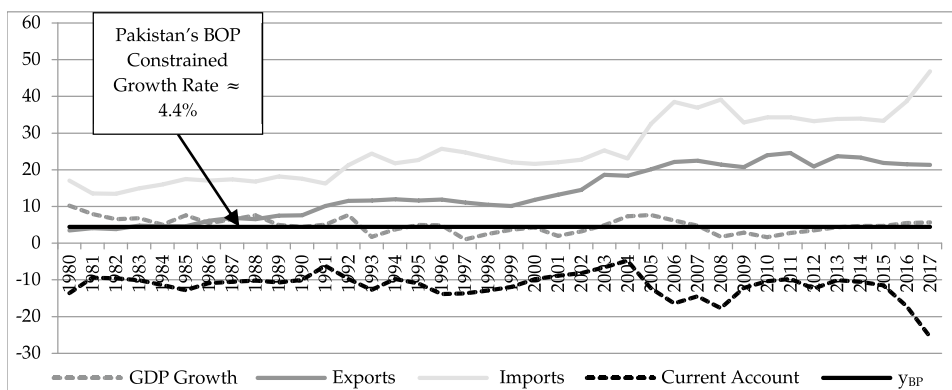
We illustrated the balance of payments constrained growth rate by reproducing Figure 1 with our estimated balance of payments constrained growth rate of 4.4%. Here we see that there is a consistent tendency for imports to rise far more than exports when the GDP growth rate exceeds 4.4% which in turn leads to a significant deterioration of the current account.

Table 3: Balance-of-Payments Equilibrium Growth Rate: Growth Rates and Parameter Values, 1980–2017

	Growth Rates (p.a.)
Growth of GDP per annum	4.61%
Weighted growth of trading partners per annum	4.09%
Growth of exports per annum	4.89%
Growth of real remittances per annum	6.12%
Growth of terms of trade per annum	-1.93%
Rate of change of real effective exchange rate per annum	-1.22%
Import Income Elasticity	0.64
Import Price Elasticity	-0.24
Export Income Elasticity	0.7
Export Price Elasticity	-0.32
θ_x (Average export share in foreign currency receipts)	0.6424
θ_r ((Average remittance share in foreign currency receipts)	0.2120
θ_f	0.1454
y_{BP}	4.415 %
y'_{BP}	2.773 %
π (Income Elasticity of Imports) for which $y_A=y_{BP}$	0.6127
π (Income Elasticity of Imports) for which $y'_A=y'_{BP}$	0.3849

Source: Authors' Calculations

Figure 3: Illustration of Pakistan’s Balance of Payments Constrained Growth Rate



Source: Authors’ Calculations, IMF, World Bank, Government of Pakistan.

6. Simulations Based on Import and Export Demand Functions

Though the import and export demand functions may be susceptible to specification issues, they can still provide a basis for predicting what will happen in the Pakistani economy over the coming years.

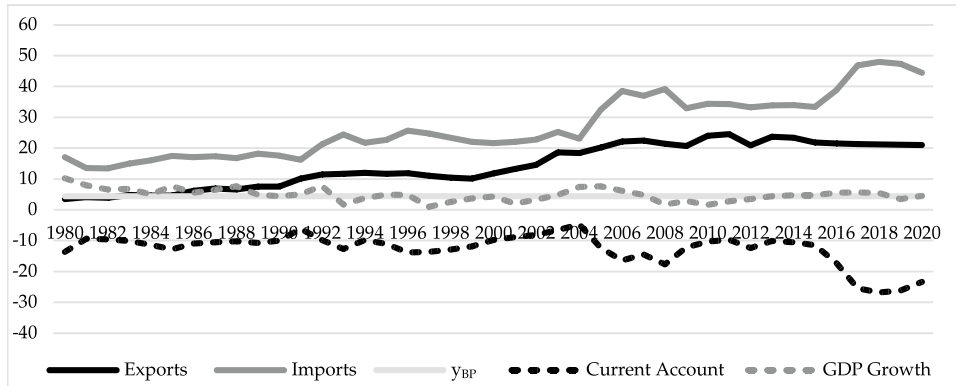
In this section, we use our estimated import and export demand models to forecast what will happen to imports, exports and the current account under different scenarios for the next 2 years.

In each of the scenarios illustrated below, we have used a conservative estimate for domestic GDP growth, IMF forecasts for international GDP growth and three different exchange rates, (i) Rs140/USD\$, (ii)Rs150/USD\$ and (iii) Rs 160/USD\$.

Under each simulated scenario the story is consistent: Over the next 2 years, imports will fall due to the rise in the exchange rate (and fall in domestic growth), exports will increase slightly and the fall in the imports will call an improvement in the current account deficit.

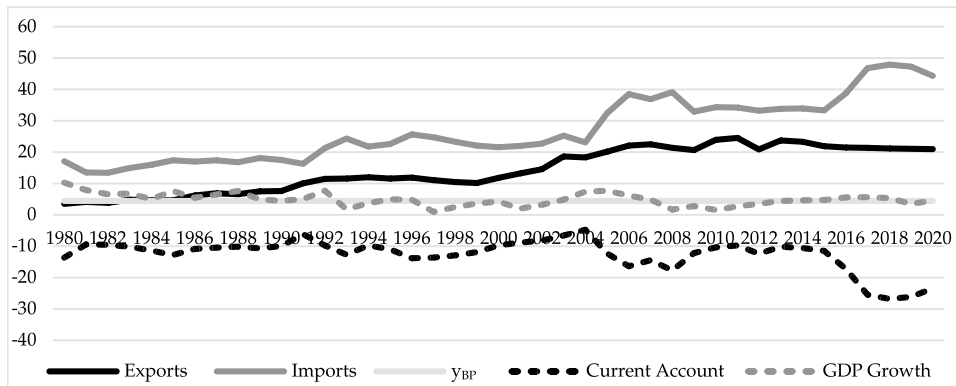
It is interesting to note that the shape of the current account projections mirror what the literature refer to as the J-curve which is the observed phenomenon in which an exchange rate devaluation leads to an deterioration in the current account deficit and then an improvement. But again it should be noted that this improvement is due to significant decrease in imports and not a significant increase in exports. This makes sense because the combined effect of an economic slowdown in Pakistan with the fall in the value of the rupee leads to a much higher impact of imports than on exports which are relatively price inelastic.

Figure 4: Scenario with Rs 140/ USD\$ Exchange Rate



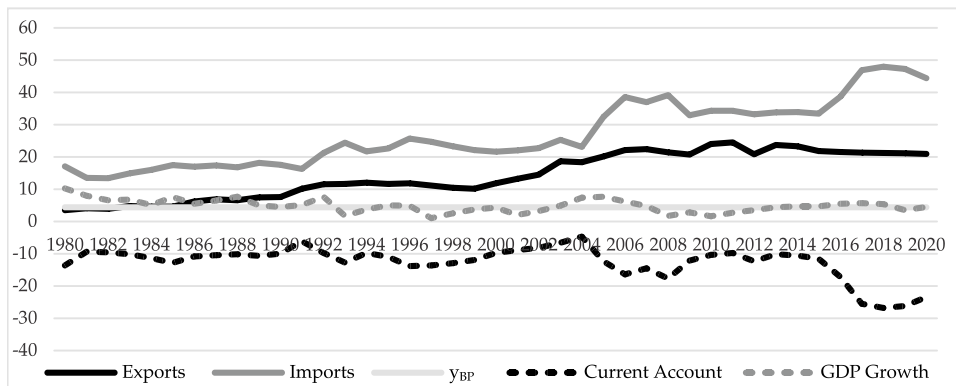
Source: Authors' Calculations, IMF, World Bank, Government of Pakistan

Figure 5: Scenario with Rs 150/ USD\$ Exchange Rate



Source: Authors' Calculations, IMF, World Bank, Government of Pakistan

Figure 6: Scenario with Rs 160/ USD\$ Exchange Rate



7. Conclusions

While there seems to be broad consensus on the need for major changes in the Pakistani economy, there is little agreement on what these planned changes should be. In this paper we present an argument that there is a major structural problem in the Pakistani economy that relates to the export sector. In particular, we believe that the less sophisticated, low value-added exports that Pakistan has focused on has led to a threshold growth rate in the economy. If the growth rate in Pakistan exceeds this threshold then imports rise to unsustainable levels while exports only increase marginally, which in turn leads to reoccurring balance of payments crises.

In order to calculate this threshold level of growth, or the balance of payments constrained growth rate, we start by estimating the import and export demand functions for Pakistan. Here we find that both imports and exports are relatively more sensitive to domestic and foreign income levels (respectively) but are less sensitive to prices. The elasticities of imports and exports when seen together seem to imply that the Pakistani economy does not satisfy the Marshall-Lerner conditions which implies that a devaluation will only have a limited impact on the current account deficit in the short run.

We then use the estimates of the import and export demand functions to calculate the balance of payments constrained growth rate in Pakistan which turns out to be approximately 4.5%. This implies that if GDP growth rises above 4.5%, Pakistan will face significant balance of payments problems. We also present simulations based on our results and find that further devaluations of the rupee combined with a slowdown in domestic growth will improve the current account through lower imports and not higher exports.

Our empirical results point to a deeper point: Only if Pakistan fundamentally change the nature of the goods it exports will it be able to break out of this cycle of balance of payments crises. A shift towards higher value-added exports characterized by greater income and prices elasticities are the only realistic way for Pakistan to realize sustained levels of higher economic growth.

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2

Breaking out of Pakistan's Stop-Go Economic Cycles: Do the "Twin" Fiscal and Current Account Deficits Hold the Key? 1999-2019

Rashid Amjad* and Almazia Shahzad**

Abstract

Pakistan's overall economic growth patterns since 1950 have been cyclical with periods of low economic growth in the 1950s and 1970s interspersed with periods of high economic growth in the 1960s and 1980s. Since 1990, however, these stop-go economic cycles have been recurring more frequently and the duration of expansionary spurts have decreased while those of low economic or stagnant growth increased in years. The reasons for this post-1990 slow down have been a subject of considerable debate and discussion especially since Pakistan has been during at least half of this period under a dozen IMF programs of varying durations with only two being successfully completed and the rest being abandoned during their duration.

The aim of this paper is two-fold. The first to review Pakistan's economic performance during 1999-2018, identify the main growth trends and factors responsible for the overall poor growth performance in the period, except for a brief growth spurt during 2003-06. The second more specifically to analyze the role of the twin fiscal and current account deficits as the major factors in explaining this poor stop-go economic performance.

We test the impact of the twin deficits on overall economic growth for the years 1980 – 2018. Our results confirm that the twin deficits have a negative impact on economic growth. Between the two deficits, the fiscal deficit contributes more to the slowdown of the economy than the current account deficit. We conclude that economic policy makers in Pakistan, to break-out of the recurring stop-go cycles, must aim for the adoption of a policy of running of low and targeted level of the fiscal deficit.

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Background

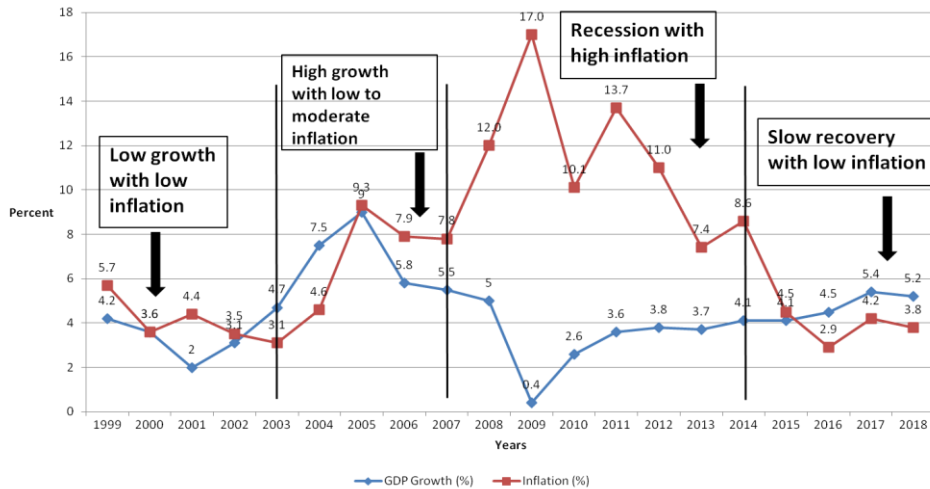
During the period 1960-1990 Pakistan with an average growth rate of around 6.5% was one of ten fastest growing economies in the world. Over the subsequent almost thirty years 1990-2019 its average growth fell to around 4%. It should, however, be kept in mind that post-2000 despite this low economic growth rate, poverty levels fell drastically and using the Food Energy Indicator (FEI) from around 30% to less than 10% in 2013-14 (State Bank of Pakistan, 2016). During this period a vibrant middle-class began to emerge which according to some estimates was between 20-25% of the total households in 2015 (Durr-e-Nayab, 2011). Most analysts have attributed these favorable developments primarily to the almost twenty-fold increase in remittances from just over \$1 billion in 2000 to around \$20 billion in 2018-19 or about 7% of GDP (Amjad, 2017).

Pakistan's overall economic growth patterns since 1950 have been cyclical with periods of low economic growth in the 1950s and 1970s interspersed with periods of high economic growth in the 1960s and 1980s. Since 1990, however, these stop-go economic cycles have been recurring more frequently and the duration of expansionary spurts have decreased while those of low economic or stagnant growth increased in years. The reasons for this post-1990 slow down have been a subject of considerable debate and discussion especially since Pakistan has been, during at least half of this period, under a dozen IMF programs of varying durations with only two being successfully completed and the rest being abandoned. Interestingly of the last two programs the Stand-by Agreement signed in 2008 initially for two years and then extended for another two was pre-maturely abandoned in 2011 without the allocated funds being disbursed. The failure of the government to introduce the general sales tax (GST), a form of the value-added tax (VAT), to increase revenues and better document the economy and adjust energy and fuel prices to reduce the mounting subsidies were the two main reasons which led to its abrupt end. The 2013 three-year Extended Fund Facility program was successfully completed in 2016. Currently the newly elected government is in the process of negotiations with the IMF for a new three-year program starting in mid-2019 if a suitable agreement to the satisfaction of both sides can be reached.

The aim of this paper is two-fold. The first to review Pakistan's economic performance during 1999-2018, identify the main growth trends and factors responsible for the overall poor growth performance in the period, except for a brief growth spurt during 2003-06. The second more specifically to analyze the role of the fiscal deficit as the primary factor in explaining this poor economic performance and whether the adoption of a policy of running of low and targeted levels of fiscal deficit in the future could provide a solution and move the economy to a more sustainable and possible higher growth path.

Pakistan's Economic Growth Performance 1999-2018

Figure 1: Pakistan's Macroeconomic Performance (1999 to 2018)



Source: Pakistan Economic Survey (2017-18) and previous issues.

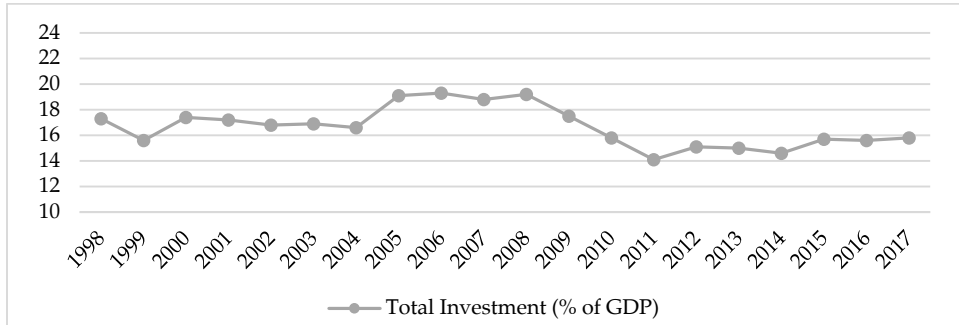
The above figure shows Pakistan's economic growth performance and inflation over 1999-2018 divided into four different phases: (i) a period of low economic growth 1999 -2002 following Pakistan's nuclear test in 1997 (as a response to the test by India) and the placing of trade and economic sanctions and cutting bilateral aid and loan flows from the western powers; (ii) a period of high economic growth and low inflation 2003-2006 following 9/11, the removal of sanctions and increased foreign assistance including rescheduling of debt repayments and trade concessions and a buoyant global economy driving up exports and industrial growth; (iii) a period of stagflation 2007-13 following the unprecedented increase in oil and food prices and the global financial meltdown that followed in 2008 and serious energy shortages which led to load shedding of up to 8 hours in major urban areas and 12-14 hours in rural areas; (iv) a slow economic recovery during 2013-2018 with economic growth gradually picking up, a gradual decline in energy shortages mainly due to China-Pakistan Economic Cooperation (CPEC) financed power plants and a fall in oil prices through most of this period ensured low inflation, though oil prices did increase at the end of this period.

Turning Points in Pakistan's Growth Experience (1999-2018)

Pakistan's fundamental problems are structural. To start with, are its extremely low levels of investment (see Figure 2) and savings – the former hovering between 15-20% and the latter defined as national savings (domestic savings plus net private

inflows) around 10-12%. Productivity growth has been low especially total factor productivity (TFP), reflecting both low levels of investment and low human development indicators. It is also argued that the economy is over protected with high levels of protection though given a very large amount of imports coming through undocumented channels needs further study. Its tax to GDP level at best at around 11% is also far too low to finance badly needed development expenditure.

Figure 2: Total Investment as a Percentage of GDP (1998-2017)



Source: Pakistan Economic Survey (2017-2018 and previous issues).

Yet we find that Pakistan both historically and in the period being discussed has shown the capacity to achieve high economic growth when overall economic circumstances are favorable as during 2003-06. What then are the factors that allow or retard Pakistan's sustained and at times high economic growth spurts?

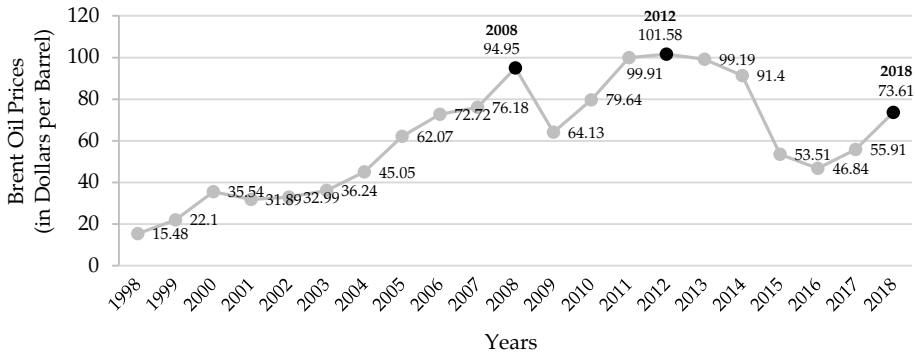
To find an answer to this question we examine the factors that resulted in what we can term as "turning points" in 2002-3, 2007-8, 2013-14 and most recently in 2017-18 and their far-reaching consequences for the Pakistan economy.

External factors, whether in the form of military interventions in neighboring Afghanistan or surge in international oil and food grain prices, have played a critical role in each of these turning points. The sad event of 9/11 that resulted in the invasion by NATO forces led by the US of Afghanistan, thrust Pakistan into the role of a front line state in the war against terrorism. In recognition of this role and the costs Pakistan had to bear in the fight against terrorism led to direct funding in the form of the Coalition Support Fund (which was recently withdrawn) and economic relief in the form of debt deferment and debt relief (or forgiveness) as well as selected trade concessions granted by the western coalition countries.

These factors and the then military government's economic and banking reform measures, led to a boost in business confidence and this together with buoyant global trade led to an upturn of the Pakistan economy in 2002-03 and an

increase in investment economic growth. These favorable developments led to an increase in investment (both public and private), high growth in manufactured exports and overall economic growth rising to an unprecedented 9% in 2005. The IMF which had been initially reluctant to provide support also agreed to an enter into a three-year Poverty Reduction and Growth Facility (PRGF) program with Pakistan in 2002 but which Pakistan ended pre-maturely as it had enough foreign inflow of resources including through rising exports.

Figure 3: Brent Oil Prices (in dollars per barrel)



Source: World Bank, Commodity Prices, February 2019.

The second turning point in 2007-08 was directly the result of an unprecedented rise in oil and food grain prices in 2006 and the government inability to pass on these prices to the consumers (mainly due to public unrest led by lawyers protesting against the sacking of the Chief Justice of Pakistan by the government) and this led to the government running up an unsustainable fiscal deficit and current account deficit, each of over 8% in 2007-08. This left the new government which took over in 2008 with no other option but to turn to the IMF or face default as foreign exchange reserves fell to dangerously low levels. The resulting stabilization program plummeted economic growth to less than 1% from an average of over 6% in the preceding years and raised inflation rates to unprecedentedly high levels at over 20% in 2008-09 as food and energy subsidies were drastically reduced and wheat procurement prices more than doubled to international levels. The economy never quite recovered from this shock and while there was a slight recovery the increases in oil prices again led the then government to leave an extremely high fiscal deficit of near 8% and current account deficit of about the same amount.

Faced with an unsustainable fiscal deficit of near 8% and a rising current account deficit the third turning point was 2012-2013 that saw the new government that took over in 2013 again turning to the IMF for support but managed to get

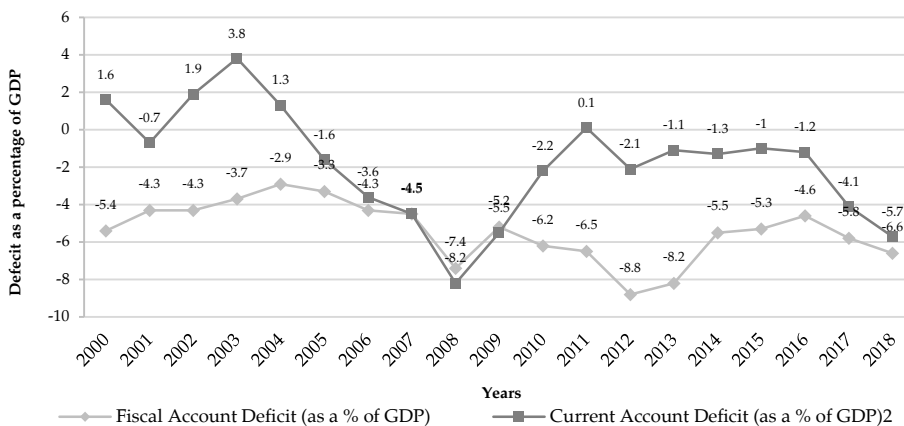
softer terms including a gradual decline in the fiscal deficit which led to a slow but sustained economic recovery. It was able to successfully complete the IMF program in 2016 but the increase in oil prices after a period of a fortunate downturn and reckless government expenditures before the elections in 2018 again led to its leaving behind a fiscal deficit of 6.6% and a current account deficit of around 6%. The new government that took over in August 2018 again faced the same dilemma as had its two predecessors.

While the accounts of these turning points is by no means comprehensive and does not cover some important economic developments in the ensuing years, they show reasonably accurately Pakistan’s vulnerability to external events and external economic shocks as well as a history of poor economic decision making and economic management to cope with unfavorable economic developments.

It could be convincingly argued that though external price shocks negatively impacted on the economy if they had been handled more prudently with timely and diligent economic management they would have, after an initial shock, worked themselves through the economy and not necessitated the harsh stabilization measures and sharp economic downturns that followed. The failure to adopt such policies was also the result of a lack of “political will” or fear of a public back lash especially in the years just before the general elections.

The Role of “Twin Deficits” on Economic Growth

Figure 4: Current Account & Fiscal Deficit (as a percentage of GDP) 2000-2018



Source: State Bank of Pakistan, Annual Reports (Various years).

Theoretically, the link between the fiscal deficit, the current account deficit and GDP is derived from the basic national income accounting model of the

economy. National income measured by GDP is the sum of private consumption, private investment, government spending and net exports (i.e. exports of goods and services minus imports of goods and services):

$$Y = C + I + G + NX \quad (1)$$

Alternatively, we can measure national income as the sum of consumption, savings and taxes:

$$Y = C + S + T. \quad (2)$$

Equation (1) and (2) can be rewritten as:

$$NX = (S - I) + (T - G). \quad (3)$$

The above equation (3) shows net exports ($NX = X - M$) is the result of the difference between aggregate savings and investment plus the difference between tax revenue and government spending. If savings are less than investment, then it results in net borrowing from abroad. Similarly, if tax revenue is less than government spending then it results in net borrowing from the banking and public sources.

Equation (3) shows that a rise in the fiscal deficit ($T - G$) must be compensated by an increase in domestic savings, otherwise it will result in a widening of the trade deficit (NX). If domestic savings do not increase, then the rise in the fiscal deficit will result in a widening of the trade deficit which would then have to be financed by foreign borrowings. The latter leaves the economy more vulnerable to external shocks, especially if foreign exchange reserves are very low.

Barro (1974), proposed an alternative hypothesis; the Ricardian Equivalence Hypothesis that suggests the fiscal deficit is unlikely to result in a current account deficit as the reduction in government savings through a tax cut are compensated by the increase in private savings, leaving the total level of national savings unchanged. Therefore, the current account deficit also remains unchanged. In case national savings fall, the economy will have to rely on foreign borrowings that can weaken the current account position.

Studies conducted by Cavallo (2005) and Kim and Roibini (2008), discuss the twin divergence, i.e. a negative association between the fiscal and the current account deficit. They argue that an increase in interest rates as a result of government crowding out of private investment will boost private savings leading to a fall in aggregate demand for imports that improves the current account deficit.

Empirical Assessment

To empirically test the impact of the twin deficits on overall economic growth, we ran a simple linear regression using the ARIMA model for the years 1980 – 2018. To further study the dynamic relationship between the two deficits and economic growth, a vector autoregressive (VAR) model was used. We used three series in both the models: fiscal and current account deficits taken as a percentage of GDP and real GDP growth as a measure of economic growth.

Prior to estimating the models, we checked for stationarity of the series, i.e. whether or not they had a unit root. The Augmented Dickey-Fuller test was used and we found that all were non-stationary at level but become stationary at first difference. The three series also displayed characteristics of an autoregressive process of order 1. Johansen co-integration test was also carried out to check for the presence of co-integration between the series. The test results indicated no co-integration relationships. The optimal lag-length recommended by the Akaike information criterion (AIC) and Schwartz-Bayes information criterion (SBIC) for the VAR model was 1.

Based on the pre-estimation tests, we therefore estimated an ARIMA (1,1,0) model and a VAR(1) model. For the ARIMA (1,1,0) model we also created an interaction term of the current and fiscal deficit and used its lagged values in the model. The results of the regression are given below:

Economic growth = -0.06

Lagged economic growth*** – 0.56

Fiscal deficit – 0.03

Current account deficit – 0.10

Lagged current fiscal deficit*** - 0.06

(Note: *** represents significance at 1% level)

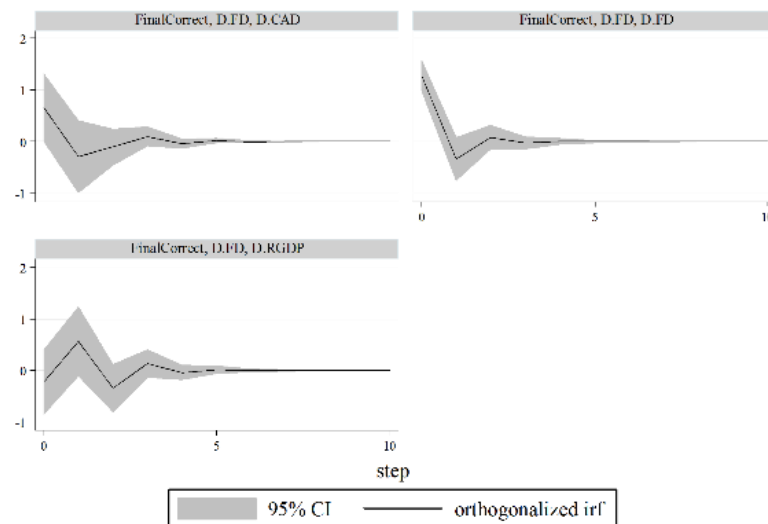
The results suggest that both current and fiscal deficits negatively affect economic growth but neither of the variables turned out to be significant. In line with the twin hypotheses we observed that when the economy suffers from both deficits, it has a significantly negative impact on economic growth.

In the second step, we estimated the VAR(1) model and obtained the Impulse Response Functions (IRFs) for a fiscal deficit shock and current account deficit shock to the economy. Certain assumptions about the causal structure of these three variables were imposed in the model through their ordering. Two scenarios have been tested, in the first fiscal deficit results in a current account

deficit and in reduction of economic growth. In the second, a rise in the current account deficit results in a rise in fiscal deficit which leads to the slowing down of economic growth.

Figure 5 below shows the IRFs for a fiscal deficit shock in the first type of ordering structure where the fiscal deficit affects the current account deficit and GDP. A positive shock to the change in fiscal deficit has a positive effect on the change in current account deficit but a negative one on the change in the real GDP growth rate. The fiscal deficit shock does not show persistence and returns to the pre-shock level within two years. However, both the current account deficit and real GDP growth takes between four to five years to return to their pre-shock levels. This is in line with the twin hypothesis, which argues that the fiscal deficit can lead to a current account deficit. The movement in GDP is more volatile than the two deficits; a sharp rise and fall in values can be observed that points to the recurring macroeconomic crisis the country faces in the form of stop-go economic cycles.

Figure 5: Impulse Response Functions for Fiscal Deficit Shock

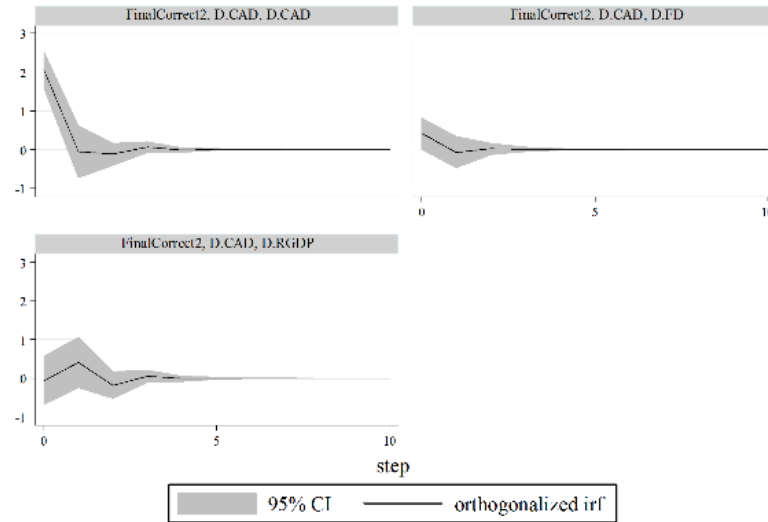


Graphs by irfname, impulse variable, and response variable

Figure 6 shows the IRFs for a current account deficit shock. In the second ordering structure where current account deficits affect the fiscal deficit and GDP, a positive shock to the change in the current account deficit results in an increase in the fiscal deficit. However, this increase is much smaller as compared to the current account deficit's response to a fiscal deficit increase. Similarly, real

GDP growth does show signs of a decline in line with the expectations but the effect is much smaller. The volatility of the growth response function is also lower as compared to the fiscal deficit shock. This indicates that although both the current account deficit and fiscal deficit shocks slow down economic growth, the former does not do so to the same extent as the latter.

Figure 6: Impulse Response Functions for Current Account Deficit Shock

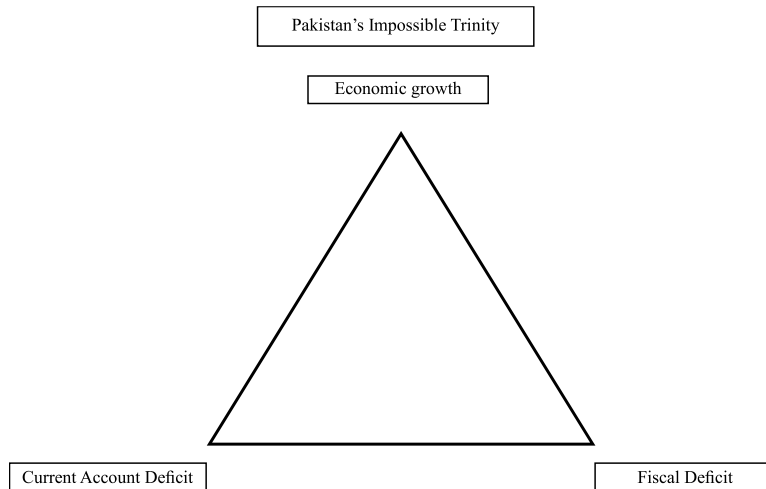


Graphs by irfname, impulse variable, and response variable

To interpret in terms of Pakistan’s growth experience, we see that every three to four years Pakistan’s growth momentum becomes unsustainable leading the economy into macroeconomic crisis. The preceding events primarily point out the fiscal and current account deficits. As discussed in the earlier section on turning points in Pakistan’s growth experience, the 2007-08 downturn in economic growth was a result of the sharp rise in oil and food prices that were not passed on to the consumers, resulting in the government running unsustainable levels of fiscal and current account deficits. Similarly, in 2012-13 and more recently in 2018-19, the newly elected governments at the time were each handed over an economy faced with a high fiscal deficit and rising current account deficits. The high fiscal deficit towards the end of each government’s period is also motivated by their desire to gain political support among the public. In each of these three episodes, the governments had to seek IMF support that sought for a number of reforms to be implemented, among which the curtailing of public spending has been consistently prescribed.

Pakistan's Impossible Trinity: The Challenges of Prudent Economic Management

Figure 7: Pakistan's Impossible Trinity



Overall, our analysis suggests that running high fiscal and current account deficits ultimately leads to a decline in economic growth and indeed, Pakistan's recent experience suggests a major contraction in economic growth to regain macroeconomic stability. Our analysis on turning points suggest that the causation between these two variables may have varied over time and in some instances the rising current account deficit as a result of an external shock (such as rising oil and food prices or low export growth) may have led to an increase in the fiscal deficit. This was mainly because in most cases rising import prices were not passed on immediately to consumers and were absorbed by the government in the form of subsidies which resulted in a high fiscal deficit.

The causation may also run the other way – the pursuit of higher economic growth results in increased imports especially of machinery and capital goods and this is not matched by a corresponding increase in exports. In a recent study, Chaudhry and Gul (2019, forthcoming) for the period 1982-2017 found the income elasticity of imports as high as 0.62 and price elasticity of exports quite low at -0.32.

Indeed, the pre-dominant view that has emerged over the years (Amjad, 1982, Hamid and Chaudhry, 2010, and Chaudhry and Gul, 2019) is that the foreign exchange constraint is the binding constraint on Pakistan's economic growth for this leads to an unsustainable current account deficit. Indeed, both the empirical studies Hamid and Chaudhry (2010), covering the period 1987-2007 and Chaudhry and Gul (2019), covering the period 1982-2017 found that every time Pakistan's growth rate

exceeded 5.6% in the former study and 4.5% in the latter study, the current account significantly deteriorated and made any growth rate above this unsustainable. This meant that periods of growth exceeding these growth rates in the periods covered must have been supported by large doses of foreign savings in the form of aid, loans and grants. This is best seen in the period following 9/11 when, due to large injections of such concessional aid and loans, the economy witnessed three spurts of high economic growth 2003-2006.

The other question that needs to be explored is whether there exists a threshold level of the fiscal deficit and that running a fiscal deficit below that can result in the promotion of economic growth? While not adequately explaining the mechanism through which this relationship works Iqbal et. al. (2017) applying the smooth transition autoregressive model to time series data for 1972-2014 shows that the threshold level is 5.57% which a priori seems on the high side given Pakistan's high propensity to import.

Prudent Macroeconomic Management

The macroeconomic management of the economy has always been a challenging task not just for the economic policy managers of Pakistan but also for those of other South Asian countries especially over the last two decades in the face of external shocks and recurring unsustainable current account deficits.

Pakistan's stop-go economic cycles have been recurring more frequently post-1990. This task of breaking-out of these recurring stop-go cycles is made further difficult as there are trade-offs between important economic objectives and political governments and the economic policy team have to decide to which they will assign a greater priority, as for example the pursuit of higher economic growth while exposing themselves to a unsustainable current account deficit. For this in many cases short-term relief is gained by borrowing in global financial markets at high costs. This situation over time becomes untenable and the government has to resort to strong stabilization measures to suppress aggregate demand by drastically reducing the fiscal deficit and restricting imports, in most cases as part of an IMF program.

In this context the question this study explored was whether an important way of breaking out of Pakistan's recurring stop-go cycles in the first instance is to prudently manage the fiscal deficit as a means of ensuring a more stable, sustainable and high growth path?

Before we come up with our main conclusions we must point out that many important aspects of macroeconomic policy management have not been explored in this study especially the role monetary policy has played in the past in contributing to Pakistan's stop-go cycle. While this is a major omission there is

perhaps ground for arguing that except for the State Bank demand stimulus in 2002-03 to jump-start economic growth, monetary policy has in most of the time period covered been subservient to the fiscal policy stance of the government. Indeed, the government could never have run high fiscal deficits if the monetary authorities had not been accommodating. Monetary policy has been used most often as part of the stabilization program in the form of raising interest rates and reducing the money supply which has been adopted after the economic crisis conditions make such an economic path inevitable.

We have also not analyzed in detail the role played by an overvalued exchange rate through limiting export growth or stimulating imports and thus worsening the current account deficit. Our results did not show that this variable was significant in influencing economic growth in the period that we covered but this needs more careful and detailed analysis.

Finally, we have also not analyzed the role of foreign remittances in macroeconomic policy management. Clearly it has played an important role in bolstering the exchange rate in the face of stagnant or low growth of exports ("Dutch disease") and made policy makers less conscious of the extremely high trade deficit run up, especially in recent years.

Yet, despite these limitations our study supports the basic proposition that targeting a low fiscal deficit can serve as an important stabilizer against recurring stop-go cycles especially in a period of time when it is vulnerable to external instability and economic shocks.

However, our detailed analysis of this general proposition of targeting a low fiscal deficit suggests that the circumstances that result in high fiscal deficits can vary considerably over time and limit the government's ability to curb the rise in the fiscal deficit. Also our analysis suggests that the targeted value of the fiscal deficit varies across countries depending on their overall economic conditions as well as over different periods of time for a particular country.

Another important conclusion that this study points to is that when going through a stabilization program to the extent possible, the drawing down of the fiscal deficit should be done gradually given its impact on slowing down the economy and negatively impacting on employment and poverty.

The overall conclusion must be that economic policy makers in Pakistan in order to break-out of our recurring stop-go cycles must aim for and ensure that the fiscal deficit is carefully managed and monitored so that steps can be taken to keep it in check before the economy reaches a point when strong stabilization measures become inevitable.

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3

Pakistan: Fiscal Crisis Management 2019-24 – The Revenue Perspective

Muhammad Ashfaq Ahmed* and Inayat Ullah Mangla**

Abstract

The paper is a political economy perspective on Pakistan's fiscal crisis management during 2019-24 period. It is empirically brought out that though revenues have moved up significantly under all major taxes over the past five years, yet the fiscal deficit poses serious challenges to the economic managers. The fiscal conundrum is confounded by the fact that the robustness of revenue numbers was mustered through excessive use of policy handles rather than through capacitation of the tax system on solid foundations. Theoretically speaking, it is argued that this paradox is the product of elitist capture of the revenue system. The paper inventively plugs in the theory of political settlements to contend that Pakistan's fiscal woes are cast in the structural formation of the polity, and that the structural fault-lines necessarily stem from insufficient political settlementization i.e. fragmentation of the base between the federation and the federating units, insufficiency of the fiscal base on account of absence of wealth tax, inheritance tax, capital gains tax, and gift tax from the statute book, brute secrecy in the economic domain, and erosion of the state's fiscal base through reckless vanity agreementization with the outside world. The paper develops the argument that the on-going exemptization with an annual tax-tag in the vicinity of Rs. 550 billion – almost 20 percent of the total national tax take – would continue to operate as headwind on the revenue effort of the government. Likewise, the tax amnestization initiative of 2018 which generously proffered to whiten even the future earnings would have tax implications closer to Rs. 275 billion per annum over the next two years. Similarly, the simmering offshore problem and the continuing money whitening ploys in-built into the law would continue to exert pressure on the fisc. In summation, the wanton ways with which the exchequer has been managed over the past few decades is no more sustainable, and that in order for the tax system to generate both healthy and sufficient revenues, substantial investments are required to be made into the system as necessary inputs before expected outputs can be derived, which would require a gestation period of a couple years, at the least, and that too after sufficient political settlement has been arrived at a broader level in key areas of the extractive function.

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Introduction

Pakistan's tax system, historically but more significantly since 2001 onwards, paints a paradoxical picture. While revenue numbers have shown upward trends pushing the tax/GDP ratio up by a couple of notches, the system itself continues to be reckoned a pariah amongst the state institutions inflicted by a set of malaises – iniquitous, inefficient, perverse, and detached from the macroeconomic framework. The tax system also lacks in terms of public image, number of tax filers, and an ability to go after delinquents particularly those wielding political or agitational power. The paper premises that this paradoxical situation emanates from a disproportionate use of tax policy and tax enforcement handles by the state, in that while tax policy options were excessively exploited to harvest easy money into the exchequer, the enforcement arm was left to incapacitate into a state termed “too lazy to prey.” This paper is an attempt to analyze the ostensible journey of the states' revenue function from relative functionality to visibly perceptible dysfunctionality.

The paper consists of 5 sections. Section 1 provides basic facts about the tax system which under-bridges the ensuing debate. Section 2 develops a theoretical framework which is then operationalized to analyze the revenue system's insufficiency in totality. Section 3 explores the sub-surface fissures which operate on the tax administration as pull-back factors. Section 4 takes stock of the tax system's simmering wounds – the issues that are well-diagnosed but the polity has consistently shied away from resolving them. Section 5 seminally identifies and explains the tax system's new maladies. The paper concludes with a candid appraisal of the tax system and its ability to meet the revenue needs of the state during the period 2019-24.

1. Federal Tax Architecture

1.1. Federal tax system

The primary responsibility for collecting tax revenues at the federal level is vested in the Federal Board of Revenue (FBR).¹ Administratively, the federal tax structure can be categorized into (a) inland taxes, and (b) border duties and taxes – both being managed by two specialized services – Pakistan Inland Revenue Service (IRS) and Pakistan Customs Service (PCS), respectively. The IRS administers all inland taxes e.g. (i) Income Tax; (ii) Sales Tax; (iii) Federal Excise Duty; and (iv) Capital Value Tax.² The PCS manages border taxes i.e. Customs Duty. Each tax essentially differs from the other in base, rate, incidence, point and time of collection, and filing requirements. Income tax, for instance, is charged on

¹ The Federal Board of Revenue was created under the Federal Board of Revenue Act, 2007. Earlier it carried the nomenclature of the Central Board of Revenue, which, in turn, was established under the Central Board of Revenue Act, 1922.

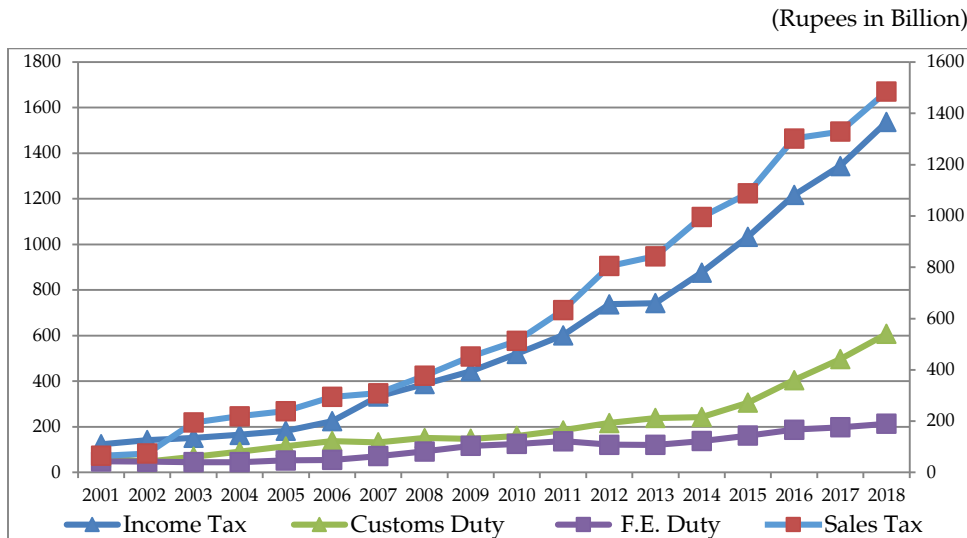
² Pakistan IRS also administers Workers' Welfare Fund and Workers' Profit Participation Fund.

individuals, corporates and associations of persons (AOPs) in respect of all incomes, profits, and gains derived from various sources. By law, a large number of taxpayers have also been obligated to collect withholding tax at source and deposit it into the national exchequer. Sales tax is charged on all supplies of goods and services on prescribed tax rates except those specifically excluded. Federal excise duty is levied on the import and manufacturing of specific commodities and services. Customs duty is charged on all dutiable imports as per specified rates at the port of entry or the port of clearance. In order to execute these taxes a 23,000-strong standing workforce has been deployed, of which the officers’ corps is only about 2000. The professional support tiers i.e. inspectors, auditors, and superintendents constitute about 1/4th of the total workforce, and the residual 3/4th falls in the support staff category. It is generally observed that a large population of support staff category operates on the organization as a drag and inflicts it with a standard set of malaises generally associated with the public sector in Pakistan. Pakistan’s current cost of collection is about 0.6%, which, on the one hand, may mean that FBR is a highly efficient organization, but on the other, that adequate investments have not been made in the revenue system by the state.

1.2. Tax Collection Trajectories

Over the past two decades, federal taxes have been exhibiting different but upward collection trajectories. Figure 1 depicts relative tax collection figures in respect of the major federal taxes.

Figure 1: Federal Taxes – Comparative Trajectories



Source: FBR-DRS, 2018.

What Figure 1 shows is that income tax, which is generally the biggest source of revenue in advanced, well-governed and healthy economies, in Pakistan's context is second to sales tax. No doubt revenue collection on account of income tax has doubled since 2012, but this is mainly because of over-deployment of policy tools – extensive withholding taxes being one of them.³ In overall terms, the income tax system continues to be iniquitous, inefficient, and insufficient as also reflected in the composition of revenue collected – 67% of total income tax collection is collected through withholding taxes.⁴ Sales tax collection is the most significant source of revenue in the federal tax mix. Total sales tax collection which in 2010 was Rs. 513 billion, has touched the figure of Rs. 1,485 billion showing a remarkable increase of 200% in 10 years. Historically, the major sources of sales tax collection have been POL products, electrical energy, cement, cigarettes, natural gas, and iron and steel. Since under the Constitution, sales tax on services is to be charged by the provinces, the blurring line between goods and services and input adjustments are lingering issues between the federation and the federating units. The major problems of the system include non-filing, under-filing, registration of economic sectors and inability of the tax administration to pursue delinquents, which, in turn, are reinforced by a deficit of political will and investment in the tax system.

Customs duty is another stable source of federal revenues. It is noticed that collection on account of customs duty that was well-below Rs. 250 billion in 2014, has registered a remarkable surge touching the figure of Rs. 608 billion in 2018. This is despite FTAs covered imports and significant under-invoicing. The steep increase in customs duty, at a certain level, is indicative of commercialization of the economy at the expense of industrialization and mass-scale under-valuation. This is particularly applicable to the imports from China. The leading five customs duty contributors remain vehicles, POL products, iron & steel, mechanical machinery and edible oil. The federal excise duty (FED) is currently contributing a little over Rs. 200 billion to the national exchequer. In the early 2000s, this levy was dubbed as a dying tax. However, the fact that a significant portion of the economy is undocumented, un-organized and not automated, has actually reinforced the continuation of this levy. Given its very nature, FED is charged on a select number of commodities. Currently, about 90% of total FED collection is contributed by five sectors i.e. cigarettes, services, beverages, cement, and natural gas. Federal excise on services continues to be a lingering issue between the federation and the provinces.

³ See, for a detailed analysis, Muhammad Ashfaq Ahmed, "Pakistan: Withholdingization of the Economic System: A Source of Revenue, Civil Strife or Dutch Disease+?," (2018).

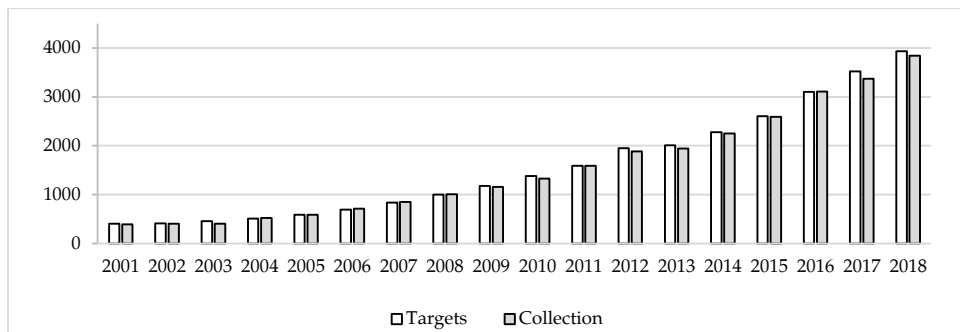
⁴ *Ibid.*

1.3. Fixation and Achievement of Targets

The fixation of revenue targets by the government and their achievement by the revenue administration is an annual national event in Pakistan. It is widely debated and brought up in Parliament, the media, and public discourse. It was remarked that “the reversions on the part of the tax administration ... started to take place under the hammer of steep revenue targets, which not only went steeper by the year but also that their periodicity turned evermore frequent — from annual to quarterly, from quarterly to monthly, from monthly to weekly, and of late, from weekly to daily.”⁵ Figure 2 plots the data of annual targets assigned to and achieved by the tax administration since 2001.

Figure 2: Revenue Target Fixed and Achieved

(Rupees in Billion)



Source: FBR-DRS, 2018

It can be seen that tax administration has historically fallen short on its assigned revenue targets, particularly since 2009 and onwards. It may be because of the inefficiency of revenue administration, but on the flipside, it may also be because the revenue targets set were steep, irrational and divorced from economic realities. The key question, however, remains that even if the tax administration were able to meet its given targets, would that be good enough revenue for the state to perform its avowed functions? Probably, not.

1.4. Fiscal deficit

Pakistan’s tax-GDP ratio that remained fixed around 10% over the past decade and a half, has gone up slightly beyond 13% in 2018. This when coupled with non-tax revenues, gives a figure of 17% in the revenue-GDP ratio leaving the fiscal deficit hovering above 4% of GDP as plotted in Table 1.

⁵ ———, "Pakistan: Wither Tax Reforms - The Case of Large Taxpayers' Unit, Islamabad," *Journal of Tax Reform* 4, no. 3 (2018).

Table 1: Revenue, Expenditure, Fiscal Deficit

(%age of GDP)

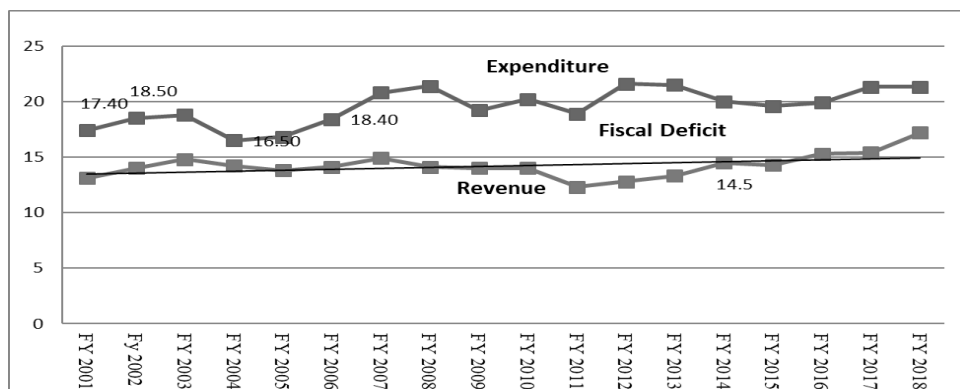
Year	Revenue			Expenditure			Fiscal Deficit
	Tax	Non-Tax	Total	Current	Development	Total	
2001	10.5	2.6	13.1	15.3	2.1	17.4	4.3
2002	10.7	3.3	14	15.7	2.8	18.5	4.3
2003	11.4	3.4	14.8	16.2	2.6	18.8	3.7
2004	11	3.2	14.2	13.7	2.8	16.5	2.3
2005	10.1	3.7	13.8	13.3	3.5	16.8	3.3
2006	10.5	3.6	14.1	13.6	4.8	18.4	4.3
2007	10.2	4.7	14.9	15.8	5	20.8	4.3
2008	9.9	4.2	14.1	17.4	4	21.4	7.3
2009	9.1	4.9	14	15.5	3.5	19.2	5.2
2010	9.9	4.1	14	16	4.4	20.2	6.2
2011	9.3	3	12.3	15.9	2.8	18.9	6.5
2012	10.2	2.6	12.8	17.3	3.9	21.6	8.8
2013	9.8	3.5	13.3	16.4	5.1	21.5	8.2
2014	10.2	4.3	14.5	15.9	4.9	20	5.5
2015	11	3.3	14.3	16.1	4.2	19.6	5.3
2016	12.6	2.7	15.3	16.1	4.5	19.9	4.6
2017	12.4	3	15.4	16.3	5.3	21.3	5.8
2018	13.7	3.5	17.2	15	6.3	21.3	4.1

Source: Pakistan Economic Survey 2017-18.

It is evident that Pakistan’s expenditure-GDP ratio that soars above 20% roughly by a quarter is financed through domestic borrowing and international financing arrangements. The relative trajectories of expenditure, revenue, and fiscal deficit are plotted in Figure 3.

Figure 3: Fiscal Deficit

(%age of GDP)



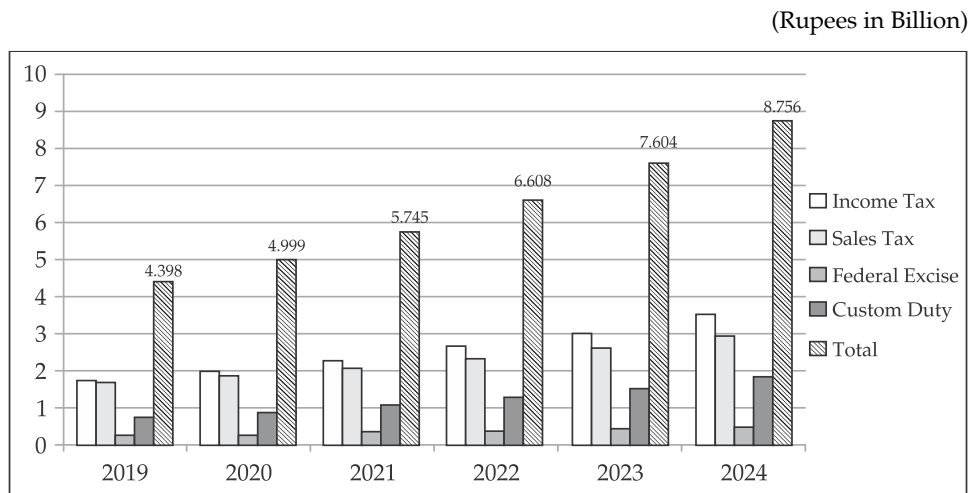
Source: Pakistan Economic Survey 2017-18.

It is evident that Pakistan’s revenue system has historically under-extracted. It was argued that Pakistan fundamentally is a minimalist subsistence state in that it collects less and it spends less – resulting in a sustained twin regulatory and developmental deficit. This phenomenon, in turn, if continued for longer lengths of time, has had implications for the process of state-building.⁶ It is also apparent that the tax system has not been generating sufficient revenues for the state to perform its avowed and other developmental functions,⁷ and that whatever little revenue the tax administration generates is, in fact, unhealthy revenue which does more harm than good to the economy in holistic terms.⁸ The moot question remains if Pakistan can weather the fiscal crises confronting it and can generate adequate revenues to realize the developmental potential of its people over the shorter to medium term?

1.5. Revenue projections F/Y 2019-24

The Government continually undertakes revenue projections for future years for better financial planning. The FBR’s revenue projections for F/Ys 2019-24 that have been undertaken in close collaboration with Ministry of Finance are plotted in Figure 4.

Figure 4: Revenue Projections – F/Y 2019 – 24



Source: FBR-SPS & R Wing.

⁶ See, in particular Section V of ———, "Pakistan: Extraction, Elites and State Autonomy: A Theoretical Configuration," *Pakistan Development Review* 56, no. II (2017).

⁷ See, in particular Section V of *ibid*.

⁸ ———, "Pakistan: Withholdingization of the Economic System: A Source of Revenue, Civil Strife or Dutch Disease+?."

These revenue projections on account of each revenue stream as well as in totality are based on the expected GDP growth rate and inflation rate approximated by the Ministry of Finance in consultation with the State Bank of Pakistan. Given the revenue collection trends for the current fiscal year, the FBR is likely to report a shortfall of Rs. 486 billion towards the close of the year – a historically record revenue deficit.⁹ Keeping in view the current revenue trajectory and the level of investment being made in the tax administration, and other structural and embedded issues, it appears to be difficult that these targets will be met. This leaves the economy with a specter of serious challenges.

2. Theoretical Framework

The paper posits that taxation in Pakistan has mostly, if not always, been an elitist affair. Although, the elitist framework has long been applied to analyze Pakistan's power and politico-economic structures,¹⁰ yet Ahmed developed the more convenient conceptual vehicle of Elites Ltd, crystallized the elitist model, and expanded its framework to systematically analyze the monopolization of Pakistan's extractive function. He disaggregated it to comprehend various mutually reinforcing undercurrents and cross-cutting mechanics at work by way of an explanation of its historically embedded low performance.¹¹ The state's political crust, it is argued therein, is essentially underpinned by Elites Ltd which, in turn, is composed of six effective elite groups i.e. industrial elite, business elite, religious elite, feudal elite, military elite, and sundry (judicial, media, non-profits, and professional) elite; that while elites enter into zero-sum transactions on the political chessboard, they resort to non-zero-sum transactions in the economic realm; that elites face a rational actor dilemma in that they need a state to govern but they also need (want) to maintain it at least cost to themselves; that in order to get out of this dilemma, the elitist state attempts to extract from international sources optimally; and that since an infinite international extraction is not possible, it descends to undertake internal extraction through seven unwholesome modes in order to make do the domestic resource-match, namely, withholdingization, deficit fiscalization, indirectization of the tax system, maximization on non-tax revenues, extortionization, mendicantization, and amnestization.¹²

Ahmed further reckons extraction as a critical variable of state-building, and in Pakistan's context, lays bare the level of importance which various societal agents accord to it. He enquires into how elites, after effectively monopolizing the

⁹ Mehtab Haider, "FBR Facing Record Shortfall of Rs. 485.9 Billion," *The News*, March 18, 2019.

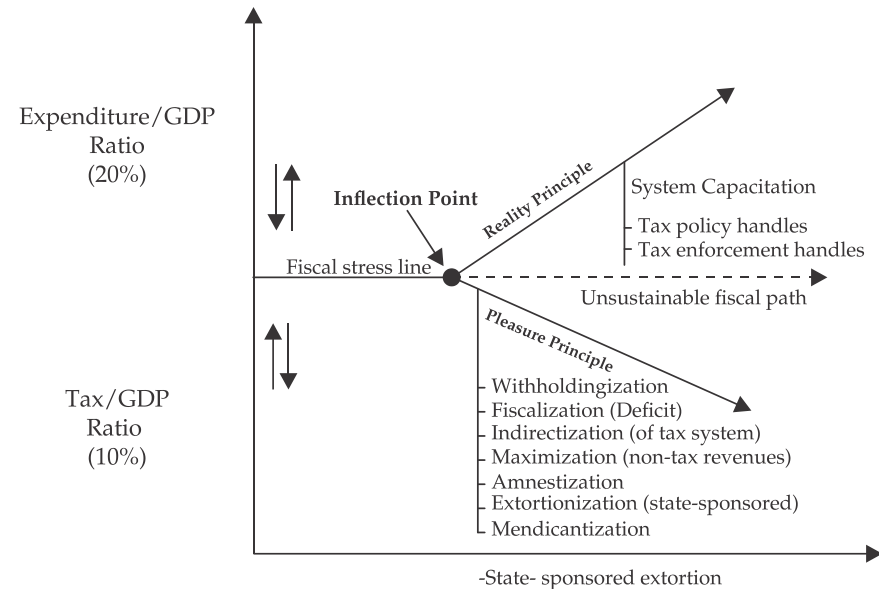
¹⁰ See, for instance, Asaf Hussain, "Elites and Political Development in Pakistan," *The Developing Economies* 14, no. 3 (1976); Hamza Alavi, "The State in Post-Colonial Societies: Pakistan and Bangladesh" *New Left Review* 1, no. 74 (1972); Saeed Shafiqat, *Political system of Pakistan and public policy: essays in interpretation* (Lahore: Progressive Publishers, 1989); Ishrat Husain, *Pakistan: the economy of an elitist state* (Karachi; New York: Oxford University Press, 1999).

¹¹ Ahmed, "Pakistan: Extraction, Elites and State Autonomy: A Theoretical Configuration."

¹² See, in particular, section IV of *ibid*.

infrastructure i.e. means of production,¹³ take to exploit the *superstructure* to numb and opiate the citizenry so that they conveniently rig the extractive policy formulation process and weaken the state’s extractive arm.¹⁴ This position is based on the premise that only a weak extractive system can help elites underwrite full control over their riches that they amass over time through monopolization and manipulation of the state infrastructure, and the maintenance of the economic status quo. He further posits that in order to achieve their spurious agenda of maintaining and enhancing the economic status quo at the strategic level, Elites Ltd forms an alliance with the generalist juggernaut – generalist cadres of Pakistan civil services thereby producing an elites-generalist duopoly of sorts.¹⁵ The theoretical framework explicated above is pictorially presented in Figure 5.

Figure 5: Theoretical Argument – Portrayal



What the Figure 5 portrays is that at any given point in time, Pakistan is found operating under a significant amount of fiscal stress, that is, its expenditure far exceeds its revenues. This means that the Pakistani state every now and then finds itself at the inflection point – the crossroads at which it has two choices. One, to pursue the reality principle thereby capacitating the extractive system, and undertake par taxation like all functional states. This is also good enough to meet

¹³ See Husain, *Pakistan : the economy of an elitist state*: 133. for a detailed analysis.

¹⁴ Muhammad Ashfaq Ahmed, "Pakistan: State-Building, Extraction, and (Misplaced) Societal Preferences," *Journal of International Stability Studies* 2, no. 1 (2016).

¹⁵ ———, "Pakistan's Governance Goliath: The Case of Non-Professional Chairman, F.B.R.," *Pakistan Development Review* 55, no. 4 (2016).

its expenditure needs. Two, to pursue the pleasure principle such as it has always done and resort to easier yet perverse extraction through the aforementioned seven domestic resource-match modes.

The paper builds on the theoretical framework developed above and argues that in Pakistan's context the tax system's output is a function of political settlementization underlying the state's institutional frameworks. Political settlement can have three different strands with some overlapping features, that is "(i) a negotiated settlement to end interstate or intrastate armed conflict; (ii) a new and transformed political order born of crisis and achieved through elite cooperation; and (iii) the interdependent arrangement of political power and institutions on which a regime is based."¹⁶ It has further been posited that "Political settlements are the expression of a common understanding, usually forged between elites, about how power is organized and exercised," which not only "include formal institutions for managing political and economic relations, such as electoral processes, peace agreements, parliaments, constitutions and market regulations," but also "informal, often unarticulated agreements that underpin a political system, such as deals between elites on the division of spoils."¹⁷

The concept of political settlement can be operationally defined to imply the broad consensus amongst ruling elites underlying the institutional configuration forming the state's crust and rendering it functional. The underlying consensus is of key import as it can help explain the performance of various institutions by moderating the costs of enforcement and resistance.¹⁸ Further, the overlying political settlement amongst elites can help breed the wider underlying social acceptability in key areas of governance. The paper attempts to innovate on the theory of political settlements and to expand its scope, coverage, and application to a given state's extractive function. This would, shorn of all additives, imply that a state's extractive outputs, in the final analysis, depend upon the broad underlying consensus amongst societal elites as regards the breadth of the fiscal base, rate, timing, filing requirements, and size and strength of the extractive arm, and the ultimate question as to who bears what burden of maintaining the state – simply put the ultimate question of the incidence of taxes. Accordingly, the theory of political settlements is applied to interpret Pakistan's extractive function with all its antics, by arguing that it suffers from a protracted insufficient political settlementization.

¹⁶ Sue Ingram, "Political Settlements: The History of an Idea in Policy and Theory," *Australian National University SSGM*, no. Discussion Paper (2015).

¹⁷ *Ibid.*

¹⁸ M. Khan, "Political Settlements and Governance of the Growth-Enhancing Institutions - Working Paper," ed. School of Asian and African Studies (London: School of Oriental and African Studies, 2010), 5.

3. Tax System's Structural Fault lines

Having observed in section 1 that the tax system's output is neither adequate nor healthy to keep the state going in a wholesome fashion, undertake development and reduce poverty in a sustainable manner, the theoretical framework developed in section 2 is now operationalized to explore the causes of the embedded sub-optimal extractive performance. It is posited that Pakistan's system may be the "most reformed" tax system but nevertheless it continues to undertake sub-standard and sub-optimal extraction. The tax system of Pakistan's sustained under-performance can be analyzed under three heads – structurally embedded fissures, the well-known problems, and the new maladies. There is no denying the fact that "Pakistan's severe fiscal challenges are, in good measure, the result of structural shortcomings of the tax system."¹⁹ These structural problems are embedded and anchored in the history of the polity. The problems not only determine the output of the system but also breed rigidity and resistance to change. Some of the glaring structural issues are delineated here.

(i) Fragmentation of the fiscal base

The state's fiscal base, in Pakistan, has historically remained fragmented on account of taxing rights being distributed amongst various tiers of government, particularly between the national and the subnational governments.²⁰ In fact, the fragmentation of the state's fiscal base emerges as one of the critically important sub-surface fault-lines that operate as a pull-back factor on the tax administration's revenue effort. There is a plethora of literature defining fiscal base but the crispest conceptualization of fiscal base comes from Canada's Carter Commission, 1960. The Carter Commission averred that "in order to allocate taxes in accordance with the equity principles we espouse, we must specify a tax base that would estimate consistently the economic power of each individual and family relative to others",²¹ and then went on to typologize the economic gain that constitutes the tax base, namely: -

- (a) The market value of goods and services consumed by the tax unit during the year to satisfy its own wants;
- (b) The market value of goods and services given to other tax units during the year; and
- (c) The change over the year in that market value of the total net assets held by the tax unit.

¹⁹ Jorge Martinez-Vazquez and Kaspar Richter, "Pakistan's Short and Medium Term Reform Options," in *The Role of Taxation in Pakistan's Revival*, ed. Jorge Martinez-Vazquez and Musharraf Rasool Cyan (Karachi: Oxford University Press, 2015), 553.

²⁰ "Fragmentation" refers to vertical allocation of fiscal base along various tiers of government e.g. federal, provincial, and district governments.

²¹ K.L. Carter, "Canadian Royal Commission on Taxation Report," (1962).

This fragmentation takes place both at the base and sub-base levels. While the Constitution reserves certain tax bases for the federal government allowing other residual bases to be claimed by provincial governments. The Constitution allows the federation to assert its taxing rights in the case of 'taxes on the sales and purchases of goods imported, exported, produced, manufactured, or consumed.' This opens up vistas for provincial governments to impose a sales tax on services, whereby all provincial governments now levy a tax on services.²² Similarly, Entry 50 of the Constitution entitled "Taxes on the capital value of the assets, not including taxes on immovable property," allocates the taxation of rights on real estate to provinces creating a miniscule space for the federation to levy tax on capital gains on real estate. The fragmentation of the fiscal base between the federation and the federating units syncopates the entire extractive effort of the state. In view of this, the most functional states piggyback sub-national levies on the national bases without fragmenting the bases themselves. This is important not only from the point of view of generating sufficient and wholesome revenues for the polity but also for giving the citizenry a better deal when it comes to taxation.

In this connection, the Taxation Enquiry Commission 1957-60 (TEC) after categorically stating that "for the successful operation of fiscal policy it is essential that jurisdiction to tax all types of income should vest in single agency"²³ unequivocally proposed that "the Central Government should assume power to tax all incomes, whether agricultural or non-agricultural,"²⁴ and that "total income of a person should be computed as including both agricultural or non-agricultural income and should be taxed under the Central Income-tax."²⁵ This, the TEC argued, is because in "the advanced tax systems, it is the Central Government which is given the responsibility of equalizing the overall tax burden and securing the various objectives that direct taxation is designed to attain,"²⁶ and that "Income taxation is a powerful means of furthering the economic and social objectives and can help greatly in rectifying the anomalies in the distribution of the tax burden."²⁷ It was further contented that for "purposes of taxation, all forms of property, whether agricultural or non-agricultural, should be included in the interest of equity."²⁸

Although a dedicated specialized study would be required to fully analyze the fiscal conundrum within which the state has landed as a result of the Eighteenth Amendment to the Constitution, yet what can be speculated on the basis of the available scholarship, is that the state's fiscal base stands torn apart almost

²² Roy Bahl, Musharraf Cyan, and Sally Wallace, "The Potential of Provincial Taxation," in *The Role of Taxation in Pakistan's Revival*, ed. Jorge Martinez-Vazquez and Musharraf Rasool Cyan (Karachi: Oxford University Press, 2015).

²³ GOP, "The Taxation Enquiry Committee Report (Volume 1)," (Karachi: Ministry of Finance, 1960).

²⁴ *Ibid.*, 111.

²⁵ *Ibid.*

²⁶ *Ibid.*

²⁷ *Ibid.*

²⁸ *Ibid.*, 207.

completely whereby various governance tiers are neither able to formulate a compatible tax policy nor implement it with full authority.

(ii) Elitist compartmentalization of the information state

It is maintained that economic secrecy may be the most inimical headwind not only for the tax system but also the entire institutional framework in Pakistan. The debilitating effect of economic secrecy on state functioning is reinforced by a specter wherein most institutions of the state, working on its behalf or connected to it, jealously guard and block information held by them from flowing to and sharing with other par institutions. The centrality of informational inputs into extractive and coercive functions is theoretically proven. It has been authoritatively argued with reference to the extractive function that governments need to observe transactions in the economy in order to be efficiently extractive.²⁹ It has also been posited that understanding information inflows is central to effective revenue operations. When governments imperfectly observe transactions, important differences emerge between forms of extraction that are equivalent in standard models of taxation but differ in the outcomes that they generate.³⁰ Likewise, third-party reporting, verifiable paper trails and whistle-blowers are thought to play an important role in facilitating enforcement.³¹

The challenge of enforcing taxation is particularly severe in developing countries, where many transactions in the economy are not readily observable by the government, and it has been argued that these limited sources of information can explain some of the key differences in tax systems between developed and developing countries.³² The proposition that formal political theory is now going through the same 'informational revolution' as economic theory during the 1970s and 1980s,³³ has merit to it. In a nutshell, bits of actionable information are the raw material of a state's extractive and coercive systems. Of late, economic information aggregation has started to take place internationally – with Pakistan trailing far behind. In fact, in Pakistan every law that was legislated to create an institution or govern an aspect of economic life has an inbuilt powerful secrecy provision which debars the sharing of information about the activities of economic agents operating in the economy which results in sub-optimal regulation, governance and extraction. Thus, the non-availability of aggregated information about the economic activities of taxpayers is a critically important operational bane of the tax system.

²⁹Dina Pomeranz, "No Taxation Without Representation: Deterrence and Self-Enforcement in the Value Added Tax," ed. Harvard Business School (Boston 2012). Working Paper 13-057

³⁰Joel Slemrod, "Does it Matter Who Writes the Check to the Government? The Economics of Tax Remittance," *National Tax Journal*, no. 61:2 (2008).

³¹———, "Putting Firms into Optimal Tax Theory," *The American Economic Review: Papers and Proceedings* 2, no. 96 (2006).

³²Roger H. Gordon and Wei Li, "Tax Structure in Developing Countries: Many Puzzles and a Possible Explanation," *Journal of Public Economics* 93, no. 7-8 (2009).

³³Thomas Picketty, "The Information-Aggregation Approach to Political Institutions," *European Economic Review*, no. 43 (1999).

(iii) Insufficient fiscal base

An equally important problem associated with the fragmentation of the fiscal base is that of insufficiency of the fiscal base, which mainly arises on account of lack of the tax administration's ability to collect wealth tax, inheritance tax, capital gains tax, and gift tax. Most developed countries attempt to adopt comprehensive direct tax systems which comprise income tax, wealth tax, gift tax, inheritance tax (estate duty), and capital gains tax. It is seen that Pakistan's direct tax is chronically lagging behind on this count as the income as the sole criterion of ability to pay taxes has been questioned for a long time.

(a) *Wealth tax*

Apart from its revenue potential, a tax on wealth has been viewed as a vital complement and necessary adjunct of other taxes and as an integral part of an effective direct tax system. Under the system of income taxation, based as it is on the principle that the liability to tax is determined in relation to the taxpayer's income, since his assets do not yield any income, are not subject to taxation. It was argued that it was "an indisputable fact that a man who owns property, irrespective of whether it yields any income, has a larger command over resources than another individual who does not," and "that such an individual possesses a capacity to pay taxes which the tax system in the country has yet to recognize and exploit."³⁴ Further, this argument is further augmented when it is realized that the ownership of property bestows a greater measure of economic security than normally attached to professional or salaried incomes. The TEC categorically recommended that "tax may be levied on the net worth of a person i.e., his assets minus liabilities and should include agricultural estates and property of every kind."³⁵ It was against this backdrop that the Wealth Tax Act, 1963, was legislated and enforced on July 1, 1963, imposing a flat tax rate of 1% on the net worth of a person as on June 30th each year. Appeasing the landed elite, the military-led ruling coalition removed agricultural land and a wide range of other assets from the charge of the levy.³⁶ The wealth tax continued to be levied until 2000 when it was abolished citing administrative reasons and ignoring egalitarian, fiscal, and economic reasons.

³⁴ GOP, "The Taxation Enquiry Committee Report (Volume 1)" (Karachi: Ministry of Finance, 1960).

³⁵ ———, "The Taxation Enquiry Committee Report (Volume 1)," 326.

³⁶ The polity took a decade to correct the wrong. In 1969-70, agricultural land was included in the definition of "taxable assets" for computation of charge under The Wealth Tax Act, 1963, but simultaneously a generous special exemption of one lakh rupees in PIU value was extended. Again the method of valuation of agricultural land was based on Produce Index Units (PIU), which resulted in only a fraction of an asset's value being charged as compared to its actual value in the open market. Thus, extension of The Wealth Tax Act, 1963 to agricultural land was indirectly but effectively neutralized by applying the PIU method for valuation purposes coupled with a special exemption of one lakh rupees. This was, of course, in addition to Section 5A thereof which ordained coverage of the tax only to the persons who were income tax assesseees. Thus, the landed elite who had no income other than agricultural income irrespective of its quantum, were not liable to Wealth Tax.

(b) Inheritance tax

Theoretically speaking, it is assumed that an economic agent has the right to create, accumulate and consume wealth in his life time, and anything being left unconsumed and passed on to the next generation falls within the state's right to tax it. It is in this context of the matter that most states levy some kind of tax – inheritance tax or estate duty – on the total wealth being bequeathed to the next generation. In Pakistan, the Estate Duty Act was passed in 1950 providing for the taxation of estates passing or deemed to pass on the death of a person on or after 1st April, 1950. The exemptions allowed included gifts to government, proceeds of life insurance up to Rs. 20,000, properties dedicated to endowments for religious purposes, and immovable and movable property situated outside Pakistan.³⁷ This made the base of the tax inherently porous. In April, 1953, a further exemption was granted for property invested in twenty specified industries, which, however, was withdrawn with effect from 1st April, 1958.³⁸ The TEC, strongly hitting out at the exclusion of agricultural estates from the purview of the Estate Duty Act, 1950, categorically took the position that “while the duty should be levied and collected by the Centre, the provinces should receive a share from receipts from agricultural land according to some basis mutually agreed upon between the Centre and the provinces.”³⁹ Despite the TEC's vociferous call against the fragmentation of the state's fiscal base, no measures were taken to reverse the situation. The Estate Duty Act, 1950 was repealed in 1979, during the early years of General Zia-ul-Haq's military rule at the behest of the feudal, industrial and religious elites.

(c) Capital gains tax

The gain on capital forms an important tool within the context of the concept of the fiscal base as delineated above. In Pakistan taxation of gain on movable and immovable capital assets has historically posed challenges to the polity. The capital owning elites have usually been able to muster enough political muscle to induce the exemption on this count in their favor. Gain arising from the disposal of moveable assets have enjoyed exemption under the law whereas the gain on immovable capital under the constitution has not. As regards the taxation of gain on immovable assets the Finance Act 2012, ended up amending section 37(5) of the Income Tax Ordinance, 2001, imposing the capital gains tax on immovable property for the first time. The Punjab followed suit and levied a similar tax in the Finance

³⁷ GOP, "The Taxation Enquiry Committee Report (Volume 1) ".

³⁸ The agricultural land constituted the base for the purpose of levy of Estate Duty. The abrogated Constitution transferred succession tax on agricultural lands to the provincial list. The Constitution also stipulated that all laws in force on the Constitution Day shall continue to be in force unless repealed by a competent legislature. The West Pakistan legislature used this power and passed an Act on May 5, 1958, abolishing estate duty on agricultural land with retrospective effect from March 23, 1956. Contrarily, East Pakistan did not withdraw the jurisdiction of the Centre, and agricultural land situated in East Pakistan continued to be taxed by the federal government till 1971.

³⁹ GOP, "The Taxation Enquiry Committee Report (Volume 1)," 157.

Act 2013 but never pushed it to the implementation stage or seriously questioned the federation's authority to levy such a tax by invoking Article 184(1) of the Constitution.⁴⁰ Apparently, tax on capital gains arising from immovable properties "cannot be levied simultaneously by the center and provinces."⁴¹ In a nutshell, the state's extractive right on an important base i.e. appreciation in the value of capital, continues to under-contribute to the national exchequer, which militates against equity principles and reinforces economic disparity.

(d) *Gift tax*

The gift tax is, in fact, a protective levy which is kept on the state's fiscal statute book to thwart against evasion ploys under income tax, wealth tax, inheritance tax, and capital gains tax. The gift tax kicks in when the real owner transfers economic resources to other related persons to eliminate or reduce the impending tax liability. In Pakistan, the gift tax was imposed through the Finance Act, 1963, against categorical TEC recommendations.⁴² The gift tax was abolished in 1985, citing low yield as a reason, which not only mismatched but also negated its very *raison d'être* which was advanced to support its legislation.

Thus the non-levy of wealth tax, inheritance tax, capital gains tax, and gift tax creates a void in the tax base of the state but also creates major distortions in the resource distribution of the economy.

(iv) *Vanity agreementization*

In a rapidly globalizing economic system, countries put in place legal infrastructures which incentivize foreign investment in-flows of capital and facilitate movement of technological expertise across borders. To address the fiscal dimension of international business and investment, countries sign and enforce the avoidance of double taxation agreements (DTAs). Pakistan has so far signed 66 DTAs, which are broadly based on the well-honed principles developed by the United Nations (UN) and Organization of Economic Cooperation and Development (OECD). Martinez-Vazquez and Richter have, in this context, averred: -

While these concepts have been adopted over the years, they have become increasingly flawed with economic globalization, deregulation, and technological advances. With the help of new technologies, multinational operating taxpayers are increasingly able

⁴⁰ Prior to the Eighteenth Constitutional Amendment Act, 2010, Entry 50 entitled "Taxes on the capital value of the assets, not including taxes on immovable property," read "Taxes on the capital value of the assets, not including taxes on capital gains on immovable property." However, after the omission of the words "capital gains" from Entry 50, FBR sought the views of the Ministry of Law about its scope. The Ministry of Law purportedly endorsed FBR's views that in the new constitutional scenario the tax on the gain of immovable capital had become a federal subject; hence, within the domain of the Parliament.

⁴¹ Ikramul Haq, "Taxing Capital Gains," *Business Recorder*, June 30, 2017.

⁴² GOP, "The Taxation Enquiry Committee Report (Volume 1)".

to arbitrarily decide whether they want to establish residence or source income in a certain jurisdiction. Moreover, international tax rules have relied heavily on the arm's length principle for profit allocation. Yet this method establishes a heavy burden on both the tax administration and taxpayers as the arm's length or uncontrolled price is often difficult to establish. This is especially the case when there are economic reasons for performing certain activities internally within a multinational company rather than through outsourcing.⁴³

It is in this context that Pakistan's battery of DTAs has started to impact its fiscal base significantly and adversely. Further, Pakistan may not have negotiated many of its DTAs and provisions within DTAs very well or those might not reflect the economic imperatives of the country. This may also be true of Pakistan's international agreements pertaining to investment and trade i.e. bilateral investment treaties (BITs) and free trade agreements (FTAs) – a process which the paper refers to as vanity agreementization of the state – almost involuntarily signing certain agreements just because other states have signed them. Although a dedicated study on this count would be needed to actually assess the real loss to revenue, the broad conjecture, however, is that it is substantial. The loss to the exchequer only on account of Article 8 (International Traffic) in the Pakistan-China DTA, it has been argued, would become unaffordable to Pakistan as traffic on Gwadar Port picks up.⁴⁴ Likewise, only Article 11 of the Pakistan-Netherlands DTA is causing an annual loss to the exchequer equal to 0.3% of the GDP of the country.⁴⁵

It is evident that the embedment of most of these issues is due to and cast in insufficient political settlementization. Various elite groups, being rational actors, have evolved a perverse status quo of disagreements resulting in fragmented, insufficient or inoperable extractive functions of the state. The point emphasized is that the structural issues of the tax system – insufficient political settlementization, vanity agreementization, elitist compartmentalization of the information state, and fragmentation of the state's fiscal base be it through simple legislation or a constitutional arrangement – operate as parameters of the revenue function.

4. The tax System's Simmering Wounds

In addition to the aforementioned embedded structural issues that are the direct result of non-optimal political settlementization vis-à-vis how the polity is to be financed, at what level, and who should pick up what incidence of the tax burden, there are some simmering problems that have repeatedly been identified, and

⁴³ Jorge Martinez-Vazquez and Richter, "Pakistan's Short and Medium Term Reform Options," 638.

⁴⁴ Muhammad Ashfaq Ahmed, Na Li, and Peter Mellor, "China-Pakistan Double Taxation Agreement and China-Pakistan Economic Corridor," *Bulletin for International Taxation* 72, no. 8 (2018).

⁴⁵ Katrin McGuaran, "Should the Netherlands Sign Tax Treaties with Developing Countries?," (Amsterdam Centre for Research on Multinational Corporations (SOMO), 2013).

deliberated upon in the public domain. Yet the polity has not been able to muster the critical ability to resolve them. It has consistently been conveyed that the state's revenue function's problems emanate from its expenditure function as it is perennially under financed. Likewise, while extraction is primarily a federal subject, the internal coercive power is held by the provinces – hence, the weakness of the former is cast in its primeval formation.

Similarly, elsewhere a tax system is highly ring-fenced – completely insulated from the tinkering of other state institutions. But not so in Pakistan. Almost every other case of some substance gets caught up in a high court under Article 199 of the Constitution. Administrative fissures within the overall bureaucracy and revenue bureaucracy have not been resolved, and this also creates frictions and problems for the revenue outcomes.⁴⁶As already indicated, since investments were not made in the revenue system, policy handles were relentlessly used to boost revenues over the years, which now have reached exhaustion point. The whitening schemes inbuilt in the tax system continue to cause hemorrhage and leak of much needed revenues. Since the ruling coalitions – mostly motley groups nurturing diverse economic, regional, religious, and political leanings – continue to be weak governing structures. As a result, the extractive system continues to be a bastion of the ruling elites without any efforts being made to autonomize and professionalize it. The injection of information technology (IT) into the tax system has always been considered an alternative and a replacement to deploying quality human resources. Sustained retrofitting of easy-money, yielding policy tools, has rendered the tax laws practically inoperable in any conventional sense. Since set channels of interest group articulation have not been put in place, the tax system continues to respond to those groups which can attract its attention. Wide-going exemptization is another serious issue confronting the tax system. Table 2 depicts the data of tax expenditure on account of federal taxes for the F/Y 2018.

Table 2: Tax Expenditure of Federal Taxes – T/Y 2018

(Rupees in Billion)

#	Type of Tax	F/Y 2018
1	Income Tax	61.78
2	Sales Tax	281.05
3	Customs Duty	198.15
	Total	540.98

Source: Pakistan Economic Survey, 2017-18

Pakistan's total tax expenditure for the last year was Rs. 540.98 billion. It is likely to go up during the current year because of the reliefs given by the PML-N government in its dying days as well as the present government through various

⁴⁶ Ahmed, "Pakistan's Governance Goliath: The Case of Non-Professional Chairman, F.B.R."

justifications. With expenditure needs increasing due to security imperatives, and the revenue collection decreasing, the fiscal gap is likely to increase in F/Y 2019.

5. The tax System's New Maladies

Against the backdrop of revenue projection as given earlier, this section deals with some of the immediate leakage points. It is argued that relentless amnestization being resorted to as a policy prescription, the latent fall-outs of TAS, 2018, and ever-growing offshore problems would continue to exert added pressure on the fiscal deficit – not factored into the projections.

(i) Amnestization

Towards the close of the PML-N's term in power, which officially ended on May 31, 2018, the economic edifice that had been erected by artificially maintaining the exchange rate at above par levels, foreign exchange reserves, fiscal deficit, current account deficit, tax collection, and GDP growth rate had started to plummet. The artificial management on the part of the PML-N government though, kept the economy from being completely rudderless during F/Ys 2013-18. Yet understandably its performance in most areas was not only abysmal in a general sense,⁴⁷ but also in the sense of what it had committed to its electorate in its manifesto.⁴⁸ There is no denying the fact that the government was constantly bullied on corruption charges and constrained in its decision-making, policy formulation and policy implementation by a super-aggressive opposition – contextually, Pakistan Tehreek-e-Insaf (PTI) led by Imran Khan. The surfacing of the Panama Leaks scandal in April 2016 and the politico-judicial turmoil that it triggered pulverized the PML-N during the remainder of its term. The stand-in Prime Minister Shahid Khaqan Abbasi, and his Finance Minister, Miftah Ismail, had started to give indications of launching yet another tax amnesty scheme. The matter was widely debated in Parliament, the media and the Supreme Court both for and against, which implied a clear lack of consensus in the society as regards launching of yet another tax amnestization initiative. Finally, through separate acts of Parliament, two separate tax amnestization initiatives were launched – one for the domestic undisclosed assets and incomes, and the other for foreign undisclosed assets.

(a) Domestic Amnesty Scheme, 2018

Under the Voluntary Declaration of Domestic Amnesty Assets Act, 2018 – referred to as domestic amnesty scheme (DAS, 2018), any person could declare and whiten his previously undisclosed incomes and assets by paying a tax of 5 and 2% between

⁴⁷ Shahbaz Rana, "Economic Performance in 4-Year Report card, Failing Grade for PML-N," *The Express Tribune*, December 4 2017.

⁴⁸ See, for a detailed analysis, Asim Bashir Khan, "The PML-N Made Bold Claims in its 2013 Manifesto. How Many of those Promises Did It Keep?," *Dawn*, June 6 2018.

April 10, 2018 and July 31, 2018.⁴⁹ The declarations under DAS, 2018 were to enjoy complete confidentiality and were protected against their use as evidence in a court of law. The assets and incomes owned by public office holders and the ones created with the proceeds of crime were excluded from the purview of the amnesty. The DAS, 2018, classified undisclosed assets broadly into 18 categories. Table 3 presents the asset heads, the total number of cases filed, the value of assets whitened, the tax rate applicable, and the tax paid.

Table 3: DAS, 2018 – Assets Whitened & Tax Paid

(Rupees in Thousand)					
#	Domestic Income & Assets	Cases	Value of Asset	Rate	Tax Paid
1	Undisclosed income	10,769	127,296,143	5%	6,364,807
2	Open plots & land	15,812	157,295,145	5%	7,864,757
3	Superstructure	6,764	30,831,163	5%	1,541,558
4	Apartments & flats	5,422	32,316,486	5%	1,615,824
5	Imported motor vehicle	721	2,201,086	5%	110,054
6	Motor vehicles purchased from a manufacturer, assembler or dealer in Pakistan	2,508	5,572,271	5%	278,614
7	Used motor vehicles purchased locally	2,284	4,197,697	5%	209,885
8	Securities & shares traded on stock exchange	567	5,853,352	5%	292,668
9	Securities & shares not traded on stock exchange	307	4,487,926	5%	224,396
10	National saving schemes, postal certificates, bonds, & other instruments not traded on stock exchange	1,289	14,889,529	5%	744,476
11	Gold	1,298	6,611,582	5%	330,579
12	Other precious stones and metals	129	1,185,564	5%	59,278
13	Stock in trade	574	5,160,863	5%	258,043
14	Plant & machinery	543	3,987,840	5%	199,392
15	Accounts receivable	514	17,647,989	5%	882,399
16	Other assets	6,822	80,829,636	5%	4,041,482
17	Cash, prize bonds, bank accounts & FCAs	69,559	1,002,955,265	5%	50,147,763
18	FCA encashed in Rupee/investment in US\$ bonds	1,020	2,490,551	2%	49,811
Total		76,952	1,505,747,699		75,212,669

Source: Pakistan Revenue Automation Ltd.

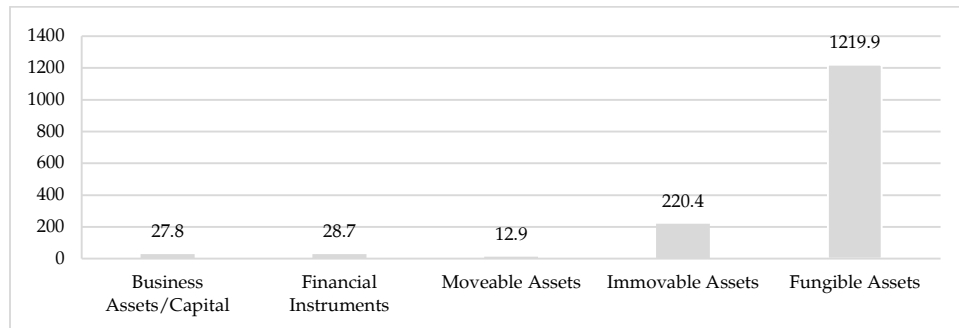
It is noted that a total of 76,952 DAS declarations were filed whitening a total of Rs. 1,505 billion worth of assets which yielded a corresponding revenue of Rs. 75 billion. Given the nominal tax rate of 5percent and 2percent, a complete confidentiality cover, and minimal information reporting requirements vis-à-vis the assets being whitened, the outcomes are definitely on the lower side.

⁴⁹ Muhammad Ashfaq Ahmed, "Pakistan: Economy Under Elites - Tax Amnesty Scheme, 2018," *Asian Journal of Law and Economics* 10, no. 2 (2019).

When the assets whitened are classified into thematic clusters such as business capital, financial instruments, movable assets, immovable assets, fungible assets as plotted in Figure 6, the empirical inferences drawn tend to validate the general perception of the structurally defective composition of Pakistan’s economy.⁵⁰

Figure 6: DAS, 2018 – Category-Wise Value of Assets Whitened

(Rupees in Billion)



Source: Pakistan Revenue Automation Ltd.

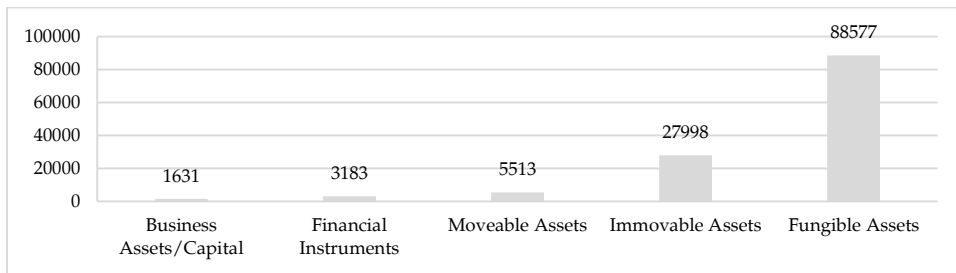
It can be seen that the maximum tally of assets whitened is under fungible assets. This may imply the whitening of past earnings. But in reality it reflects the whitening of future earnings. It is plausible that entrepreneurs have whitened future stocks of incomes at a meagre tax rate of 5 and 2%. Since the evidence of the “holding” of all fungible assets in any concrete or substantive form was not a precondition under DAS, 2018, it essentially is a fictitious number. They would be realizing their future earnings in hard assets by diluting the figure of “cash” in their books of account and tax declarations. The impact of this particular generous facilitation will be massive in view of the fact that incorporated entities were also entitled to avail the amnesty. Out of the total assets whitened under DAS, 2018 at Rs. 1,505,747,699 million, a sum of Rs. 1,218,878,190 million is in fungible assets. Now assuming that 15% of total fungible whitened assets constitute past earnings, the future revenue implications for the exchequer on account of the conversion of liquid assets to hard real assets for the next three years works out as under: -

⁵⁰ The classification of assets whitened consists of (i) Immovable assets: Open plots & land; Superstructure; Apartments & flats; (ii) Movable assets: Imported motor vehicles; Motor vehicles purchased from a manufacturer, assembler or dealer in Pakistan; Used motor vehicles purchased locally; (iii) Financial instruments: Securities & shares not traded on the stock exchange; Securities & shares not traded on the stock exchange; National saving schemes, postal certificates, bonds & other instruments not traded on the stock exchange; FCA encashed in Rupee investment in US\$ bonds; (iv) Business assets/capital: Stock in trade; Plant & machinery; Accounts receivable; and (v) Fungible assets: Undisclosed income; Gold; Precious stones & metals; Other assets; Cash, prize bonds, bank accounts & FCAs.

- Total assets whitened under DAS, 2018 = Rs. 1,505,747,699
- Total fungible assets whitened = Rs. 1,218,878,190
- (-) 15% ascribable to past earnings = Rs. 182,831,728
- Balance ascribable to future earnings = Rs. 1,036,046,416
- Applicable tax rate = 25%
- Approximate future tax implication = Rs. 259,011,604
- Expected annual price-tag for 2 years⁵¹ = Rs. 172,674,402

Thus, in the process of harvesting quick money to the tune of Rs. 121,477,588 million into the exchequer, the state squandered an approximate amount of Rs. 259,011,604 million in future revenues. The implications of this would be borne by the tax administration in eroded revenue capacity and the fiscal managers in reduced fiscal space, over the next couple of years.

Figure 7: DAS, 2018 – Asset Category-Wise Number of Assets Whitened



(Source: Pakistan Revenue Automation Ltd.)

When column 3 of Table 3 is further analyzed, it is found that of a total of 76,952 DAS, 2018 filers, 69,559 whitened cash or some other fungible asset, which means more than 90% of the DAS, 2018 filers whitened cash. Likewise, the people who whitened business related assets i.e. stock in trade, plant and machinery and accounts receivable is meagre at 574, 543, and 514 respectively. This is indicative of the fact that untaxed resources hardly get fed back into business, and that the whitened resources are not likely to get invested in the business again. The same is true of the financial instruments kept in the documented economy. The total declarations filed under these heads are 567, 307, 1,289, and 1,020, which is a negligible number in view of the fact that a total of 76,952 persons filed DAS, 2018 declarations. The analysis of the declarants also corroborates the fact that the economy is given to real estate hedging as out of 76,952 declarants 27,998 whitened real estate assets. The same is true of moveable assets as a meagre number of declarations have been filed. The data of declarations reinforced the nexus between

⁵¹ Given an abnormally high frequency of offer of tax amnesties in Pakistan, being rational actors, the taxpayers who have accumulated futuristic tax credit, would like to incorporate all of it as soon as possible - maximum two years - so as to be able to optimally benefit from any future tax amnesties.

cash, underground economy and the real estate in Pakistan. The policy handles are not being put in place to address the root cause of the problem.

(b) Foreign Amnesty Scheme, 2018

The Foreign Assets (Declaration and Repatriation) Act, 2018 – referred to as the foreign amnesty scheme (FAS, 2018) allowed any person to disclose and whiten previously undisclosed and untaxed foreign assets. The trigger behind FAS, 2018 was the expected exchange of information of Pakistan tax-resident persons maintaining bank and financial accounts in foreign jurisdictions under the OECD Multilateral Convention on Mutual Administrative Assistance in Tax Matters (MC) Common Reporting Standard (CRS) for the automatic exchange of information (AEOI).⁵² This was an inflection point and the polity once again appeared to go by the pleasure principle, in the process appeasing the feudal, industrial and business elite who had amassed wealth in Pakistan but had taken it out through illegal means.⁵³ The tax rates prescribed were 5% for liquid assets not repatriated, 3% for immovable assets held abroad, 2% liquid assets repatriated and invested in government securities, and 2% for liquid assets repatriated. Other provisions pertaining to secrecy and non-admissibility of amnesty declarations in a court of law applied to declarations filed under FAS, 2018.

Table 4: FAS, 2018 – Assets Whitened and Tax Paid

					(Thousands)
#	Particular	Cases	Value of Asset	Rate	Tax Paid
1	Liquid assets not repatriated (Rs.)	5,089	727,851,288	5%	36,392,564
2	Immovable assets (Rs.)	3,988	322,563,113	3%	9,676,893
3	Liquid assets repatriated & invested in securities (Rs.)	143	3,344,217	2%	66,884
4	Liquid assets repatriated (Rs.)	322	6,428,833	2%	128,577
	Total (Rs.)	6,195	1,060,187,452		46,264,919
	Total Tax in US Dollars	3,829			285,959

Source: Pakistan Revenue Automation Ltd.

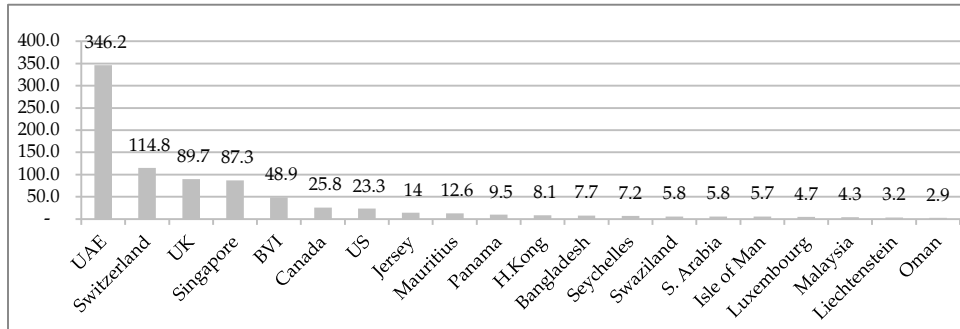
Table 4 reports total liquid assets that were not repatriated valued at Rs. 727 billion, immovable assets at Rs. 322 billion, liquid assets invested in government securities at Rs. 3.3 billion and liquid assets that were repatriated valued at Rs. 6.4 billion. Total tax collection in US dollars comes to 285.9 million. Diametrically opposite to what had been the projected amount of US \$ 4 billion by the promoters of FAS, 2018, the outcomes were highly disappointing – particularly keeping in view the negligible tax rate.

⁵² Ahmed, "Pakistan: Economy Under Elites - Tax Amnesty Scheme, 2018."

⁵³ Ibid.

Figure 8: FAS, 2018 – Assets Whitened – Top 20 Jurisdictions

(Rupees in Billion)



Source: Pakistan Revenue Automation Ltd.

Figure 8 presents the leading 20 most popular jurisdictions with Pakistanis. It is astonishing to note that the UAE with a tally of Rs. 342 billion, is the most favorite destination with Pakistanis as concerns the creation of offshore assets. Next is Switzerland at 115 million, UK 90 billion, Singapore 87 billion, British Virgin Islands 49 billion, Canada 29 billion, US 23 billion, Jersey 14 billion and Panama 9.5 billion. These were the leading 10 jurisdictions where Pakistanis maintain their undisclosed bank accounts and hold their undisclosed assets.

(ii) Offshore Problem

With regard to Pakistan, the problem of siphoning funds from Pakistan through dubious means has always existed, particularly since the legislation of the Protection of Economic Reforms Act, 1992. This Act liberalized the foreign exchange regime in Pakistan without due diligence. The problem, however, has always been ignored for obvious reasons, either through repeated tax amnestization initiatives or through muffled whitening schemes built into the law – section 111(4) of the Income Tax Ordinance, 2001. The issue attained significance in early 2016 as a result of the Panama Leaks. Evidence to the fact that it is a significant pull back factor in the context of Pakistan, is indicated from the data received under OECD-MC and FIAS, 2018.

(a) OECD – Multilateral Convention

Pakistan became signatory to the Multilateral Convention for Mutual Administrative Assistance in Tax Matters (MC) in 2017. The MC makes available multiple means through which tax administrations can cooperate primarily to curb tax evasion. The most important mechanism of cooperation within the context of MC is the exchange of bank and financial account information kept in offshore jurisdictions on an automatic basis. Pakistan undertook first such exchanges on September 30, 2018.

Keeping in view the fact that the total value of Pakistanis’ account balances as on December 31, 2017 is a little under US\$ 8 billion, the number of account holders over 150,000 is relatively on the higher side. The staggered account-category wise values are given in Table 5 below:

Table 5: Pakistanis’ Offshore Bank & Financial Accounts on 31-12-2017

#	Particulars	Data
1	US \$ 1.0 – 150 million	1,074
2	US \$ 0.75 – 1 million	238
3	US \$ 0.5 – 0.75 million	331
4	US \$ 0.25 – 0.5 million	1,142
5	US \$ 0.1 – 0.25 million	2,373
	Total (> US \$ 0.1 million)	5,158

Source: Pakistan Revenue Automation Ltd.

Most of the Pakistanis whose offshore bank and financial accounts have been reported, appear to have been in the export and import sectors, which implies that those exports and imports are mis-invoiced and the resultant surpluses are retained outside Pakistan. This information should have provided a powerful policy prompt but it has not. Likewise, most of the persons maintaining offshore accounts of substantial size successfully availed amnesty and wriggled out of the situation. MC was an inflection point, but it was lost and the elitist juggernaut was successful in getting an amnestization initiative launched.

(b) Foreign Income & Assets Statement, 2018

In order to have a handle on the offshore issue, a new declaration namely the Foreign Income and Assets Statements (FIAS) was included in the tax return through Finance Act, 2018.⁵⁴ The data of offshore assets held by Pakistanis in offshore jurisdictions is given in Table 6. While Pakistanis having real estate abroad were 2,698 carrying a total value of Rs. 229,944 million, and those investing in overseas business is only 210 and with a value of Rs. 6,889 million. This is reflective of deeper societal trends, which is a non-entrepreneurial tendency.

⁵⁴ Section "116A. Foreign income and assets statement." inserted through the Finance Act, 2018, reads "(1) Every resident taxpayer being an individual having foreign income of not less than ten thousand United States dollars or having foreign assets with a value of not less than one hundred thousand United States dollars shall furnish a statement, hereinafter referred to as the foreign income and assets statement, in the prescribed form and verified in the prescribed manner giving particulars of -- (a) the person's total foreign assets and liabilities as on the last day of the tax year; (b) any foreign assets transferred by the person to any other person during the tax year and the consideration for the said transfer; and (c) complete particulars of foreign income, the expenditure wholly and necessarily for the purposes of deriving the said income. (2) The Commissioner may by a notice in writing require any person being an individual who, in the opinion of the Commissioner on the basis of reasons to be recorded in writing, was required to furnish a foreign income and assets statement under sub-section (1) but who has failed to do so to furnish the foreign income and assets statement on the date specified in the notice."

Table 6: FIAS, 2018 - Offshore Assets Declared

(Rupees in Million)

Amount Description	Persons	Amount
Commercial, Industrial, Residential Property (Non-Business)	2,698	229,944.2
Business Capital	210	6,889.5
Investment (Non-Business)	2,899	283,936.3
Debt (Non-Business)	377	63,653.1
Motor Vehicle (Non-Business)	113	550.9
Any Other Asset	459	44,321.2
Assets in Others' Name	110	7,789.2
Share or Interest in Foreign Trust, Foreign Company or any Foreign Entity	416	76,652.7
Assets held outside Pakistan	4,117	713,737.1

Source: Pakistan Revenue Automation Ltd.

The information regarding offshore incomes earned by Pakistanis is plotted in Table 7.

Table 7: FIAS, 2018 - Offshore Incomes Declared

(Rupees in Million)

Amount Description	Persons	Amount
Income from Salary	446	2,182
		2,181
Income from Business	248	1,666
		1,667
Gains from Capital Assets	125	101
		101
Income from Other Sources	339	2,097
		2,097
Income Subject to Separate Taxation	1,330	3,979
		3,980
Dividends	276	637
Profit on Debt	557	654
Rent from Property	946	2,3
Capital Gain on Disposal of Securities u/s 37(A)	101	18
Capital Gain on Disposal of Immovable Property u/s 37(1A)	82	357
Total Income	1,876	10,027
		10,027

Source: Pakistan Revenue Automation Ltd.

The comparative analysis of the data plotted in Table 6 of offshore asset holders at 4,117 and Table 7 of offshore income earners at 1,876 reveals that Pakistanis tend to hold their assets in offshore jurisdictions more than setting up businesses and earning incomes abroad. Likewise, while the quantum of total incomes earned outside totals Rs. 10,026 billion, that of total assets held abroad by Pakistanis is at a staggering Rs. 713 billion.

6. Conclusion

The paper is an attempt to move beyond text-book analytical templates and dissect Pakistan's tax system innovatively mainly from a political economy perspective. Section 1, which briefly surveys the tax scene, indicates that though revenues have moved up substantially under all major heads over the past five years, the fiscal deficit remains quite a serious challenge for economic managers. It is also indicated that not only has the tax administration been failing to achieve its assigned targets, the target-setting itself is not scientifically or rationally based. Even if those targets were met, the resultant revenue collection would not afford adequate fiscal space to the government to try and fix macroeconomic imbalances, or make for the regulatory deficit through substantial investment in governance structures, and undertake development schemes primarily in the education and health sectors. The government revenue projections for the next fiscal years are also outlined, and these are appraised over the next sections whether or not those are achievable.

Section 2 provided the theoretical scaffolding within which the dissection of the tax system takes place. It is argued that elitism is still the most relevant theory applicable to and the way the statecraft is conducted in Pakistan – particularly in the fiscal domain. The paper inventively plugs in the theory of political settlements to argue that Pakistan's fiscal woes are cast in the structural formation of the polity. Section 3 explored such structural fault-lines that stem from insufficient political settlementization i.e. fragmentation of the base between the federation and the federating units, insufficient fiscal base on account of the absence of the wealth tax, inheritance tax, capital gains tax, and gift tax as well as brute secrecy in the economic domain, and the erosion of the state's fiscal base through reckless vanity agreementization with the outside world.

Section 4 was a cursory glance at the repeatedly identified problems that the polity has consistently failed to overcome – the most critical being exemption as its price-tag in 2018 to the exchequer was Rs. 540.98 billion – almost 20% of the total revenue collection. Section 5 covered the new maladies of the tax system that are likely to operate as a headwind on the revenue effort. This includes whitened future earnings by business entrepreneurs during the last amnestization initiative, and offshore problems. Not enough is being done about these problems in spite of the government's avowed public commitment on this count and the international crackdown against money laundering and tax evasion amply evidenced in the OECD's work. The data harvested from the OECD, FAS, 2018, and FIAS, 2018, lent adequate credence to this assertion. All these factors, it is empirically put, would exert pressure on the tax effort, and the government is not likely to meet its projected revenue targets.

It is evident that the polity is at another inflection point as the political leadership appears restless and is running out of patience with the FBR's fiscal effort. But the fact remains that lack of investment in the system has completely drained it of even an iota of capacity. Resorting to the pleasure principle prongs to reap quick money into the exchequer consistently for decades, ought to have brought realization to the state that there are no short cuts to revenue. In order for the tax system to generate both healthy and sufficient revenues, substantial investments are required to be made in the system as necessary inputs before expected outputs can be derived. This would require a gestation period of a couple years, at the least, and that too after sufficient political settlement has been arrived at a broader level in key areas of the extractive function.

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4

Pakistan's Recurring Fiscal Crisis – Institutional Strategies for Fiscal Consolidation

Jamshed Y. Uppal* and Mahmood Khalid**

Abstract

The paper explores how Pakistan's perennial fiscal deficits are rooted in its politico-economic institutions. We examine literature from political economics on how institutions and budgetary processes affect the fiscal policy and relate these to the country's fiscal policy experience. The paper explores how greater discipline can be brought to public expenditure through enhanced institutional checks and balances. We examine political institutions and budgetary processes that may affect the fiscal policy in the context of Pakistan. An important dimension in this relationship is the governance environment. The paper concludes that instilling fiscal discipline would remain intractable unless approached in its entirety in a comprehensive strategy. Long-term solutions must be found in the development of political institutions and improved governance. The real challenge may lie in summoning the political will and raising public awareness to implement the required measures.

1. Introduction

Recently, there has been much debate centered on Pakistan's latest difficulties with the balance of payments and dwindling foreign exchange reserves. Not much attention has been devoted to the conjoint fiscal crisis. It seems that the causes underlying the twin deficits are chronic, they periodically emerge, and necessitate relief and stabilization packages from the IMF. While the stabilization programs may have helped to sustain macroeconomic stability briefly, they have not helped Pakistan to break the *begging bowl*. Each episode has been dealt with orthodox short-term economic stabilization tools, which led to a slowdown in economic and social development; however, adequate follow-through structural reforms to

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address the underlying weaknesses were not taken. Not surprising, in time the fiscal crises simply manifested themselves again, triggered by the next external shock or as a consequence of internal economic mismanagement.

With this background, the paper seeks to address the following questions: (i) What are the structural roots of the country's recurring fiscal crises? (ii) Can the literature on the political economy of fiscal crisis and consolidation programs help us to understand why Pakistan continues to repeatedly suffer episodes of fiscal distress? The paper, drawing on the politico-economic literature, explores certain possible longer-term solutions to the recurring cycle of debt and fiscal crisis. We also discuss some specific areas of the expenditure side which have remained intractable so far, i.e., (a) rationalization of the PSDP programs such as to minimize negative impacts; (b) rationalization of the formulas for the sharing of the cost of power production with the provinces; (c) fiscal strategies to strengthen the capacity of the SEZs and EPZs to compete in the global markets; (d) long-term debt strategies so as to eliminate the use of external resources for budgetary support; (e) rationalization of the role of the Higher Education Commission; (f) rationalization of the public subsidies e.g., BISP; (g) strategies to institute public development projects and programs based on public-private-partnership and equity based funding models; (h) institutionalization of sound public expenditure management practices at the federal as well as the provincial and local government levels.

Lastly, sound fiscal management depends on the institutions by which the people's preferences are ascertained, political accountability is obtained, and outcomes are monitored. This question is centered on the extent of government legitimacy, mechanisms of legal and political accountability, and effective separation of powers among the branches of government. As the democratic institutions and processes become stronger in Pakistan, can these provide the appropriate set of checks and balances for the formulation and conduct of a sound fiscal policy?

The paper is organized as follows. The next section provides a brief background of the country's fiscal position, and of the financing of the government deficit. It is followed by a survey of the theoretical issues in the political economics of fiscal policy and evaluates Pakistan's governance and regulatory environment in the light of these theories. The third section of the paper discusses the weakness in the budgetary processes and its linkages to public spending. It is followed by a discussion of some of the areas of public spending which have proved to be intractable for decades. The final section summarizes the findings and develops policy recommendations.

2. Pakistan's Perennial Fiscal Deficits

It has long been realized that Pakistan has faced persistent and chronic fiscal deficits, as can be seen for the last 25 years in Figure 1. The Financial Stability Review (FSR) in 2011 noted that, "... when viewed in a historical perspective, it comes to light that Pakistan's economy has faced, since inception, perennial and persistent fiscal deficits..."¹ The typical explanations offered for the persistent fiscal deficits are captured by the FSR (2011) that the deficit emanated "largely from insufficient revenue generation due to lack of appropriate governance measures which tend to encourage tax evasion and a substantially large and thriving undocumented or parallel economy functioning alongside." The expenditures are hard to reduce, and there is "poor fiscal discipline." The situation is made worse by weak cash management and cash flow forecasting. Furthermore, the expenditure on defense and interest on debt are not amenable to cuts. On the revenue side the main weakness lies in a narrow tax base, tax avoidance and evasions.

Figure 1: Fiscal Deficits Over 1992 -2017 (as percentage of GDP)

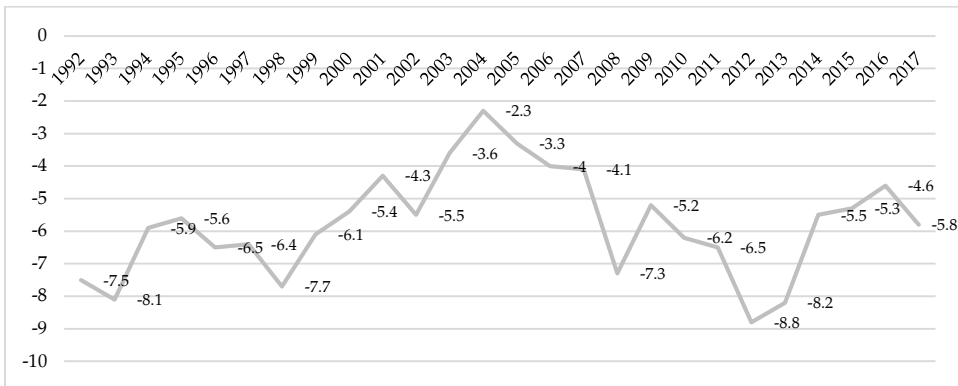


Table 1 presents an overall summary of the revenues, expenditures and the deficits. As the table shows, due to persistent deficits, the total debt and liability stock had increased to 72.5% of the GDP by 2018; this ratio increased by 9% in just previous three years.

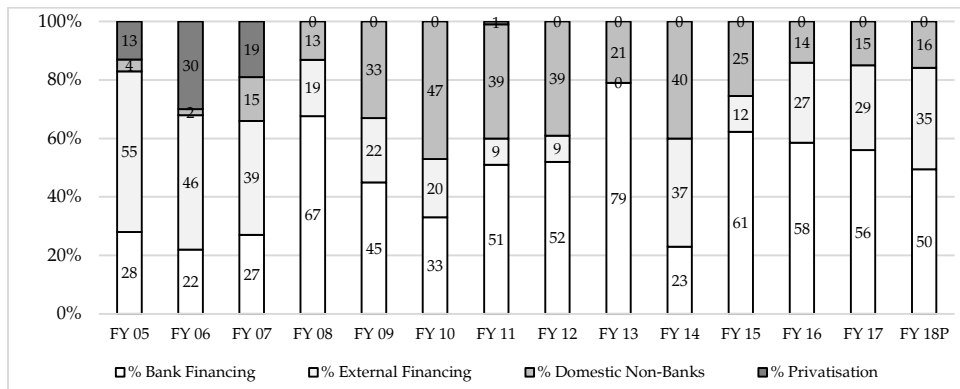
Figure 2 depicts how the fiscal deficits have been financed over the period 2005-18. The period 2008-2013 saw a large increase in financing of the deficit through internal sources, with the central bank being the main source. It was due to a drop in the availability of external loans and restricted access to the international markets. The internal borrowing also included non-bank sources such as Prize Bonds, Treasury Bills and National Saving Schemes. Since, 2014,

¹ State Bank of Pakistan, Financial Stability Review 2009-10.

financing through external sources has increased steadily over the last four years, from almost a negligible percentage to 35% of the deficit in 2018.

In addition to the government borrowing for meeting the budget deficit, the banking system also lends to the provincial government as ‘ways and means’ advances, and to meet the *quasi-fiscal deficit* of public sector enterprises (PSE’s), and for commodity operations and other public subsidies.

Figure 2: Financing of Budget Deficits



The negative consequences of excessive borrowing from the banking system are well known. It could be inflationary, negatively impacting economic growth and monetary stability. A heavy reliance on the commercial banks allows the banks to charge a premium on public sector loans, although these loans are risk free. It also reduces the banks’ incentives for lending to the private sector and retards the process of financial deepening across the economy.

Table 1: Consolidated Fiscal Operations (Federal & Provincial)

	FY14		FY15		FY16		FY17		FY18P		Growth Rate 2014-18
	Amount	%age	Amount	%age	Amount	%age	Amount	%age	Amount	%age	
A. Total Revenue (1+2)	3,637	100%	3,931	100%	4,447	100%	4,937	100%	5,228	100%	9.5%
(i) Tax	2,565	71%	3,018	77%	3,660	82%	3,969	80%	4,467	85%	14.9%
(ii) Federal	2,375	65%	2,812	72%	3,377	76%	3,648	74%	4,066	78%	14.4%
<i>Of which: FBR Revenue</i>	2,255	62%	2,588	66%	3,112	70%	3,361	68%	3,842	73%	14.3%
(ii) Provinces	190	5%	206	5%	283	6%	322	7%	401	8%	20.6%
(2) Non-tax	1,073	29%	913	23%	787	18%	968	20%	761	15%	-8.2%
(i) Federal (exc. Interest from Provinces)	1,023	28%	838	21%	693	16%	888	18%	614	12%	-12.0%
(ii) Provinces	49	1%	76	2%	93	2%	80	2%	147	3%	31.3%
B. Total Expenditure (1+2)	5,026	138%	5,388	137%	5,796	130%	6,801	138%	7,488	143%	10.5%
(1) Expenditure Booked (a+b)	5,241	144%	5,565	142%	6,008	135%	6,879	139%	7,476	143%	9.3%
a. Current (1+ii)	4,005	110%	4,425	113%	4,694	106%	5,198	105%	5,854	112%	10.0%
(i) Federal	2,831	78%	3,038	77%	3,144	71%	3,472	70%	3,790	72%	7.6%
<i>Of which: Mark-up Payments</i>	1,148	32%	1,304	33%	1,263	28%	1,348	27%	1,500	29%	6.9%
Defense	623	17%	698	18%	758	17%	888	18%	1,030	20%	13.4%
Subsidies	306	8%	243	6%	197	4%	-	0%	-	0%	-100.0%
(ii) Provinces	1,173	32%	1,387	35%	1,550	35%	1,726	35%	2,065	39%	15.2%
b. Development & net Lending	1,237	34%	1,141	29%	1,314	30%	1,681	34%	1,622	31%	7.0%
(i) Federal	806	22%	642	16%	722	16%	726	15%	576	11%	-8.1%
(ii) Provincial	431	12%	499	13%	592	13%	852	17%	880	17%	19.6%
(2) Statistical Discrepancy	(215)	-6%	(178)	-5%	(212)	-5%	(78)	-2%	12	0%	0%
Budget Deficit (A-B)	(1,389)	-38%	(1,457)	-37%	(1,349)	-30%	(1,864)	-38%	(2,260)	-43%	13.0%
Financing	1,389	100%	1,457	100%	1,349	100%	1,864	100%	2,260	100%	13.0%
External	512	37%	181	12%	371	27%	541	29%	785	35%	11.3%
Domestic	877	63%	1,276	88%	979	73%	1,322	71%	1,475	65%	13.9%
Bank	324	23%	892	61%	787	58%	1,046	56%	1,121	50%	36.4%
Non-Bank	553	40%	366	25%	192	14%	277	15%	353	16%	-10.6%
Privatization Proceeds	-	-	18	0.01	-	-	-	-	2	0.00	-

Source: SBP Annual Report - Statistical Supplement FY 18.

3. Evaluating Fiscal Policy

In this section we evaluate Pakistan fiscal and debt policy using the World Bank's *Country Policy and Institutional Assessment* (CPIA) ratings. These ratings are used in making lending decisions by the International Development Association (IDA). The CPIA ratings reflect the quality of a country's debt and fiscal policy and the related institutional framework. The "quality" of the institutional framework, refers to its ability in fostering poverty reduction, inducing sustainable growth, and ensuring that the development assistance is used effectively. The CPIA ratings include subsets of criteria on different dimensions of the policy and institutional setup.

Figure 3: Fiscal Policy Rating

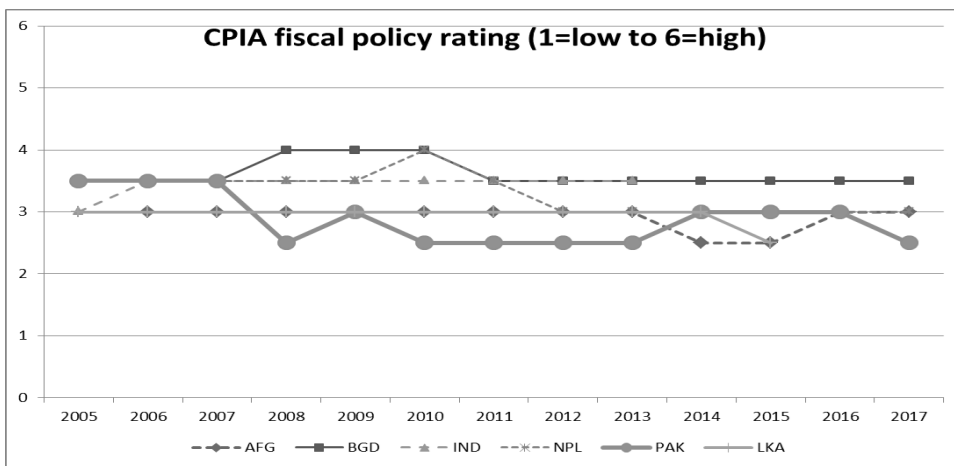


Figure 4: Budgetary and Financial Management Rating

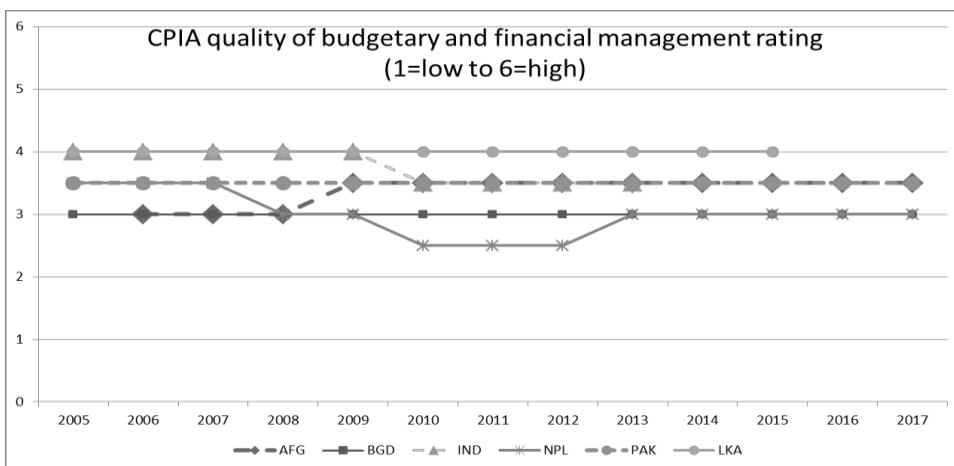


Figure 3 plots the CPIA ratings on Fiscal Policy and Debt Policy for a selected set of countries for the period 2005-2017. Of the six countries in the group, the Fiscal Policy ratings for Pakistan show a deterioration in 2017, while these are improved or maintained by the other five countries.

Figure 4 plots the CPIA “Quality of Budgetary and Financial Management” ratings for the six South Asian countries. It shows that the country has been able to maintain its rating and stands in the middle of the pack. It lies below that of India and Sri Lanka, and above that of Nepal and Bangladesh. It is at par with Afghanistan’s rating which show considerable improvement over the period.

The next section focuses on the features of the institutional and political environment which include incentives for budgetary indiscipline and make it harder to make adjustments to remedy the situation.

4. The Politico-Economic Roots of Fiscal Policy:

The literature on political economics explains how persistent fiscal deficits could be a result of the nature of the political process.² Alesina and Perotti (1995) survey the literature on the politico-institutional roots of budget deficits. The authors reject the “tax smoothing” model that considers the government to be a “benevolent social planner” seeking to maximize the utility of the population. In this approach, a budget deficit or a surplus is temporary, the former occurs when expenditures are temporarily high, and the latter occurs when it is low. The authors describe how political-institutions may systematically affect budgetary deficits, taking six forms as summarized below:

- i. *Political Opportunism*: The voters mainly consider the benefits of current expenditures and underestimate the future tax burden, and thus suffer from ‘fiscal illusion’. Politicians take advantage of this and spend more than the revenues so as to please the voters. Due to the complexities of the budget, even rational voters may be led to make systematic errors.
- ii. *Intergenerational Models*: The intergenerational models suggest that voters (selfish generation) tend to shift the burden of taxation to the future generation. Such a social choice leads to increasing public debt.
- iii. *Use of Public Debt as a Political Strategy*: Political parties may increase public debt to constraint the expenditures by future governments (Alesina and Tabellini (1990). Such political strategies lead to larger government borrowing.
- iv. *Distributional Conflicts*: Conflicts and polarization between and within the political parties lead to larger fiscal deficits as stabilization measures, which

² These have been discussed in detail with reference to Pakistan in Uppal (2011).

are required to balance budgets, become harder to implement. Thus, heterogeneity of interests across groups and government “fragmentation” leads to pervasive deficits. This tendency is particularly observable in less developed countries where fiscal resources are limited, and thus the political parties fight more intensely for the public resources (a “voracity effect”). Lesser budgetary transparency and higher levels of corruption may aggravate such tendencies in the developing economy; Alesina and Tabellini (2005).

- v. *Geographically Dispersed Interests*: When the base of members of the legislature is geographically dispersed, the legislators tend to over-emphasize their local public projects in their districts (so called the *pork barrel projects*) while the financing costs, which are distributed nationwide, are underemphasized. The aggregate effect is an oversupply of geographically based public projects. The disconnect between the geographical distribution of costs and benefits, and decision power and fiscal responsibility, related to fiscal federalism, adversely affects the national budget, and leads to “excessive” spending; Weingast et al. (1981).
- vi. *Budgetary Institutions*: The budgetary procedures and rules can create biases favoring deficits. The procedural rules regarding setting the agenda and the adoption of amendments can lead to greater or lesser fiscal discipline. Rules that limit *universalism*, i.e., “something for everybody”, and *reciprocity*, i.e., *quid pro quo*, lead to fiscal restraint.

The political roots of fiscal indiscipline as summarized above are discussed in detail with reference to Pakistan in Uppal (2011). It seems that, a key to greater fiscal discipline lies in enhancing the ability of the voters to understand the details of the budget and form an informed view of the claims and promises made by the politicians and of their competence. The implication is to make the budgetary processes more transparent through transparent accounting practices, media development, and enhancing the sophistication of voters. There is empirical evidence that fiscal transparency systematically leads to a greater discipline in deficit and debt policies; see Alt and Lassen (2006), Alesina et al. (1999) and Stein et al. (1998) and Von Hagen (1992) among others.

With the passage of the 18th Constitutional Amendment, together with the adoption of the 7th National Finance Commission (NFC) Award, Pakistan moved towards fiscal decentralization in a major way and this has far reaching implications for fiscal management. Under the new setup, provincial budgetary spending decisions are made at the local level, but the budgets are financed mainly by the Federal government’s transfers of tax revenues raised at the national level. Thus, the provincial and the local governments do not fully internalize the implications of their budgetary decisions for the national budget deficit. The local and provincial governments would be inclined to greater fiscal discipline if they were responsible for both raising tax revenues and making expenditures.

In Pakistan the passage of the *Fiscal Responsibility and Debt Limitation Law* was in the spirit of placing hard budgetary constraints, which could have promoted both fiscal discipline and transparency. However, the implementation of the law has so far been lacking.

5. Corporate Governance and Fiscal Deficits

The political and institutional factors impacting fiscal policies are captured in the governance indicators and these are further discussed in section VI. However, two dimensions of the governance environment have a direct bearing on the fiscal deficits and are taken up here.

i. Control of Corruption

There is wide recognition that corruption exacerbates fiscal mismanagement. First, it directly cuts into tax collection efforts. Second, political corruption and misuse of the administrative powers by bureaucratic and political officials lead to rent seeking. Third, corrupt legislators can write laws and regulations to benefit powerful lobbies against the public interest. Corruption also negatively impacts foreign direct investment, and is associated with poor maintenance of public infrastructure and deterioration of its quality over time. Corruption disfavors social sector programs and investments in intangible public goods, such as education and health which has long term consequences for economic growth.

There is no dearth of suggestions on policy measures to combat corruption; for example, see Martinez-Vazquez (2006) and Schaeffer (2006). Tanzi (1999) emphasizes the need to curtail the role of the state in the economy. It is "important to modify the role of the state by reducing its reliance on regulations, authorizations, quasi-fiscal activities, and other activities and tools that lend themselves to abuse by public officials. It is also important to make the state's actions more transparent." Corruption proliferates in the absence of transparency and effective institutional controls. Discretionary powers enjoyed by corrupt and rent seeking officials over critical decisions results in distorting both the size and the composition of public spending, to the benefit of individuals or political groups.

However, there are costs associated with combating corruption which involves implementing complex and costly procedures. It increases the cost of providing public services and projects. Other forms of cost are those associated with distorting the behavior of public officials who may become averse to taking risky decisions in an uncertain environment.

ii. The Rule of Law

The implementation of the budgetary measures is facilitated by a well-functioning and effective judicial system. Revenue generating efforts in Pakistan have been

frustrated by systemic tax evasion and out-right misrepresentation and non-compliance with the law. The incidence of prosecution and conviction in Pakistan is one of the lowest among developing countries. Powerful elite and vested interests resist fiscal adjustments and the closing of loopholes and 'legal' tax avoidance provisions. On the other hand, the influence and power of the elite distorts the composition of public expenditure to their advantage. However, even well-conceived fiscal reforms are rendered ineffectual at the enforcement level. Strengthening the rule of law should, therefore, be a central piece of strategies to address chronic fiscal deficits through the strengthening of the institutional environment in the country.

iii. Policy Implications for Pakistan

The literature on the political economy of fiscal policy has important implications for the institutional reforms. If fiscal policy is product of the politico-institutional characteristics, then one has to address the issues at the institutional level. Many countries, like Pakistan, are struggling with hard fiscal adjustments and reforms. Many developing countries are building democratic institutions and budgetary institutions dealing with the legislative processes as well as more general institutional reforms, such as changes in electoral laws.

The relevance of the various theories bearing on fiscal policy in the context of Pakistan is summarized in Table 2, below. We also speculate as to the tractability of these factors so as to indicate some priorities as to where the focus of public effort should be. It seems that as an emerging democracy, the political scene is still rife with political opportunism without a strong tradition of accountability either through the polls or through the judicial system. The electorate could also be naïve and entertain some degree of fiscal illusion. Improvement in this dimension would be a matter of gaining maturity as a democracy. There is not much discussion of intergenerational issues, nor there are many programs with implied inter-generational transfers. We have experienced some budgetary battles where the various interest groups have sought to increase their share of the common resources and minimize their tax burden. The areas with the great promise for improvement seems to be control of corruption and development of budgetary institutions supportive of budgetary discipline, like greater fiscal transparency, improvements in the system of financial management and control, and audit.

**Table 2: Political Dimensions of Fiscal Environment
Plausibility, Tractability and Policy Direction for Pakistan**

Political & Governance Factors in Fiscal Indiscipline	Plausibility & Relevance	Tract-ability	Indicated Policy Directions
i. Political Opportunism	★★★	★	Transparency in budgets and Government accounting, media development, voter awareness
ii. Intergenerational Conflicts	-	-	Promoting intergenerational altruism, voter awareness
iii. Public debt as a Strategic Variable	★	★	Lessen political polarization political and economic stability
iv. Distributional Conflicts	★★	★	Lessen fragmentation of governments, increase political cohesion, macroeconomic stability
v. Geographically Dispersed Interests	★★	★★	Internalize cost of fiscal indiscipline across geographically dispersed government units
vi. Budgetary Institutions	★★★	★★	Adopt balanced budget rules and institutions that limit universalism and reciprocity
vii. Corruption and Public Finance	★★★	★★	Improve rule of law, reduce the discretionary role of the state; transparency in state's actions
viii. The Role of the Courts	-	-	Reduce scope of judicial review of budgets, and asymmetry in judicial advocacy by organized groups.

6. Governance Environment in Pakistan

We can use the World Bank's "aggregate governance indicators" to assess the state of the governance environment in Pakistan and make comparisons with other developing countries. The six governance indicators are as follows³:

- i. *Voice and Accountability*: the extent of citizens' participation in their government, as well as freedom of expression, freedom of association, and a free media.
- ii. *Political Stability and Absence of Violence*: likelihood of destabilization or overthrow of the government by unconstitutional or violent means; includes political violence and terrorism.
- iii. *Government Effectiveness*: the quality of public and civil services, and its independence from political pressures, how well public policies are formed and implemented, whether the government is credibly committed to its policies.

³ For details please see Kaufmann, Kraay, and Mastruzzi (2004).

- iv. *Regulatory Quality*: whether the government is able to formulate and implement sound policies and regulations that permit and promote private sector development.
- v. *Rule of Law*: whether people have confidence in and abide by the rules of society; it includes contract enforcement, role of the police, and the courts, as well as the likelihood of crime and violence.
- vi. *Control of Corruption*: whether public power is exercised for private gain. This includes “capture” of the state by elites and private interests.

Pakistan’s ratings on the above six indicators are shown in Figures 5 to 10; a comparison with a select group of countries over the period 1996-2017 is provided. As seen in the figures, Pakistan’s governance is rated among the bottom of the pack. For all of the six indicators there does not seem to be much of an improvement over the twenty-year period. There seems to be continued deterioration in the indicators of “*Rule of Law, Political Stability and Absence of Violence. Government Effectiveness and Control of Corruption*” have shown periods of improvements but also of deterioration. There has been a slight deterioration in more recent years. On the other hand, indicators of *Voice and Accountability* and *Regulatory Quality* show slight improvements, though when compared with the other countries, there could have been greater improvement.

Table 3: 2017 Percentile rank among all countries

(ranges from 0 to 100)

Governance Indicator	Afghanistan	Bangladesh	India	Sri Lanka	Nepal	Pakistan
Voice and Accountability	22.17	30.05	60.10	43.35	38.92	28.08
Political Stability and Absence of Violence/Terrorism	0.48	10.48	17.14	42.38	22.38	1.90
Government Effectiveness	9.13	22.12	56.73	48.08	18.75	31.25
Regulatory Quality	6.73	20.67	42.31	50.48	25.96	29.33
Rule of Law	4.81	28.37	52.88	55.29	27.40	24.04
Control of Corruption	3.85	19.23	48.56	41.35	23.56	22.60

Figures 5 – 10: Governance Indicators Comparisons with Selected Countries

Figure 5:

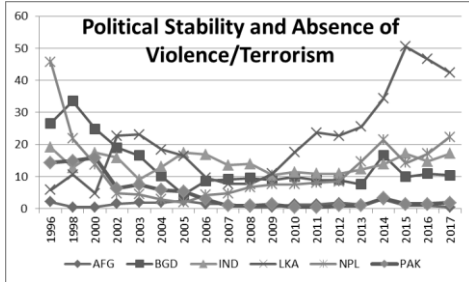


Figure 6:

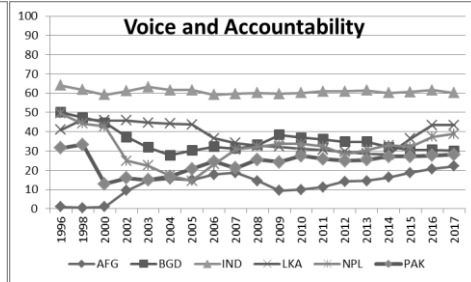


Figure 7:

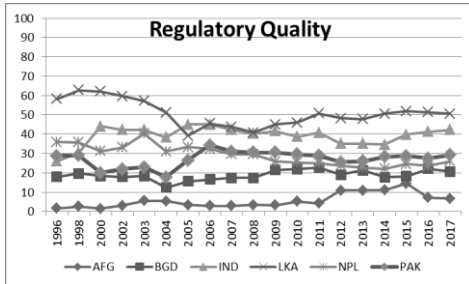


Figure 8:

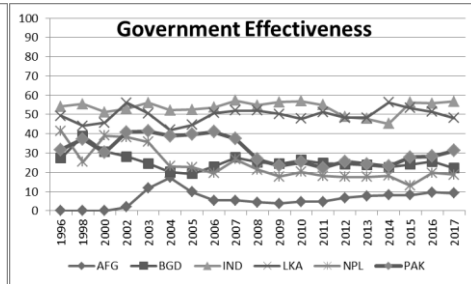


Figure 9:

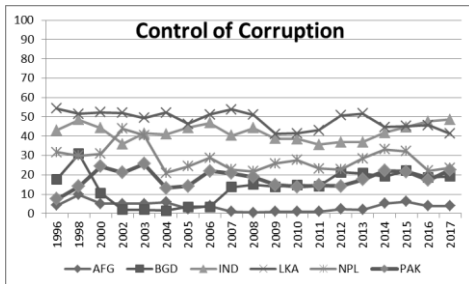
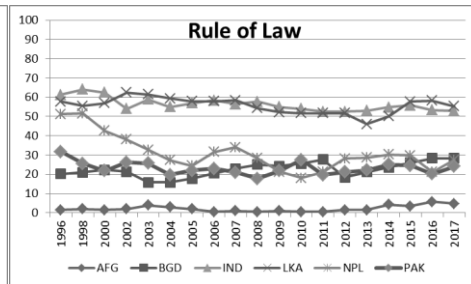


Figure 10:



7. Evaluating Budgetary Processes

Most comprehensive assessments on fiscal management across countries is provided by the Open Budget Index (OBI, 2017) produced by the International Budget Partnership. The Open Budget Survey (OBS) uses criteria developed by multilateral organizations, such as the International Monetary Fund (IMF), the Organization for Economic Co-operation and Development (OECD), the International Organization of

Supreme Audit Institutions (INTOSAI) and the Global Initiative for Fiscal Transparency (GIFT). It is a data-based assessment tool that reports openly observable phenomena. The OBI consists of three sub-indices: (i) Transparency (ii) Public Participation, and (iii) Budget Oversight.

i. Transparency

Pakistan’s score of 44 out of 100 is close to the average score of 42 for all countries; it has, however, not improved since last reported in 2015. Table 4 depicts how budget transparency in Pakistan compares to other countries in the region.

Table 4: Open Budget Index (Out of 100)

	Pakistan	India	Afghanistan	Nepal	Sri Lanka	Bangladesh
a. Transparency	44	48	49	52	44	41
b. Public Participation	6	15	15	24	11	13
c. Budget Oversight	44	48	43	44	50	44

a. Scores less than 60: limited budget information is provided to the public.
b. Scores below 40: there are few opportunities for the public to engage in the budget process.
c. Scores less than 60: the legislature and supreme audit institutions’ oversight of the budget is limited.

According to OBS, the improvement shown in Pakistan’s score has been due partly to the change in definition of “publicly available”. Since 2017 OBS considers only the online publications on the official website. Online availability is now the basic standard for the publication of government information. As a result of the change in the definition, Pakistan’s Audit Report, which is published only in hard copy, is not considered a public document. However, since 2015 more budget information is being made available online.

However, OBI notes that Pakistan has failed to make progress in the following ways:

- Not making the Pre-Budget Statement available to the public.
- Not producing a Mid-Year Review or a Citizens’ Budget.
- Publishing In-Year Reports that contain only minimal budget information.

Figure 11 shows how the OBI score for Pakistan has changed over time.

Figure 11: Transparency (Open Budget Index)

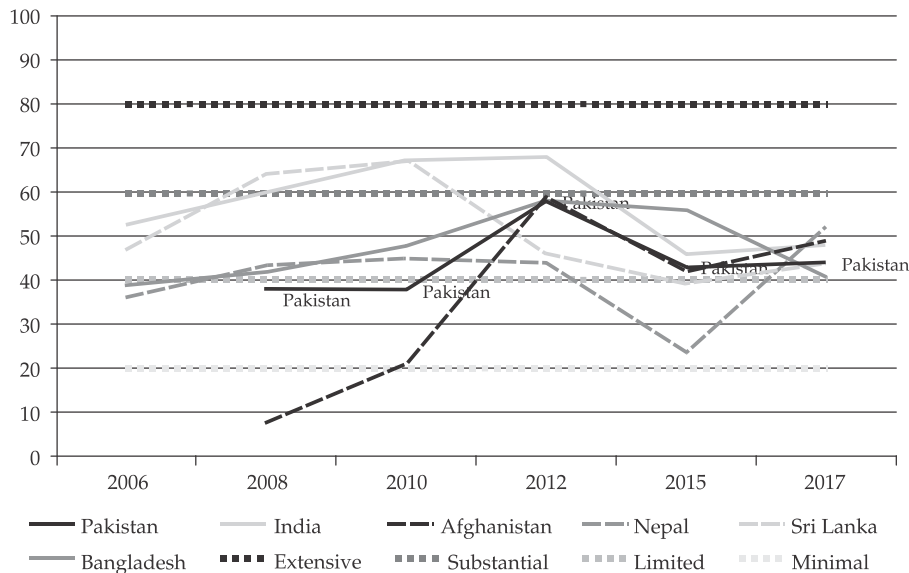


Figure 11 shows that Pakistan's position with respect to the countries in the group, is not that bad. However, all countries including Pakistan fall in the category of "limited" transparency and quite below the threshold for achieving "extensive" or "substantial" levels of transparency. This is further explored in the table below which lists the documents that are considered critical for providing transparency in the budgetary process. The following table details what budget documents have been available to the public over the period 2008 to 2017, for the six South Asian countries. The table provides rating indicating how comprehensive and useful are the key budget documents published by the countries.

Table 5: Public Availability of Budgetary Documents

Key Documents	Pakistan	India	Afghanistan	Nepal	Sri Lanka	Bangladesh
Formulation	Pre-Budget Statement	<i>iu</i>	<i>np</i>	72	<i>np</i>	<i>iu</i>
	Executive's Budget Proposal	67	55	54	62	70
	Enacted Budget	17	28	78	28	72
	Citizens Budget	<i>np</i>	25	42	<i>np</i>	<i>np</i>
Implementation	In-Year Reports	33	78	<i>pl</i>	41	37
	Mid-Year Review	<i>np</i>	<i>np</i>	44	74	<i>np</i>
	Year-End Report	45	52	45	50	62
	Audit Report	<i>nol</i>	81	43	62	<i>iu</i>

Notes: *iu*=Produced for Internal Use Only; *np*= Not Produced; *pl*= Published Late; *nol*= Not Published Online

ii. Public Participation

Though transparency in the budgetary processes is important, it is not sufficient for improving governance. Public participation is vital for ensuring that transparency leads to the desired outcomes. In order to assess the degree of public participation, the OBS considers to what extent there are opportunities for the public to participate in budget processes. Opportunities for public input and oversight need to be available during the full budget cycle, at all levels, the executive, the legislature, and at the level of the supreme audit institution.

The Open Budget survey has now been aligned with the principles adopted by the Global Initiative for Fiscal Transparency regarding public participation. These principles have now become widely accepted norms on public participation in budget processes.

The following table shows how Pakistan compares in providing public participation with the other countries in the region, showing the extent to which different institutions provide such opportunities. Pakistan scores 6 out of 100, which indicates that it provides few opportunities for the public to engage in the budget process. The score is only half as much as the global average of 12.

Table 6: Public Participation and Extend to which Institutions provide opportunities for public Participation

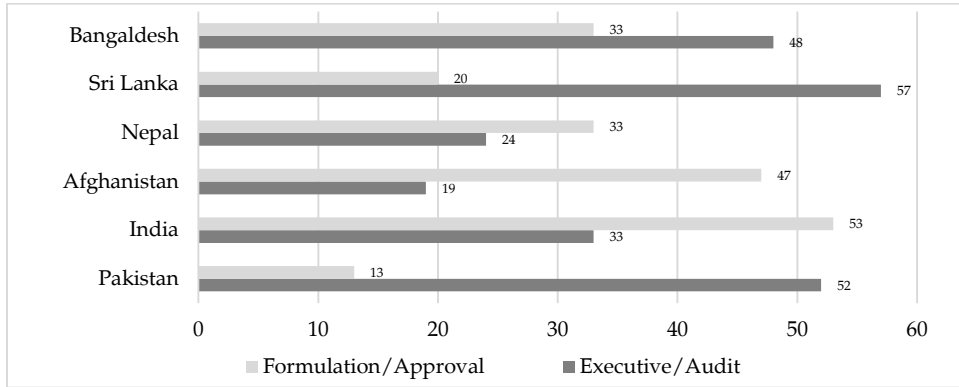
Country	Public Participation Score	Opportunities Provided by Institutions		
		Executive	Legislative	Supreme Audit Institution
Pakistan	6	9	0	0
India	15	24	0	0
Afghanistan	15	24	0	0
Nepal	24	21	25	33
Sri Lanka	11	9	0	33
Bangladesh	13	18	8	0

8. Budget Oversight

The Open Budget Survey looks at the role that legislatures, supreme audit institutions, and independent fiscal institutions play in the budget process, and examines how far these institutions are able to provide effective oversight of the budget. The institution’s role is often defined in the constitution or laws in budget planning and overseeing their implementation. However, quite often their actual roles in practice are far limited than is envisaged.

Figure 12 depicts to what extent the legislature in Pakistan provides budget oversight.

Figure 12: Budgetary Oversight



Pakistan's score on execution/audit is only 13 which indicates that the legislature's oversight during the budget cycle is weak. However, the country's score on "formulation/approval" is much higher; it still shows that the legislature provides limited oversight at the budgetary planning stage and weak oversight during the budget implementation stage.

According to the OBI report the following are the main barriers to effective legislative oversight:

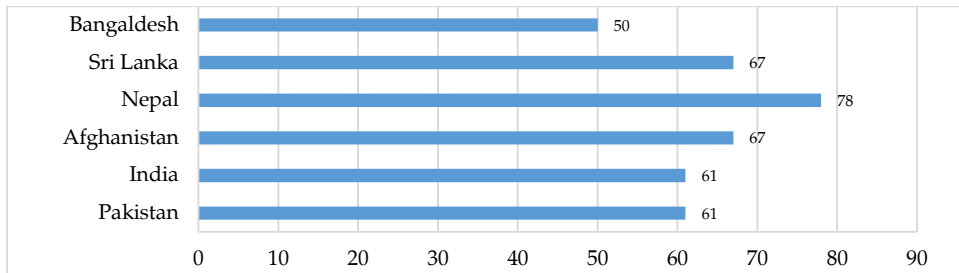
- The Executive's Budget Proposal is not provided to legislators at least two months before the start of the budget year.
- Legislative committees do not examine and publish reports on their analyses of the Executive's Budget Proposal online.
- A legislative committee does not examine or publish reports on in-year budget implementation online.

Figure 13 shows the extent to which the supreme audit institution (SAI) in Pakistan provides budget oversight. According to the OBI report, the supreme audit institution in Pakistan seems to provide adequate budget oversight, with some reservations, as below:

- As provided by the law, the SAI has significant discretion to undertake audits.

- The head of the SAI cannot be removed without legislative or judicial approval. But on the other hand, they are not appointed by the legislature or judiciary, which weakens his or her independent position.
- The supreme audit institution has adequate resources to fulfill its mandate. However, its audit processes are not reviewed by an independent agency.

Figure 13: Extent of the Supreme audit institution in providing budget oversight?



9. Recommendations

According to the OBI report, Pakistan can improve its budgetary transparency by prioritizing the following actions:

- It should publish a Pre-Budget Statement and an Audit Report online.
- It should produce and publish a Mid-Year Review and a Citizens' Budget.
- The budget can be made more informative by providing more detail in the Enacted Budget. For example, it should report expenditure estimates by expenditure classifications, and on the revenues side, report revenue estimates by revenue category and individual sources.

Pakistan can improve upon public participation in its budget process by prioritizing the following actions:

- Providing forums for the public and government officials to exchange views on the budget during the budget formulation phase as well as during the budget monitoring and implementation phase. There have been a number of innovations in other countries, such as participatory budgeting and social audits.⁴ Such innovations need to be studied and adopted to suit the environment in Pakistan.

⁴ For examples, see www.fiscaltransparency.net/mechanisms

- The country should hold legislative hearings during the formulation of the annual budget, in which members of the public or civil society organizations and area experts can testify.
- There need to be formal mechanisms through which the public can assist the supreme audit institution in formulating its audit program and participate in relevant audit investigations.

The OBI study suggests that Pakistan can make budget oversight more effective by prioritizing the following actions:

- The Executive's Budget Proposal should be provided to the legislators at least two months before the start of the budget year.
- A legislative committee needs to examine and publish reports on in-year budget implementation online.
- The audit processes need to be reviewed by an independent agency.
- Pakistan does not have an independent fiscal institution (IFI). It should consider setting up an independent fiscal institution to strengthen budget oversight.

10. Institutional Challenges in Fiscal Policy and Management

In the previous sections, we have sought to identify the underlying institutional roots of the chronic budgetary insufficiencies and inefficiencies. In this section we discuss some specific institutional issues on the expenditure side which have so far remained intractable.

i. Fiscal Federalism

Fundamental changes under the 18th Constitutional Amendment and the 7th NFC Award in 2011 have had major implications for the fiscal policy and budgetary function of the governments. The institutional changes have decentralized and devolved many government functions to the provinces and increased the share of provinces in the federal revenues.

Local governments (LG), important components in the delivery of public services, have lacked financial and administrative authority, which remains centralized and distant from the people and the local communities. There remains ambiguity as to the status of the local governments, resulting in friction with the provincial government and the provincial governments retaining a major part of the fiscal authority. Therefore, the LGs have not been as effective as had been expected, e.g., in collecting property taxes; Mukhtar (2015). The success of the local

governments in providing public services would depend on the extent of autonomy and authority they have. On the other hand, the local institutions such as local councils and auditing agencies are needed to provide “horizontal accountability” at the local level. Active participation and advocacy by the local citizenry and civic society would also provide “bottom up” accountability (refer to Figure 14).

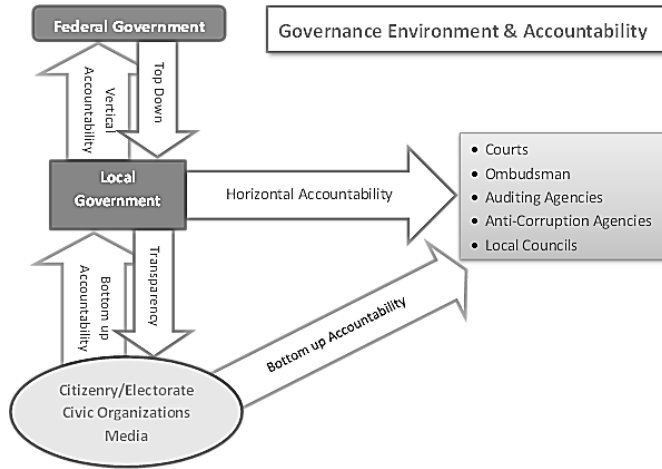
While the 18th Amendment has been a step in the right direction, it has created several residual issues which need to be cleared. A report by Mukhtar (2015) points out the following, in particular:

- (1) By re-assigning a greater share of the revenues to the provinces, the NFC Award has made fiscal adjustment even more challenging.
- (2) Significant revenue transfers from the Federal Government have greatly diluted the incentives on the part of the provinces to raise local taxes.
- (3) Assignment of additional responsibilities to the provinces has not been matched with greater administrative capacity leading to a decline in expenditure efficiency.
- (4) Empowerment of the provinces to borrow from domestic and international sources has increased the potential risks to the country’s macro-stability.
- (5) The devolution has not been followed by right-sizing the Federal Government and re-aligning its organizational structure. It retained redundant employees and programs managed by its line agencies. Instead, grant programs with specific objectives and accountability mechanisms should have been instituted.
- (6) The Higher Education Commission and the National Centre for Human Development were allowed to continue without re-thinking their roles and the appropriate new institutional structures.

Similar to Pakistan’s fiscal devolution steps, many other developing countries have implemented decentralization reforms which are promoting changes in governance structures and reshaping the relationship between local governments and citizens. Schaeffer and Yilmaz (2008) emphasize that the success of these decentralization reforms depends on the existence of sound public financial systems both at the central and local levels. Budgetary controls together with effective local government accountability and transparency are critical tools in reform implementation and in improving decision-making. Community based schemes need to combine legal, political, and administrative mechanisms with proactive community involvement. In particular, mechanisms need to be instituted that require input from local community members, and increase accessibility to information on government finances by the press or the general public at large.

Figure 14 schematically presents elements of the governance structure and accountability; adapted from Schaeffer and Yilmaz (2008).

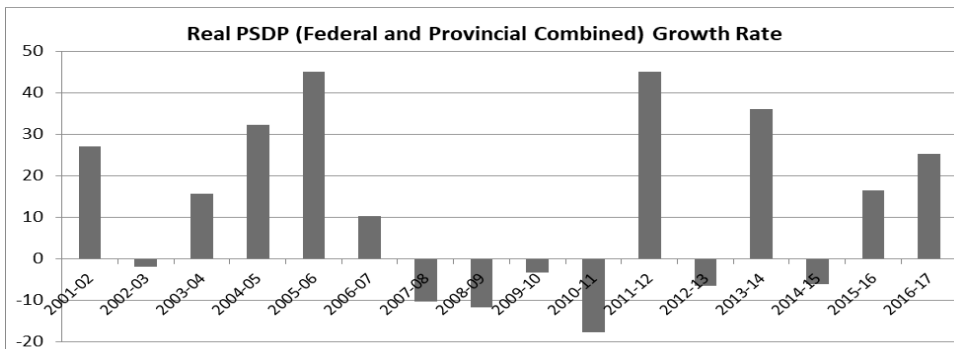
Figure 14: Governance Environment and Accountability



ii. Minimizing negative impact of fiscal consolidation on the PSDP programs

With each round of fiscal and balance of payment crisis, the country has been forced to slash development and investment expenditure. The consolidation measures need to minimize the negative impacts on the PSDP programs preserving the long-term momentum of growth and development. In the case of Pakistan, the composition of the expenditures has reflected a bias towards non-productive expenditures such as interest payments, subsidies and defense. Expenditures on development programs have not increased in real terms, and have been rather erratic, as can be seen in Figure 15 which plots annual growth rates in PSDP expenditure.

Figure 15: Growth Rates in PSDP



Almost 43 % of the public expenditure in the year 2018-19 is budgeted for either interest payment or public subsidies. Such expenditures have increased over time, leaving less room for other service delivery functions and developmental activities. Public investment shows a declining trend since the mid-1970s. Further, public investment has seen many ups and downs; it was in the higher range in the 70s and 80s, but has had a declining trend since then, and has been reduced in the current decade. It has averaged around 7% of GDP for the whole period but fell to a mere 2.9% of the GDP in fiscal year 2010-11 and has been at this level since then.

It has been empirically shown that public investment not only leads to positive economic growth and sustainability, but also provides the enabling environment for private business. At least for the last two decades, fiscal responsibility appears to be poor and weak, as the fiscal deficit for the last two decades remained above 5% of the GDP. Because of poor fiscal management practices, the public sector development program has been severely affected. The increases in current expenditures disproportionate to the increases in revenues, forces drastic cuts of PSDP to meet the mandatory requirements of the IMF conditionalities and the constraint put forth by the Fiscal Responsibility and Debt Limitation Act, 2005. Thus, the development needs of the country are neglected, which can make our long run growth targets unachievable.

At the project execution stage, there are cost and time overruns for various reasons which escalate the estimated cost to complete development projects and extend the time line. There is also a poor mix of public expenditures, for example, insufficient funds are provided to maintain existing assets. Thus, the quality of assets and of subsequent service delivery is impaired.

Due to inefficient financial management and outdated procedures, the implementation of programs and projects is adversely affected. For example, the development projects are prepared by the Ministry/Departments, which are approved, by the Planning and Development Division/Commission (through PDWP, CDWP and ECNEC), but the funds are allocated by the Finance Division (through the Priorities Committee, APCC, and NEC). Often funds, particularly for higher-cost projects, are seldom allocated according to the approved phasing owing to thin funding. This is mainly due to low budgetary allocations to certain sectors, which entails the repeated revision of projects based on escalated costs which hampers their implementation. Increased spending on education, health, infrastructure and research and development can boost long-term growth, which then in turn can generate the fiscal space for spending on human capital and thus further bolster the dynamism of the country.

Project approval mechanism needs an overhaul; economic appraisals and alignment with strategic priorities of respective sectors is a weak area. There is a huge throw forward, but still new projects are initiated. The size of the PSDP is

inconsistent with the resource base and does not focus on the recovery of cost incurred. There is no provision of maintenance expenditure, and each department is required to manage it from its recurring budget; the required funds often do not materialize. Thus, the asset quality deteriorates, and the services are degraded. There is a disconnect between expenditure allocation and service delivery responsibility at the line ministry level. Public private partnership has not flourished as compared to the potential it has.

iii. Rationalization of Sharing of Cost of Power Production with the Provinces

The Federal Budget reflects a sizeable amount paid out as subsidy to WAPDA/PEPCO regarding power generation. This year it amounts to Rs. 134 billion. However, after the 18th amendment, the Concurrent List was abolished, and the subject of electricity was placed in part-ii of the Federal Legislative List. As a result, now provinces are free to initiate power generation projects in excess of 50 megawatt (MW). The formulation of any policy and regulatory oversight over this sector vests with the Council of Common Interests (CCI) under Article 154 of the Constitution wherein all provinces and the federal government are represented in equal numbers. But there is no roadmap on how to bill the provinces for the subsidy which is provided related to energy generation. It requires that the roles and responsibilities of institutions at both provincial and federal levels should be clearly defined and a strategic plan must be devised for engaging the provinces and the federal government in lieu of the production subsidy being provided.

Significant differences remain outstanding between the provinces and the federal government on the mechanism for determining the cost associated with electricity generation, transmission and line losses. As per Article 161(2) of the Constitution, the Net Hydel Profit (NHP) earned by the federal government on any undertaking established or administered by it from the bulk generation of power at a hydroelectric power station will be paid to the province in which the generation facility is situated. The Inter-Provincial Coordination Committee (IPCC) appointed by the CCI has recommended that the methodology recommended by the AGN Kazi Committee in 1991 should be adopted to calculate the NHP. However, the formula remains contentious for several reasons. The formula is difficult to apply as since then electricity generation has become a mix of thermal, coal and hydel resources. It is also contended that the methodology is in contradiction to the essence of the Constitution as it considers total revenue generated through the retail distribution of power to consumers instead of that at the bus bar of hydel power stations; Panni (2011).

The Arbitral Tribunal formed to resolve dispute between WAPDA and the government of KPK has also stated that the AGN Kazi Methodology is unworkable and has become redundant as several changes (administrative and

jurisdictional) have taken place in the power sector since then. The Arbitral Tribunal has prescribed its own formula by adopting a base amount of Rs. 6.9 billion as NHP for FY 1991-92 and compounding it by 10% every year. Such a substantial increase in the NHP will add to the already high electricity tariff which may become unaffordable for the consumers and deal a hard blow to the national economy due to the costly and uncompetitive price of manufactured products. Therefore, the NHP has been capped by the Federal Government. There is an urgent need to resolve the issue and revisit the formula to determine the NHP.

iv. Fiscal Strategies to Strengthen the Country's Export Capacity

Fiscal policy can play a pivotal role in enhancing the country's export capacity. The Special Economic Zones (SEZ) and the Export Promotion Zones (EPZ) have been instrumental in boosting exports for many countries and enabling them to compete in the global markets.

The SEZ Act was promulgated on September 13, 2012 and it states that SEZs are to be set up by the Federal or the Provincial Governments themselves or in collaboration with the private sector under different modes of *public-private partnership* or exclusively through the private sector. The fiscal incentives include a one-time exemption from custom duties and taxes for all capital goods imported into Pakistan for the development, operation and maintenance of a SEZ (both for the developer as well as for the zone enterprise) and an exemption from all taxes on income for a period of ten years.

However, the incentive package which would motivate the investment in these specialized zones is far from being attractive. A recent study by CPEC Center of Excellence-PIDE, makes a regional comparison of the fiscal incentives provided by each country. The results indicate that the incentives offered in Pakistan on a relative basis are not attractive. Fiscal incentive models of India, Myanmar or Bangladesh and China will have to be adopted. However, several considerations must be noted. Firstly, once the infancy period is over these packages would phase out. Hence, in the short-run better incentive package needs to be developed. Secondly, the performance of existing SEZs under the support of fiscal incentives provided must be evaluated before new facilitation is extended. Thirdly, there would be a loss of revenues in the shape of income taxes and customs duty on the import of machinery. Additionally, there is a possibility that in the face of non-greenfield investment, the domestic producer may face stiffer competition and may close down. Thus, there is a potential loss to the exchequer.

However, the axe and subsidy incentive package still remain pending before the federal cabinet for approval, amid reluctance on the part of the provinces to provide financing. Hence, there is still considerable work to be done, along with

patiently waiting to see how these incentives start to bring the desired impact on the exports and the economy.

v. Rationalization of the role of the Higher Education Commission

The role and capacity of the Federal HEC needs to be reexamined after the 18th amendment. With almost all provinces having their own HECs, the role and responsibilities of the Federal HEC have been considerably compromised. After the 18th amendment, the federal government has the mandate to oversee matters pertaining to higher degrees from abroad such as issuance of equivalence and the management of foreign scholarships. This is by virtue of entry No 16 in the Federal Legislative List (FLL) Part-I, but issues related to education planning and standard setting for higher education, research, scientific and technical institutions fall within the purview of the Council of Common Interests (CCI) vide entries Nos 7, 11 and 12 of FLL Part-II. World experience shows that countries with the best universities in QS ranking are the ones which have a federation concept with clearly defined roles and responsibilities. According to a study entitled “Post-Secondary Education in 12 Federations” conducted by the Forum of Federation, in most of the countries with a federal political structure (10 out of 12), the primary responsibility for governing, funding of public sector HEIs and approval of new academic programs lie with the federating units. This was also the spirit of the 18th amendment where it is a devolved subject. However, many issues are pending and require a thorough dialogue between all stakeholders.

The Federal HEC proposed a long-term vision called HEC Vision-2025 in May, 2017. Its first strategic objective is to “Sustain and Consolidate the National Higher Education Commission,” which shows that there is still much work to be done in terms of integrating the HECs of federating units and the Federation. The rest of the seven key objectives also lay down the Commission’s scope which covers the whole of Pakistan. Further, the cost estimates for achieving these goals reveal that the budget of 0.30% of GDP for the FY 2015-16 would need to be increased to 1.4% by FY 2024-25 in order to achieve the targets. The required financial resources would be difficult to raise for the federal government without the support of the federating units.

vi. Rationalization of Public Subsidies, e.g., BISP

Subsidies constitute a significant part of the budget every year. For example, in the year 2018-19 the total size of subsidies is estimated to be Rs. 175 billion in comparison with a total federal salary budget of Rs. 243 billion. The major subsidies provided are in the energy sector and commodity operations. Another larger program is the Benazir Income Support Program (BISP) which is funded as a Development Expenditure outside the PSDP budget. This year it is budgeted at Rs. 125 billion.

In June 2007, the Government launched the BISP as its flagship social safety net program to cushion the negative effects of the food crisis and inflation on the *ultra-poor* (*chronically poor?*). The BISP sought to reach up to 7 million families living below the poverty line, located in rural and urban areas which roughly covered 35 million people or about 22 % of the population. The BISP has earned global recognition of being the most reliable and transparent social protection program for its methodology of scientific targeting and automated payment system; World Bank (2017).

On the other hand, critics allege that the grants of BISP are distributed on the basis of nepotism and political basis to garner votes. Gardar (2014) identifies the key successes of the BISP and finds that its success has been associated with the high level of political commitment, which, in turn, was partly driven by the understanding that the support base of the ruling PPP would benefit disproportionately from reformed social protection. However, the overt association of BISP with the PPP may have become a liability with the change in the political landscape of the country and may not endure the heat of competitive electoral politics.

While taking consolidation measures to address fiscal deficits, the social protection programs would typically become prime candidates of budget cuts. Nasim (2014), however, maintains that in dealing with the fiscal deficits the answer does not lie in expenditure cuts or freezing of expenditure on social protection programs. He argues that, "fiscal space for social protection can and should be created through other options, including the reform of energy prices, reduction in the losses of public sector enterprises, improvement of economic governance to restore economic growth to its historical levels, increase in the tax-to-GDP ratio, and public-private partnership."

There is no elaborate framework of subsidies such as other fiscal programming in Pakistan. Besides the direct subsidies there are also considerable hidden subsidies in the form of non-cost recovery in services such as education, etc. A study by Pasha et al. (2002) estimated that the budgetary subsidy on major economic and social services is about 5 % of the GDP. Around the globe several strategies have been adopted which lessen the burden on the public exchequer, for example, strategies based on public-private-partnership and equity-based funding models. Although the private/non-government sector, has participated well in the provision of certain services, most of its participation has had limited scope such as road and energy infrastructure concentrated in the urban areas. Since most of the subjects are provincial, federal and provincial policies need to be coordinated in order to facilitate PPPs.

Besides, there must be fiscal incentives such as tax exemptions, to encourage investments in sectors with social priorities e.g., as rural schools. More importantly, the provision of physical facilities e.g., electricity, safety, water, sanitation,

telecommunications, etc., is needed which would improve the quality of rural life and attract private investors. The following could be the key areas to encourage PPP based public development projects:

- i. Political and Institutional support
- ii. Synergy of desired public and commercial objectives
- iii. Risk allocation and financial feasibility frameworks
- iv. Process, priorities and procurement transparency through legal and institutional development.
- v. Identification of potential projects and effective communication strategies.

There are currently many PPP based development projects in the implementation stage such as the Karachi Mass Transit Project and some have matured. There is a need to learn from the international and domestic experiences and improve this potential window for the long-term perspective.

11. Conclusion and Policy Implications

Addressing chronic fiscal imbalances requires examining the institutional roots of the problem. Due to the multi-dimensional nature of the problem, it will remain intractable unless approached in its entirety in a comprehensive strategy. The long-term solution lies in the restructuring of political institutions and the improvement of governance ensuring these are conducive to fiscal discipline. On examining the political-economy literature we find that there seems to be a consensus as to what is likely to work. The real challenge lies in creating the political will, raising public awareness and generating political energy to implement the needed measures.

There is a strong argument that advocates the basing of fiscal policy on rules which instill fiscal discipline. It is a parallel to the 'rule based monetary policy' which has been adopted by many countries. Wyplosz (2002), note that there is a notion that fiscal policy is a purely political function, which should remain in the realm of politics. However, he argues that on the one hand, the matter of fiscal deficit or surplus should be in the realm of macroeconomic management. On the other hand, the budget structure (size, allocation of expenditures and taxes) is in the political domain. He concludes that, "Budget deficits, like interest rates, are best left to non-political bodies which operate in full light and are subject to democratic accountability."

The literature on the political economy of fiscal policy has important implications for institutional reforms. If fiscal policy is a product of the politico-institutional characteristics, then one must address the issues at the institutional

level. Many countries, such as Pakistan, are struggling with hard fiscal adjustments and reforms. Many developing countries are building democratic institutions and budgetary institutions dealing with the legislative processes as well as more general institutional reforms, such as changes in electoral laws.

Theories of political opportunism seem to be quite relevant and plausible in the Pakistani context. It seems that as an emerging democracy, the political scene is still rife with political opportunism without a strong tradition of accountability either through the polls or through the judicial system. These could be mitigated through greater transparency in budgets and government accounting through media development and voter awareness. Intergenerational conflict theories may not be of much relevance to Pakistan's situation, as the societal values emphasize intergenerational altruism. There is not much discussion of intergenerational issues, nor are there many programs with implied inter-generational transfers. Nevertheless, voter awareness of this dimension of such issues should greatly help. The electorate could also be naïve and entertain some degree of fiscal illusion. Improvement in this dimension would be a matter of gaining maturity as a democracy.

We have experienced some budgetary battles where the various interest groups have used public debt as a strategic variable. Major interest groups and elites have sought to increase their share of the common resources and minimize their tax burden. The lessening of political polarization and greater political maturity over time should be helpful in mitigating this problem. Theories focusing on distributional conflicts theories and geographically dispersed interests have assumed greater relevance after the 18th Amendment. The remedy may lie in lessening the fragmentation of governments. Institutional mechanisms need to be developed which internalize the cost of fiscal indiscipline across geographically dispersed government units. With time, as the country acquires greater political cohesion and achieves macroeconomic stability, such issues underlying the country's fiscal problems may become less relevant.

The areas with a great promise for improvement seem to be the control of corruption and the development of budgetary institutions supportive of budgetary discipline. Adopting and enforcing balanced budget rules and institutions that limit universalism and reciprocity should certainly help. There is plenty that can be achieved in the short-to-medium time frame for ensuring greater fiscal transparency, improvements in the system of financial management, control, and audit.

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5

Increasing Exports through Tariff Reductions on Intermediate Goods[†]

Nida Jamil* and Rabia Arif**

Abstract

To counter the severe trade deficit problem that Pakistan faces, we explain how to move up the value chain of exports by reducing tariff rates on the intermediate inputs used by local manufacturers. The availability of cheaper intermediate inputs through tariff reductions can substantially reduce input constraints. We begin by identifying trends in the tariff rates imposed on intermediate inputs, and their imports over time by Pakistan and its counterparts. Using an instrumental variable approach, we measure the gains that can be achieved by importing more of these intermediate inputs in terms of export performance indicators. We emphasize that input tariff reductions could help Pakistan expand exports. We also identify specific sectors in which intermediate input tariff reductions could have significant gains for Pakistan in terms of export growth. We recommend the need to reduce intermediate input tariffs in these sectors only, rather than general tariff reductions across all sectors.

1. Introduction

Over the past decade, Pakistan has substantially reduced its tariffs, especially after entering into free trade agreements (FTAs) with various countries including Sri Lanka, Iran, Mauritius, countries in the European Union and, most importantly, China. While there are numerous channels through which export performance indicators (EPIs) can be improved, such as through better institutions, infrastructure and credit availability, we argue that a potential channel through which Pakistan could benefit is through better use of these FTAs. Specifically, lowering tariffs on the imported intermediate inputs used by domestic exporting firms in production is a potential mechanism for achieving this, in turn helping Pakistan boost its exports in the world market.

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The gains from reducing tariffs on intermediate inputs are straightforward. Improving the availability and variety of inputs for domestic exporters eases the input constraint, potentially both increasing *and* improving firms' output for export. It can help firms increase the unit value of existing output being exported (by improving its quality with the availability of better inputs); it also helps exporters climb up the export ladder by manufacturing and ultimately exporting products in which the country is not yet very active. For example, in Pakistan's case, it can compare its export basket relative to India, Sri Lanka, Bangladesh and Turkey and aim to replicate their successes through strategic tariff reductions on intermediate goods.

Reducing tariffs on intermediate inputs can also boost competition among domestic and foreign suppliers. This may induce existing firms to exploit economies of scale if greater competition reduces their market power, forcing them to move down their cost curves and thus produce more (Helpman & Krugman, 1985). Further, if reduced protection lowers the price of intermediate goods, high-cost domestic suppliers of these inputs will be forced to exit the market, freeing resources for more efficient producers (Rodrik, 1992). Finally, importing cheaper and better-quality inputs, exposure to new products and better methods of production can provide access to better machines and make new technology available to domestic firms, ultimately affecting the productivity of exporting firms.

Much of the emerging literature stresses the importance of intermediate input tariff reductions. Bigsten et al. (2016) study the effect of input and output tariff reductions on firms in Ethiopia. They conclude that exporting firms enjoy large productivity gains from input tariff reductions – gains that outweigh the benefits of output tariff reductions. According to Topalova and Khandelwal (2011), reductions in import tariffs are important for developing countries, especially for those emerging from the import substitution phase under which they faced technological constraints because of the nonavailability of imported inputs.

Goldberg et al. (2010) show that lower input tariffs account for around 31% of new products being introduced by domestic firms in India, mainly due to the increased access to intermediate inputs that were not available earlier. Cruz and Bussolo (2015) study the impact of trade liberalization, particularly of imposing lower tariffs on intermediate goods, in Morocco. They conclude that firms exposed to greater input tariff reductions perform better in terms of exports, with better access to markets and a higher probability of survival since the imported inputs allow them to export new products. This enables them to export higher-value products. The study applies a difference-in-difference methodology, using the FTA between Morocco and other countries as an exogenous shock to the country. Sen (2007) also identifies the importance of reducing prices of capital goods mainly through reductions in tariffs, and highlights the importance of this for India's economic growth.

Contrary to this belief, we may expect a decline in pressure on firms to upgrade due to the reduction in input tariffs. This would result in reluctance to change existing patterns of production, thereby discouraging firms to compete in the product market. A recent study by Bas and Paunov (2018) sheds light on the relevance of complementary factors that may play an important role in determining the effect of tariff reductions on intermediate goods. They argue that the same policy might have a little impact on product growth in the absence of these complementary factors.

This article explores a similar question to Cruz and Bussolo (2015), but using a different methodology to estimate the impact of total imports of intermediate inputs on EPIs via the exogenous decline in intermediate input tariff rates. We use an instrumental variable (IV) approach rather than a difference-in-difference approach, applied to selected countries (Pakistan, Turkey, Sri Lanka, India and Bangladesh).

We begin by looking at trends in intermediate input tariffs for Pakistan, India, Turkey, Sri Lanka and Bangladesh. Specifically, we examine their imports of intermediate inputs over time from the rest of the world. We then focus on how these tariff rates have affected the EPIs for these countries via the import of intermediate inputs. For this, we create a panel dataset using information from the World Integrated Trade Solution (WITS) for 2003–11 for Pakistan, India, Bangladesh, Sri Lanka and Turkey. Among developing countries, these countries were selected specifically for their high export performance in the world market. India and Bangladesh have similar geographical characteristics to Pakistan, while Sri Lanka and Turkey can be taken as significant exporters in the world textiles market.

We use the average intermediate input tariff rate as an instrument for the value of the intermediate input being imported by these countries (in US\$). Next, we look at the direct impact of these imported intermediate inputs on the EPIs. We combine the IV approach with country fixed effects (FE) and time FE to cater for time-invariant unobservables at the country level. We then move from the aggregate level to the sector level, identifying trends in intermediate input tariffs for Pakistan, India, Bangladesh, Sri Lanka and Turkey in various sectors. Finally, we look at the direct correlation of intermediate input tariffs with export value at the sector level for all the countries in our sample. We do this to recommend a list of sectors in which Pakistan could gain in terms of boosting exports by lowering the tariffs on intermediate inputs.

We conclude that, over time, all these countries have reduced their tariffs on intermediate inputs, with the most significant reduction by India. As a result, their imports of intermediate inputs from the rest of the world have risen drastically. Moreover, the import of intermediate inputs has had a positive and significant effect on these countries' EPIs, helping them boost their exports. Imported intermediate inputs not only improve export value and volume index, but also improve export

unit value. This means that the import of intermediate inputs helps countries export high-quality products, helping them climb up the export ladder.

Finally, high tariffs on intermediate inputs have a negative and significant effect on export value for most sectors in Pakistan. This relationship holds true for all sectors in India and many sectors in Bangladesh. It indicates that reducing tariffs on intermediate inputs would help Pakistan boost its exports. Since a situation exists in India, Pakistan could climb the world export ladder by following in India's footsteps and making those intermediate inputs that are important to the latter available to Pakistani manufacturers.

2. Stylized Facts

Given Pakistan's chronic trade deficit (see Figure A1 in the Appendix), it urgently needs to boost its exports. The country's main problem in terms of exports has been its dependence on low value-added agricultural and manufacturing goods. Table 1 compares the top export products for Pakistan and India as in 2016. While low-value products such as textiles, clothing, cotton and fruit remain Pakistan's top exports, India exports high-value products such as gems, stones, vehicles and machinery.

Table 1: Top ten export products, Pakistan and India, 2016

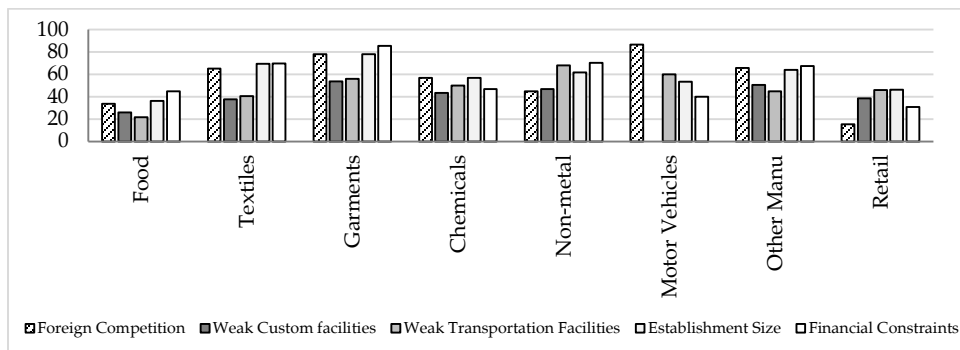
Product	Pakistan		Product	India	
	Value	% share of exports in overall exports		Value	% share of exports in overall exports
Misc textiles, worn clothing	\$3.8 bn	20.1%	Gems, precious metals	\$43 bn	16.5%
Clothing, accessories (not knitted or crocheted)	\$3 bn	16.1%	Mineral fuels including oil	\$27.7 bn	10.6%
Knitted or crocheted clothing, accessories	\$2.6 bn	13.8%	Vehicles	\$15 bn	5.7%
Cotton	\$2.5 bn	13.2%	Machinery including computers	\$13.6 bn	5.2%
Cereals	\$916.6 mn	4.9%	Pharmaceuticals	\$13 bn	5%
Leather/animal gut articles	\$700.6 mn	3.7%	Organic chemicals	\$11.3 bn	4.3%
Mineral fuels including oil	\$415.9 mn	2.2%	Clothing, accessories (not knitted or crocheted)	\$9 bn	3.5%
Fruits, nuts	\$388.2 mn	2.1%	Electrical machinery, equipment	\$8.2 bn	3.1%
Manmade staple fibers	\$367.3 mn	2%	Knitted or crocheted clothing, accessories	\$7.9 bn	3%
Optical, technical, medical apparatus	\$334.6 mn	1.8%	Iron, steel	\$6.4 bn	2.5%

Source: <http://www.worldstopexports.com/>. Retrieved 15 March 2018.

While Pakistan has signed many bilateral agreements in attempts to strengthen its export market, we argue that not much can be achieved through these until and unless Pakistani firms upgrade the products they are exporting and move up the value chain by exporting higher-value products. This is necessary to increase exports. In line with this argument, Goldberg et al. (2013) analyze the relevance of reducing intermediate input tariffs on firms' product mix. They find that the volume of intermediate inputs increases due to a decline in tariff rates on them, and that new high-quality intermediate inputs become available to these firms, thereby expanding their product scope and leading to manufacturing output growth.

The World Bank Enterprise Survey for 2013 gives us a clear picture of the constraints faced by manufacturers in Pakistan. It shows that firms – especially in Punjab – that do not export, acknowledge that this is because their products cannot compete with those of foreign competitors. This points to a need to eliminate these constraints by intervening in the input market specifically, and enabling Pakistani manufacturers to climb up the export ladder (Figure 1). Reductions in tariffs are a possible form of intervention. Vehicles, for example, are among India's top ten exports (as shown in Table 1), while on the other hand, 80% of non-exporting motor vehicle firms in Punjab (Pakistan) report they do not export because they do not believe their products to be internationally competitive.

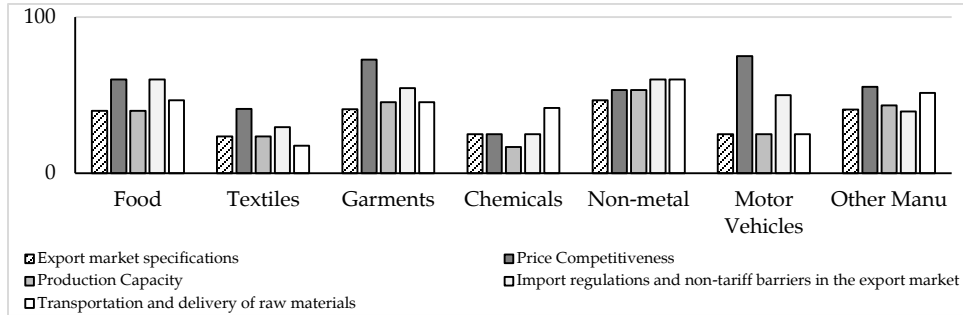
Figure 1: Obstacles to non-exporting firms in Punjab, frequency by sector



Source: World Bank Enterprise Survey, 2013.

Many firms in Punjab report export market specifications and price competitiveness to be major or severe obstacles (Figure 2). Again, this indicates a need to upgrade the products being exported. More than 40% of textile firms and over 60% of firms in the garments sector report price competitiveness as a major obstacle. Access to better-quality intermediate inputs through tariff reductions could help resolve both these problems. Better-quality inputs help produce better-quality products, in turn enabling firms to compete internationally and meet export market specifications. The cheap availability of inputs means that firms can charge less for the final good in the world market, enabling them to compete in terms of prices.

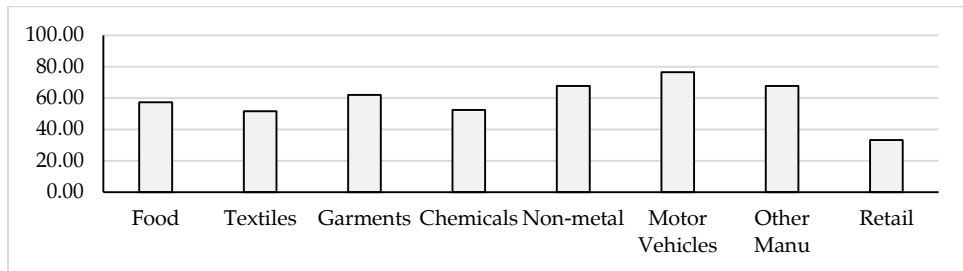
Figure 2: Obstacles (major or severe) to all firms in Punjab



Source: World Bank Enterprise Survey, 2013.

Figure 3 shows that more than 40% of firms in all the sectors mentioned below (except retail) report dissatisfaction with the quality of inputs available to them, indicating they need access to better-quality inputs.

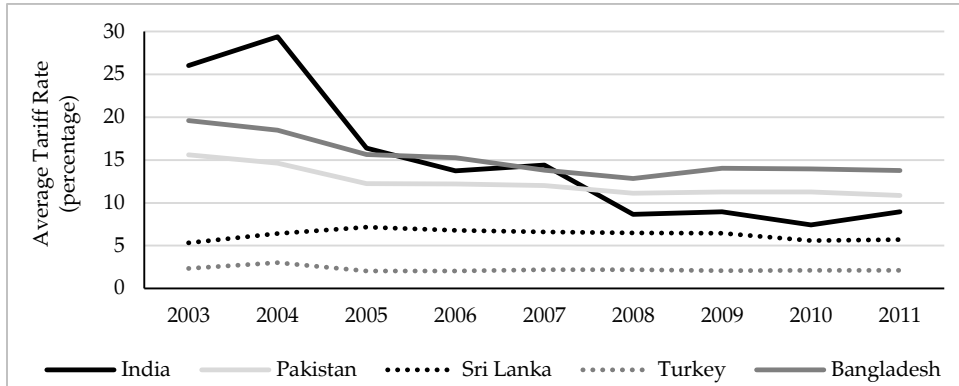
Figure 3: Firms in Punjab reporting lower-than-expected quality of intermediate inputs



Source: World Bank Enterprise Survey, 2013.

Over time, the world has opened up to trade. Countries including Pakistan, Sri Lanka, India, Turkey and Bangladesh have reduced their average tariff rates on overall imports (see Figure A2 in the Appendix). Figure 4 shows the average tariff rates applied by these countries specifically on imports of intermediate goods. While Pakistan has reduced its tariffs on the import of intermediate goods, what is striking is how considerable India’s reduction in tariff rates has been – from more than 25% in 2003 to below 10% by 2011, which is significantly more than the tariff reductions made by Pakistan and Bangladesh. Turkey still applies the lowest tariff rates to intermediate goods. Sri Lanka and Turkey have had a relatively constant tariff rate over this period. A similar situation applies when we look at the average tariff rates applied by these countries to imports of intermediate goods, specifically from China (see Table A3 in the Appendix).

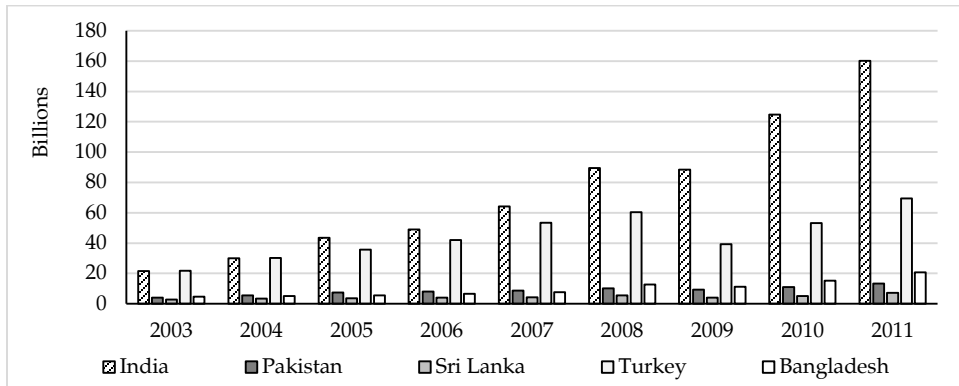
Figure 4: Average tariff rate on intermediate inputs, 2003–11



Source: World Integrated Trade Solution.

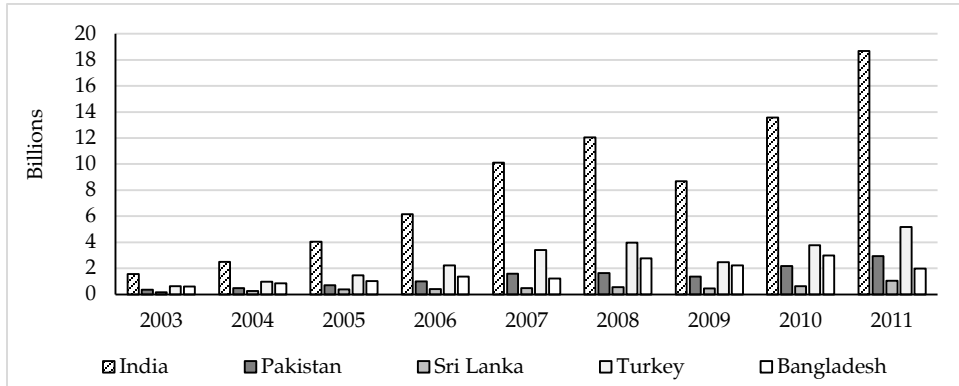
Due to the large tariff decline, as expected, India’s imports of intermediate inputs have grown relative to other countries (Figure 5). Turkey initially had a low tariff rate and has managed to increase its imports of intermediate inputs from the rest of the world. Pakistan’s imports have changed only slightly: in 2011, its imports of intermediate goods were even lower than those of Bangladesh. Looking at imports of intermediate goods from China (Figure 6), we see that India is the largest importer of intermediate inputs compared to the other countries in our sample.

Figure 5: Imports of intermediate inputs from the world (US\$), 2003–11



Source: World Integrated Trade Solution.

Figure 6: Imports of intermediate inputs from China (US\$), 2003–11



Source: World Integrated Trade Solution.

India’s imports of intermediate inputs from China have increased from less than US\$2 billion in 2003 to more than US\$18 billion. Pakistan’s imports have increased over time, but much less than those of India. In 2011, Turkey’s imports of intermediate goods from China outperformed Pakistan, rising from less than US\$2 billion in 2003 to around US\$5 billion in 2011.

3. Theoretical Framework

We use the theoretical framework proposed by Feng et al. (2016) to explain the channel through which exogenous changes in firm access to imported intermediate inputs affect firm EPIs. The authors argue that firm access to imported intermediate inputs can affect export performance in numerous ways. They use a standard profit maximization function for a firm to evaluate the profits it could earn from international sales as follows:

$$Max \pi_{EX} = r(q) - c(q)$$

where r and c represent firm revenue and costs, respectively, which are a function of the firm’s export quantity, q .

The following production function, $q = f(l, k, m_d, m_f)$, links the output produced by the firm to its input choices, namely, labor l , capital k , and the availability of local and imported inputs, m_d and m_f . Each intermediate input is selected to maximize the firm’s profits by means of its EPIs. Under the binding financial constraints faced by the firm, the relevance of fixed and marginal costs may determine its optimal input mix. Therefore, the costs associated with imported intermediate inputs that are affected inversely by cuts in tariff rates can substantially affect the final product (q) the firm produces to export.

The authors propose two main channels through which reductions in tariffs on intermediate inputs can affect the firm’s EPIs. First, the quality of imported

intermediate inputs available to local manufacturers can enhance the quality of the final product to be exported, making it more competitive in the world export market and directly affecting $r(q)$ in the equation above (see Kugler & Verhoogen, 2009; Bas & Strauss-Kahn, 2014; Fan et al., 2015). Second, EPIs can improve through the production function (f) via the production technology affecting firms' total factor productivity (see Ethier, 1982; Kasahara & Rodrigue, 2008; Amiti & Konings, 2007; Gopinath & Neiman, 2014).

4. Do Tariffs on Intermediate Inputs Affect Export Performance?

In this section, we focus on the impact of intermediate input tariffs on the import of intermediate goods and eventually on EPIs.

4.1. Data and Methodology

The data for this study is taken from the WITS, developed by the World Bank in collaboration with the United Nations Conference on Trade and Development (UNCTAD) and with the help of organizations such as the International Trade Center, the United Nations Statistical Division and the World Trade Organization. We create a panel of five countries – Pakistan, India, Bangladesh, Sri Lanka and Turkey – for the years 2003–11. Taking advantage of this panel dataset, we use country FE along with time FE to account for any time-invariant and across-country unobservable variations.

The following specification is used to estimate the impact of imported intermediate inputs on the EPIs:

$$EP_{ct} = \beta_{0ct} + \beta_1 \log(\text{intermediate input US\$})_{ct} + \text{country}_c + \text{year}_t + u_{ct} \quad (1)$$

where EP_{ct} refers to the seven ways of measuring export performance as listed below, which vary with country and time. *Intermediate input* (measured in US\$) is the total value of imported intermediate inputs from the rest of the world for each country over time. Country_c refers to country FE and year_t to time FE, while u_{ct} is the time-varying error term.

We take various measures of a country's EPIs:

- Exports (US\$ '000): The net value of a country's exports.
- Export volume index: This is derived from UNCTAD's volume index series and is the ratio of the export value index to the corresponding unit value index. The year 2000 is taken as the base year.²
- Export value index: The current value of exports converted to US dollars and expressed as a percentage of the average for the base period (2000).

² In the year 2000, the index equals 100.

- Export unit value index: The ratio of the export value index to the export volume index.³
- Index of export market penetration: This measures the extent to which a country's exports reach already proven markets. It is calculated as the number of countries to which the reporter exports a given product divided by the number of countries that report importing the product that year.⁴
- Number of export products: The number of partner markets for a country. A market is counted if the exporter ships at least one product to that destination in the given year with a trade value of at least US\$10,000.
- Herfindahl–Hirschman market concentration index: A measure of the dispersion of trade value across an exporter's partners. A country whose trade value is concentrated in very few markets will have an index value close to 1. Thus, it is an indicator of the exporter's dependency on its trading partners and the risk it faces should its partners increase trade barriers. Measured over time, a fall in the index may be an indication of diversification in the exporter's trading partnerships.

Equation (1) suffers from a potential problem of endogeneity and may estimate biased coefficients for the impact of imported intermediate inputs on EPIs. Even if we control for country FE and year FE, there are still types of variation that are unobserved at the product level which may affect the dependent variable (the EPI) and independent variable (the imported intermediate input) simultaneously. For example, a country may experience a demand shock (unobserved) that could affect its EPIs as well as its imports of intermediate inputs needed to manufacture those products, thereby resulting in biased estimates.

To address the endogeneity problem as discussed above, we use an IV estimation approach. The IV should fulfill two criteria: it should be highly correlated with the intermediate input value and fulfill the exclusion restriction, that is, it should be uncorrelated with the EPIs through any channel other than changes in the intermediate input value. Therefore, we use average intermediate input tariff rates as an instrument for the total import of intermediate goods (US\$) for each country for each year, as used by Goldberg et al. (2010). We argue that the instrument is valid and fulfills the exclusion restriction. Since a reduction in the tariff rates for intermediate inputs would directly affect their prices, making them available to local manufacturer at a cheaper rate, this would eventually improve the EPI via this channel alone.

³ Since both the numerator and denominator were normalized by the base year 2000, the export unit value index is not normalized by the base year.

⁴ A low export penetration may signal the presence of barriers to trade that are preventing firms from expanding the number of markets to which they export.

The first-stage equation is as follows:

$$\text{Log}(\text{intermediate input US\$})_{ct} = \alpha_{0ct} + \alpha_1 \text{average tariff rate on the intermediate input}_{ct} + \xi_{ct} \quad (2)$$

Estimates from the first stage are then used in the second stage where EP_{ct} refers to the seven ways of measuring export performance, which vary with country and time. C_c refers to country FE while u_{ct} is the time-varying error term.

$$EP_{ct} = \beta_{0ct} + \beta_1 \log(\widehat{\text{intermediate input US\$}})_{ct} + c_c + u_{ct} \quad (3)$$

4.2. Descriptive Statistics

Table 2 gives the mean values of the dependent and independent variables used in the empirical estimations for each country in our sample.

Table 2: Descriptive Statistics, Country wise

Country Names Variables	Pakistan		India		Sri Lanka		Turkey		Bangladesh	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
intermediate input tariff rates	12.3680	1.6590	14.8936	7.9316	6.2776	0.6092	2.2386	0.3040	15.2710	2.3033
intermediate input value (measured in US \$)	8,645,440	2,845,465	74,600,000	45,800,000	4,449,200	1,327,694	45,100,000	15,200,000	9,914,864	5,471,580
export Value Index	198	45	366	183	136	29	344	109	214	87
Export Volume Index	169	17	245	82	118	11	229	42	200	67
Export Value (measured in US \$)	18,100,000,000	4,470,000,000	158,000,000,000	78,800,000,000	7,350,000,000	1,630,000,000	103,000,000,000	31,500,000,000	13,600,000,000	5,660,000,000
Index of Export Market Penetration	7.1053	0.4764	24.1094	2.6664	4.8746	0.3662	18.3424	2.0139	4.8596	0.4902
Number of Export Products in World Market	2,879	256	4,612	107	2,730	272	4,320	67	1,707	132
Export Unit Value	1.1598	0.1832	1.4229	0.2531	1.1423	0.1538	1.4660	0.2287	1.0484	0.0724
Herfindhal Market Concentration index	0.0693	0.0176	0.0491	0.0070	0.1141	0.0303	0.0459	0.0095	0.1035	0.0137

Source: Author's own Calculations

4.3. Results

Our results are shown in Table 3. The first-stage results (Table 3A) show that the coefficient of intermediate inputs is significant and negative, indicating that a rise in the tariff on imported intermediate inputs leads to a decline in their import. The second-stage results (Table 3B) indicate that the import of intermediate goods has a significant impact on all export measures except for the export unit value and the number of export products. We give the OLS results side by side for a base comparison. For almost all EPIs, we can see that the OLS results are overstated.⁴ The direction of bias is consistently positive across all the specifications, which is in line with the magnitude of bias we expect due to omitted variables such as demand shocks. If, on one hand, positive demand shocks affect the EPIs positively, they will also increase the value of intermediate inputs simultaneously, causing an upward bias.

Table 3A: Impact of intermediate input tariffs through import of intermediate inputs on export performance indicators

	Log (intermediate input)
Average tariff rate of intermediate goods	-0.0404*** (0.0069)
Year fixed effects	Yes
Country fixed effects	Yes
F-value of the excluded instruments	321.35

⁴ For all the EPIs except for the number of export partners, the OLS results are biased upward.

Table 3B: Second-stage IV and OLS results

	Log (export value)		Export volume index (base year 2000)		Export value index (base year 2000)		Index of export market penetration		Herfindhal market index		Export unit value		Number of export products	
	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS
Log (intermediate inputs)	0.625***	0.705***	143.8***	143.9***	240.2***	280.7***	2.806**	4.981**	0.0281***	0.0344*	0.0912	0.207	112.3	42.52
	(0.0556)	(0.0976)	(17.56)	(21.70)	(47.50)	(87.39)	(1.029)	(2.380)	(0.00875)	(0.0180)	(0.0782)	(0.171)	(186.8)	(467.1)
R-squared	0.998	0.945	0.945	0.922	0.922	0.990	0.990	0.954	0.954	0.906	0.906	0.979	0.979	0.979
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IV	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Log intermediate inputs instrumented by average tariff rate on intermediate goods varying by country and time. Country and time fixed effects have also been applied. N = 45. Countries: Pakistan, India, Bangladesh, Turkey and Sri Lanka. Time: 2003–11.
 * p < 0.10, ** p < 0.05, *** p < 0.01. Robust standard errors in parentheses.

Source: Authors' calculations based on data from World Integrated Trade Solution.

We interpret the IV results below since they are econometrically stronger. The main results are:

- An increase in import of intermediate inputs leads to an increase in the value of exports (in US\$). On average a 1% increase in the import of intermediate goods increases the value of exports by 0.625%.
- An increase in the import of intermediate inputs leads to an increase in the export volume index. On average if the import of intermediate inputs increases by 1%, the export volume index goes up by 1.43.
- An increase in the import of intermediate inputs leads to an increase in the export value index. On average, if the import of intermediate inputs increases by 1%, the export value index increases up by 2.4.
- An increase in the import of intermediate inputs increases export market penetration.
- An increase in the import of intermediate inputs increases the HF index. This implies that the import of intermediate goods decreases the number of markets that a country is exporting to.

The results also imply that higher imports of intermediate inputs lead to higher value added exports (represented by the export unit value index) and an increase in the number of traded products, though these results are not significant.

These findings are in line with the theoretical framework in Section 3, where we have argued that a reduction in tariffs on intermediate inputs would have a significant and positive effect on EPIs. However, our findings contradict Bas and Paunov (2018), who argue that access to new inputs through input trade liberalization has little impact on product growth since other complementary factors such as skilled labor and institutions are also important. Our results show that the impact of input tariff reductions is large and significant even if the variable does not interact with the quality of institutions and labor. The FE ensures that these important variables are not causing any bias in our estimations. Therefore, reducing the cost of inputs does not eliminate the pressure on firms to be more competitive, hence discouraging them from upgrading their EPIs.

5. Intermediate Input Tariffs and Correlation with Export Value

Here, we carry out a sector-level analysis by estimating the trends in intermediate input tariffs at the sector level for Pakistan, India, Sri Lanka, Turkey and Bangladesh. We then look at the direct impact of intermediate input tariffs on export value for Pakistan and its comparable counterparts for various sectors. We identify important sectors for Pakistan, where, if the intermediate tariffs are reduced, exports will grow.

5.1. Data and Methodology

We begin by listing the inputs used by firms in different sectors, using the Census of Manufacturing Industries (CMI) for Punjab 2005/06. The CMI identifies the quantities and values of inputs used by firms, distinguishing between domestic and imported inputs. These inputs are based on ISIC 3.1. We convert these inputs into comparable HS codes, identifying the possible inputs used by different sectors. Next, we identify the tariff rates applicable by different countries (Pakistan, India, Bangladesh, Turkey and Sri Lanka) on these inputs, again based on the HS codes for 2000, 2007 and 2014. This data is obtained from the WTO's Tariff Analysis Online. Finally, we obtain the value of sector-level exports for each of these countries over the three years from the WITS.

5.2. Results

Table 4 lists the sector-wise average intermediate input tariff rates for Pakistan, India, Turkey, Sri Lanka and Bangladesh for different years.

Table 4: Average intermediate input tariffs for Pakistan, India, Bangladesh, Turkey and Sri Lanka

Sector	Average Tariff Rates for Intermediate Inputs																	
	Pakistan				India				Sri Lanka				Turkey				Bangladesh	
	2000	2007	2014	2000	2007	2014	2000	2007	2014	2000	2007	2014	2000	2007	2014	2000	2014	
Textile	30.02	15.44	14.75	54.84	16.05	14.46	17.95	23.08	19.14	8.1	7.41	7.35	27.78	20.03	17.83			
Articles of Wood	26.9	17.3	10.26	36.27	17.3	9.16	12.23	10.82	18.21	4.64	4.08	4.12	21.11	14.05	12.53			
Processed Food	27.91	21.03	18.88	129.5	40.93	38.85	20.11	22.21	21.89	35.35	37.94	39.62	27.23	20.8	19.01			
Articles of Rubber and Plastic	26.73	17.34	16.07	38.48	9.61	9.55	11.71	13.13	16.85	6.21	5.35	5.42	23.08	16.88	13.56			
Articles of Glass	36.6	21.33	21.25	39.1	9.78	9.77	17.39	19.57	19.27	4.39	4.2	4.22	26.09	24.46	17.63			
Chemicals	14.78	7.19	6.93	39.71	7.26	7.05	5.51	3.66	13.48	5.56	5.14	5.28	14.72	11.11	9.07			
Electrical Appliances	21.47	11.52	11.47	32.28	8.14	8.06	7.78	8.65	5.03	2.71	2.63	2.7	15.71	14.68	9.15			
Articles of Metal	22.02	11.38	11.15	32.93	8.03	7.88	8.17	8.37	16.35	2.8	2.76	2.77	15.62	14.51	8.86			
Pharmaceuticals	4.19	7.62	7.61	42.15	7.74	7.62	5.36	2.85	15.74	6	5.51	5.72	13.67	13.39	8.63			

Source: Authors' calculations.

This is in line with Figure 4, which shows the trends in intermediate input tariffs for these countries. Among all these countries in 2000, India starts with the highest tariff rates and shows a gradual decline, reaching comparable rates with those of other countries in 2014. Pakistan and Bangladesh have also reduced their input tariffs, while Sri Lanka has increased its average tariff slightly for most of these sectors. An interesting observation for Sri Lanka, in terms of the tariffs for individual inputs, is that its tariff rates are 0 for all those inputs in which it does not have a comparative advantage, and are high for products in which it does have a comparative advantage.⁵ The tariff rates for Turkey remain more or less the same on average, with a slight difference between these 14 years.

Next, we look at the direct relationship of these intermediate input tariffs with the export values for these countries at the sector level in Table 5. The coefficients estimated in the table are obtained through OLS. Although we may not infer causation from these coefficients, they still give us some insight into how heavily the intermediate input tariffs affect export value at the sector level.

Table 5: Impact of intermediate input tariffs on export value, by sector

Sector	Pakistan	India	Sri Lanka	Turkey	Bangladesh
Textile	-0.0173*** (0.0028)	-0.0056*** (0.0020)	-0.000 (0.0050)	-0.0049 (0.0137)	-0.0612*** (0.0119)
Articles of wood	-0.0898* (0.0345)	-0.0457** (0.0101)	0.1141 0.0528	-0.1733 (0.5998)	-0.0925* (0.0419)
Processed food	-0.0113 (0.00690)	-0.0107*** (0.0013)	0.0032 (0.0198)	-0.0045 (0.0039)	-0.0597*** (0.0213)
Articles of rubber and plastic	-0.0598*** (0.0187)	-0.0423*** (0.0092)	0.1468** (0.0446)	-0.0858 (0.2095)	-0.2212*** (0.0229)
Articles of glass	-0.0598*** (0.0187)	-0.0423*** (0.0092)	0.1468** (0.0446)	-0.0858 (0.2095)	-0.2212*** (0.0229)
Chemicals	-0.0366*** (0.0128)	-0.0368*** (0.0064)	0.0637** (0.0346)	0.0060 (0.0677)	-0.0034 (0.0207)
Electrical appliances	-0.0498*** (0.0146)	-0.0488*** (0.0079)	0.0452 (0.0249)	0.0204 (0.2145)	-0.0283 (0.0351)
Articles of metal	-0.0571*** (0.0136)	-0.0445*** (0.0029)	-0.0047 (0.0091)	-0.0014 (0.0715)	-0.0510** (0.0234)
Pharmaceuticals	-0.0558 (0.0306)	-0.0390*** (0.0105)	0.0238 (0.0269)	-0.0036 (0.0993)	0.0022 (0.1104)

Source: Authors' calculations.

Among the sampled countries, exports for all these sectors are significantly affected by input tariffs in all sectors for India. The negative sign shows that a higher input tariff in these sectors leads to a decline in that export. Pakistan shows a similar result, where a high tariff on inputs in most sectors has a negative impact on the

⁵ This means that Sri Lanka is importing inputs that are of better quality in the world market while protecting those inputs it can produce itself.

export value. In Pakistan, textiles, wood, rubber and plastic, glass, chemicals, electrical appliances and metal are significantly affected by intermediate input tariffs.

This negative relationship can be seen for most sectors in Bangladesh as well. For Turkey, intermediate input tariffs affect exports negatively for most sectors, but are not significant. The case of Sri Lanka is different: higher tariffs help boost exports in rubber and plastic, glass and chemicals, but are not significant for the other sectors.

6. Conclusion and Recommendations

There is a significant need for Pakistan to boost its exports and climb up the export ladder, given its worsening trade deficit. While there are numerous channels – institutions, better infrastructure, credit constraints etc. – through which export performance can be improved, we argue that one potential channel is a reduction in intermediate input tariff rates. Lowering tariffs on these intermediate inputs could help local manufacturers in two ways: first, by providing cheaper intermediate inputs and, second, by making new, better-quality intermediate inputs available to Pakistani exporters.

We show that there are substantial gains for countries in terms of better export performance by lowering the tariffs on imported intermediate inputs. Using an IV approach, we measure the impact of the value of intermediate inputs used by Pakistan, India, Turkey, Sri Lanka and Bangladesh for the years 2003–11 on various EPIs. With the intermediate input tariffs applied by these countries as the instrument, we find that imported intermediate inputs have a positive and significant effect on all EPIs except for the number of trading partners.

Having established that there are gains to be had from intermediate input tariff reductions, we narrow down our analysis by identifying which sectors may experience the most significant gains due to lower intermediate input tariffs. We do this by looking at the direct relationship between the export value and average intermediate inputs. For Pakistan, textiles, wood, rubber and plastic, glass, chemicals, electrical appliances and metal could be significantly affected by intermediate input tariff reductions. This pattern is similar to that of India.

The counter-argument is that reductions in tariff rates may discourage local manufacturers of these intermediate inputs due to greater competition overseas. Therefore, we recommend that the government focus on reducing intermediate input tariffs in those sectors identified above. We propose a careful analysis of intermediate inputs and tariff reductions even within these sectors and suggest taking a more strategic approach to reducing tariffs on a selected range of intermediate inputs, as identified by Arif and Jamil (2018), in the case of the textiles sector. The tariff reductions were proposed based on a careful assessment of the quality of intermediate inputs produced locally relative to the international market

in that sector. We recommend importing only high-quality intermediate inputs that are not produced in the domestic market.⁶ This strategic reduction in tariffs will not only benefit local manufacturers of the final good by providing them with high-quality intermediate inputs, but it will also protect local input manufacturers along with minimizing the revenue loss for the government due to this policy.

Climbing the export ladder means making these inputs available to Pakistani manufacturers. After identifying these inputs, the government could further narrow down the list of intermediate inputs for which tariffs should be lowered by comparing the unit value of the imported intermediate inputs with that already available to Pakistani manufacturers.⁷ This will help the government identify the product categories for which tariffs should be reduced within each sector.

⁶ As an example, high quality denim is already produced in Pakistan, this methodology recommends that intermediate input tariff should not be decreased on this quality of the intermediate input. Likewise, the methodology in this paper is extended to intermediate inputs used in these sectors at HS-10 digit.

⁷ This is the average of the unit value of export and unit value of import for a specific product.

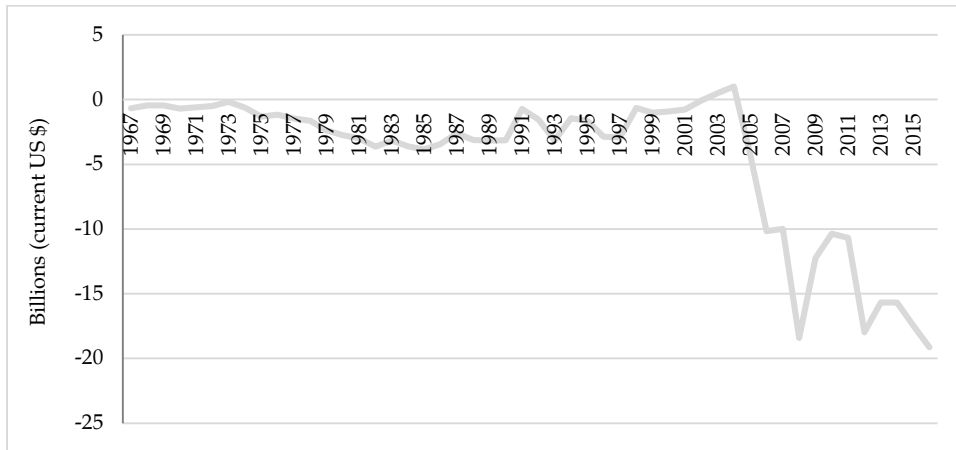
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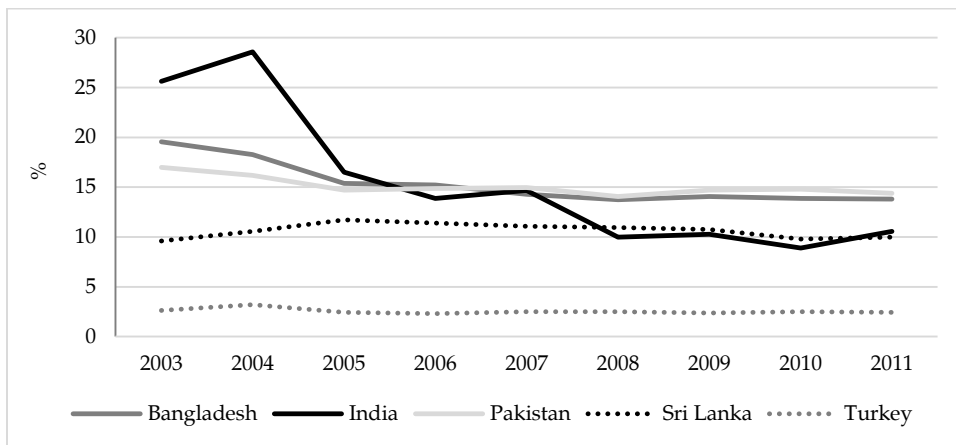
Appendix

Figure A1: Pakistan’s trade deficit of goods and services in current US\$, 1967–2016



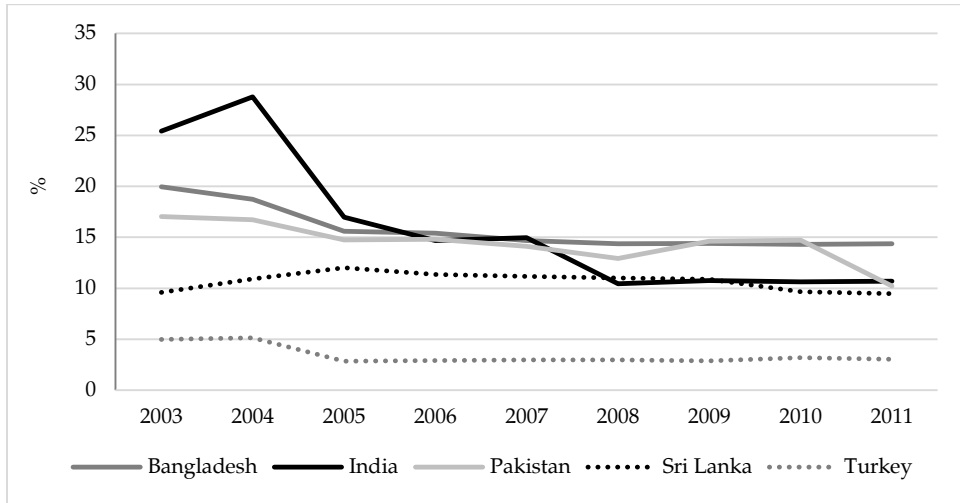
Source: The World Bank.

Figure A2: Average tariff rate applied to all imported goods by Pakistan, India, Sri Lanka, Turkey and Bangladesh, 2003–11



Source: World Integrated Trade Solution.

Figure A3: Average tariff rate applied to imports of intermediate goods from China, 2003–11



Source: World Integrated Trade Solution.

6

What's So Special in Special Economic Zones (SEZs) under the China Pakistan Economic Corridor (CPEC)?

Muhammad Muzammil Zia* and Cui Yong**

Abstract

Special economic zones (SEZs) around the world are normally established with the aim of achieving various policy objectives: to attract foreign direct investment (FDI), to generate employment, and to be experimental with economic reforms through zone-exclusive trade policies. Pakistan has already signed Memorandums of Understanding (MOUs) for an upward of nine SEZs throughout the country in collaboration with China under the China-Pakistan Economic Corridor (CPEC) program. The purpose of this study is an assessment of the socio-economic impacts of various SEZs in diverse regions with a comparative analysis. We focus on those SEZs in particular that are similar to Pakistan in regard to the economic profiles of the respective states. Further, we in particular observe the literature on the FDI phenomenon in this perspective to assess the extent to which the SEZs have helped improve the socio-economic outcomes in the vicinity of the local communities surrounding such zones. Hence, these brought about broad-based economic development there. In the present study, SEZs that have proved to be poor with regard to export volume, amelioration of the domestic labor force's technical skills and overall inefficiency (such as those in Africa) are stacked up against those that have performed with high levels of productivity and viable economic gains such as those found within China, Bangladesh, and the ASEAN member states. This was in order to decipher the common features of SEZs that enable them to be more effective in the long-term. Our analysis indicates that overall, African SEZs have not led to significant job creation or poverty reduction because of failures in the implementation of proper regulations. However, Asian SEZs on the other hand, have shown many socio-economic benefits. We thus conclude that we can co-opt African experiences with SEZs in order to improve the Asian framework for the same zone-type setup as Pakistan. This will certainly help us in attaining maximum socioeconomic benefits from its own CPEC-oriented SEZs and hence, allow for the development of a basic framework that Pakistani SEZs should adhere to in order to avoid the meagre gains seen in areas such as Africa.

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1. Introduction

A mutually acceptable mechanism among researchers to accumulate and sustain the growth of GDP and to revolutionize the status of developing towards the developed, is to expand exports by encouraging industrialization. This is in order to facilitate FDI for export oriented production. Taking this into account, numerous government policies have concentrated adequately on encouraging exports as a tool to improve the productivity and advancement of the overall economy. Of these policies, the most widely practiced strategy in a number of countries, is to establish special economic zone (SEZ). According to the Ministry of Commerce, SEZ is defined as "A specifically duty free enclave which shall be deemed to be foreign territory for the purpose of trade operations and duties and tariffs". The SEZ is further categorized into several specific zone types, which include Free Ports, Industrial Estates (IE), Export Processing Zones (EPZ) and Free Trade Zones (FTZ).

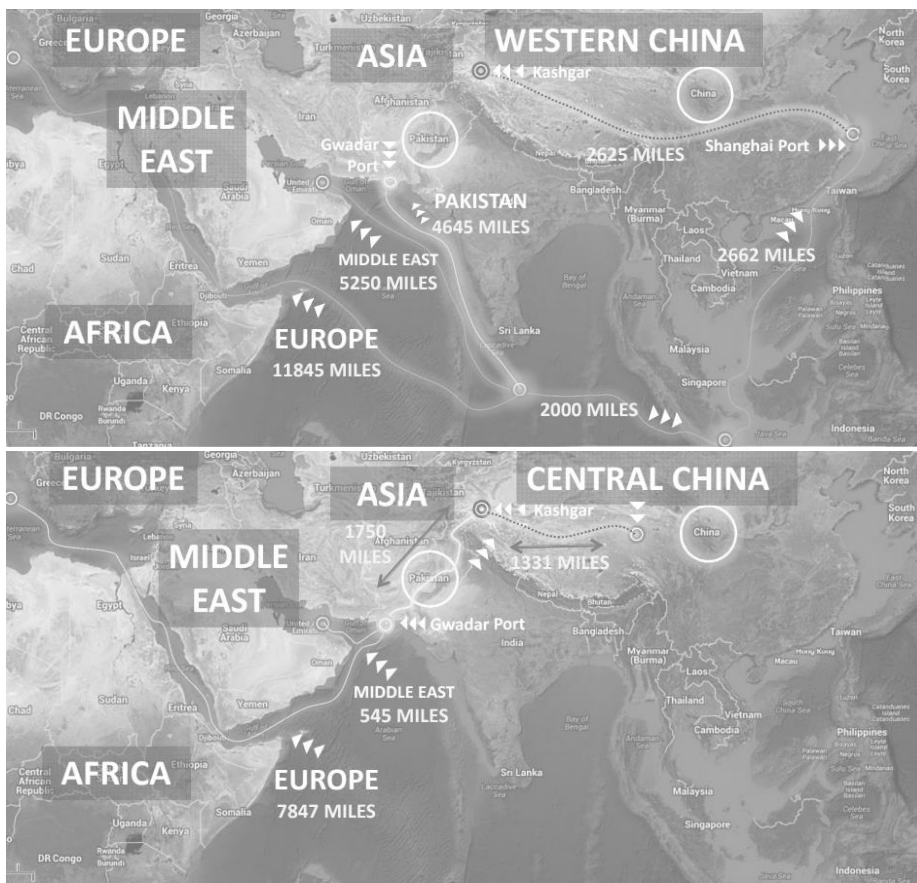
As discussed earlier, the rendering of Special Economic Zones (SEZs) in many developing states is meant to encourage intensive foreign direct investment (FDI) in particular pockets and clusters of state industries. This in turn stimulates the local government to subsidize various facilities such as assuring the provision of uninterrupted electricity, favorable trade and tariff legislation which are only applicable to those goods tendered and produced within SEZs. Similarly, indigenously-provided labor and viable transportation networks for the exports of production are some of the most attractive tasks and benefits of SEZs.¹ Such zones are meant to complement existing commercial activity within a particular region to increase diversification, render the possibility of value-added commodities, boost employment, and encourage improvements in labor standards by keeping it in line with internationally-set standards as per the origin of FDI meant for the SEZ. Pakistan has already signed Memoranda of Understanding (MOUs) for more than nine SEZs throughout the country's different provinces in collaboration with China and under the China-Pakistan Economic Corridor (CPEC) program. This further falls under One Belt One Road initiative (OBOR).² The flagship component of the CPEC funding is the Gwadar port project, which drastically aims to cut the shipping time for Chinese commodities by bypassing the Strait of Malacca, which in turn saves almost 10,000 miles worth of ocean routes (Figure 1) for Chinese shipment tankers. Therefore, the Gwadar port project proves to be one of the most crucial vicinities for the future of Pakistan as compared to any other port with respect to energy, transport,

¹Pakdeenurit, P., Suthikarnnarunai, N., & Rattanawong, W. (2014). Special Economic Zone: Facts, Roles, and Opportunities of Investment. International Multi Conference of Engineers and Computer Scientists, 2, 1047-1051. Retrieved from http://www.iaeng.org/publication/IMECS2014/IMECS2014_pp1047-1051.pdf

²Ali, M. M., & Faisal, F. (n.d.). CPEC, SEZ (Special Economic Zones) and Entrepreneurial Development Prospects in Pakistan. *Pakistan Institute of Development Economics*, 1-17. Retrieved from http://pide.org.pk/psde/pdf/AGM32/papers/CPEC_SEZ.pdf

and security. However, there exist some profound examples which highlights the core issues potentially prevailing within the time period of installation and functioning of SEZs, especially, in developing countries. These zones do create certain long-term impacts such as environmental pollution, exploiting the profitability and creditability of other operating firms outside these zones, producing negative externalities, etc. Keeping in view these challenges, adequate steps which involve human rights and Corporate Social Responsibilities (CSRs) should be integrated in every stage of establishing SEZs.

Figure 1: Comparison of Shipping Route Length for Chinese Commodities with and without Gwadar Deep-Sea Port



Source: Siddiqui, A. (2017).

In a nutshell, SEZs are a subset within the geographical boundaries of the state needed to expand exports, develop infrastructure, increase employment and minimize the distortions usually faced by the administration, along with low or

no tax. With these foundations, this particular study aims to assess the exact potential of Pakistani SEZs. A detailed insight is required especially encompassing the challenges faced by the SEZs operating in many parts of the developing world, namely Africa and Southeast Asia, so as to avoid such incidences in establishing SEZs in Pakistan.

2. Literature Review and Theoretical Justification

Geographically encircled fenced-in territories, popularly referred to as SEZs, have flourished all over the world. Areas free from the regulations and policies applied elsewhere have also been termed as the 'foreign territories'. Almost every aspect of the debate on SEZs has shared the impression of 'success'. The present study attempts to analyse the potential benefits which are attainable for Pakistan. However, it is only possible after considering certain restrictions and cautions. There exist a number of cases where such projects and construction have led to land being wasted and have brought the common man towards hardship and starvation. On the other hand, by taking into account the reasons for breakdowns and by adopting a sense of responsibility through taking certain steps, can yield innumerable gains.

Pros and Cons of SEZs

Analyzing the functioning of SEZs in India, Gopalakrishnan (2007), indicated certain complications and negative impacts of SEZs in that country by analyzing the history of SEZs in China. The study highlighted the negative effect of SEZs by emphasizing the insulation of the rest of the areas from these zones and focusing on the SEZs in particular. This led to a threat and shutdown of local industries, hence, hampering exports and foreign reserves. Secondly, the problem of speculation and land loss phenomenon was argued by Cartier (2002) and, Hang and Yong (1996), who provided evidence on the grants and acquisition of hectares of land, developing only half of it, while wasting the other half. O'Brien and Leichenko (2000), argued about a prominent adverse effect of such economic zones, referred to as 'climate change' in particular, which indicates the advantages or opportunities for certain regions or social groups, while leaving the others to absorb the adverse effects or the negative externalities produced by SEZs. Similarly, Marrakech (2009), Farole and Akinici (2011), added a very crucial point that, in the past, SEZs operating and established by the public sectors failed to meet the objectives of SEZs. Consequently, several countries revised the regulations in allowing the government to be involved in such projects. Currently, 62% of the SEZs are either solely managed by the private sectors or are jointly managed by the governments and the private sector.

A list for the benefits and incentives of SEZs can be provided that have been analyzed, predicted and practically implemented in several studies. As SEZs are

established to attract FDI, the primary benefit is in terms of the investment from foreign countries which enhances the GDP growth of the country, thereby generating employment, expanding infrastructure and transforming the traditional economy into technological development (as documented by Johannesburg et al. (2012), Monga (2011), Pakdeenurit and Suthikarnnarunai (2014), and The World Bank (2012).

Orthodox and Heterodox Analysis

The orthodox approach focuses on the static economic outcomes of SEZs. This static economic welfare comprises the generation of direct employment, FDI inflows, economic value-addition and foreign exchange earnings. Hamada (1947) is considered as one of the most pioneering studies conducted on SEZs in this regard. The study analyzed the direct short-term effects of SEZs in particular localities. This approach is also considered as the second best option after full trade liberalization and full-fledged market reforms. The studies encompassing this phenomenon includes, Aggarwal (2010), Baissac (2011), Farole and Akinici (2011) etc.

The heterodox approach, on the other hand, focuses on the dynamic effects. This became a prominent approach in the late 1980s. In particular, it is based on endogenous growth theory which intensifies sustainable growth of the overall economy, by including the development in human resources, technology, and institutional reforms. These studies include Milberg and Amengual (2008), Agarwal (2010), and Baissac (2011).

Keeping in view the above, the establishment and operation of SEZs should be subject to certain restricted policies in order to attain maximum potential for the prosperity and development of Pakistan. In the next section, we will critically analyze the benefits and incentives as well as the issues taking into account the static and dynamic economic outcomes experienced by the SEZs operating in countries categorized as the same development level as Pakistan.

3. Methodology

In assessing the performance of SEZs, we define two types of outcomes under the broad concept of socioeconomics

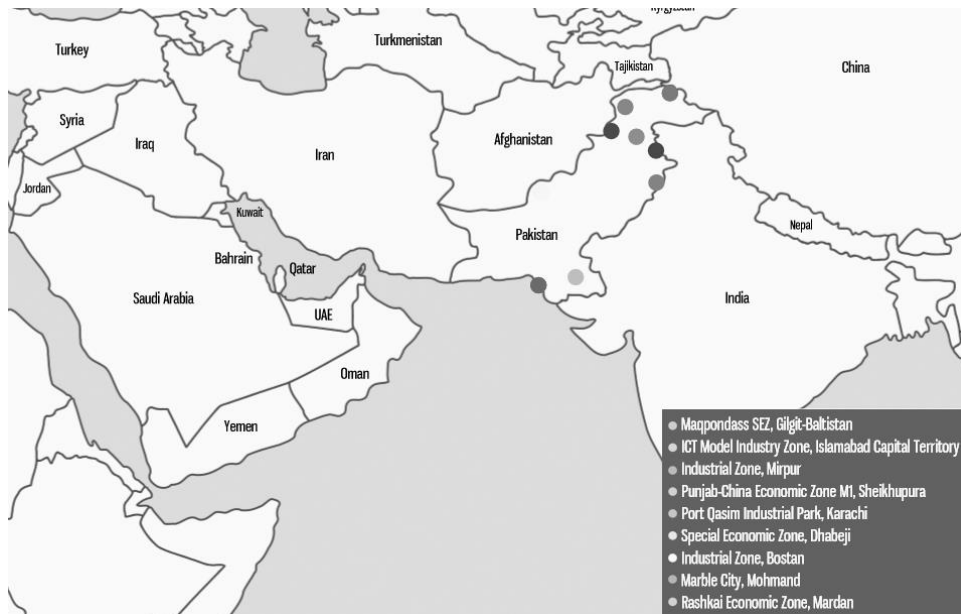
- a) Static economic outcomes of SEZs. Encompassing the direct effect of these projects which includes the volume of investment, exports and the employment generated.
- b) Dynamic economic outcomes of SEZs. This includes a relatively long-term impact of investment in terms of technological improvements, human resource development and overall surge in the living standards of that particular vicinity.

In our methodology we will be focusing on analyzing the above stated outcomes through the assessment of SEZs by comparison. We have chosen the case of SEZs that is similar to the development level of Pakistan. Then we will analyze and assess the extent to which the SEZs have helped to improve socio economic outcomes in the relevant localities and thus brought about broad-based economic development there. In this regard, we have used secondary data acquired from SEZs that have already been set up in different regions to analyze the socio economic conditions. With the help of this data we will draw important implications for Pakistan. Low to middle-income countries seeking to implement a development model have invariably turned towards the experiences faced by Asian countries in executing similar models. The countries representing Asia's SEZs include Bangladesh, Cambodia, the Philippines, and India. African SEZs have also been analyzed for the socio economic conditions prevailing there. This paper aims to identify and examine how the SEZs can contribute with maximum potential in terms of job creation and thereby sustainable GDP growth by improving the volume of exports and foreign direct investment in case of Pakistan.

4. Pakistani Special Economic Zones (SEZs)

Around nine total SEZs have been approved of thus far under the auspices of the CPEC infrastructural and energy corridor. These SEZs will utilize specifically designed favourable tariff and tax legislations which will allow an expansion of Pakistan's output of manufacturing, alongside the CPEC motorways which aid in delivering the final products from this platform. These varied zones as proposed in conjunction between the Pakistani and Chinese federal governments, are located in Nowshera (KPK), Dhabeji (Sindh), Bostan (Balochistan), Faisalabad (Punjab) Islamabad (Federal), Port Qasim near Karachi (Federal), Mirpur (AJK), Mohmand (FATA) and Monqbondass (Gilgit/Baltistan). The exact locations and industrial cluster niches can be seen in Figure 2.

Figure 2: Map of CPEC-Oriented SEZs in Pakistan



Source: Zia, M. (2017).

Pakistan has experienced the implementation of SEZs in the past, but none at the scale and metrics that CPEC-oriented ones are set to deliver. The Special Economic Zones Act was passed by Pakistan’s Majlis-e-Shoora (Parliament) in September of 2012, allowing for various incentives with regard to the taxation of the import of machinery,, in order to establish a framework for the combined public-private ownership of ventures within the private sector itself.³ Such ventures may be conducted on either a state-to-state basis (i.e Pakistan to China) or under the mechanism of the provinces of Pakistan negotiating with China .. Various clusters are to be addressed by the Pakistani SEZs including, but not limited to, information technology, mining processing, and value-added manufacturing. The comparative analysis performed in this paper not only aims to decipher the potential implications of SEZs in Pakistan, rather it provides recommendations in safeguarding against the inefficiencies and low output of such ventures.

³Federal Government of Pakistan. (2012). Special Economic Zones Act. *International Labor Organization* -, PAK-2012-L-92177. Retrieved from http://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=92177

5. Comparative Analysis of SEZs in Asia and Africa

Cambodia SEZs

SEZs have attracted significant levels of foreign investment to Cambodia that would not have been present otherwise. Currently, 9 SEZs are operating, while 20 more are authorized to begin operation. These projects have created around 68,000 total jobs raising the economic welfare of domestic labor.⁴ However, due to the small size of SEZs, it employs only 1% of total and 3.7% of the manufacturing sector employment of Cambodia. One aspect which is pertinent to note here is that the garment industry dominates the manufacturing sector of Cambodia employing 600,000 laborers. **Table 1** reveals the massive uptick in general employment generated by Cambodian SEZs.

Table 1: Total Employment Statistics in Cambodian SEZs, 2014

Location	Name of SEZ	Year Established	Number of Firms	Total Employment	Employees per Firm (avg)
Phnom Penh	Phnom Penh	2008	50	17000	340
Bavet	Manhattan	2006	26	28051	1079
	Tai Seng	2007	17	7968	469
Sihanoukville	Dragon King	2013	2	280	140
	Sihanoukville 1	2009	2	424	212
	Sihanoukville 2	2008	40	8967	224
	Sihanoukville Port	2012	2	416	208
Poi Pet	Poi Pet O'Neang	2011	2	830	415
Koh Kong	Neang Koh Koh	2005	4	3953	988
	Kong				
Total	All Combination SEZs	2005	145	67889	468

Source: Warr, P., & Menon, J. (2016).

The main objective of SEZs was to diversify in terms of manufacturing products. Therefore, the SEZs are more diversified, producing electronic products and home appliances. Such kinds of production employs technical labor which help to improve and to develop human resources. But unfortunately, the top brass is hired from abroad to operate the industry, while low skilled laborers are employed from within Cambodia as non-technical operators. It has also been examined that the firms operating in the SEZs invest less in the training of non-technical labor, as 30per cent of new labor are those who never attended schools and hence, require long-term adjustment programs.

Secondly, in terms of the expansion of exports, the net effect in the case of Cambodia has been neutral. These industries tend to purchase intermediate goods from abroad and do not produce for the domestic markets, which somehow

⁴Warr, P., & Menon, J. (2016). Cambodia's Special Economic Zones. *Journal of Southeast Asian Economies (JSEAE)*,33(3), 273-290.

balances the equation. The only benefit of SEZs in Cambodia is in terms of local taxes if applied, employment but with low-skilled operators, purchase of land, electricity, water, etc. A salient feature of the Cambodian SEZs is that the government has left the establishment and management of the zones to private sector developers, avoiding large and sometimes wasteful public sector set up costs associated with the establishment SEZs in many other countries.⁵

The overall circumstances prevailing in Cambodian SEZs are somehow satisfactory but the ambition to achieve maximum potential from these firms is to improve the literacy rate of new employees to motivate the firms in the SEZs to invest in further training of the laborers. Secondly, the domestic industries should focus on the production of intermediate goods to attract SEZs towards them. In this manner, the exports of the country can increase and hence both static and dynamic economic outcomes can be attained.

Bangladesh SEZs

The case of Bangladesh highlights the importance of locating the program of the zone appropriately in producing those products in which it has a comparative advantage. Although the SEZ program in Bangladesh primarily focused on attracting high-technology investment, it only took off when concerted efforts were made to focus on the garments sector, in which it had a relative comparative advantage. Table 2 displays the advantages that the apparel and garment industries enjoy in Bangladesh with regard to financing of other industries. The percentage share of FDI flow in the EPZs of Bangladesh has been highly recorded at 81%. The incubation period for SEZs operating in Bangladesh before they began to build momentum spanned 5 to 10 years. Likewise, the case for even the most successful SEZs like those operating in China and Malaysia, which were initially slow and took at least 5 to 10 years to operate to a maximum. Therefore, in Bangladesh, the SEZ program began in the early 1980s, but it managed to attract investment on a large scale in the early 1990s.⁶ From a policy perspective, this analysis provides the governments the advice to be patient and to provide consistent support to zone programs over long periods of time. It seems to be an immense challenge in countries with shorter political cycles. Another noteworthy revolutionary transition of the Bangladesh economy has been observed. As the entire national economy is seeking to transform itself into EPZs, consequently, the

⁵Warr, P. G., & Menon, J. (2015). Cambodia's Special Economic Zones. *SSRN Electronic Journal - Asian Development Bank*. Retrieved from <https://www.adb.org/sites/default/files/publication/175236/ewp-459.pdf>

⁶Moberg, L. (2013). The Political Economy of Special Economic Zones. *SSRN Electronic Journal - George Mason University*. Retrieved from http://www.lottamoberg.com/uploads/2/9/2/5/29253679/lotta_moberg_the_political_economy_of_special_economic_zones.pdf

relevance of EPZs in Bangladesh will gradually diminish, as far as the perspective of the trade policy of the country is concerned.

Table 2: Enterprises by Industry and Types of Goods Produced, Ranked in Terms of Investment, Employment, Exports, Imports, and Balance of Trade - Chittagong EPZ, January 1997

Criteria	Rank				
	First	Second	Third	Fourth	Fifth
Investment	Vehicular components	Textile manufacturing towels, grey fabrics	Wearing apparel	Sports bags and sportswear	Textiles: knitwear, knitted fabric
Employment	Wearing apparel	Sports bags and sportswear	Textiles: knitwear, knitted fabric	Textile manufacturing towels, grey fabrics	Vehicular components
Export	Wearing apparel	Sports bags and sportswear	Textiles: knitwear, knitted fabric	Vehicular components	Textile manufacturing towels, grey fabrics
Import	Wearing apparel	Textiles: knitwear, knitted fabric	Vehicular components	Sports bags and sportswear	Textile manufacturing towels, grey fabrics
Trade Balance	Sports bags and sportswear	Textiles: knitwear, knitted fabric	Wearing apparel	Vehicular components	Textiles

Source: Bhatiddhafyd, D. (1998).

Millions of workers enter the economy annually. The contribution of the EPZs to employment generation is crucial. As of 2009, about 220,000 jobs had been created in the EPZs.⁷ More than 99% of the total number of laborers is from the local community providing direct jobs to the workers of Bangladesh. The growth rate of employment is annually increasing impressively by almost 32%. There are three types of EPZs prevailing in Bangladesh, first, the industries fully owned by foreign, second, those owned solely by domestic individuals and third comprises joint ventures between local and foreign individuals. 86% of the workers are employed in fully foreign owned industries while 9% in domestic industries and only 8% in joint ventures which clearly presents the contribution of foreign based industries in the labor market of Bangladesh.

Further, the contribution of EPZs in the expansion of exports has been significant. The exports of the country have been double on average against the imports, conclusively strengthening the overall performance of the economy. In South Asia, zones in Bangladesh have been contributing 75% of the national exports.

⁷Bhatiddhafyd, D. (1998). Export processing zones in Bangladesh: Economic impact and social issues. *International Labor Office - Geneva*. Retrieved from http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---multi/documents/publication/wcms_126103.pdf

The Philippines SEZs

The Philippine Economic Zone Authority (PEZA) was created by the Filipino government under the Special Economic Zone Act 1995, which provided a great opportunity for foreign investors to concentrate on investing in garments, shoes and toys.⁸ As of April 2007, 336 SEZs have been documented across the Philippines. As the main task of the SEZs is to attract as much foreign investment as possible, more than half the total FDI inflows of Philippines are constituted by the PEZA. The highest peak of the FDI inflows has been recorded in 2012 and this documented 6.9 US\$ Billion out of which 5 US\$ Billion were specified for the SEZs.

Massive inflows of FDI towards labor-intensive activities have given a boost to the employment rate of Philippines. Over 3 million jobs have been created under these projects which certainly enhanced the living standards of a million more. The most successful region which led to such extensive investments along with job creation is Region 4, located in the south of Metro Manila. It comprised 69 of 200 SEZs across the country, employing 2 million of jobs from 3 million of all the SEZs combined. On the other hand, the unemployment rate at the same region up surged drastically from 8% to 13% within a time span of only 10 years. An increase in the migrants has been the main factor for this incidence. Therefore, better planning with deep insights should be under consideration in planning and specifying the areas for SEZs.

The government of the Philippines was committed to diversify manufacturing products from the traditional minerals and agricultural commodities. In this association, TI committed itself to build electronic plants which attracted other prominent firms to focus on the true potential of the Philippines.⁹ These firms set up co-operative training programmes to upgrade the semi-skilled labor from the above-average educational resources in the area. Altogether, the companies in these two SEZs have generated sufficient jobs, and exported almost \$4 billion worth of goods in 2010.¹⁰

It is pertinent to note that both these zones lie within heavily populated urban areas, with much of Filipino SEZ exports coming from dense urban areas as shown in Table 3.

⁸Remedio, E. (1996). Export processing zones in the Philippines. *International Labor Office - Geneva*, 1-43. Retrieved from http://ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---multi/documents/publication/wcms_126169.pdf

⁹Carter, C., & Harding, A. (Eds.). (2010). *Special economic zones in Asian market economies*. Routledge.

¹⁰Makabenta, M. P. (2002). FDI Location and Special Economic Zones in the Philippines. *Review of Urban & Regional Development Studies*, 14(1), 59-77. Retrieved from <http://onlinelibrary.wiley.com/doi/10.1111/1467-940X.00048/pdf>

Table 3: Philippine Export Shares by SEZ Region: 1990-1998* (per cent)

Region/Port	1990	1991	1992	1993	1994	1995	1996	1997	1998
Metro Manila	61.12	65.11	68.13	66.04	68.07	85.76	81.09	48.66	71.16
NE Luzon	2.59	1.84	3.36	4.56	5.15	0.27	0.29	6.07	2.24
NW Luzon	0.01	0	0	0	0	0.01	0.01	0.01	0
C. Luzon	3.73	3.98	2.91	2.37	2.57	4.58	5.78	6.14	3.01
S. Luzon	2.23	1.95	2.35	4.13	2.50	1.15	1.61	23.66	12.32
Bicol	0.28	0.78	0.53	0.39	0.29	0.17	0.12	0.2	0.29
W. Visayas	2.12	1.57	0.87	0.95	0.68	0.01	0.01	0.33	0.35
C. Visayas	8.69	8.73	7.83	8.90	8.62	7.29	7.56	7.38	5.14
E. Visayas	5.27	4.78	3.42	3.34	2.98	0.01	0	1.87	1.21
W. Mindanao	1.61	1.37	1.03	1.09	1.15	0.03	0.03	0.74	0.29
N. Mindanao	4.43	3.30	3.26	2.79	2.70	0.62	0.48	1.56	1.09
S. Mindanao	6.07	5.35	3.12	2.70	2.62	0.11	0.08	2.8	2.27
C. Mindanao	1.87	1.24	3.19	2.74	2.64	0	2.94	0.59	0.64

Source: Makabenta, M. P. (2002).

India SEZs

Under the SEZ Act of 2005, India officially granted permits to foreign investors to establish SEZs. The first ever Asian SEZ was deployed at Kandla in India in 1965, recording the third such zone in the world. As the project was regulated by the government itself, as a consequence the project failed to fulfil the proposed benefits. In 1998 the SEZs increased to 8 employing around 95000 workers. This figure declined significantly unless the government officially approved the SEZ bill. Currently, 70% of India's inflow of FDI is attributed to the SEZs especially those located in Maharashtra, Delhi, Karnataka, Andhra Pradesh and Tamil Nadu. The number of employees has surged to 178,000 against 95,000. Although the stacking up of these numbers against unemployed individuals is inconsequential, since an immense number of people are entering the labor force. However, in view of the situation of inaccessibility of alternate opportunities, these jobs are a bonus. Only 20% of the workers has been identified migrating from rural to urban areas, indicating the slow pace of industrialization.

The performance of India's exports has subsequently improved, as the economy has become more export oriented. Nevertheless, the exports from these specified zones constitutes only 6% of the total exports of India. More precisely, exports worth US\$ 5,097 million are contributed by those SEZs operating under the direct control of the Central Government of India. Whereas exports from the SEZs under the control of the state government and private sector constitutes US\$ 1861 million, resulting from about US\$ 7,000 million of exports.

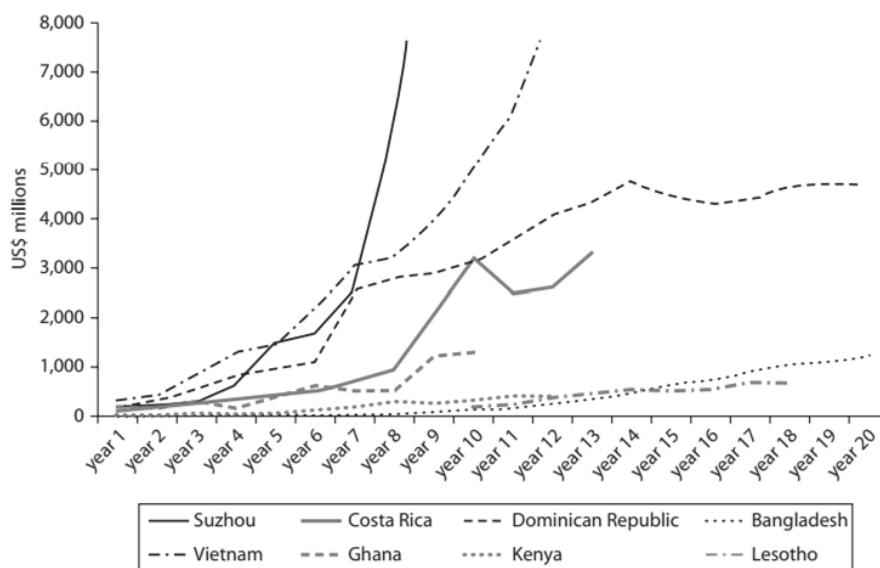
To improve the pace of economic growth and the development of India, necessary steps should be taken. First, the policy makers should make enabling administrative procedures to get the jobs done which includes the single window mechanism as practiced in Cambodia and other countries. Secondly,

strengthening the infrastructure that certainly includes roads, railways, electricity, easily accessible water, etc., as it usually attracts foreign investors.

African SEZs

Several SEZs have been employed in Africa. However, at this stage the scale of SEZs does not matter since there exists evidence indicating the sluggish growth of the GDP.¹¹ Its global counterparts such as Vietnam and Bangladesh have somehow managed to create jobs over the past decade at an exponential rate. Albeit in the case of African zone programs, the trend in the job structure and exports have been analyzed as being identical. Both of these factors rapidly grew in the first half of the decade but soon declined radically. **Figure 3** reveals the relatively poor growth trajectory of African SEZs in comparison to their global counterparts.

Figure 3: SEZ Export Growth by Years of Operation



Source: Farole, T. (2011) and Baah, A., & Jauch, H. (2009).

African zones which only depend upon the garment sector, especially in Kenya and Lesotho, the unemployment rate witnessed a drastic increase instead of a decline in these specific regions. The current situation declares a 15% decline in the employment rate of Lesotho's garment sector. Whereas, in Kenya's EPZs, the employment rate has deteriorated by 20%. In Ghana, the volume of exports rapidly increased, yet the growth of employment only documented 4.5% since

¹¹Farole, T. (2011). *Special economic zones in Africa: comparing performance and learning from global experiences*. World Bank Publications.

2004. Likewise in 2005 and 2008, where the exports were increasing by 2.5 times.¹² Table 4 also exemplifies the poor conditions in which such labor is often kept. Hence, with the exemption of some of the African regions including Mauritius, Kenya, Madagascar and Lesotho, the overall African experience with SEZs has been far less than spectacular.

Table 4: A Comparison of Chinese Employment Policy in African FDI Ventures

	Angola		Kenya		Malawi		South Africa			Zambia		
	Local Staff	Chinese Staff	Local Staff	Chinese Staff	Local Staff	Chinese Staff	Formosa	CITICACRE	FIDA	Local Staff (Temporary)	Local Staff (Permanent)	Chinese Staff
							Local Staff	Local Staff	Local Staff			
Social Security	X	✓	✓	✓	X	N.D	X	X	X	X	✓	X
Medical Care	X	✓	✓	✓	X	N.D	X	✓	X	X	X	✓
Subsidized Transport	X	X	X	✓	X	N.D	X	X	X	✓	✓	✓
Paid Leave	✓	✓	X	✓	X	N.D	X	X	X	X	X	✓
Paid Sick Leave	X		✓	✓	X	N.D	X	X	X	X	X	X
Housing Allowance	X	✓	X	✓	X	N.D	X	X	X	✓	✓	✓
Childcare Services	X	X	X	X	X	N.D	X	X	X	X	X	✓
Incentive Based Bonuses	X	X	X	✓	X	N.D	✓	X	X	X	X	X
Severance Pay	X	✓	✓	✓	X	N.D	X	X	X	X	X	X
Paid Maternity Leave	X	X	X	✓	X	N.D	X	X	X	X	✓	X
Subsidized Meals	✓	✓	X	✓	✓	N.D	X	X	X	✓	✓	✓
Employee Stock Option and Ownership Plans	X	X	X	✓	X	N.D	X	X	X	X	X	X
Interest-free Loans	X	X	X	✓	X	N.D	✓	X	X	X	X	✓
In-House Pension Scheme	X	X	X	✓	X	N.D	X	X	X	X	X	X
Education / Training Bursary	X	X	X	✓	X	N.D	X	X	X	X	X	✓

The main reason attributed for the failure of African SEZs is the mismanagement of the right time and place. The Asian SEZ's success was driven by determining the appropriate moment in an unprecedented era of globalization. Later, after the SEZs started to develop in different ways and sectors, African SEZs came into the picture. In this way investors were less attracted towards African SEZs. Secondly, the African SEZs failed to fulfil the crucial requirement, that is physical and social infrastructure. Other reasons include the uncertainty of

¹²Farole, T. (2011). Special Economic Zones in Africa. *The World Bank*, v-xxii. Retrieved from <http://www20.iadb.org/intal/catalogo/PE/2012/12126.pdf>

regularity, policy instability, weak implementation capacity etc. These observations are mainly owing to instability in the political policies.

6. Decipherable Trends in Foreign SEZs

In the following we discuss some the decipherable trends experienced by the foreign SEZs

- SEZs tend to take almost 5 to 10 years to benefit the host country in terms of large-scale stable employment and production. This examination has been commonly experienced even by the most successful SEZs in PRC and Malaysia. Therefore, patience is necessary.
- The SEZs tend to succeed only in those countries which offer to bear significant costs of international manufacturers. Foreign investors usually have alternatives which they can easily avail of by withdrawing their investments from the host country, if they do not find it in their interests. Therefore, such industries should not be considered as captives, rather the projected benefits should be considered.
- The main incentive for any foreign firm does not merely depend upon tax holidays. A foremost requirement to encourage foreign investors rests on the political and macroeconomic stability of the host country. Tax holidays, on the other hand, are costly in fiscal terms but they only matter at the margin.
- A vital cause identified for not achieving the maximum benefit from SEZs is that SEZ firms often prefer to import their inputs or intermediate goods from abroad, unless there exists a clear cost advantage in purchasing these goods locally. This indicates weak backward linkages with domestic firms because of which the net effect of exports become negligible, as the input imported and final product exported somehow balances the equation. In this case, domestic firms should strive to provide inputs with similar features and quality, quantity and prices to SEZ firms in order to enjoy the real benefits. The same is being practiced in the regions of Thailand and PRC where well developed local industries are sourcing cost effective inputs to the SEZ firms in line with their requirements.
- The early SEZs were focused primarily on reducing poverty and creating jobs in the poorest regions of a host country, often with very poor infrastructure. This hindered the establishment and operations of SEZs which enforced the governments to invest heavily in building the infrastructure necessary to make the zones viable. This definitely raised the costs significantly of the host country.

7. Conclusion

Following a comprehensive comparative analysis, it becomes apparent that African-based Chinese FDI ventures in the realm of SEZs have not yielded the same results when compared to the Asian SEZs. The latter adopted almost similar funding models and frameworks to increase the host country's manufacturing output. In the context of CPEC-oriented SEZs, nine zones have been established which should indicate the overall problems faced by the SEZs. In the context of employment growth in particular, certain measures should be adopted to ensure the protection of labor standards and proper skill development of the labor force. The results of comparative analysis clearly exhibit the fact that African SEZs have not rendered the appropriate generation of employment and have failed to ameliorate poverty, due to the ineffective frameworks employed. A lack of coherent trade policy with in addition a lack of incentives given to investors in many areas, hampered the African SEZs further. On the other hand, Asian SEZs have publicized complementary additions particularly to SEZ firms. These stimulated the prominent socio-economic indicators exemplifying viable growth in employment and increased skill levels and productivity amongst the local labor forces. Thus, it is pertinent for the federal government of Pakistan (Board of Investment), to take into account the issues experienced, the benefits enjoyed and the overall policy framework adopted by both African and Asian countries in order to better refine a system through which Pakistan's own SEZs can properly flourish. This as soon as the CPEC begins to reach its fully-operational phase. It additionally follows the set pattern established in the literature review of developing states utilizing the Asian economic framework in their own context so as to boost their economic growth in a similar fashion.

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Warr, P., & Menon, J. (2016). Cambodia's Special Economic Zones. *Journal of Southeast Asian Economies (JSEAE)*, 33(3), 273-290.

7

The China-Pakistan Economic Corridor (CPEC): Considering Contemporary Pakistan through Old-Fashioned Economics and Historical Case Studies[†]

Matthew McCartney*

Abstract

As part of the massive One Belt One Road (OBOR) project or 'New Silk Road' the governments of China and Pakistan have announced that a significant 'corridor' will be constructed in Pakistan. This paper looks in detail at the \$46 billion China-Pakistan Economic Corridor (CPEC) package of transport, energy and manufacturing projects and asks how we can analyse the impact of a transformative expansion of infrastructure. This paper draws lessons from various old-fashioned economics including Rostow, Hirschman and others and the historical case studies of transformative infrastructure expansion in the nineteenth century United States, Mexico, Germany and India to explore the conditions under which CPEC could promote sustainable long-run economic growth in Pakistan.

1. Introduction

Much has been written about the China-Pakistan Economic Corridor (CPEC)². Many of these writings are brimming with optimism such as the definition of CPEC as given by the Government of Pakistan, "a growth axis and development belt featuring complementary advantage, collaboration, mutual benefits and common prosperity." (2017:4). The promised investment in CPEC (US\$46 billion) is enormous relative to the cumulative Foreign Direct Investment (FDI) Pakistan received between 1970 and 2001 (around US\$7 billion) (Atique et al., 2004). CPEC can represent more than just a boost to economic growth. The explicit long-term commitment of investment can assist Pakistan in making a decisive break with the

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² Thanks to the scholars and students of the Institute of International Area Studies (IIAS) at Tsinghua University in Beijing where the final revisions of this paper were completed.

decades-long dependence on the fickle whims of U.S. policy (McCartney, 2011). There is need for more careful reflection. CPEC is not due for completion until 2030 and Pakistan has a dire record of implementing and benefiting from large-scale donor funded projects – the unsuccessful Social Action Program (SAP) in the 1990s being just one such example (Birdsall & Kinder, 2010).

It is not easy to make a rigorous assessment about whether CPEC is likely to be an economic success. Economics, particularly its neo-classical branch, is very well suited to examining the impact of marginal changes to the economic environment. When it comes to how a new road, bridge or railway track will impact various markets and economic outcomes, economics has a well-developed methodology for doing just this – Cost Benefit Analysis (CBA) (see Gunasekara et al (2008) for an example in the South Asian region). The academic problem stems from the promise of CPEC – that it will represent a transformational and wide-ranging change to existing economic relations. These changes cannot be captured by a methodology geared to economic shifts at the margin.

This article offers a contribution to this theoretical and empirical dilemma. Often forgotten amidst the excitement surrounding CPEC is that, while it is unprecedented for contemporary Pakistan, there are many historical examples of transformational infrastructural change – among those discussed in this paper are the massive (much greater than CPEC) expansions of the railway systems in nineteenth century India, Mexico, the U.S. and Germany. This paper tries to draw out lessons from these historical case studies to inform our understanding of contemporary Pakistan. This paper will also make the case that there is a neglected body of economic theory more suitable to engage with such a question than CBA. This theory derives from the writings of the early development economists – like Rostow, Rosenstein-Rodan and Hirschman – whose starting point was not marginal interventions and consequent shifts in equilibrium, but was that of transformational change in the entire structure of an economy. While they were writing about the shift from a rural-agricultural to an urban-industrial economy we can profitably draw from their discussion to consider the possible impact of a transformational change in infrastructure.

This paper is organised as follows: section 2 examines the economics of geography to explain why transport infrastructure is important, section 3 introduces CPEC, section 4 examines the work of the early development economists, section 5 considers problems with existing studies and proposes a possible methodology, section 6 considers the possible impact of CPEC on making markets more efficient, and section 7 on whether CPEC will more likely promote industrialization or deindustrialization in contemporary Pakistan. Section 8 concludes and draws together the lessons from this paper into a research agenda.

2. Why Transport Infrastructure is Important

The deep determinants of economic growth are those underlying factors that influence the ability of firms, households and the government to acquire land,

labor, capital and technology. These factors are utilized to increase output and to do so productively. Other deep determinants of economic growth include institutions, history, culture and openness (McCartney, 2015).

The geography hypothesis argues that the geographical endowments of a country or state are the most important influence on long term growth and productivity. There are five major mechanisms through which geography can influence economic growth. These are proximity to or ownership of natural resources (Collier, 2007), state formation (Diamond, 1999), human health (Sachs et al., 2004), agricultural productivity (Bloom et al., 1998) and - of particular importance to this paper - transport costs. The economic analysis of infrastructure (and of CPEC in particular as discussed in this paper) is ultimately justified by the argument that geography has been shown to be a deep determinant of economic growth.

There is compelling evidence that geography has had an enduring and important economic impact. A global map showing GDP per capita in 1995 shows that tropical countries (those nearer the equator) tend to be poor, and also that landlocked countries are poorer than countries with access to the coast. Of the top thirty countries ranked by 1995 PPP-adjusted GDP per capita, only two are tropical (Hong Kong and Singapore), four are sub-tropical, and 23 are located in a temperate zone. This evidence uses single countries as data points such that India and the U.S. were considered coastal, despite having large portions of their land area located far from the coast. Nordhaus (2006) overcame the crudity of this early work by using gridded data. He divided the world into almost 20,000 data points, rather than the 150 country observations previously used. This approach allowed Nordhaus to use more finely tuned geographic data (including climate, location, distance from markets or seacoasts, and soils) which are organized by geography rather than political borders. Nordhaus confirms the importance of geography and the significant positive link from temperate climates and costal location to economic outcomes.

Gallup and Sachs (1999) use data from 150 countries (with populations above 1 million) for the period 1960 to 1990 and control for the influence of economic and political institutions. They find four geographic variables (the prevalence of malaria, transport costs, the proportion of the country's population near the coastline, and endowment of hydrocarbons per capita) explain 69% of cross-country variation in per capita income. Bloom et al. (1998) examine data for 77 countries from 1965 to 1990 and find that the percentage of a country's land area in the tropics and the density of population within 100 km of the coast accounts for 73% of the income gap between Sub-Saharan Africa and East and Southeast Asia. The most important geographical variables Warner (2002) finds are tropical location, remoteness from the coast or a river, and mountainous terrain. In India the richest and fastest growing states in recent decades have tended to be coastal rather than landlocked (Kurian, 2000).

Transport costs are a product of geography and are those extra costs imposed by being a landlocked country, having population far from the coast or being far from domestic or large international markets. Transport costs are positively related to the distance of the country from core areas of the world economy and to the accessibility of the country to sea-based trade. Half of world trade takes place among countries located within a 3,000 km radius of each other (Gallup & Sachs, 1999). This is a particular problem for Sub-Saharan Africa. In 1990 the average distance of Sub-Saharan African countries from their trading partners was over 7,800 km and that Africa is also fragmented into nearly 50 countries each with an average four neighbours, many of which must be crossed to reach the coast. Coulibaly and Fontagne (2005) find that trade with the rest of the world is on average 60% lower for landlocked Sub-Saharan African countries. A specific example is the transport inefficiencies that impose significant cost on Ugandan exporters. These are most pronounced for railway connections through Kenya and the gross inefficiency at the Mombasa port. The route from Kampala to Mombasa should be one week although it is often as long as two months. This makes it difficult for exporters to book space on ships, departure times are often missed at high cost, and goods remain in port for long periods. Exporters rely on roads despite the high cost and increased risk of theft. The cost imposed on domestic producers by geography and inefficient transport was equivalent to an effective rate of protection of 48% on average in 1994 (Milner et al., 2000).

Any transport solution to the problems of geography will involve overcoming significant market failures. For a landlocked region in Pakistan (or another country), there are crucial external benefits to investment in transport infrastructure by regions or countries lying between them and the coast. Improving the railway line in the Punjab region, for example, would have little effect unless there was similar improvement to the line as it passed through Sindh or Balochistan on the way to ports in Gwadar or Karachi. Why should Sindh or Balochistan take into consideration those external benefits to investment for the Punjab region? This market failure relates to the external or spillover effects of transport infrastructure investment. There are also market failures related to the role of public investment in infrastructure creating profitable investment opportunities for the private sector. Crowding-in occurs when private sector investment is conditional or contingent on public investment. This is for various reasons, including the long-gestation of investments such as power-supply, the limited size of domestic capital markets, the risk of large investments without precedent in a developing country, and the fact that much of the benefit from such projects is external to the original investment. Investment in energy supply, for example, may not generate much return for the government but such investment may create profitable investment opportunities in private sector manufacturing (Hirschman, 1958). There has been some work on crowding-in of private investment in the Pakistani context. The general finding is that public investment has a positive impact on private investment (Khan, 1988; Hyder, 2001; Naqvi, 2002; Ahmed & Qayyam, 2007) though some argue the opposite (Ghani & Ud Din, 2006).

3. The China-Pakistan Economic Corridor

China and Pakistan have a long-established history of economic links. Bilateral trade and commercial ties were established in January 1963 with the signing of the first long-term trade agreement. In November 2006, China and Pakistan signed a free-trade agreement which was extended to services in 2009. China-Pakistan trade increased from a little over US\$4 billion in 2006-07 to US\$9.2 billion in 2012-13 (Sial, 2017). These trade policy agreements have recently been supplemented by a renewed emphasis on improving infrastructure. The construction of a nearly 3,000 km (1,800 mile) infrastructure link from Kashgar in Western China to the deep sea port of Gwadar in southern Pakistan was discussed during the visit to Pakistan of Chinese Premier Li Keqiang in 2013. The link became known as CPEC and includes oil and gas pipelines, railways, highways, special economic zones and fiber optic networks (Sial, 2017). CPEC is part of a huge infrastructure project that will involve more than sixty countries known as the One Belt One Road (OBOR). OBOR has become an integral part of Chinese foreign policy under President Xi Jinping (Boyce, 2017).

There are deeper historical precedents for the construction of transport linkages in Pakistan motivated in part by the geopolitical-economic interests of external powers. The British constructed a railway to the Khunjerab Pass in Gilgit-Baltistan where it crosses into China. This renewed emphasis on railways linked up the border of Afghanistan in 1926. The Chinese constructed the 1300 km Karakoram Highway in the 1960s to connect Hasan Abdal in the Punjab region to the Khunjerab Pass in Gilgit-Baltistan where it crosses into China. The renewed emphasis on CPEC dates back to policy decisions in 2010 China to develop the western parts of China to close the gap in economic development with eastern and coastal China. The CPEC project has emphasized extending infrastructure and energy projects into Pakistan to link up western China with the rest of the world (Summers, 2016).

There is clear and widespread support for CPEC in Pakistan that was sustained through the change of government in Pakistan in the 2014 national election. The military have also confirmed their enthusiastic backing. To date the main exception has come from some minor regional nationalist parties in Balochistan (Sial, 2017). There is enormous and widespread optimism about CPEC; it "will be a harbinger of economic prosperity and well-being for Pakistan, China and the neighboring states" (Hali et al., 2015). CPEC is clearly in tune with the well-established government policy of giving priority to infrastructure, especially energy. There is good evidence that the provision of infrastructure in Pakistan is poor relative to large comparator developing countries and has become a significant constraint on economic growth (Loayza & Wada, 2012). CPEC is projected to cost US\$46 billion, of which 71% is to be invested in energy, 4% in the Gwadar port, 8% in rail and 13% in road links (Boyce, 2017). The link to the port is likely to be highly significant, as in 2014-15 95% of Pakistan's foreign trade (US\$46 billion of imports and US\$23.7 billion of exports) transited through the three ports of Karachi, Qasim and Gwadar (Boyce, 2017).

4. How to Study the Economic Impact of Transformational Infrastructure

There is widespread agreement that CPEC will represent a transformational impact on Pakistan. "The CPEC is a growth axis and development belt featuring complementary advantage, collaboration, mutual benefits and common prosperity" (Government of Pakistan, 2017). While conventional neoclassical economics offers a useful framework to analyze how marginal changes will push an economy towards a new equilibrium, it is a less suitable theoretical framework for examining transformational changes. There are various old-fashioned theoretical perspectives that can be called upon to analyze how a transformational change in the provision of infrastructure will likely impact economic growth. These theories date back to the early years of development economics when scholars were seeking to better understand the nature of the transformational shift represented by an agrarian economy undergoing industrialization.

There is a long-standing body of theoretical work, from those early years of development economics that emphasized the importance of a big push (something like CPEC) to launch a poor developing county into self-sustained economic growth. Rosenstein-Rodan (1943) argued for the simultaneous planning of several complementary industries on the basis that employment and income growth in each would create a corresponding demand for the output of the other industries and lead to broad-based sustained economic growth. Rostow (1956, 1960) places what he calls the take-off into a longer-term perspective and adds a discussion of complementary social changes to the focus on the economics. Rostow (1956) writes of a "take-off into self-sustained growth" when over two or three decades the economy and society transform themselves in such way that subsequent economic growth is more or less automatic. There is more to this than just policy change as these "[i]nitial changes in method require that some group in society have the will and the authority to install new production techniques" (Rostow, 1956,). Relevant for our study of CPEC is his argument that the "beginning of take-off can usually be traced to a particular sharp stimulus. The stimulus may take the form of a political revolution which affects the balance of social power and effective values, the character of economic institutions, the distribution of income, the pattern of investment outlays and the proportion of potential innovations actually applied" (Rostow 1960,). Could the unusually wide agreement in Pakistan encompassing both political and military elites be likened to such a Rostowian political revolution?

Rostow (1960) provides us with a useful framework in which we can analyze the success (or otherwise) of CPEC. A take-off, he argues, requires three related conditions. "Firstly, a rise in the rate of productive investment from 5% or less to 10% of national income. Secondly, the development of one or more substantial manufacturing sectors, with a high rate of growth. Thirdly, the existence or quick emergence of a political, social and institutional framework which exploits the impulse to expansion in the modern sector and the potential external economy effects of the take-off and gives growth an on-going character." The relevance of this

to contemporary Pakistan at first glance may appear a little tenuous. Pakistan boosted its investment from 5 to 10% of GDP and beyond in the early 1950s. Rapid manufacturing growth that created a modern industrial sector (textiles) can be dated back to the 1960s. The emergence of a pro-growth institutional framework has often been doubted, but it is nevertheless true that Pakistan has experienced an average of 5% GDP growth p.a. and, according to World Bank data, not had a recession since at least 1960. This certainly can be considered growth with an on-going character. So perhaps here, we should modify Rostow: we should not be analyzing CPEC as potentially initiating a take-off, but as, at most, re-starting a stalled take-off.

Of more clearly obvious relevance from Rostow to Pakistan are his discussions of the wide variety of those leading sectors that can contribute to the take-off. Historically, Rostow noted this included, among others, the use of the steam-saw in the Swedish pulp industry (1890-1920), cotton textiles in Britain (1819-48), and the export of silk thread in Japan (1900-1920). Of more direct relevance to Pakistan is that Rostow argued that the 'growth and modernization of the armed forces' played a role as the leading sector in the take-off of Germany, Japan and Russia. Also of very clear relevance for CPEC is that Rostow (1960) argued that historically the introduction of the railroad has been "the most powerful single initiator of take-offs." He argues that railways were decisive in the U.S., France, Germany, Canada, Russia and played a very important part in Sweden and Japan. The railway had three major contributions to the take-off: firstly, lowering internal transport costs, bringing new regions and products to the market and widening the market for producers; secondly, generating large-scale exports; and thirdly, the expansion of the railway directly boosting the modern coal, iron and engineering industries. We must remember though, while the growth of the railway (think large scale infrastructure provision in CPEC) has generated self-sustaining economic growth, this has not always been the case. Rostow also argues that the expansion of railways was less successful in nineteenth century India and China, in Canada pre-1895, and in Argentina. This evidence indicates that there is nothing automatic about the benefits of CPEC and so we must be cautious regarding both the developmental benefits of big infrastructure projects and the widespread optimism surrounding CPEC in Pakistan and China. History offers many examples of otherwise productive investments failing to generate wider economic growth. The exemplar is the plantation or mechanized extractive sector. In such sectors the investment financing is often from overseas developed countries, the output is entirely exported, much of the managerial expertise and capital equipment is imported, the consumption goods of senior managers are imported, and much of the profit from production is remitted back to shareholders in the home country. There are so few linkages with the domestic, host economy that such sectors can be likened to "domestic investment on the part of industrialized countries" (Weisskoff & Wolff, 1977).

Such thinking is not just a relic of colonial economic history (for example, it was much applied to the jute, tea and opium plantations of nineteenth century

India). Even the software-IT sector in 1990s India bore many of these characteristics. Software was clearly a success in some ways. The IT sector in India experienced annual output growth of 30% p.a. for much of the 1990s. Total revenues of the IT services and software sector reached US\$16.5 billion and exports US\$12.2 billion in 2004-05, with the latter showing growth of 32.3% over the year. Such high rates of growth of output and exports had never been recorded by India's manufacturing sector (Balakrishnan, 2006). But during this decade the sector bore some uncanny resemblance to a nineteenth century tea plantation. Ninety% of the output of the software sector was exported. This meant that production and resultant learning by software firms was geared to the needs of the high-technology economy of Silicon Valley in the U.S., so had little link with the needs of the developing country of India. Skills acquired by software engineers were more likely to lead to international migration and brain drain than those skills being transferred to other sectors in the domestic economy. The finished software and hardware used by the industry was largely imported meaning that net exports (of this very import-intensive sector) were actually much lower than the impressive headline figures (Chakraborty & Jayachandran, 2001; Balakrishnan, 2006; Kapur, 2007). However, there is increasing agreement that these enclave-like features declined in the 2000s, when software took on more of the characteristics of a leading sector (Kite, 2013).

The lesson from this particular concern is that we need to go beyond measures of the success of CPEC itself – freight volume at Gwadar or transit volumes on the new highways, for example. The expansion of one sector can promote wider economic growth through spillovers and these need to be carefully considered in any discussion of the CPEC. The theoretical literature identifies four channels through which spillovers may boost productivity in the host economy: imitation, skills acquisition, competition and exports. Imitation occurs when firms in the rest of the economy observe and copy production methods, and managerial and organizational techniques. Skills spillovers occur when skills acquired through employment and participation in the leading sector are transferred elsewhere in the economy through the movement of labor. Competition spillovers occur when the lead sector compels other firms through competition to become more efficient and adopt new technology at an accelerated rate. Export spillovers may occur if the leading sector is able to export and so enjoy scale economies and increased exposure to global-leading technology (Gorg & Greenaway, 2004). There is a dearth of any work on spillovers and linkages from CPEC, which must be a research priority.

Theory reminds us that we should not forget politics. The intense debates among regional political leaders in Pakistan about re-routing CPEC to pass through their own political constituencies should be a timely reminder that support for CPEC is not just about its national benefits. We must not forget the local and the political considerations, as well. In their theory of white elephants, Robinson and Torvik (2005) demonstrate how infrastructure projects with

negative social value may still be built. They see such unproductive investment as a means of inefficient redistribution that can only be credibly built by certain politicians who have a vested interest in a particular group or region. For such politicians these projects may be preferred to socially-efficient projects.

Our final lesson from old-fashioned theory is that transformational infrastructure is very different from marginal changes. Marginal infrastructure changes involve incremental gains such as alleviating bottlenecks, meeting obvious and immediate needs, cutting costs for producers and reducing travel time for commuters. The benefits from such changes should be quickly and clearly evident. The impact of a transformational change in infrastructure cannot be so easily measured or even anticipated. We are no longer considering just promoting a more efficient economy, but of “calling forth and enlisting for development purposes resources and abilities that are hidden, scattered, or badly utilized.” (Hirschman, 1958). Economic growth then is not about the efficient allocation of resources, but if the “economy is to be kept moving ahead, the task of development policy is to maintain tensions, disproportions, and disequilibria” (Hirschman, 1958). In considering the success (or otherwise) of CPEC we should not expect to see only improvements but also considerable and often unexpected changes that may in turn be associated with significant adjustment costs, such as shortages of credit among firms desperate to expand, bankruptcy of firms no longer able to compete, and forced migration as workers move to growing areas.

5. Problems with Existing Studies and a Proposed Methodology

There are various existing studies of infrastructure, but they tend to be very narrow in their focus. Gulyani (2001) has studied the impact of the poor road system in India in the 1990s on the automobile firm Maruti. He found that poor roads directly raised the cost of freight, increased the cost of operations and maintenance (greater wear and tear and higher fuel consumption) and increased transit times making it longer to complete deliveries. As a result, Maruti was compelled to tie up large amounts of capital holding stocks and inventories. Gunasekara et al. (2008) examined the improvement of 350 km of roads in Sri Lanka in 1987 through the rehabilitation of two highways connecting Colombo and Kandy to the Northeast. This was not a transformative change but did lead to the number of vehicles on these roads increasing from 2000 to 8000 per day. After the renovation, firms near the highway were found to have more output, more employees, increased capital and reduced labor, more skilled employment and households living near the road experienced higher incomes.

Here, after examining old-fashioned economics, we can now turn to history which offers a wide range of case studies that bear a lot of similarity to CPEC. Recall that the route from Kashgar to Gwadar will be around 3,000 km (1,800 miles) and is scheduled to be completed over 15 years (2015 to 2030). The historical case studies have been chosen because they bear some important similarities to the

CPEC in contemporary Pakistan. The infrastructure was built in then-developing economies largely through foreign investment, much of it mediated by a foreign government (typically the UK). Infrastructure in two cases led to rapid and sustained industrialization (Germany and the U.S.) and in the other two tended to boost agriculture or have a more muted impact on industry (Mexico and Russia). This distinction allows us to draw on contrasting experiences when thinking about possible lessons for contemporary Pakistan. Finally, the railways generated new economic opportunities, but in the context of the close presence to and competition with an industrially developed economy. For the case of India and Germany the leading industrial economy was the UK. The later constructions of railways in Mexico were overshadowed by both the UK and U.S., and in Russia by Germany, the UK and France.

In India the first railway tracks were laid in 1854 and the 4,711 miles of track in 1860 had expanded to 37,029 miles by 1920 (Hurd, 1975)³. In the U.S., railways were first laid in the 1820s and during the 1850s there was a boom in construction. The 1850s saw around 22,000 miles of track being laid (Haines & Margo, 2006). German railroad began later, in the early 1840s, and there were 14,518 miles by 1860 (Fremdling, 1977). In Russia the railway system grew from nothing in 1850 to 32,000 miles by around 1900 (Metzer, 1974). In Mexico the railway network expanded from 680 miles in 1880 to 12,400 miles in 1910 (Coatsworth, 1979; Dobado & Marrero, 2005). In each of these cases, there is ample evidence to suppose these changes did not represent marginal changes but were 'transformative'. Prior to the railroad era, goods transport within India took place on roads, rivers and coastal shipping routes. Bullocks were either employed as pack bullocks (goods strapped to backs) and travelled over pasture land or cart bullocks, which pulled a cart containing goods, and travelled along improved roads. Before the railways, the overland commodity transport was dominated by Banjaras who travelled with huge herds of bullocks that sometimes numbered 10-20,000. Such a herd could move 6-8 miles per day and could only travel for a few months a year when animals could find food and water and not during the monsoon. In a year, such a herd could move an amount equivalent to that which a railroad could carry over an equal distance in a single week. In 1860, grain sold 100 miles apart between Aligarh and Bareilly (a route dominated by Banjaras) showed a three-fold price difference (McAlpin, 1974). Water transport was superior to road transport though only feasible on the Brahmaputra, Ganges and Indus river system. To travel between Ahmedabad and Calcutta, it took around 20 days downstream and two or three months upstream. Coastal shipping was perennially available along India's long coastline; ocean-going steamships were

³ Considerable debate remains about the motivation for this construction which has variously been explained by connecting cotton and rice producing regions to facilitate exports of these goods, to speed up troop movement between urban areas and to protect regions from crop failures (particularly after publication of the Famine Commission Report in 1880) (Andrabi & Kuehlwein, 2010).

fast after 1840 and could cover over 100 km per day, but could only service major ports (Donaldson, 2010). From the outset, railroads proved far superior to road, river or coastal transport. Railroads were able to travel 600 km a day and offered superior speed, predictable timetables, through all months of the year and railroad freight rates were also much cheaper (Donaldson, 2010). In a sample of 188 districts, only 14 were served by railroads by 1860 and 99 by 1880. By 1867, 19 of the 20 largest cities had a railroad (Hurd, 1975). In nineteenth century Russia, pre-railway trade was conducted by river, canal and wagon. Waterways were frozen for six months a year. Transport had high cost and served only localized markets, and the volume of market output was relatively small, with much of it consumed or retained as a famine reserve (Metzer, 1974). In Mexico, there were no cheap alternatives to railway travel and the main population centers were far from the coast. As such, coastal shipping was not a realistic alternative (Coatsworth, 1979; Dobado & Marrero, 2005).

There have been various attempts to measure the impact of these transformative changes. Fogel (1966) pioneered a method called 'social saving' to measure the incremental contribution of U.S. railroads to the U.S. economy. He defines 'social saving' as "the difference between the actual cost of shipping goods in a year and the alternative cost of shipping exactly the same goods between exactly the same points without railroads" (Fogel, 1966). He argued that even by the later nineteenth century, the extensive system of existing and potentially expandable waterways in the U.S. offered a reasonable alternative to railway transport. Despite the enormous infrastructural costs, he argued, by 1890 the social saving of railways only amounted to less than 3% of GDP. He notes, for example, that the main wheat and cotton growing regions and bulk of iron ore deposits were all located close to natural waterways. Fogel (1966) also argued that (contrary to the ideas of the 'leading sector') the growth of the railways accounted for only around 17% of the output of total iron production, less than 1% of total lumber output and 6% of total machine production.

There are predictably many criticisms of Fogel and his pioneering method. Fogel makes strong assumptions about the feasibility and likely impact on the costs of transport by shifting from the actual railways to a counter-factual, the waterways. Fogel based his estimates on the actual market prices of waterway transport in the 1890s without accounting for the possibilities of rising costs if waterways were burdened with the extra traffic then carried by railways. Fogel makes no mention of the comfort and convenience of passenger travel. This activity generated 25% of operating revenues for the railroad companies in 1890. Fogel does not account for the importance to the U.S. of massive grain exports in the nineteenth century which provided the foreign exchange necessary to import the capital goods and technology needed for industrialization. The export of grain on a large scale would have been difficult without railways. While Fogel focused on the expansion of the cultivated area of grain he paid little attention to the greater ease of regional agricultural specialization and internal trade afforded by railways (as noted later in this article). Fogel also

neglected to consider the impact of railways on risk and consumption patterns. The reduction of risk by reducing the vulnerability of previously self-sufficient regions and allowing inter-regional and international trade is difficult to quantify. The more even flow of grain throughout the year via railways allowed consumers to move away from seasonal consumption patterns and to maintain consumption levels more evenly throughout the year (David, 1969; White 1976). The root of the methodological problem is that there are so many potential changes induced by a transformational change in infrastructure that it is impossible to convincingly account for all of them or more generally that there are “deficiencies of partial analyses, which accept the existing structure of prices and production” (David, 1969).

Another potential method which avoids many of these problems is a before and after comparison. Haines and Margo (2006), for example, measure rail access in the U.S. at the county level using information derived from maps to show whether a rail line passed through county boundaries in 1850 or 1860 (or both). They then link rail access data to county level information on economic outcomes in 1850 and 1860. They use a difference-in-difference approach comparing outcomes in the treated group (counties that gained rail access in the 1850s) with a control group before and after gaining rail access using 672 counties from 14 states. While more satisfying in some ways, this method couldn't be carried out in Pakistan until well after 2030 – when CPEC has been completed and we can begin thinking about comparing before and after. The method used in this paper is to draw from historical studies and think about their likely relevance for the case of CPEC in contemporary Pakistan.

6. Markets More Efficient

While this paper has drawn on old-fashioned economics, many of the historical case studies have also utilized very conventional economics and focused on how transformative infrastructure has influenced the efficiency of markets. The implication being drawn from neo-classical economic theory is that economic growth is best promoted with freely functioning and competitive markets. Such orthodox theory predicts that where a profit opportunity exists, somebody will take it. Where prices and profits are high, commodities will be moved until prices and profits decline to an average through arbitrage. Prior to railway construction in India and elsewhere, owing to prohibitive transport costs and absent information on arbitrage opportunities across much of the world, different regions and districts were not in the same market. Hence, prices differed widely across different climactic zones and the movement of these prices was unrelated. There is widespread evidence that transformative infrastructure led to price convergence.

In India, prior to the railways, some regions were perennially short of grain or had frequent famines, while others had a relative abundance of food. In the 1860s, the prices of grains in some districts were eight to ten times higher than the prices in others. In India the railways caused transportation costs to fall by approximately

80% per mile and trade in bulk goods was made possible. By 1910 almost 3 million tons of wheat were carried by rail amounting to around 30% of the wheat crop (and also 14% of the rice crop). Historical India has an abundance of food-grain price information that was collected by the British colonial state from 1861 onwards at a disaggregated level of detail. Price data reveals a decline in the coefficient of variation between districts from the mid-nineteenth to the early twentieth century, which coincides exactly with the era of railway construction (Hurd, 1975). Between 1876 and 1910, the coefficient of variation in the average prices of rice in around 70 sub-divisions of Bengal showed a secular decline and lower seasonal price variations (Mukherjee, 1980). Donaldson (2010) used seven million observations on district-level prices, output, daily rainfall and inter-regional and international trade in India. He found that railroads reduced trade costs, the responsiveness of prices to local weather shocks, inter-regional price gaps, real income volatility, and increased trade volumes and income levels. He found the timing of connection to a railway link was clearly correlated to rising real incomes in districts (by an average of 18%). Such links though had the effect of reducing income in neighboring districts by an average of 4%. The detail of this study was striking. Among other data, Donaldson (2010) used the all-India network of 3,614 meteorological stations that recorded the amount of rainfall at each station on every day of the year to link local rainfall to local crop output and combined these data with a newly created digital map of India's railroad network in which each 20 km segment was coded with its year of opening. One problem with such studies that purport to show railways were correlated with economic success is that they were often built in areas already experiencing economic growth. Haines and Margo (2006) for example found that gaining access to railways was correlated with existing access to water transport and that more densely populated areas were more likely to gain access to railways. Controlling for such factors reduces the effects significantly but preserves the impact of railways on market efficiency. Andrabi and Kuehlwein (2010) examine the effect of railway construction on price dispersion in annual retail wheat and rice prices in over 150 Indian districts between 1860 and 1920. They have found that railways can explain only 10% of the decline in the relative price gap that we observe over these 60 years. The bulk of the effect they suggest can be accounted for by other factors such as the spread of the telegraphy and postal service which improved information flows, the construction of paved roads which improved road-based bullock transport, the greater peace and uniformity in the all-India legal system after the ending of the 1857 uprising, the spread of a single currency and the abolition of internal tolls which hindered inter-regional trade.

Elsewhere Dobado and Marrero (2005) have found that between 1885 and 1908 inter-state differences in corn prices declined in Mexico and that railways played a significant role. The speed of price convergence of those states with railroads in 1884 more than doubled those of the states without them. In Russia there was a clear decline in price differentials starting in the 1870s with the first surge in railway construction between wheat prices in Odessa and St Petersburg, as well as various

other regional markets such as Odessa-Moscow and Riga-Moscow. There was a rapid commercialization of rye, previously a subsistence product, and a rise in the share of the harvest that was marketed. About 83% of the decline in price differentials could be attributed to railways, which induced a decline in transportation costs (Metzer, 1974).

The relevance of these studies for contemporary Pakistan is limited. Even before CPEC was launched, there is evidence that markets were already efficient in Pakistan. Price data show that there was rapid convergence of prices across ten major cities of Pakistan between 2000 and 2011 (Alam & Bhatti, 2014), 35 Pakistani cities between 2001 and 2008 (Mohsin & Gilbert, 2010), and of food commodities (but less so other commodities) between 35 Pakistani cities between 2001 and 2011 (Ghauri et al., 2013). Therefore, the benefits of CPEC infrastructure are not likely to emerge from more efficient price convergence and the creation of national markets.

A key result from this work is that some regions gain and some regions lose. In India by 1914, around 18% of agricultural production by value was marketed over long or medium distances. This generated a process of greater regional specialization in the cultivation of market-oriented cash crops such as cotton, sugarcane, indigo, and poppy. Across India cultivation shifted to high yield areas and away from areas close to rivers. Cotton cultivation came to an end in low yield areas in the United Provinces (which grew a low-quality, short-staple variety) and Central, Northern and Eastern Oudh. Cotton became increasingly concentrated in the Middle Doab where yields were highest and where the plant could be sown early as part of the double cropping mix (Derbyshire, 1987). The United Provinces became the great sugar-province of the sub-continent with a 30-50% increase in its sugarcane acreage being recorded between 1860 and 1895. During the same period, sugarcane acreage fell in Western and Central India (Derbyshire, 1987). All these changes generated winners and losers. In the United Provinces there is no reason to suppose cotton farmers who lost out could have transferred production to benefit from growing sugarcane. As noted above, Donaldson (2010) has found that districts adjacent to newly constructed railways experienced income increases and those further away experiences declines in income. This is not surprising as businesses may go bankrupt or seek to re-locate in areas further away from railway lines to participate in new growth opportunities. There is the danger of polarization in response to growing inequalities of opportunity created by transformative infrastructure. This is highly relevant for the case of contemporary Pakistan which has long experienced striking regional inequalities in economic growth (Zaidi, 1992).

Recent work has emphasized that patterns of specialization have different implications for long-run economic growth. Specialization in agriculture or low-technology production may lock-in a region or country to long-run patterns of slower economic growth (Deraniyagala & Fine, 1999). In this view the very efficiency of the railway system in nineteenth century India (or, as discussed below, Mexico) locked the economy into long-run slow economic growth.

A key safety valve for regional polarization has historically been the migration of people from the poor to the fast-growing areas of the economy. If a region or state has 'poor geography', the constraint to aggregate growth can be overcome by people moving to better endowed regions/states. Hundreds of millions of people in contemporary India remain stuck in the Gangetic heartland, in some of the poorest states - Madhya Pradesh, Rajasthan, and Bihar. There is no indication of mass migration to the more rapidly growing coastal states of Gujarat or Maharashtra, for example. India has long been handicapped in this regard by relatively low levels of migration. There was little migration and wage convergence in the nineteenth century (Collins, 1999) and this pattern continued into the period between 1960 and 1990 (Cashin & Sahay, 1996). A representative sample of rural Indian households found that the likelihood of male migration actually declined between 1982 and 1999 despite growing wage inequality between states and urban-rural areas (Munshi & Rosenzweig, 2005). In India "[t]he highest level of movement are recorded within the same district. The flow of migrants across state lines is a trickle. Since 2001 there has been a slowdown in permanent or long-term migration" (World Bank, 2009). By contrast, in the more mobile U.S., over the course of a decade a quarter of the population changes its state of residence (World Bank, 2009). In China over the 1980s and 1990s perhaps 100 million people moved from inland to rapidly growing coastal China. This immobility in India has been ascribed to various reasons: the location-based welfare programs such as subsidized food and land reform, the restrictions on marriage outside the sub-caste/jati which restrict partner choice to a local pool, kinship- and caste-based insurance networks that would be undermined by migration, and the enormous linguistic, religious and caste diversity. Migration in India is also associated with constructed political constraints. The influential Shiv Sena party in Mumbai, for example, have a dedicated program to keep the city a preserve of the locally born. Pakistan, by contrast, was a country born of migration. Soon after independence, more than 50% of the populations of major urban areas - Karachi, Lahore, Hyderabad - were composed of migrants. There are no directly comparable studies with India, but evidence for Pakistan suggests migration has continued at a high level over the subsequent decades (Perveen, 1993). Tension and conflict have been prevalent, such as conflict over jobs and urban living space in Karachi during the 1990s, but this hasn't hindered long-term migration. By 2000, ethnic Sindhis were a tiny minority of the urban population of Sindh (Ahmar, 1996; Khan, 2002).

The other important lesson we can learn from this historical literature is that infrastructure, even if transformative, is not sufficient to create efficient markets and ensure the flexible allocation and re-allocation of commodities and factors of production. Estimates of the impact of railway infrastructure on price convergence ranged from 10 to 80% of the total convergence. In contemporary Pakistan there are well-documented constraints on economic growth that will not be tackled by transformative infrastructure. These include competition from other countries such as Vietnam, corruption (in 2013 Pakistan ranked 127 from 175 countries in

the Corruption Perception Index produced by Transparency International, TI), regulatory burdens, the business climate, political instability, and the availability of skilled labor (Amjad et al., 2015).

7. Industrialization or De-Industrialization

To understand more fully the impact of transformative infrastructure in the historical settings discussed in the previous section, we need to go beyond the neo-classical assumption that efficient markets are necessarily good and ask instead, efficient at what?

Various authors have argued that the railways in colonial India were so efficient that they facilitated the import of British manufacturing goods and undermined domestic industrialization in India. The arrival of the Indian railways coincided with a significant change in the composition of exports, imports and domestic production. In the nineteenth century, new export commodities emerged such as indigo, opium and cotton. India's traditional cotton textile industry declined between 1820 and 1860. Initially, the export market for Indian cloth disappeared, and later, hand-spun cotton yarn and handwoven cloth declined in response to competition from imports of yarn and cloth produced in English mills (Roy, 2002). By 1880-81 British manufacturers were supplying more than half of total consumption (Habib, 2006). Other sectors to decline were the jute handloom weaving and silk of Bengal, Kashmir shawl manufacture in Srinagar, hand paper, glass, and iron (Habib, 2006).

More efficient markets did not prevent devastating famine. The estimated mortality from starvation and disease crossed 1 million in the Deccan in 1876-78, and North West Provinces in 1877-78. There were country-wide famines in 1896-97 (an estimated 4.5 million dead) and 1899-90. The Orissa famine in 1865-66 was clearly a pre-railway age famine, as crops failed in an area without roads and ports and the region could not receive supplies from outside. It was expected that as the railway network spread, supplies would move in from cheaper/surplus areas and famine would be alleviated. The famine in 1868-69 in the North West Frontier occurred in an area well-supplied by railways and so refuted this notion. The railways had instead facilitated a general shift to producing cash crops for trade rather than food crops for local consumption. The output of food crops per head stagnated in British India from 282.41 kg in 1885 to 287.95 kg in 1895 (Habib, 2006). The second effect of the railways was to connect inland areas to ports which facilitated the export of food-grains, especially rice and wheat. In 1875, British Indian ports exported 1.22 million tons of food-grains and in 1895 about 2.49 million tons, representing 2.3% and 3.9% of estimated food-grain production, respectively. In 1896-98 and 1899-90, exports would have been enough to avert famine (Habib, 2006). Others have emphasized the more positive efficiency impacts of the railways. The Indian National Congress met for the first time in Bombay 1885 and could not have done so with the railways which brought in

delegates from the provinces. If railways contributed to colonial exploitation, then they also contributed to the growth of nationalism. The growing Indian press depended on railways for their circulation (Rothermund, 1993). The postal system was started in the 1850s and mail was carried by the railways. The number of letters and packets carried by post increased from 85 million in 1869 to 1,043 million in 1914 (Habib, 2006).

Another example is that of Mexico in the Porfirian era (1877-1910). Before the railroad, Mexico depended almost exclusively on overland transportation. Mexico, unlike Russia, the U.S. and Britain, had no river system suitable for use in transport. Most of the Mexican population and economic activity has traditionally been located far from the two coasts in plateaus and mountain valleys, so coastal shipping never played the role it did in Europe and the U.S. Unit savings on railway freight operations were enormous, with an estimated social saving of around 25% of GDP. Local entrepreneurs and foreign capitalists responded to changing market incentives with the result that modern mining and agricultural export industries boomed. Railroads promoted Mexican economic growth by reinforcing the country's comparative advantage in the production of minerals and, to a lesser extent, fibers for export. On the Mexican Central Railway (the longest in Mexico) minerals and fibers amounted to 1.3% of total freight tonnage in 1885 and 58.2% in 1908. It is likely that the export sector received at least 75% of the benefits of the operation of the railways in Mexico by 1910. The construction and operation of the railways was also heavily import-dependent. Imported inputs as a percentage of total operating costs increased from 29.3% in 1896, to 48.0% in 1900, 25.1% in 1905 and 32.3% in 1906. The extreme levels of export- and import-dependence of Mexico during these years meant that the railways generated very few backward linkages to stimulate domestic industry. Railroads were constructed and operated with rails, locomotives, rolling stock, spare parts, iron bridges and supervisory/engineering personnel imported from abroad. On occasion, even fuel (coal and wood), ties for laying tracks and unskilled labor were imported (Coatsworth, 1979).

In nineteenth century Germany, by comparison, the railways stimulated widespread backward linkages to local industry. When railway construction began in the mid-1830s, the German engineering and iron industries were backward and not capable of producing the main investment goods such as rails and locomotives. For example, in 1835 more than 90% of the pig iron was produced in small charcoal-using furnaces. In the first years of railroad construction, foreign, mainly British, suppliers dominated the market. By the beginning of the 1840s, the substitution for these imports by domestic production had begun. Many iron processing plants using modern British technology were established and existing ones enlarged their capacity. By the 1850s, most of the rails were produced in Germany. After 1854, all locomotives except a few from Austria were supplied by German producers (Fremdling, 1977). The sequence and speed of import substitution was promoted by

a tariff policy that protected the wrought-iron industry by levying heavy duties on all processed iron products. Catching up with British technology was possible through deliberate imitation and borrowing. Foreign technology was transferred through leading German manufacturers traveling and studying in France and Britain, through employment of French, Belgian and British engineers and skilled workers (for example, puddlers and roll-masters), and through foreign investors founding firms, especially French ironmasters in the Ruhr and Rhine area (Fremdling, 1977). This was a general process of the state taking on a more direct and guiding role in relation to domestic industry after 1840. The state promoted infant industry through tariff protection, state investment, public-private cooperation and various subsidies. The state also gave scholarships to promising innovators, subsidies to competent entrepreneurs, and directly facilitated the organization of new machinery and industrial processes (Chang, 2002).

There is a well-established body of literature that explores the criteria necessary for a state to be developmental in the style of nineteenth century Germany and so ensure that the benefits from a project like CPEC promote domestic economic growth rather than leak out overseas. These pre-conditions include: that leaders have a politically-driven desire to promote growth; that state institutions are autonomous; the bureaucracy is competent and insulated from politics; that civil society is weak; and that the state enjoy widespread legitimacy, whether of the democratic variety or other (Leftwich 1995, 2000). Unfortunately, there is good evidence that the capacity of the state in Pakistan is declining. The Global Competitiveness Reports compile indices, ranging from 1 to 7 (7 being the best) to measure various aspects of governance. Table 1 compares the reports from 2006-07 and 2014-15 which reveal a widespread deterioration in state capacity, across the quality of institutions, judicial independence excepted, favoritism in government decision-making, waste in government spending, and an improving if poor measure of the reliability of the police.

Table 1: Declining State Capacity in Pakistan

Measure of Governance	2006/07	2014/15
Quality of Institutions	3.5	3.2
Judicial Independence	3.3	3.8
Favoritism shown in decisions of government officials	3.1	2.6
Wastefulness of Government Spending	3.5	2.6
Reliability of Police	3.1	3.1

Source: World Economic Forum (2006). *The Global Competitiveness Report, 2006-07*, Geneva, Switzerland and World Economic Forum (2014). *The Global Competitiveness Report, 2014-15*, Geneva, Switzerland.

One practical example is the Medium-Term Development Framework for 2005 to 2010, launched by the Government of Pakistan with the aim to provide basic infrastructure to promote sustained economic growth. The effort was evaluated by the Asian Development Bank (2013). The evaluation found that efforts at inter-departmental cooperation and coordination were a failure and the work was

eventually implemented separately by line ministries. A significant lack of government capacity to identify projects through feasibility studies and to bring them to the bidding stage was also noted, and the government was unable to ensure contract and licensing enforcement. The absence of a long-term debt market and no long-term financing was identified as an enduring constraint on infrastructure financing. Not surprisingly, almost none of the targeted outcomes were achieved in practice.

As noted, the developmental state theorists argue that a key criterion for a state to be developmental is a bureaucracy that is autonomous and therefore empowered to take a long-run growth-promoting view of the economy that is not side-tracked by the populist and short-term demands of politicians. The reality is very different in contemporary Pakistan. State capacity is declining and the state has become increasingly subordinate to the demands of civil society. The relationship between state and society in Pakistan is one of patronage between politicians and supporters or dependents, such that “people gain access to patronage by using their position within a kinship network to mobilize support for a politician who then repays them in various ways in office, or by using kinship links to some policeman or official to obtain favors for relatives or allies” (Lieven, 2011). The process can be likened to state fiscal resources being “nibbled by a plague of mice” (Lieven, 2011). The state fails to provide public services such as water, education and power, because it is too weak to raise tax revenue and to control corruption among state officials. Corruption is not just about individual gain but is also for patronage, whereby state resources are recycled by politicians to win, retain and reward supporters and kinship groups.

8. Conclusion and a Research Agenda

There is widespread agreement that CPEC is a transformative infrastructure project and will be a success. It has become a key part of the discourse surrounding the contemporary debate on the economics of Pakistan. It is worth pausing here, as while there is much research on the geopolitical implications of CPEC, there is very little existing research on the likely economic outcome of the CPEC.

Old-fashioned economics has given us some key theoretical ideas from scholars who thought in terms of transformational changes – usually the shift away from a rural-agricultural economy to an urban-industrial one. Such theory gives us the means to think about the likely impacts of CPEC and of some of the preconditions for it to be a success. A key idea is that of leading sectors, where one sector expands and pulls up the wider economy through positive spillovers. While the CPEC could become a leading sector there are plenty of historical examples of expensive infrastructure projects than ended up in costly and splendid isolation from the rest of the economy. The decaying and underused Olympic Games projects in many countries are perhaps the most notorious such examples. The current and likely spillovers need to be studied further, focusing on those relating

to imitation, skills, competition and exports. We must also give careful consideration to the politics of CPEC. Does the wide support for CPEC represent a Rostowian elite commitment that will help ensure it works successfully? Does CPEC represent a new national idea or consensus that has eluded so many other reformist efforts in the past? Are its many supporters genuinely anticipating that it will contribute to the national economic revival of Pakistan or hoping that some of the resources associated with its construction and operation will benefit them and their constituents? History offers us much evidence of the impacts of transformational infrastructure, their successes and failures. We can draw from these studies and their various methodologies of counter-factual history and before-after approaches to think carefully about whether CPEC is likely to be successful in contemporary Pakistan.

There is widespread evidence that transformational infrastructure does tend to make markets more efficient in the sense of reducing time and spatial price divergences. This is of little relevance for contemporary Pakistan where spatial price differences have already tended to converge before the launch of the CPEC. The potential transformational impact of CPEC needs to look for changing patterns of regional specialization in production and its impact on changing patterns of migration.

Further we need to ask the question of efficient to accomplish what? Improved markets and transport links between China and Pakistan could lead to the growth of manufacturing production in Pakistan, to Pakistan being bypassed and becoming merely a transit route for Chinese exports travelling to the rest of the world, or for Pakistani manufacturing production to be displaced by imports from China. Each of these outcomes could represent the working of efficient markets. A brief consideration of Pakistan offers little cause to be optimistic. Existing studies looking at the constraints to manufacturing growth need to be reviewed. Just how important is infrastructure as a constraint relative to absent long-term credit, education, political instability, governance and difficulties in accessing land for industrial development. The Pakistani state has no vision to utilize the construction of CPEC to promote domestic industrialization. There is no indication that a domestic industrial policy will be utilized to ensure that the opportunities of CPEC are manifested in domestic industrial growth rather than in more industrial imports. The Pakistani state lacks the capacity to be developmental even if it did seek to acquire and utilize just such an industrial policy. Recent evaluations of efforts to promote infrastructural growth have been negative. There is a need for more research certainly, but perhaps also for a dash of realism about the prospects for CPEC.

There is much of importance that this article does not cover that could also be considered in future studies. Firstly, the focus of this paper is narrowly on economic growth rather than issues of wider development. The likely impact of CPEC on livelihoods would represent an important extension of this research.

While CPEC is promising the creation (or diversion) of at least 30,000 security posts to protect its investments (Boyce, 2017), others will inevitably have to surrender their lands and associated livelihoods for the construction of the new infrastructure. Secondly, this article does not consider the financing of CPEC. Will it lead to excess profits among outside investors supported by government guarantees and subsidies? This was one mechanism by which the economic advantages of railways in colonial India were argued to have benefited the British rather than the domestic Indian economy (Habib, 2006). Will CPEC lead to an excessive level of external debt creation and so to long-term debt dependence? Here there are grounds for some optimism. The US\$12 billion financing of infrastructure has been undertaken at interest rates of around 1.6% (Boyce, 2017). This is more generous lending than, for example, the high interest rates used to finance massive developing country infrastructure investments in the 1970s that collapsed in the global debt crisis of the 1980s. Finally, this article focuses on the infrastructure side of CPEC rather than the energy investments – the latter has already been widely researched and the benefits of better electricity supply seem much more clearly apparent (Siddiqui et al., 2011).

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8

Maximizing the Impact of Chinese Investment in Pakistan

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Abstract

Chinese investment is enhancing energy security, stimulating economic activity and establishing Pakistan as a regional services hub for multimodal trade. As with any foreign investment, there can be crowding out of local industry, social disruption and environmental damage. An enlarged external exposure is placing pressures on the balance of payments. However, the overall impact will likely be positive, as improved infrastructure will catalyse key productive sectors, and exports. Vibrant economic activity, in turn, will attract investment from other countries. The ensuing cross-border flows will improve the external accounts and enhance integration in the global economy. Proactive industrial policies, partnerships and effective economic management can potentially sustain a growth momentum that would set Pakistan on a path to becoming an upper middle-income country by 2030.

1. Introduction

The China-Pakistan Economic Corridor (CPEC) is Central Asia's gateway to the Arabian Sea. It will link China's landlocked Western Province of Xinjiang to Pakistan's Gwadar port and reduce the maritime transit distance by 75%. The completed corridor will relieve congestion on the circuitous sea passage and generate new trade.

CPEC is just one segment of China's One-Belt-One-Road Initiative but for Pakistan it is all-important. Launched in April 2015, CPEC has restored Pakistan's stature regionally, and pulled the economy out of a prolonged slump. The inflow of Chinese investment will accelerate growth and, with appropriate policies, unleash economic externalities that can potentially transform Pakistan into an upper middle-income country.

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This is admittedly a positive scenario. Achieving it will require effective macroeconomic policies to accommodate pressures from an enlarged external exposure. There is also a need for fresh industrial policies to facilitate long-term development. Above all, domestic enterprises and local governments will have to play an active role to ensure that the Central Asian transit corridor is a vibrant economic corridor for Pakistan.

2. China-Pakistan Economic Corridor

CPEC envisages a comprehensive renewal of infrastructure across the breadth of Pakistan. It involves: renovation of the Karakoram Highway; the building of connecting expressways; the upgrading of railways; the laying of oil and gas pipelines and fibre optic cables; enlarging power capacity; establishing economic zones; and the construction of world-class shipping and air terminals. It will take 15 years and require skills, machinery and capital upward of US \$45 billion (and as much as US \$65 billion), mobilized through foreign direct investment, grants, concessional loans, joint ventures and public-private partnerships. By end-2018, US \$18.9 billion had already been invested.

The list of infrastructure is long, partly to make up for decades of past neglect (with respect to the upkeep of railroads, repair of highways and expansion of national power supply). Even so, the overall cost of CPEC is not particularly high when spread over its 2015-2030 span: between 3 and 4 billion dollars per year—about 1% of Pakistan's gross domestic product (GDP). The CPEC is plausible in other respects as well.

First, the CPEC is a collection of standalone projects. The projects are individually funded and executed, largely with Chinese expertise and capital. The 'turnkey' mode may inhibit domestic inputs, but Pakistan has limited capacity in undertaking infrastructure projects (World Bank, 2007), and given China's skill in project delivery, the risk of delay or loss is low. By end-2018, 9 energy projects have already been completed, 13 other projects are under construction and another 20 are in the pipeline.

Second, the CPEC is an economic endeavour. The Peshawar-Karachi Motorway will be a tolled facility. Investment in infrastructure is generally attractive (World Bank, 1994). Rates of return on private concessions in developing countries (in Latin America) average 7.2% in power and 5.2% in transport (UN, 2008, pp. 141-142). The long duration of the concessions assures profitability (the concession for Gwadar port is 43 years). Experience (in South-East Asia) suggests that large outlays can be recouped over an extended lifetime with appropriate user charges for the services generated.

Third, the CPEC is market driven. Projects are primarily implemented by corporate contractors, which are incentivized with concessional finance from

China, and with tax exemptions, procurement guarantees and security safeguards from Pakistan. However, as a market operation, the liabilities associated with incentives and guarantees would need to accord with the future recovery of financial and social (e.g., environmental) costs. In the interim, the international exposure to commercial cross-border transactions, and corporate debt denominated in foreign exchange, would also swell and will need oversight.

Fourth, the CPEC is a ‘win-win’ partnership. Objectives may differ, gains may vary, cultures may clash, but there are net benefits for all. Although China invests more and receives more monetary returns from CPEC, the expected percentage increase in real GDP is twice as large for Pakistan (UN, 2017, chapter 2). Importantly, both countries are committed to a sustained, cordial engagement at a high political level. There is an agreed long-term plan, operational matters are addressed in regular, bilateral meetings of senior officials, and progress updates are posted publicly on-line to promote transparency and accountability.¹ Within Pakistan, there is unprecedented cooperation at the federal and provincial levels, and between civilian and military authorities. This is a robust basis for success.

3. Chinese investment

China’s foreign direct investment (FDI) in Pakistan is recent but rising rapidly. The first major investment was in 2007 (in telecommunications) and the cumulative stock of all Chinese investments at the end of 2015 was only US \$1 billion (see Table 1). However, Chinese investment is increasing while traditional investment has been slowing. By end-2017, China had overtaken the United States, the United Arab Emirates and Japan, and by end-2018, China was not far behind The Netherlands, the third largest foreign investor in Pakistan.

Table 1: Largest foreign investors in Pakistan

Country	Foreign direct investment (US \$ billion, stock, end-year)			
	2015	2016	2017	2018
United Kingdom	9.9	12.1	11.6	11.9
Switzerland	5.7	7.2	6.2	6.3
Netherlands	2.1	4.1	3.9	4.0
China	1.0	1.4	2.7	3.6
Japan	1.3	2.3	2.1	2.2
United Arab Emirates	3.8	2.1	2.2	2.2
United States	1.8	2.0	1.9	2.0
<i>Memorandum:</i>				
Total (all countries)	34.4	42.0	41.6	42.1

Source: State Bank of Pakistan.

¹ See the official portal: <http://cpec.gov.pk>.

Chinese investment is also different (see Table 2). Traditional investment has been resource-seeking (in extractive industries) and mainly market-seeking (in manufacturing and services). These latter areas are vulnerable to economic conditions. Traditional investment has therefore slowed with low economic growth. However, Chinese investment is mainly in strategic assets related to CPEC infrastructure (power, construction and transport), where the principal determinant is potential growth and related non-pecuniary gains, rather than current conditions. There are, of course, common determinants—security, energy and bureaucracy—and as these concerns are addressed within CPEC, the overall investment climate should improve for all.

Table 2: Types of investment

Sector	China	Other countries
FDI stock, end-2015	\$1 billion	\$33.4 billion
<i>Distribution:</i>		
Extractive	1%	25%
Manufacturing	7%	36%
Communications, finance, services	30%	28%
Power, construction, transport	62%	11%

Source: State Bank of Pakistan.

In terms of new investment, China is, for now, the largest investor. Chinese investments account for the bulk of all FDI inflows into Pakistan since 2016, and for 58% of the net inflows of US \$3.47 billion in the 2017-2018 fiscal year. As a consequence, the profile of inward investment is shifting towards services: infrastructure (58% in power and construction), finance (10%) and other services (9% in communications, trade, transport, storage, tourism). This shift will likely continue as CPEC establishes Pakistan as a regional services hub.

4. Potential impact

Foreign direct investment has direct and indirect effects in host economies, and these effects vary according to the economic sector, policy regime and level of development. In this respect, Chinese investment is no different from other foreign investment. The cumulative impact of FDI is hard to assess *ex post* and is certainly much harder to do *ex ante*. There is extensive analysis and prescription on FDI but the basic policy guidance remains, simply, to maximize the positive and minimize the negative.

Foreign direct investment mobilizes financial resources, creates jobs, transfers technology and skills, augments industrial capacity and stimulates the local economy. These effects are generally positive and, in the case of infrastructure, amplified by the scale of activity.

Finance is a key feature of the CPEC. The large outlays for the CPEC are financed only partially by FDI, and chiefly by funds mobilized through development finance and commercial loans. These leveraged funds amplify the impact of Chinese investment. Although the bundling of equity and non-equity arrangements for infrastructure projects is a global practice (UN, 2008, p. 127), the leverage is particularly high for Chinese investment, as evidenced in the high degree of debt to equity.

To illustrate, the US \$2 billion coal-fired power project at Port Qasim is financed with 25% equity and 75% debt (arranged by the Export-Import Bank of China). Moreover, 49% of the equity is from a Qatari partner (Al Mirqab Capital). Thus, the lead Chinese investor (POWERCHINA Ltd) is able to leverage foreign direct investment of US \$250 million into a US \$2 billion venture. Pakistan receives FDI from China and Qatar, and a physical investment that is quadruple the value of the inflow. The downside of these projects is the liabilities incurred by the public sector, in guaranteeing to purchase energy at tariffs that ensure an attractive rate of return to independent power producers (IPPs). Pakistan's past experience with IPPs has been problematic, yielding a crippling "circular debt" between utilities and producers (Malik, 2015). Proper management of IPP contracts applies to all energy projects, not specifically to Chinese investment.

Employment in CPEC projects is potentially large. Around 700,00 direct jobs will be created in 2015-2030 (UN, 2017, chapter 5).² To date the recruitment of Pakistani workers has been mainly at low skill levels, with Chinese professionals and managers filling 20% of the 38,000 jobs created in 2015-2017 (ACCA, 2017, p. 15). To illustrate, the construction of the 392-kilometre highway between Multan and Sukkur employed 22,000 labourers during 2016-2019. The Sahiwal power plant, now operational, employed 3,000 labourers and semi-skilled workers for construction and has a technical school to train 200 engineers for operations. The Port Qasim power plant engaged 5,000 workers in construction, and for operations would create 500 trainee and engineering jobs annually. While there is potential for learning within the CPEC projects, the demand for technical, professional and managerial skills would need to be met in the education sector. The bulk of the jobs are for contractual work at minimal wage, but would benefit low-income families and boost local commerce in the less-developed regions of the country.

Technology is primarily embodied in imported capital equipment and engineering services of Chinese contractors and workers. An immediate benefit is the acquisition of production capabilities, and the crucial longer-term benefit is the potential for learning skills for the operation, maintenance and upgradation of production processes. The principal areas for technology transfer are power plants

² Estimates of direct job creation range from 400,000 jobs (ILO, 2016) to 800,000 jobs (Pakistan Planning Commission, cited in ACCA, 2017). A high figure of 2.3 million jobs was reported by Wu (2017).

and multi-modal transport. To illustrate, the Port Qasim coal-fired power plant utilizes efficient thermal technology and sustainable management operations (e.g., recycling seawater, desalination and desulfurization of flue gas). The energy infrastructure is being diversified with solar and wind power stations. The envisaged fibre optic networks will provide advanced digital services. The transshipment port facilities at Gwadar will be first class like China's Shenzhen Port and will be built in half the time (5 years instead of 10).³ The downsides of technological leapfrogging are the relatively high costs of imported equipment, parts and supplies, and the on-going need for foreign expertise in operations and maintenance. Additionally, Pakistan's experience with 'turnkey' projects has been mixed, marked by rapid depreciation of capital plants and limited mastery of the skills for efficient production.

Economic activity is stimulated by Chinese investment through linkages with domestic industry. Backward linkages create demand for construction materials and transport services. Public-private partnerships (PPPs) engage Chinese investors with local companies, banks and provincial authorities. To illustrate, the cement and steel industries have increased production and are investing in enlarged capacity (World Bank, 2017a, p. 5). A Pakistani conglomerate, Engro, is the lead partner in the Thar Block II coal-mining project (*The Economist*, 2018). However, the typical linkage is a supplier relationship in which local companies must compete with imports on the basis of low cost, high quality, and timely delivery, and even when these conditions are met, the local supplier must still overcome a tendency for Chinese firms to import through established ties in the home country. Thus, local content may in all likelihood fall short of expectations.

Chinese investment has spawned novel support services. Chinese is now being taught in 19 universities and at dozens of private institutes. Pakistanis are also pursuing studies in China, with some 20,000 having already graduated and another 25,000 enrolled in engineering, science, medicine and other disciplines. There is also demand for security services. An army division of 15,000 personnel has been assembled to safeguard projects. At the provincial level, some 2,600 police officers in Sindh and another 4,200 officers in Khyber Pakhtunkhwa will protect foreign workers. These numbers will increase with the establishment of the economic zones. Protection services provide value and their cost is recoverable. More generally, the expenditures of the projected 100,000-plus Chinese workers and their accompanying families will have multiplier effects for food, retail, finance, tourism and consumer industries.

The major economic stimulus will be from forward linkages. The energy projects will mitigate the recurrent power shortages that have crippled industrial output for years and are estimated to have held back economic growth by some 2% per

³ See Iftikhar, Xie, Shakeel, Jamali, Cheema & Shahid (2019).

annum (Pakistan, Ministry of Finance, 2013, p. 1; IMF, 2017, p. 65; World Bank, 2017b, paragraph 3).⁴ As the energy shortage is overcome, the industrial and economic growth rates should pick up towards full potential. In addition, potential growth can be expected to rise over the medium-term, with the establishment of economic zones to augment industrial capacity and with improvements of the transport infrastructure making all sectors more productive.⁵ The export sector would become more competitive.⁶

Overall, energy security, transport efficiency and economic diversification are estimated to boost the level of real GDP by at least 2% and possibly as much as 7% (UN, 2017, Figure 2.2). Thus, Chinese investment might potentially infuse a significant growth momentum in the host economy that, if sustained, could elevate Pakistan to an upper middle-income country by 2030.

5. Maximizing the impact

Any high growth scenario hinges on domestic factors. The stimulus of foreign investment can spread widely or dissipate quickly, depending on the absorptive capacity of the local economy. Unfortunately, the provinces that need investment the most have the least capacity to absorb it, limiting real economic growth. Also, infrastructure can be underutilized or be a basis for economy-wide productivity, depending on the propensity of industry to invest. Hence, a key driver is domestic investment—public investment to enlarge absorptive capacity and private investment for industrial growth.

The other key driver is exports. As already noted, ‘turnkey’ projects are import-intensive, that worsens the trade balance in the short-term. The import of heavy machinery should hopefully subside in time, though the need for parts and materials would persist. External borrowing can finance the deficit but creates debt. Infrastructure projects are also services that earn revenues locally and remit profits externally over the long-term.⁷ Without a rapid and substantial increase in exports, there is the risk that the trade deficit and financial outflows would imperil the balance of payments and choke the growth momentum. Unfortunately, Pakistan’s investment and export performance has been lacklustre for decades. Alarming, acute pressures on the balance of payments surfaced in 2017-2018, and worsened in 2018-2019 as net inflows of foreign direct investment fell by 50%.

⁴ “In the industrial sector alone, power outages in 2009 cost \$3.8 billion (about 2.5% of GDP). Half a million jobs and exports worth \$1.3 billion were lost,” writes Alahdad (2014, p. 3).

⁵ Generally, a 1% increase in the stock of infrastructure is associated with a 1% increase in Gross Domestic Product (World Bank, 1994, p. 2). Thus, the planned 5% increase in transport infrastructure would increase GDP by 5%.

⁶ A 10% reduction in transport costs would increase exports by 2% (UN, 2017, Foreword).

⁷ Foreign direct investment peaked in 2006-2008 with large inflows in banking and telecommunications. However, these services subsequently generated significant outflows of profits.

The CPEC timeline aims at an “early harvest” of power projects to ease the energy deficit. This is necessary but insufficient. There is need for a concomitant “big push” on investment and exports led by industry. Private investment needs to double to meet the minimum threshold for dynamic growth.⁸

Energy security is planned as an “early harvest” of the CPEC projects. However, Chinese investments in power generation require parallel public investments in power transmission. By 2018, more power was being generated than could be distributed. The weakness of public power distribution companies (DISCOS) threatens to aggravate the “circular debt” of energy. Maximizing the impact of the “early harvest” will therefore require downstream investment in distribution capacity, closure of transmission leakages, competitive pricing with more efficient delivery, and full cost recovery from users. There have been improvements but more progress is needed.⁹ Where the DISCOS lack funds, public-private partnerships (PPPs) can raise financing, from Chinese investors as well who have offered US \$1.8 billion to acquire a 66% majority stake in the Karachi power distribution company (K-Electric) and, importantly, plan to invest US \$9 billion over 3 years to upgrade operations.¹⁰

Special economic zones (SEZs) are planned in order to promote industrial expansion and diversification. The plan could be more ambitious: the envisaged 9 zones is a minimal number for an economy the size of Pakistan. Also, the planning of SEZs should be expedited as zones typically take 5 years to come into full operation (Zia, Yong, Javed & Malik, 2018). The zones should follow global best practice: open to both domestic and foreign enterprises and operated as a service, providing state-of-the-art facilities (roads, power, water, sewerage, security and other common services) at tariffs that recover running costs. The zones should also target industries suited to particular locational advantages. Thus, the Gilgit-Baltistan zone targets resource-based industries; the Balochistan and Nowshera zones target agricultural industries; and the Faisalabad and Port Qasim zones target heavy industry. In order to attract light manufacturing from China, the zones should be designed as industrial clusters rather than SEZs (Rasiah, 2018). The aim is to attract industry that is largely reliant on local content, with potential for export-oriented production (either of finished goods or intermediate products

⁸ As discussed elsewhere (Hamdani, 2014, pp. 273-274), gross fixed capital formation in Pakistan has, for decades, been well below the minimum threshold necessary for dynamic growth (estimated at 20 to 25% of GDP). It was 14.2% of GDP in 2016. Private sector investment (which accounts for two-thirds of the aggregate) would need to double (from 10% to 20% of GDP) in order to attain the threshold for dynamic growth.

⁹ Reforms include reduced federal subsidies and increased revenue collection from users (World Bank, 2017b, para 66).

¹⁰ As reported by Salman Siddiqui, “Shanghai Electric to finally acquire K-Electric this year,” *The Express Tribune*, 8 June 2019 (<https://tribune.com.pk/story/1987719/2-shanghai-electric-finally-acquire-k-electric-year/>) and Murtaza Ali Shah, “K-Electric acquisition to position Pakistan as investment destination: CEO,” *The News*, 14 February 2019. (<https://www.thenews.com.pk/print/431811-k-electric-acquisition-to-position-pakistan-as-investment-destination-ceo>).

that feed into global value chains). Maximizing the impact of the zones will therefore require provinces to adopt proactive industrial policies that cultivate linkages with the domestic economy.

Transport infrastructure will expand and diversify trade in the medium and longer-term. Establishing export processing zones and dry ports adjacent to the transport corridor would reduce costs, improve delivery and facilitate integration in global value chains. In the interim period—while imports are rising faster than exports—there is need to “harvest low-hanging fruit” in traditional exports, agricultural products, agro-industry and tourism (Ahmad & Khalid, 2018). Although China is Pakistan’s second largest export market, the trade deficit with China increased 50% in 2015-2017, to US \$12 billion. Their bilateral free trade agreement had limited benefits for Pakistan (Chaudhry, Jamil & Chaudhry, 2017) but its second phase will improve market access for a wider range of commodities over 15 years, initially increasing Pakistan’s US \$1.2 billion exports to China by US \$500 million,¹¹ and potentially to as much as US \$12 billion if Pakistan is able to capture 20% of those Chinese imports that Pakistan produces but are now sourced elsewhere.¹²

It is important to view the transport infrastructure as a services platform. There is revenue to be earned from handling charges at the sea and air terminals. Additionally, a toll on the transit traffic with China can earn upwards of \$2 billion per year.¹³ The fee would be attractive to shippers if accompanied by administrative measures to streamline procedures and expedite transit. Such efficiency measures would also increase the volume of total trade on the economic corridor.¹⁴ An efficient multimodal transport network would establish Pakistan as a regional services hub.

Public-private partnerships can develop absorptive capacity. Large sections of the planned economic corridor pass through areas with low potential for backward and forward linkages. There are fears that CPEC opportunities will not flow to

¹¹ As reported by Amin Ahmed, “New FTA with China to increase exports by \$500m, says Dawood,” *Dawn*, 24 April 2019 (<https://www.dawn.com/news/1478060>).

¹² US\$64 billion of China’s imports are goods that Pakistan produces, see Hina Aslam, “Pakistan China Free Trade Agreement (FTA): where we are and where we are going?” *Daily Times*, 24 July 2019 (<https://dailytimes.com.pk/436023/pakistan-china-free-trade-agreement-fta-where-we-are-and-where-we-are-going/>).

¹³ A 0.5% transit fee on the US\$400 billion trade between China and the Middle East and Africa would generate an annual income of US\$2 billion. If the corridor were to handle only half of the existing ocean trade, or some 10 million containers, then a tariff of US\$250 per container would raise revenue of US\$2.5 billion. “We may be able to recover our financing costs through the toll income, if we are successful in claiming 30% of the Chinese trade with Africa and the Middle East,” says Hasaan Khawar, “CPEC toll income—myth and reality,” *The Express Tribune Opinion*, 26 October 2017 (<https://tribune.com.pk/story/1541404/6-cpec-toll-income-myth-reality/>). Husain (2018) suggests transit revenue as high as US\$4-6 billion annually.

¹⁴ Trade facilitation measures can double the potential increase in exports generated by the economic corridor (UN, 2017, Figure 3.4).

local youth (UNDP, 2017). Support for social integration includes schools, training centres, hospitals, and water and sanitation facilities. Foreign companies provide such support as part of corporate social responsibility. To illustrate, Engro is building schools in Tharparkar. The China Road and Bridge Corporation is funding dormitories in Mansehra. Hospital and educational facilities are being constructed in Gwadar city. These relatively few activities need to be replicated more broadly through public-private-civic partnerships.

Maximizing the impact of Chinese investment would also require a strengthening of the legal, regulatory and institutional framework. In the legal sphere, the legislation for build-operate-transfer projects (BOTs) and public-private partnerships (PPPs) should be updated to reflect global best practice. Rules for the tendering of public projects need transparent application, and procedures should facilitate contractual bidding by domestic industry and small and medium-sized enterprises. There is also a need to reinforce protections of financial and property rights, and for investor-friendly mechanisms for commercial arbitration and dispute resolution.¹⁵

In the sphere of public management, the various authorities for power, ports, roads and railways need professional staffing and greater autonomy to operate as self-sustaining services. The State Bank has augmented its instruments for managing external capital flows, including investment bonds, portfolio accounts of non-resident investors, bilateral currency swap arrangements with China and use of the Chinese Yuan in foreign exchange transactions. The State Bank should also issue renminbi-denominated bonds in Hong Kong. In this way, financial flows between State and private capital can be increasingly intermediated through international markets, thereby permitting competitive terms with due risk management.

6. Minimizing the negative

Foreign direct investment can 'crowd out' local industry and result in capital outflows, social disruption and environmental damage. Such impacts can be mitigated but not entirely avoided. The Chinese presence in Africa has been marked with instances of labor unrest and allegations by local industry of uncompetitive business practice (*The Economist*, 2011). The Government of Sri Lanka was overwhelmed with an unsustainable public debt burden (Abeyratne, 2018). In Pakistan, domestic steel producers have had difficulty in competing with cheaper Chinese imports (Rehman, 2017) and there is anecdotal evidence of

¹⁵ The Chief Justice of the Supreme Court has called attention to the need to "deal with grey areas in the legal and administrative landscape which may hinder our country from taking full advantage of the numerous opportunities provided by CPEC" as quoted by Muhammad Hanif, "CPEC: CJP Highlights Legal Aspects to Boost FDI," *Pakistan Observer*, 9 May 2018 (<https://pakobserver.net/cpec-cjp-highlights-legal-aspects-to-boost-fdi/>).

crowding out in other industries.¹⁶ There have been large imports of machinery, parts and materials from China that could be partially sourced locally but are ostensibly unavailable, unsuitable or costly. The CPEC policy framework should incorporate standards to discourage excessive bundling of ‘turnkey’ projects and to encourage ‘learning by doing’ and best business practice.

Unfortunately, Pakistan’s past experience with ‘turnkey’ projects—from fertilizer plants to hydro-dams—has not been stellar. Projects were built, operated and never fully transferred. Projects relied on a continuous stream of imports and management fees that, when interrupted, led to obsolescence. It is important that the CPEC not replicate this experience. All major projects should have facilities to encourage ‘learning by doing’, including training of local staff to master maintenance and servicing of plant and machinery, and eventually to assume management of entire operations. The success of Engro should be emulated widely.

As with any FDI, Chinese investments will generate capital outflows, stemming from repayment of loans and remittance of profits. Energy projects have attractive rates of return embedded in IPP contracts. Prior FDI in power in 1995 meant significant foreign exchange outflows in excess of \$1 billion per year for a decade (Hamdani, 2015). FDI in telecommunications and banking in 2007 also produced significant outflows. The costs of such infrastructure projects can be recouped from the services provided. However, the revenues are earned in local currency while the repatriations are in foreign exchange, generating significant capital outflows. Looking forward, the annual outflows of the CPEC (and other) energy projects are estimated to balloon to US \$4 billion in 2024 (IMF, 2017, p. 68). Hence, total FDI inflows will need to rise to absorb future outflows. This is not a herculean task: in previous years, Pakistan has attracted annual FDI flows at twice-current levels.

Finally, the social and environmental impacts need to be monitored. Although the CPEC projects include renewable energy, civil society demand greater assurance on the sustainability of operations that rely on coal, consume large amounts of water and are located in fragile ecosystems (Ebrahim, 2017). These are largely shared concerns that should be assuaged with explicit norms on sustainability.

The Chinese presence in Pakistan is small but visible. Large-scale projects entail the influx of personnel and the upheaval of communities. Support for social transition includes schools, training centres, and health, water and sanitation facilities. Foreign companies provide such services as part of corporate social

¹⁶ According to Kamal & Malik (2017, p.7): “The anecdotal evidence suggests that local manufacturing of ceramics, electric machinery and equipments, chipboard, plywood, bicycles, etc., and a number of small scale industries have also been affected, among others, by low cost imports from China”.

responsibility. Such activity can be scaled up through public-private-civic partnerships. The integration of the Chinese in Pakistan will contribute to a more diversified society and vibrant economy, the benefits of which can be fostered under the banner of cultural cooperation.

7. Conclusion

Overall, the impact of Chinese investment on the Pakistan economy will be positive, and could even be substantial. At a minimum, the energy projects will reduce the crippling power shortage. The special economic zones will stimulate industry. The transport corridor will earn transit revenue and establish Pakistan as a regional services hub for multimodal trade. At a maximum, Chinese investment could infuse a growth momentum that would set Pakistan on a path to becoming an upper middle-income country by 2030.

In the best scenario, Chinese investment can accelerate economic growth in four ways. First, capital inflows ease the balance of payments. Second, improved infrastructure will catalyse key productive sectors. Third, vibrant economic activity will attract investment from other countries. Fourth, the ensuing cross-border flows will deepen integration in the global economy.

These growth drivers will take time to gather momentum. The economic zones typically take 5 years to come into full operation; even then, the stimulus of a handful of zones must permeate the larger industrial structure (the development of Gwadar into a port city may take 15 years, Iftikhar, *et. al.*, 2019). Domestic economic activity must germinate before foreign investment follows. Enterprises must gain competitiveness before they can export. Skilling a new labor force may take a generation. However, proactive industrial and vocational policies can shorten the lead times. There is a particular need for a “big push” on investment and exports, led by industry. Domestic private investment needs to double to meet the minimum threshold for dynamic growth.

There are also hurdles to overcome. An enlarged external exposure places pressure on the balance of payments. Already, the trade balance has widened greatly as imports have risen faster than exports. Financing the deficit is draining reserves and accumulating debt. Even as exports catch up with imports, new pressures will surface as capital outflows balloon in the medium-term with an expected repatriation of profits, dividends and interest payments. Issues of Chinese project delivery, financing, trade imbalances and economic, social and environmental impacts should be monitored and addressed within the bilateral cooperation framework of the CPEC. However, it is the accepted responsibility of Pakistan “to sustain economic growth momentum” (CPEC, p. 7).

Maximizing the impact of Chinese investment will therefore entail strenuous effort within Pakistan. Consumers and producers need to absorb the cost of improved energy and infrastructure services, which need to be efficiently supplied by public utilities. Domestic enterprises need to invest to realize productivity gains and extract value added from linkages with foreign enterprises. Exports need a rapid boost led by traditional goods, and progressively supplemented by new products in new sectors. Public investment should enlarge absorptive capacity, particularly for human development in the least advantaged localities. There is a need for continued capital inflows, to be met increasingly through non-debt incurring foreign direct investment from all countries.¹⁷

In this respect, the latest IMF stabilization program is a welcome development.¹⁸ The US \$6 billion extended funding arrangement provides a macroeconomic framework for the piecemeal actions of the government. It also purports to release US \$38 billion from international partners over the 39-month program period. Hopefully, the brunt of the downward adjustment in fiscal, monetary and exchange rate policies will fall not on investment but on consumption, which comprises two-thirds of aggregate demand. Nevertheless, economic growth will drop significantly. A new driver of growth is needed and Chinese investments “can provide a stimulus for Pakistan’s much-needed growth recovery in the post-stabilisation IMF program period” (Hamid & Khawar, 2019).

The policy prescription for moving the Pakistan economy forward predates the CPEC (Amjad and Burki, 2013).¹⁹ For some years the economy has been mired in a low middle-income trap, with growth spurts largely reliant on external factors rather than endogenous drivers (Amjad, 2014). There is general agreement on the need to revive domestic private investment, raise exports, improve public services, and prioritize education. The policy choices are clear but entail reforms that are hard to make. The CPEC is a spur for advancing that broader policy agenda. In the absence of vigorous domestic effort, Chinese investment will still create a transport corridor but the full benefits for Pakistan of a vibrant economic corridor would fall short of expectations.

¹⁷ Total foreign investment was US \$5.7 billion in fiscal year 2017-2018 but in the following fiscal year 2018-2019 it was reduced to only US \$250 million, as gross FDI inflows of US \$3.1 billion were negated by outflows of US \$2.8 billion on direct and portfolio investment and the servicing of government debt securities.

¹⁸ IMF, “Pakistan Request for an Extended Arrangement under the Extended Fund Facility,” IMF Country Report No. 19/212, July 2019.

¹⁹ See also the related articles presented at past conferences on Management of the Pakistan Economy, and published in the Lahore Journal of Economics.

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9

Agriculture Development Options under China Pakistan Economic Corridor (CPEC)

Mahmood Ahmad* and Sana Khalid**

Abstract

CPEC is largely conceived as a transport and energy project and less so as a possible engine of growth with better regional connectivity. It is critical to establish a clear narrative or vision as to what our economy will be in future – a trading or manufacturing nation or following the old approach of import substitution. Experts are of the view that in the short to medium term it would be more feasible to harvest the low hanging trees and for this reason the long term CPEC plan 2017-30 has cited agriculture as a priority sector. Punjab is now aggressively identifying areas/actions which can provide the much-needed boost for the sector and it sees the CPEC as one growth vent. Under this backdrop, the paper will briefly discuss how we can develop a competitive agriculture and agro-industry in priority regions. To establish competitiveness, trade policies are important. The paper will first look at the present and prospective trade regime and future potential especially in the light of better connectivity of the CPEC. Pakistan's trade is dominated by agriculture and agro-based products and will continue to be so for some time to come. The paper will also highlight the fact that the identified clusters of agricultural value chains in four corridor zones, especially the central zone (Indus Basin) classified under CPEC project that carries good comparative advantages in producing a diversified crop mix that has not been fully exploited. But in order to translate this comparative advantage into competitive advantage, there is not only a need to develop clusters of commercially viable farming, processing and service firms located in specific geographical areas, but also in adopting good global production and trade practices. The paper critically evaluates the policies and investment priorities perused in developing CPEC in general and agriculture and agro-industry in particular.

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1. Introduction and Issues

Pakistan is an agriculture-based economy. Agriculture accounts for 21% of the GDP and provides livelihood to 44% of the rural population. The sector acts as a source of raw materials for the country's major industries; textile, leather, rice processing, edible oil, sugar and various food processing industries. Agriculture-based products account for around three fourths of the country's total exports of which about a 60% share is contributed by the Punjab.

Traditionally, agricultural development has focused around major cereal and cash crops since they constitute a bigger share of the total value and they enjoy an added importance due to their higher relevance in ensuring food security. Reliance of the textile industry on cotton and the export of rice were also reasons for the continued focus on conventional crops. The share of the fairly neglected non-traditional sectors of fruit, vegetables, condiments, flowers, pulses and oilseeds in the total cropped area is small. For example, the share of the Punjab is around 10% in spite of their higher value addition and profitability potential for the farmers and for other stakeholders at different links of these value chains.

After robust performance of the agriculture sector over five decades after independence, the trends during the last fifteen years show a constant decline in growth rates, indicating that the sector is under performing. After two years of a continuous slide in the economy, it has shown recovery in 2016-17 with rice exports leading the revival. A record-breaking increase in growth from negative to 3.5% in the agriculture sector and 4.2% growth in major crops against the target of 2.5% was witnessed in this year. During 2016, 20.47 million tons of wheat were grown, the highest yield in the history of the Punjab and also Pakistan since 1947. Also for the first time, the Punjab's target of cotton sowing was achieved in the same year, which will help in reviving textiles given that agriculture supplies 70% raw material to the textiles industry¹.

Table 1: Important Crops Production and Growth Potential 2014

	Production in 1000 tons / 1000 bales (cotton)				
	Wheat	Cotton	Sugarcane	Rice	Maize
Production ¹	25,286	12,769	66,469	6,798	4,527
Share in Agriculture (%)	10.3	6.7	3.4	3.1	2.1
Value(\$.bn) ²	6.3	4.1	2.1	1.9	1.3
Share of Fertilizer Use (%)	50	25	8	6	1.5
Avg. Yield (Kg/ha)	2,714	816	55196	2,396	3,991
Munds/Acre	27	8	558	24	40
Potential Mounds/Acre	45	12	900	45	80
Incremental Growth	18	4	342	21	40
% Growth potential/Acres	60%	67%	62%	53%	50%

Source: Pakistan Economic Survey 2014, Statistic, Pakistan Bureau of Statistics. Note (1) Figures are FY 14 in '000 tons, except cotton is '000 bales, (p). (2) Ranks are by production.

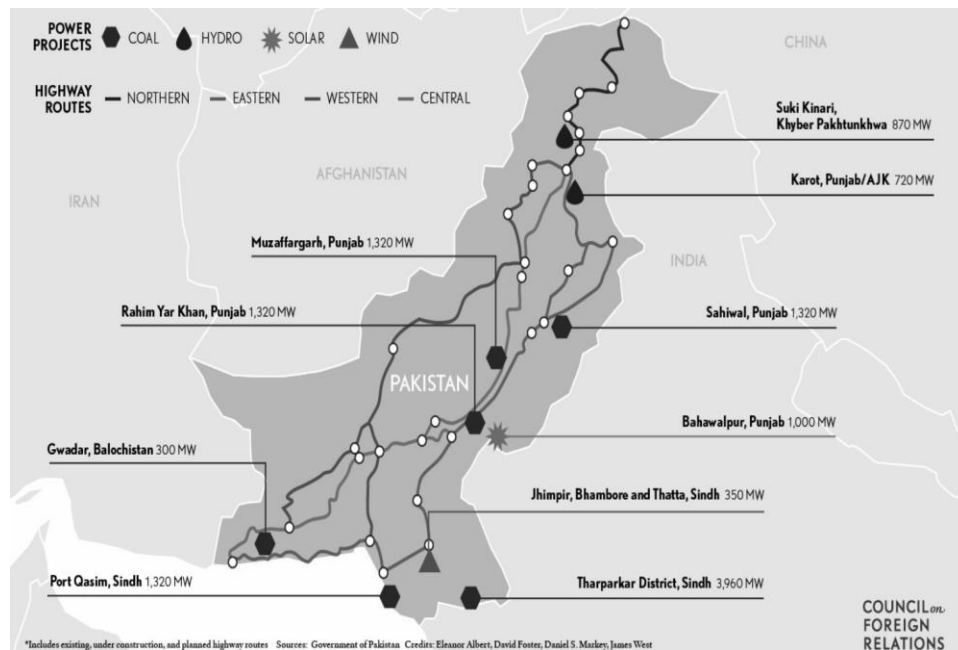
¹¹ Annual Progress Report FY 2016-17, Agriculture Department, Government of the Punjab.

The growth of yield for most crops and livestock products in Pakistan has stagnated, becoming more variable in recent years with large gaps continuing to exist between achievable and realized productivity of most crops. Relatively low returns to irrigation water and less effective use of seeds and fertilizers are fairly important factors leading to a low level of productivity and growth. Diversification and a move to higher value added has been limited, particularly in the crops sector, with the cultivated area under high-value crops more or less unchanged between 1960 and 2000.

2. China Pakistan Economic Corridor (CPEC)

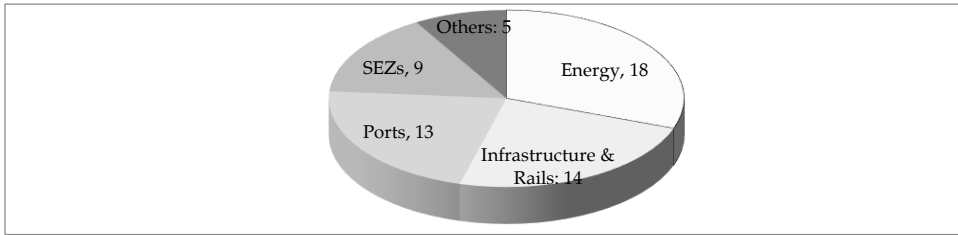
CPEC comprises a large package of investments in energy and infrastructure projected to amount to \$55 billion by 2030. This represents about 19% of Pakistan's GDP of US\$280 billion in FY16 or, very roughly, about 1.5% or so of GDP per annum over the next 10 years. Figures 1 and 2 below illustrate the major projects being implemented under the CPEC and their sector-wise distribution.

Figure 1: Major CPEC Projects



Source: "China-Pakistan Economic Corridor – A Potential Game Changer: Review and Analysis", BIPP Report on "state of the Economy (2017).

Figure 2: Sector-wise Distribution of CPEC Projects



Source: “China-Pakistan Economic Corridor – A Potential Game Changer: Review and Analysis”, BIPP Report on “state of the Economy (2017).

2.1. Possible Benefits for China

CPEC appears to be very crucial for both the countries. China’s interest in developing Economic Corridors/CPEC stems from redirecting its domestic over-production capacities and capital for regional infrastructure development and trade. China now has a surplus of skilled labor in other countries, which can also be put to productive use. It also provides an alternate least cost and secure route to import energy and find new markets for its goods and services. It would reduce the distance from Central China to the Middle East by 7,580 miles and more than 10,000 miles from Western China. It would open new trade vents for China at a much lower cost. Further, it will improve the competitiveness of China by reducing fuel and travel time to 10 days instead of 45. The details are provided in the table below.

Table 2: Saving in terms of Distance (via Shanghai vs. Gwadar)

Sr. No.	From	To	Via Shanghai (miles)	Via Pakistan (miles)	Saved (miles)	Saved (% age)
1.	Central China	Middle East	11206	3626	7580	68
2.	Central China	Europe	17801	10928	6873	39
3.	Central China	Pakistan (Gwadar)	10601	3081	7520	71
4.	Western China	Middle East	12537	2295	10242	82
5.	Western China	Europe	19132	9597	9535	50
6.	Western China	Pakistan (Gwadar)	11932	1750	10182	85

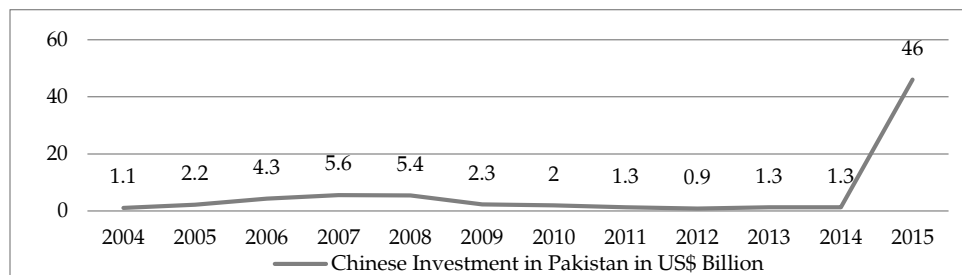
Source: Pakistan’s Potential as a Transit Trade Corridor and Transportation Challenges, pg. 268.

However, the most important benefits for China would be the opening of the possibility of industrialization and the economic development of Xinjiang province. The other benefits would include avoiding the Malacca Route in China where trade robbery is common.

2.2. Possible Benefits for Pakistan

For Pakistan, the benefits are spelled out in Figure 4 below, the main benefits being that it provides better connectivity and access to markets that will pave the way for the development of an export led competitive economy. The results are already being reflected. For example, Foreign Direct Investment (FDI) has increased by 38.8% in net flow as provided in Figure 3 below.

Figure 3: FDI Flows to Pakistan



Source: Council on Foreign Relations.

Most of the investment from the CPEC will go to the energy sector, which is expected to improve the competitiveness of the country in export markets. It would also help counter Indian influence in the region; position itself as a major transit point connecting the Eurasian region with South Asia and South East Asia, more so with the Central Asia Regional Economic Cooperation (CAREC) Program , and provide a much-needed base to kick start its economic growth².

CPEC is expected to provide a major growth opportunity for Pakistan by improving physical connectivity and functioning of the markets, while generating economies of scale in agriculture and industry. These corridors will achieve this through the integration of public and private investments in “hardware” (transport and business- infrastructure); “software” (policy and regulatory framework); “techno-ware” (ICT integrated solutions for crop-cycle, supply chain management and marketing); and “orgware” (institutional strengthening and capacity building).³

² ADB, CAREC, Transport and Trade Facilitation Strategy (TTFS 2020) for the Central Asia Regional Economic Cooperation (CAREC), 2014.

³ Concept developed by BIPP staff during intensive research being completed in estimating competitiveness of a country.

Figure 4: CPEC Possible Benefits for Pakistan



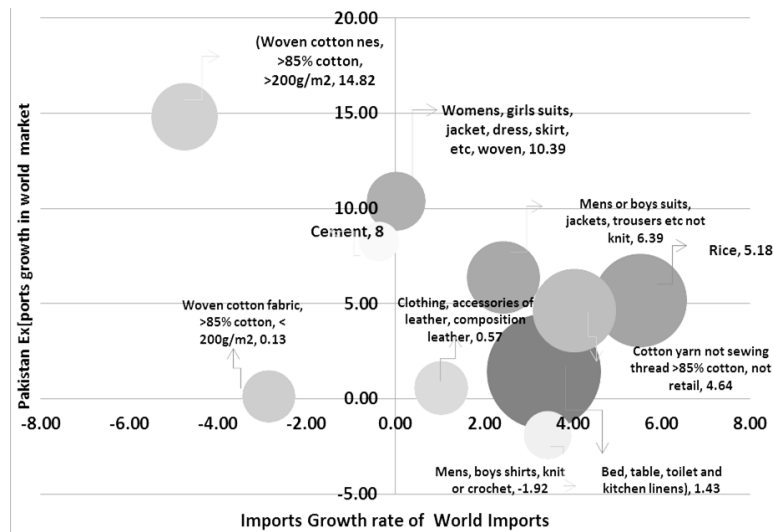
3. Trade and Competitiveness

The decline in the exports of Pakistan in the last 4 years is a major concern. The causes of this decline as documented in the Burki Institute of Public Policy (BIPP) report⁴, are largely attributed to an overvalued exchange rate by at least 20%; a weak global demand for export commodities; poor trade facilitation; adoption of import substitution policy rather than export promotion; and most importantly, a declining level of indicators of competitiveness.

The graph (Figure 5) below provides an insight into Pakistan's competitiveness in its leading 10 exports. It is clear that food and textiles remain the main export mix with essentially a poor performance as indicated by their growth and market share in the global market. Bed sheets, table cloths, toilet and kitchen linen head the export list in value terms, indicating a clear case where Pakistan's export growth in these commodities is not at par with growth in the global market. Rice, the second most important commodity, is performing well as growth in its export is more than the world average. However, its share of the world market is on the decline. Cotton yarn is also doing well with a slight growth in its share in the global market.

⁴“China-Pakistan Economic Corridor – A Potential Game Changer: Review and Analysis”, BIPP Report on “State of the Economy”- (2017).

Figure 5: Pakistan Competitiveness: Trade Matrix 2005-15



Source: UN Com trade – Computation by BIPP Research Team.

Additionally, Pakistan has a set of commodities (woven cotton, suits and jackets for men and women) that are growing well in the global market but exports from Pakistan are showing either a decline or a lower rate in comparison. Our analysis indicates that we are trading in low value agricultural commodities in uncertain markets, with most of our competitors outperforming us both in terms of quality and price.

A brief trade analysis recommends that Pakistan improves the breadth of textile production and diversifies its exports in other sectors and commodities that are low in volume but are high in value-added. A second requirement is to map countries and regions in terms of the potential they offer as trading partners; identify the commodities they are importing with consistent growth and the required competitiveness in the high demand commodities; and assess Pakistan's existing comparative advantage capacity for these commodities. The commodities that are being promoted for exports are also the ones that are affected the most by an unfavorable incentive structure: high cost of inputs, lack of supporting infrastructure such as electricity, gas, water, feed roads and credit to name a few. It is absolutely important to incrementally move out of agriculture-based products as lead exports or products by small and medium enterprises that carry low value and hold uncertain export markets. It is clear that Pakistan needs to re-position its trade regime to produce commodities that can sell to the growing import market of China.

3.1. The need to see the CPEC in a wider context of Economic Corridor Development (ECD)

The opportunities of the CPEC need to be realized in a wider context as part of the Economic Corridor Development being implemented under the Belt Road Initiative (BRI) to be able to benefit from the better connectivity and market access. Similar ADB initiatives of the Central Asia Regional Economic Cooperation (CAREC) Program under which 80 completed and ongoing projects against the milestones seven prescribed in the Transport and Trade Facilitation Strategy (TTFS). This portfolio of projects totaled \$16 billion in expenditures, of which 44% was allocated to roads, 43% to railways, 2% to ports, 8% to aviation, and 3% to logistics. The People's Republic of China (PRC) accounted for a major share of TTFS expenditure, and it is the only country in which all the projects in the TTFS Action Plan were completed. The PRC's share of expenditures was especially significant in the railway (49%) and aviation (73%) subsectors.⁵

Pakistan is well placed to take advantage of the most far-reaching changes to the corridor network that will affect Corridor 5, which links the PRC with South Asia and the Middle East. With Pakistan's accession to the CAREC Program, it is now possible to continue the corridor to the Arabian Sea. This will be achieved with three extensions totaling 4,526 km. One can see that the trade and transport link provided by BRI, CAREE and CPEC provide Pakistan with a huge opportunity to develop exports led growth and the creation of global value chains as been done in Malaysia, Bangladesh and Turkey.

3.2. Serious Efforts Needed on the Domestic Front

There is a need to address the issue of lack of synergy in developing policies and programs across districts, ecological zones and CPEC identified zones. The risks of policy, market and institutional failure can turn into a major drag on economic growth. It is crucial that policy prescriptions are based on concrete policy tools used for analysis that are effectively communicated to the policy makers. These should be similar to the competitive trade matrix and policy analysis matrix used (in this paper) as a basis for establishing competitiveness and comparative advantage in prioritizing commodities.

On the projects side, a diligent process for vetting the selection and design of projects must be put in place, critical for the success of the individual projects and this helps curb possible corruption. This should be the key role of the Planning Commission (BIPP Report 2018). It is important that the CPEC projects be made transparent and information be made readily available for researchers and the

⁵ ADB, CAREC, Transport and Trade Facilitation Strategy (TTFS 2020) for the Central Asia Regional Economic Cooperation (CAREC), 2014.

public at large. The public needs to know what is being financed under the scheme, at what cost/ terms and by whom? It might be a good idea to set up an independent “CPEC information center” in an academic setting, which can be a comprehensive warehouse for all information on this huge long-term scheme.

One way to enhance its competitiveness is to become a part of global value chains. Pakistan needs to make a case with China to consider the relocation of export oriented Chinese industries to Pakistan such as garments, solar panels, mobile phones, electrical equipment, electronics and food processing. The CPEC cells created at the provincial levels can undertake studies to benchmark the cost comparisons for commodities from China that are feasible and to relocate these in Pakistan. At the local level, the Punjab for instance, is in the process of establishing model farms linked with an improved supply chain and value addition with the purpose of producing quality selected agricultural products and also enhancing their export potential. A *Traceability System/Market Information System and Data Bank* will ensure exportable products from certified farms/processors can be tracked and traced to provide related market information to value chain stakeholders⁶. The selling point to project for industry relocation would be the low cost of labor in Pakistan, that would provide Chinese companies an opportunity to expand their operations. However, the local labor would have to be developed to match the skills for each industry. It is known that concessions are being requested in Chinese “Sunset” industrial sectors, which would incentivize Chinese investors to relocate their production facilities in Pakistan. If Pakistan can make China relocate its industries, it will not only lead to diversification but will also enhance the efficiency of low-skilled labor-intensive industry, as well as be instrumental in technology transfers; channelizing economies of scale; and adding value to production chains in various sectors such as agriculture and industry.

Figure 6: Climate Change Strategies



Source: Annual Progress Report FY 2016-17, Agriculture Department, Government of Pakistan

⁶ 'Traceable Pakistan' project (2017-21), proposed with a total cost of PKR 3 billion under Department of Agriculture, Government of The Punjab.

Finally, the ECD and CPEC need to proactively incorporate climate change and environmental concerns in project planning, preparation and the implantation process, taking into account any possible environmental externalities and degradation that the proposed investments will impose. Whereas environmental externalities impose immediate costs on others, environmental degradation imposes future costs on all users of natural resources including the end user who is responsible for the degradation of the resource base. Figure 6 suggests that the mitigation and adaptation strategy approaches will help in discovering new technologies and the related adjustment of systems in response to actual or expected climate change⁷. Therefore, high investment in research and technology for instance through the implementation of agro-ecological innovations will allow carbon to be stored in soils and trees that will absorb the temperature and humidity shocks, and also will lower the probability of heavy and untimely climate change impacts⁸. LUMS/WIT is initiating research as to how to integrate environmental costs using an extended version of Policy Analysis Matrix, a technique that uses a combination of project and policy analysis.

4. The CPEC and Agriculture

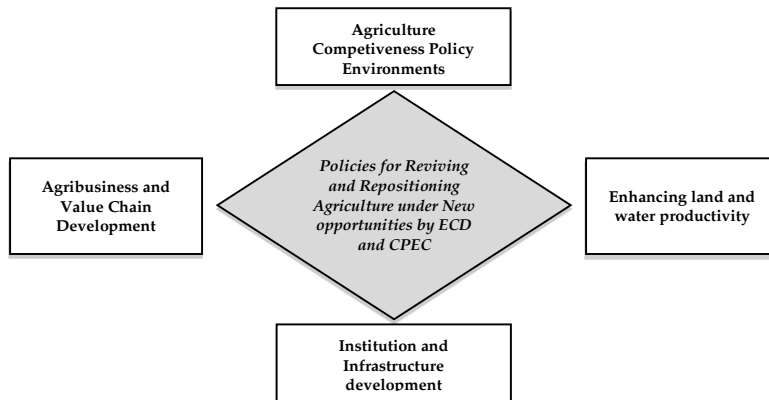
Pakistan is primarily an agrarian economy. The agriculture sector has significant potential to contribute to economic growth and development. This has not yet been fully realized. The sector remains the largest employer absorbing 42.3 % of Pakistan's total labor force⁹. This report suggests that in the short to medium term, agriculture and agro-industry provide a good opportunity to spur export led growth. The corridor development should not be regarded as a passage provided to those economies that are already well developed and better equipped to trade competitively and ultimately, take a larger share of the expected benefits. Rather, it may also be seen as an opportunity to provide the supporting infrastructure to Pakistan's potential agriculture and agro-processing industry. Promoting the rural economy in high potential areas would result in fast track rural economic growth as it carries forward and backward linkages, having a high multiplier effects in terms of job creation and value addition. Because of the generally perishable and bulky characteristics of agricultural products, many agro-industrial plants and smaller-scale agro-processing enterprises tend to be located close to their major sources of raw materials. Consequently, their immediate socio-economic impacts tend to be exerted in rural areas (Ahmad 2016). Further, it is suggested to equally spread these efforts to all provincial rural economies especially in Balochistan and Khyber Pakhtunkhwa (KPK) for equitable prosperity.

⁷ Annual Progress Report FY 2016-17, Agriculture Department, Government of Pakistan.

⁸ Lead, Pakistan, 2016.

⁹ Economic Survey of Pakistan FY 2015-16, Government of Pakistan.

Figure 7: Framework for Sustainable and Competitive Growth in the Agriculture Sector



The above framework in Figure 7 is based on international best practices, which would steer the agriculture sector towards sustainable and competitive growth. Nevertheless, the policy environment would at minimum require the sound management of information systems, flexible rural factor markets, a competitive agribusiness sector, adequate infrastructure, robust technology, and most importantly, trained and developed human capital. Holistically, the proposed policy actions and underlying strategies would foster agricultural growth, mainly through adjustments in the output mix toward higher-value products, which should result in higher total factor productivity. Tremendous opportunities are offered by the ECD and the CPEC that will allow tapping onto a larger size of the domestic market and several emerging international export destinations, especially China. This would subsequently also contribute to the government and donor objectives to provide greater support to rural livelihoods and accelerate rural economic growth.

There are numerous issues facing the agriculture sector such as the poor state of the seed industry, weak extension services and non-existent infrastructure for the development of appropriate agricultural machinery and equipment. These gaps have trapped agriculture in Pakistan in a low technology equilibrium. Stagnation in the dairy industry is also a ripple effect, particularly for the small livestock holders predominant in the sector. This is because of policy capture by a few large milk processors. The key action would be how to leverage the CPEC to develop a competitive agriculture and agro-industry by identifying clusters of agricultural value chains in the corridor zones classified under the CPEC project (discussed below); and policies needed to promote their integration into the global value chain.

Pakistan's trade is dominated by agriculture and agro-based products and would continue to be so for some time to come. In this section, based on the extensive

work undertaken during the last 5 to 7 years at the provincial, ecological zones and now at the CPEC zone levels, the aim is to identify and prioritize commodities and value added chains that need to be promoted and supported with an incentivized policy environment. Also important is the need to undertake more intensive analyses that prioritize commodities in estimating comparative advantage of producing a diversified crop mix and how to translate this into a competitive advantage. There are a number of tools, using a combination of primary and secondary data that can extensively be used to analyze and communicate results to the policy makers.

4.1. Priority Value Chains in each Province

The table below indicates that each province is endowed with climatic conditions to produce commodities that carry comparative and seasonal advantages. The Punjab provides a comparative advantage in wheat; rice (basmati); cotton; maize; citrus; mango; and livestock and dairy products. Similarly, the comparative advantage of Sindh lies in cotton; rice (course); dates; guavas; and bananas. Tremendous opportunities are offered by the significant size of the domestic market and several emerging international export destinations. The prioritization process is often based on market share and growth at macro levels rather than conducting an analysis at micro or district levels.

An integrated strategy needs to be developed which includes the criteria for the prioritization of selected value chains to render it eligible for technical assistance and capacity building support in the following areas: value addition; and marketing and export (such as acquiring export, quality assurance and food-safety compliance certifications). Similarly, the strategy would devise a criterion for the selection of enterprises from selected value chains for:

- support to access potential domestic and international markets (through participation in international exhibitions, trade shows, exposure visits etc.);
- organization of stakeholders participatory programs (involving rapid assessments, value chain analysis and other sub-sector mapping exercises with stakeholders' participation); and
- development of value chain road-maps and the establishment and operation of Value Chain Platforms (VCPs) / Sector Working Groups / Platforms covering horticulture and livestock sub-sectors.

The prerequisite to improve the competitiveness in the international markets is the quality of products/crops. However, a lack of modern backbone (supporting?) infrastructure (irrigation and feeder roads), cold storage, grading, post-harvest treatment and transport facilitates, periodic gluts occurring in markets, and the lack of capacity to store fruit undermine the supply of quality

products. The private sector, which can play a vital role, may perceive agriculture as a risky investment venture. The legal framework that impedes private investment must be changed to enable the agricultural sector to fulfill its export and growth potential. Private-public partnerships are needed to attract the much needed investment in the agro-industrial sector.

In the past, these programs were supported at the center with institutions established overtime. Now, with agriculture being a provincial subject, the capacity of planning and policy making support at the provincial levels is either nonexistent or very weak.

4.2. Priority Value Chains in Different Agro-Ecologies

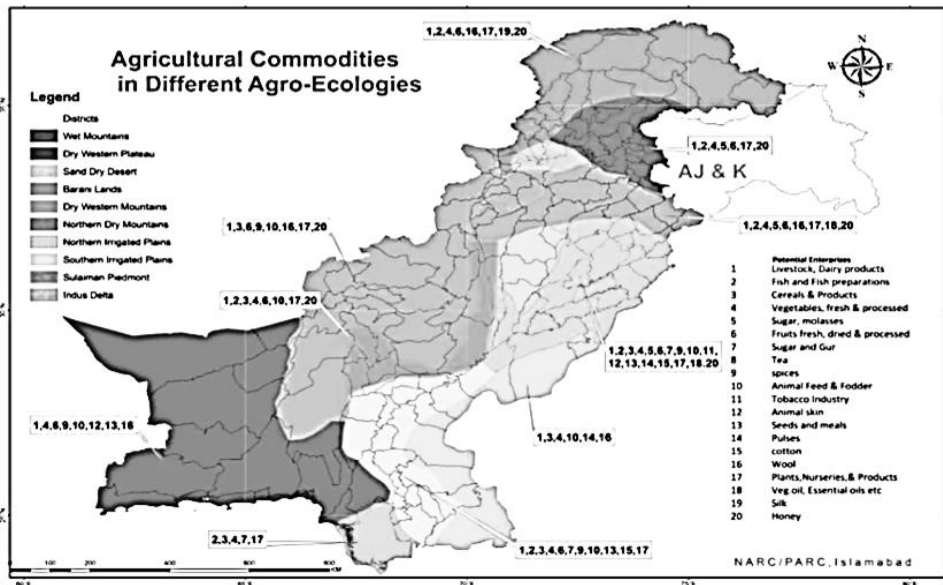
In the CPEC context, based on initial work undertaken by the Ministry of National Food Security and Research, and Pakistan Agriculture Research Council (PARC), the following value chains were identified based on the agro-climatic potential of each region (See table 3 below).

Table 3: Indicative List of Potential Sub-sectors / Value Chains according to provinces

Provinces	Identified Value Chains	Priority Value Chains
The Punjab	Wheat, Rice, Maize, Cotton, Fodder, Citrus, Sugarcane, Mango, Potato, Tomato, Onion, Guava, Floriculture, Livestock & Dairy	Wheat Rice, Cotton, Citrus (kinnow), Mango, Chili
Khyber Pakhtunkhwa	Maize, Citrus -Red Blood (3 clusters), Potato, Onion, Tomato (2 clusters), Ginger, Guava, Peach, Dates, Fish (Trout), Livestock & Dairy	Maize, Citrus (red-blood, 3 clusters), Tomato, Peaches
Sindh	Mango, Chili, Banana, Dates, Onion, Guava, Ginger, Fish, Livestock & Dairy, including study on Cattle Colony, Karachi	Mango, Chili, Banana, Dates, Onion
Balochistan	Grapes, Apples, Tomato, Dates, Fish, Livestock & Dairy	Grapes, Apple, Tomatoes, Livestock
Gligit Baltistan:	Apricot, Potato, Pine Nut, Livestock & Dairy	Apricot, Potato. Pinenuts
FATA	Apples, Tomato, Olive, Livestock & Dairy	Apples, Tomato, Olive
AJK	Floriculture, Livestock & Dairy	
All over Pakistan	A detailed study on meat sector (Halal industry) of country needs be carried out	

These commodities provided an initial list, but what was lacking was a ranking based on estimating the comparative advantage or Domestic Resource Cost (DRC) analysis and estimating the demand for the cultivation of each commodity in each ecological zone. Up to this point, no such detailed analysis has been undertaken given a huge investment is underway or planned under the ECD and the CPEC.

Figure 8:



Further developing the point above, past reliance on a few commodities such as wheat, rice, maize cotton, and sugarcane have very limited potential for farmers to attain a higher income and capture a greater market share in domestic and export markets. The horticulture and livestock sectors offer even greater potential. However, there is no comprehensive study that establishes the relative comparative advantage between traditional, high value and potential new crops. It is proposed to undertake a detailed study for strategic crops based on ecological zones in all four provinces and estimate the comparative advantage of each crop (DRC and other indicators). That will help in the identification of crops that are technically sound, economically viable, socially acceptable and environmentally benign and most importantly, in ranking the commodities. The logical process will help in setting initial priorities of crops/livestock in each ecological zone. The second stage of the study will undertake a detailed market analysis including the value chain of identifying crops that have a competitive advantage, both in domestic and export markets. The final stage of the study will create clusters; and support the actual implementation activities in selected areas and commodities. The selected commodity would need to be promoted with private-public partnership. The appropriate strategies that will raise the land, water and labor productivity of the small farmer will be of utmost importance to spur agricultural growth on a sustainable basis.

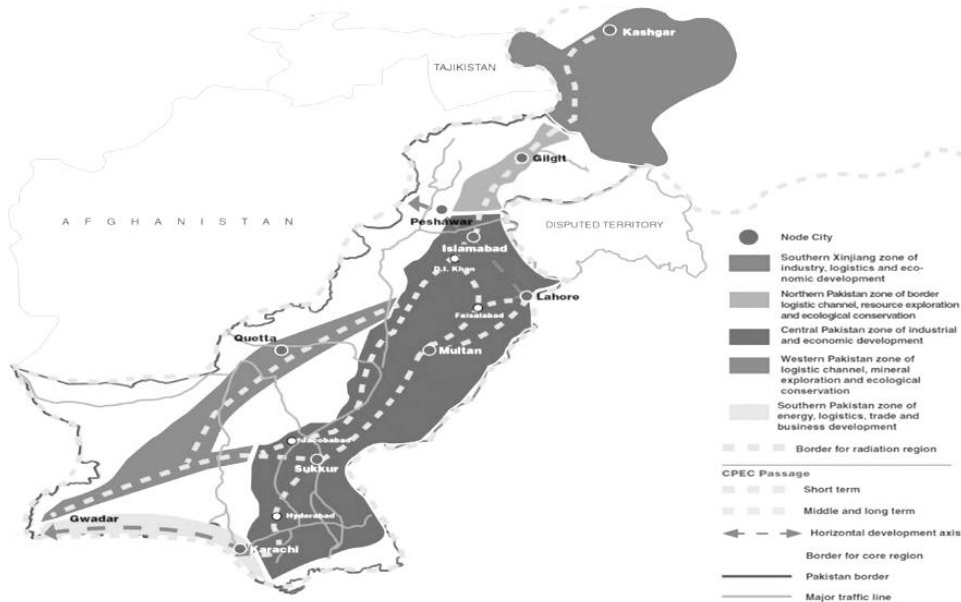
Table 4: Ecological Zones and Respective Value Chains

Eco Zones	Identified Value Chains
Northern Dry Mountains (G-B)	(1) Livestock Dairy (2) Fish and Fish Preparation (4) Vegetables, Fresh and Processed (6) Fruits Fresh, Dried Processed (16) Wool (17) Plants Nurseries & products (20) Honey
Dry Western Plateau (Balochistan, KPK and FATA)	(1) Livestock Dairy (4) Vegetables, Fresh and Processed (6) Fruits Fresh, Dried Processed Animal Feed & Fodder (9) Spices (12) Animal Skin (13) Seeds & Meals (16) Wool
Dry Western Mountain (Balochistan)	(1) Livestock Dairy Preparation (3) Cereals and (6) Fruits Fresh, Dried Processed (9) Spices (10) Animal Feed & Fodder (17) (20) Honey
Western Mountains	(1) Livestock Dairy (2) Fish and Fish Preparation (4) Vegetables, Fresh and Processed (5) Sugar & Molasses (6) Fruits Fresh, Dried Processed (16) Wool (17) Plants Nurseries & products (20) Honey
Barani	(1) Livestock Dairy (2) Fish and Fish Preparation (4) Vegetables, Fresh and Processed (5) Sugar & Molasses (6) Fruits Fresh, Dried Processed (17) Plants Nurseries & products (20) Honey
Sulamania Pedoment	(1) Livestock Dairy (2) Fish and Fish Preparation (3) Cereals (4) Vegetables, Fresh and Processed (5) Sugar & Molasses (6) Fruits Fresh, Dried Processed (17) Plants Nurseries & products (20) Honey
Northern Irrigated Plan	(1) Livestock Dairy (2) Fish and Fish Preparation (3) Cereals and Products (4) Vegetables, Fresh and Processed (5) Sugar & Molasses (6) Fruits Fresh, Dried Processed (7) Sugar and Gur (9) Spices (10) Animal Feed & Fodder (11) Tobacco Industry (12) Animal Skin (13) Seeds & Meals (14) Pules (15) Cotton (17) Plants Nurseries & products (18) Veg Oil, essential Oils (20) Honey
Southern Irrigated Plan	(2) Fish and Fish Preparation (3) Cereals and Products (4) Vegetables, Fresh and Processed (6) Fruits Fresh, Dried Processed (7) Sugar and Gur (9) Spices (10) Animal Feed & Fodder (13) Seeds & Meals (14) Pules (15) Cotton (17) Plants Nurseries & products
Indus Delta	(2) Fish and Fish Preparation (3) Cereals and Products (4) Vegetables, Fresh and Processed (7) Sugar and Gur (17) Plants Nurseries & products
Sand Dry Desert	(1) Livestock Dairy (2) Fish and Fish Preparation (3) Cereals and Products (10) Animal Feed & Fodder (14) Pules (17) Plants Nurseries & products

4.3. Priority Value Chains in Different CPEC

The planning and policy formulation for the CPEC is mainly followed keeping in mind functional zones to identify clusters of agriculture value chains in four areas classified as Northern, Central, Western and Southern regions of the CPEC (Figure 9). These four regions offer the possibility of raising a diversified mix of an integrated crop/livestock agricultural system as discussed below:

Figure 9: Four CPEC Value Chain Regions in Pakistan



Gilgit Baltistan and Balochistan are important provinces in the context of the CPEC as they provide entry and exits for the corridor. However, unfortunately, both are previously neglected provinces and carry the same attention even now in this development discourse. Political and economic stability in this region is vital for the overall success of the CPEC since expected benefits from huge investments cannot be realized optimally unless these two provinces are made inclusive to CPEC development.

Table 5: Priority Value Chains under CPEC Zones

	Past Vetting	Proposed Under CPEC	Supporting Policy
Northern Zone	Apple, Grapes, Cherry, Potato	Apricot, Trout, Organic Farming, Agro tourism	New agriculture, horticulture and livestock policy Water policy and act in the making-enable farmers, entrepreneurs and other value chain actors to also benefit from existing tourist flow in the region, supportive policies of Government of Pakistan, provincial government and the

	Past Vetting	Proposed Under CPEC	Supporting Policy
			China-Pak Economic Corridor (CPEC).
	<p>Central Zone (The Punjab) Lahore, Sheikhpura, Nankana Sahib, Kasur, Okara, Pakpattan, Sahiwal Gujranwala, Hafizabad, Narowal, Sialkot, Gujrat - Faisalabad, TT Singh, Sargodha and Jhang -- Multan, Rahim Yar Khan, Muzafarghar, Khanewal, Bhawalpur</p>	<p>Potatoes, Guava, Citrus, Mango</p> <p>Manufacturing of Pesticide Olive processing, value addition, and extraction plants Establishment of Fruit and Vegetable Preservation /Processing Center under PPP Mango and kinnow (orange) juice /pulp extraction plant Manufacture of fertilizer Establishment of Rice Bran Oil; Potato Powder and Flakes manufacturing; and Wheat Powder Plants Installation of modern para-boiling plant in rice zone Hybrid seed production of vegetables Introduction of e-beam technology for export of fruits and vegetables. promote the hybrid rice production hybrid rice research centre at International Center for Chemical and Biological Sciences (ICCBS) meat processing plants with annual output of 200,000 tons per year, two demonstration plants processing 200,000 tons of milk per year.</p>	<p>Agriculture Policy being developed Growth strategy for The Punjab Growth strategy for agriculture development. White paper under preparation for assessing programs, projects and policies to modernize agriculture development under new opportunities.</p>
	<p>Central Zone (The Punjab) Sukkur, Haripur -- Khairpur, Ghotki, N.Feroze</p>	<p>Rice , Dates, Banana</p>	
	<p>Western Zone (KPK, FATA) South Waziristan Agency, Khurram Agency-- Kech, Panjgur DI Khan, Bannu, Lakki Marwat-- Swat, Malakand Charsadda and Mohmand Agency Kalat,- Kohat, Bannu and DI Khan -- Swat and Dir Charsadda and Peshawar ,South Waziristan Agency (SWA) and Khurram</p>	<p>Apple, Dates, Tomatoes, Guava, Peaches, Apricot, Melon</p> <p>Economic Zones and Special Economic Zones located in ideal alignment K-P Incentives -- Economic Zones and Special Economic Zones Creating Park Like Environment Identify Early Opportunities for Investment & Growth Also, have Shortlist of Sectors for Road Show</p>	<p>Agriculture Policy in Place Trade Crossroad – CIS, China with Geographical, cultural and commercial advantage Economic Heartlands: Natural Resources, Agriculture, growing Engineering Hub and Tourism Comment: Need Greater role of agro-industry</p>

	Past Vetting	Proposed Under CPEC	Supporting Policy
Agency -- SWA and NWA Khurram Agency -- Lakki Marwat and DI Khan Bhakkar			
Western Zone (Balochistan) Kalat, Mastung, Killa Abdullah, Ziarat, Killa Saifullah-- Pishin, Quetta, Mastung, Killa Abdullah, Killa Saifullah-- Mastung, Killa Abdullah, Chagai	Apple, grapes, Tomatoes	Processing industry for fruits and vegetable (Apple and Date Processing Plants, Tomato Paste Manufacturing, Fried/ Dried Onion Plants) and promoting Cut-flower Business & Floriculture. Potential to explore semi-refined form of palm oil to the local market through an oil expeller unit..	Agriculture Policy and Strategy being developed.
Southern	Livestock, Fishery, Agro Tourism	Gwadar port – a trade hub in the making	Long term CPEC Plan

The Northern zone holds great potential for conversion and the declaration of the entire region as organic, which can offer good opportunities to GB farmers/enterprises in enhanced income generation. Further, due to its seasonal and elevation advantages, apricot offers a huge potential as the demand for this is growing; a good quality apricot produced in GB can be exported in large volumes to China.

The Central region should make the most out of water available under the Indus Basin, adding value per unit of water, which is presently quite low. Key steps needed to delivering the CPEC potential would require the region to place greater emphasis on the horticultural and livestock sectors; and also promotion of high value commodities such as meat, targeting halal markets, mango, citrus and dates. Mangos, guavas, potatoes and onions in the Punjab; dates and bananas in Sindh; and peaches and tomatoes in KPK are the priority value chains for the central region that offer significant export potential to be captured under the CPEC. The Chinese experience, technology and financing may be positioned under the CPEC for this region where Pakistan's comparative advantage of favorable land and water resources, cheap labor and market opportunities can create a win-win situation for both countries.

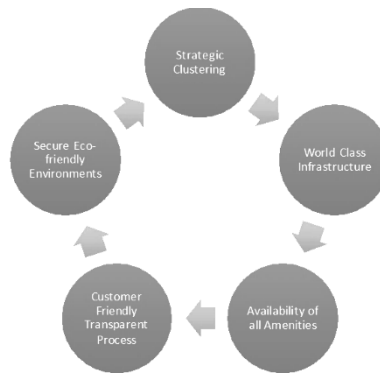
The development of agriculture in Balochistan depends critically on the sustainable and efficient use of its valuable resource base. This refers to developing competitive horticulture and livestock (sheep and goat), as rangelands stretch across much of upland areas and in the low lands. KPK and FATA provide a similar and more diversified commodity mix. FATA, with new roads built and old ones rehabilitated, provides an opportunity to develop its agriculture and mineral resources which have long been deprived of the value they offer.

The Southern zone can become a hub for fisheries and its processing industry. Thailand is a good case to learn from in developing a modern fishing industry. The advanced processing of fish canning is done in Karachi, Sindh. Modern fish processing facilities can be developed as part of the CPEC with the help of its Chinese counterparts. Developing a modern fishing industry is a test case for the CPEC in that it is largely for the benefit of the local population and would make a visible change in their livelihoods.

5. Delivering the potential

Creating the right enabling environment is very critical. Regional and global best practices need to be created to fit the needs of Pakistan, as the key factors for moving forward are illustrated in the framework below:

Figure 10: Key Requirements of Pakistan to Progress



5.1. Develop a greater role of Public Private Partnership (PPP)

Initiatives need to be pursued to create a working partnership between the Government of Pakistan, the private sector, local farmers and the international community. It aims to stimulate major increases in agricultural productivity and the incomes of smallholder farmers by catalyzing responsible private investment in the region. The ECD needs investors in agribusiness project developers operating exclusively in the agricultural and agro-industrial sector along the corridors with a mission of providing optimal investment options in developing agriculture and agribusiness within the three planned routes with priority for the Western route of the national corridor.

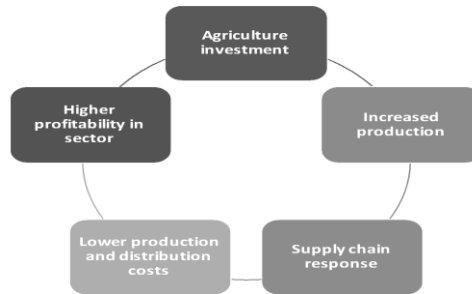
5.2. Making Agriculture Profitable, Competitive, Sustainable and Inclusive

Making Agriculture Profitable:

Support in developing a profitable agricultural sector with strong linkages to markets is the best way to develop a competitive and sustainable agriculture on the

one hand; and bring inclusive growth for the rural community on the other. Extensive work in the field shows that with proper accounting (financial and economic), on balance, agriculture is not profitable. The expected investment in the sector will not be met if farmers and entrepreneurs are not making money. Making agriculture profitable would follow the chain in Figure 11 below. The important aspect would be to make agricultural growth and sustainability as inclusive as possible.

Figure 11: Making Agriculture Profitable



Making Agriculture Competitive:

It is even more important to enhance competitiveness, both in domestic and export markets. The important question is: do we have the comparative advantage and the required competitiveness in our export commodities; and are they growing in high potential markets? Currently, most exports have a declining market share. Even in low end markets such as Afghanistan, the most recent article in the Dawn newspaper ¹⁰ indicates that Pakistan has lost half the market share. Among other factors, the main causes for this include the high cost of production and doing business. The Figure below suggests a comprehensive set of solutions in this regard.

Figure 12: Making Agriculture Competitive



¹⁰ <http://www.dawn.com/news/1393106/pakistan-loses-50pc-market-share-in-kabul>

Making Agriculture Sustainable:

Pakistan is increasingly vulnerable to a number of disaster and climate events such as floods, earthquakes, drought, pest attacks, diseases and conflict. Just within a decade more than 80% of Pakistan's 124 districts and 33 million people have been hit by natural disasters of one form or another, causing US\$ 17.1bn worth of losses to the economy. Global climate change is expected to impact the predictability of climate variability and increase the severity and frequency of extreme weather events, thus creating a precarious climate situation. All these events heavily affect not only individual lives, property and livelihoods but also greatly impact development outcomes, divert development funds, and put the fragile agricultural ecosystems at risk. There are substantial data and evidence to support the facts that due to repeated disasters in Pakistan, the agricultural sector faces serious challenges in maintaining vertical growth and expansion. At the community level, owing to these increasing problems, traditional coping mechanisms and knowledge are no longer very effective.

Despite technological and economic advancements, the condition of farmers continues to be unstable due to natural calamities and price fluctuations. Climate change and growing water scarcity is adding to the problems. Of all the problems, seasonal changes and groundwater depletion are the most serious ones. Agriculture in the future increasingly depends on groundwater availability, and this is fast depleting. Given all these factors, the agricultural sector is a high-risk investment proposition and thus, a lower choice for investors as already emphasized earlier. The agricultural sector, which besides farming, includes post-harvest handling and agro-processing, is characterized by unique features that distinguish it from other sectors. These features invariably have deterred private investors from investing in the sector and therefore, adversely affect the productivity and performance of agricultural markets. The features include, among others: low profitability and higher risks of on-farm investments such as weather and free-grazing; uncertainty in input and output prices; and limited availability of conventional bank collateral that farm households can offer. Given these issues, developing smart agriculture based on good agricultural practices is needed.

Making Agriculture Growth Inclusive:

The issues related to improving the farmer's, especially the small farmers' access to credit, technology and markets are well documented. What is not clear is which actions can be taken on the ground to address these issues. At the heart of the problem is that small farmers are forced to pledge their produce to moneylenders/traders/millers compelling them to dispose of their produce immediately. In order to meet their immediate cash needs, small-scale farmers must often sell their produce shortly after harvest when market prices are at their lowest. The farmers suffer the stress of sale and as a result, up to 40% of post-

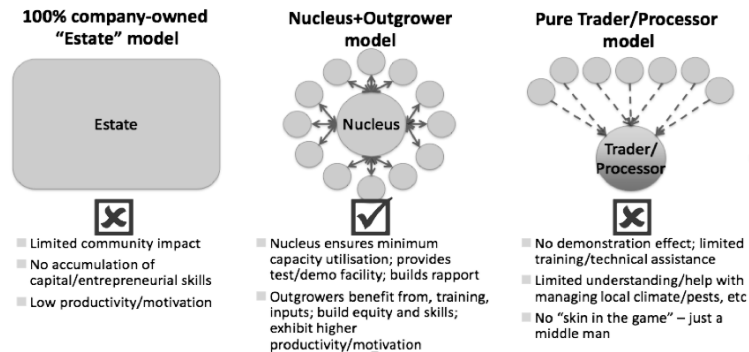
harvest losses can be attributed to this lack of holding capacity and access to loan funds of the small farmers. In summary, the farmer has to dispose his produce as early as possible due to: (1) lack of adequate storage; (2) need of funds to meet financial obligations for the next crop and to address his social obligations; and more importantly (3) to clear his debts. As much as 80% of his produce can be pledged with the *Arthi* / local middleman.

There are a number of models that are being tested to make small farmer development more inclusive, which include:

- Traditional Model
- Choupal Model
- Kisan Khushhal's (KK) by Tameer Bank
- Warehouse Receipt Program
- Value Chain Financing
- Trading Platform Preserving quality from farm to factory

The problem with these models is that none of them can be scaled to the point where its impact on small farmers is realized. There is a need to recognize how to develop collective actions when dealing with small farmers. A typical model, which is successful in Africa and other places, is to use the Nucleus Farm Hub and Outgrower Model as depicted in Figure 12 below where the local communities are provided with access to infrastructure services at low cost (e.g. water and electricity) or free of charge (e.g. feeder roads). Indications are that the Outgrower Model is preferred for access financing in Africa. Smallholder farmers benefit from the market access and economies of scale in input-purchasing created by the demand and volumes generated by the commercial farmer. In some cases, there will be entrepreneurs with the willingness and ability to design and arrange finance for these types of commercial farming projects. However, in many situations, the high costs and risks of designing early stage projects and bringing them to successful implementation are likely to deter private entrepreneurs and project developers, even when patient capital is available for the infrastructure. Therefore, the second important factor that limits its development is the question of who will cover the risk?

Figure 12: Nucleus Out Grower Model



Source: Adopted from Keith Palmer, 2010, Agricultural growth and poverty reduction in Africa, AgDevCO Development.

This report proposes to develop public private partnerships that would support building warehouses with treatment facilities in selected districts on a pilot basis for grain crops, such as rice, wheat and cotton depending on the crop cycle. A feasible public private modality needs to be worked out, which can be an appropriate and feasible way forward. Initially, the government helps in infrastructure development through land and subsidized credit. A privately - or community - owned storage facility can be linked to a bank, which can pledge stocks and advance loans to the farmers treating them as collateral.

6. The Way Forward / Actions

This report concludes with the recommendation that more refined groundwork is required to meet the challenges and make most of the opportunities provided by the ECD and the CPEC. In the short to medium term, developing agriculture and agro-based industry has the best chance of success, learning from the Chinese as they provide a successful model to feed a large population and reduce their poverty levels. The Chinese are doing their homework and are quite clear as to what benefits they can obtain from the CPEC, unlike in the case of Pakistan. Listed below are some key planning and policy formulation actions that are needed:

- Assess agricultural investment projects being planned for the CPEC with proper feasibility criteria. Develop guidelines for the promotion of investment in agri-business parks and generally, in all provinces with priority to the Western Route and KK.
- Based on ecological zones, identify commodities that have high export potential. The commonly used analytical tools used in other countries ranging from crop budgets to policy analysis matrix to establishing export competitiveness, are missing in this huge exercise.

- On the demand side, assess market potentials, especially of seasonal opportunities provided in domestic and regional markets.
- Conduct a feasibility study for the establishment of agro-tourism corridors linked to the CPEC investments, especially in GP and the Coastal zone of Sindh and Balochistan (fishery).
- Develop clusters of commercially viable farming, processing and service firms located in specific geographical areas. Importantly, development should be inclusive of small farmers in providing access to technology, credits and markets.
- Given the long-term nature of agriculture and agri-business, use an innovative financing mode to make available long-term, low-cost finance – patient capital – that can be used to finance the agricultural supporting infrastructure components of commercial farming projects. Patient capital is used to address market failures and only needs to be employed once.
- Identify agri-business parks (on the lines of industrial parks) linked to the CPEC in all provinces whereby entrepreneurs from Chinese (provinces?) and from each province can jointly establish farm, non-farm and off-farm agri-businesses.
- Develop agriculture and rural growth centers and corridors with a focus on post-harvest handling, value addition and cold chain development.
- The CPEC also opens up avenues for direct investment by Chinese companies, as well as, joint ventures and partnerships between local and Chinese investors. Each province will take this opportunity to introduce and incentivize partnerships with Chinese companies to establish small industrial parks along the three routes discussed in this report. In such parks, all business shall be established in partnership with the Chinese and the local residents of each province. This is an opportunity to promote small and medium scale entrepreneurship.
- At the government level, the CPEC will play an instrumental role in promoting technical cooperation between academia, research and agricultural extension departments of China and of each province. Such cooperation would be more effective in GB as the bordering regions have almost the same agro-ecological characteristics. GB can learn from the recent successes of China in mountain agriculture and commercial farming as well as marketing.
- Develop the following through the CPEC committee:
 - China – Provincial level Committee for Investments in Agribusiness Industry Development; and
 - China – Provincial level Committee on Promoting Cooperation in Agricultural Education, Research and Extension.
- Organization of inward and outward exposure visits between the Chinese and local institutions for the exchange of knowledge and expertise.

10

Consequences of Varying Exchange Rates for Agriculture in the Punjab – Pakistan

Abdul Salam*

Abstract

In the wake of a growing debt burden and deteriorating balance of payment situation the value of the Pak Rupee has declined sharply. A heated debate on the likely consequences of falling currency value for various sectors and aspects of the economy has ensued. As the use of modern and purchased farm inputs, which are imported in the main, has trended upward in the country, any changes in the foreign exchange rate, inter alia, will impact the cost of production of farm products. Following a Policy Analysis Matrix framework, we have estimated the shares of tradable and non - tradable inputs in crop the budgets of wheat, rice, cotton and sugarcane in the Punjab – the main surplus producing province in the country. As per these estimates, tradable inputs constituted 43 to 55% of the cost of cultivation of these crops during 2014-15. Thus, any change in the value of the currency will immediately impact 43 to 55% of the cost of production of major crops. The currency realignments will further affect transportation, processing and marketing costs, with implications for competitiveness in export markets.

1. Introduction

The twin deficits- budget and the balance of payments have chronically plagued the macroeconomic situation in Pakistan. In the wake of a growing debt burden, both domestic and foreign, the situation has deteriorated in the recent past. The balance of payment situation has historically tended to aggravate whenever there has been a change in the political regime at the federal level, often triggering a blame game and a search for popular solutions. One of the proposed solutions has always been the realignment of the foreign exchange rate. This has often been considered a panacea for curing the trade deficit and improving the balance of payments situation. The proposal of depreciating the currency to make

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exports less expensive and make imports dearer thereby increases foreign exchange earnings. This, no doubt, is not without merits. However, there is another side of the coin which is often ignored and not given due consideration. Without going into the theoretical niceties and details, I have tried to examine the likely implications / consequences of depreciation in the value of the Pak currency in the context of cultivation of important crops of wheat, basmati rice, cotton and sugarcane in the Punjab- Pakistan. These crops are important in the context of international trade and their annual production has implications for the balance of trade situation in the country. Pakistan has been a net importer of wheat and has been running a certain amount of surplus during the last few years but is unable to export competitively. The situation is quite similar in the case of sugarcane - as Pakistan has surplus stocks of sugar but finds it difficult to export. Pakistan has been an important player in the international markets of rice and cotton, ranking 4th or 5th in world exports. Thus, changes in the exchange rate will impact on savings and the earnings of foreign exchange. However, as the cultivation of these crops entails considerable use of tradable inputs such as fertilizers, seed, pesticides, farm machinery, diesel, etc, the changes in the exchange rate will, inter alia, impact their cost of production and marketing with implications for their competitiveness in international trade.

The rest of the paper is organized as follows. The characteristics and salient features of agriculture progressing from subsistence to commercial farming are briefly described in Section 2. The changes in cropping pattern over time, as experienced in Punjab's agriculture and implications thereof are detailed in Section 3. The crop budgets of wheat, basmati, cotton and sugarcane, most important field crops from the point of view of trade and the likely to benefit from the currency alignments are analyzed in Section 4. The likely consequences of realignment in the foreign exchange regime on competitiveness of wheat, basmati, cotton and sugarcane cultivation are also explained in Section 4. Major agricultural exports and imports from Pakistan, during 2014 to 2018, are reviewed in Section 5. The paper concludes by summarizing the main points emerging from the analysis in Section 6.

2. Transition from subsistence to commercial agriculture

Subsistence and traditional agriculture, which had characterized the rural landscape in Pakistan before the onset of the Green Revolution, in the late 1960s, was primarily oriented to meet the requirements of farm households of food and other products. Relying primarily on the farm households' supply of labor and other inputs, with a limited role of the markets and purchased factor inputs, traditional agriculture was marked by low land productivity. As production was primarily organized to meet the farm households' food and other requirements, the liquidity requirements of traditional and subsistence farming were also meagre and the same was true for the marketable surplus. Nevertheless, there is a lot of evidence about the role of market prices in impacting resource allocation and

crop selection even under subsistence farming (Falcon 1964, Raj Krishna, 1963, Behrman, 1966). Accordingly, producer prices of output play an important role in the allocation of resources and the determination of the cropping patterns even in traditional agriculture. Traditional agriculture, has been observed to be quite diversified so as to cater for the various household needs and also as a strategy for minimizing the risks of unpredictable changes in climate and other factors (Heady, 1952). Modern and Commercial agriculture is predicated on the supply and use of industrial inputs- fertilizers, pesticides, improved seeds, farm tractors and other machines. There is also a greater reliance on the markets for the supply of capital and other factor inputs and the disposal of the marketable surplus of farm output.

In this paper we review the situation in Punjab’s agriculture over time, in terms of adoption / use of modern and or purchased inputs: chemical fertilizers, pesticides/ herbicides, tractors in the light of data reported in the reports of the Agricultural Census; 1972, 1980, 1990, 2000 and 2010. This has been done to bring out the changes experienced in the mode of production and related aspects of important field crops. Data on the proportion of farmers using chemical fertilizers, pesticides and tractors in the Punjab, are presented in Table 1.

Table 1: Adoption of Modern Farm Inputs in Punjab Agriculture

	(% of total farms)		
	Plant protection	Fertilizers	Tractors
1972	2	55	24
1980	4	76	40
1990	32	82	88
2000	35	81	96
2010	41	75	99

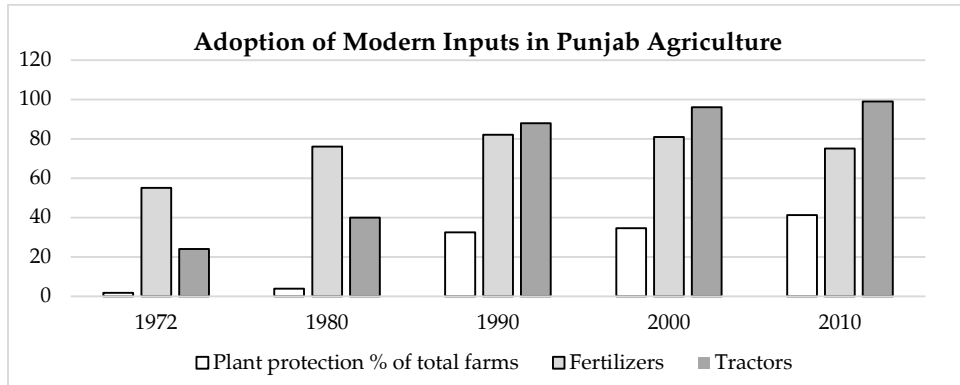
Source: Author’s calculations from the data reported in various reports of Pakistan Agricultural Census.

As per the Census data, adoption of chemical inputs and technologies, as manifested by the use of plant protection measures and pesticides, has shown an increasing trend. The area covered by various plant protection measures during 1972 was only 2 % of the total cropped area in the Punjab.

Farms reporting the use of pesticides in the Punjab in 1980 accounted for 4% of the total farms estimated at 2.5 million. The proportion of farmers using chemicals to protect their crops against various insects and pests were estimated at 32 in 1990, 35 in 2000 and 41 in 2010. The most common crop for which pesticides are used is understood to be cotton; other crops in this context are rice, sugarcane, maize etc. Farmers reporting use of herbicides in 2010 were estimated at over 40% and the wheat crop figured prominently in this context. It is worth mentioning that the bulk of the chemicals used as pesticides and herbicides for plant protection is imported, involving foreign exchange and cash outlays. Thus, any change in the rates of

foreign exchange will have implications for the cost of plant protection materials which will add to the cost of production and affect the competitiveness of field crops.

The use of chemical fertilizers has become quite critical in modern farm production. As per the data available from various census reports, the adoption of chemical fertilizers in the Punjab has climbed from 55 % in 1972 to 75 % in 2010. It was over 80% in 2000.



The use level of fertilizers in terms of total nutrients (N, P, K) in the country were reported at 382 thousand nutrient tons in 1972 had risen to 4,360 thousand tons in 2010. The cropped area during the same period expanded from 16,600 thousand hectares to 24,120 thousand hectares. Thus, the rate of fertilizer application estimated at 23 kg per hectare has increased to 181 kg in 2010 (Table 2).

The use level of chemical fertilizers in general and of phosphate and potash in particular is predicated on imports, involving substantial expenditures in foreign exchange. Thus, any change in the exchange rate of the rupee will not only affect the prices of fertilizers but also their use level with implications for farm production and land productivity of various crops in the country.

Table 2: Total Fertilizer Use in Census Years in Relation to Cultivated Area in Pakistan

Crop year	All fertilizers nutrients	Cultivated area	Cropped area	Nutrients use (kg) per ha of	
	000 tons	... 000 ha ...		Cultivated area	Crop area
1972	382	19,090	16,600	20	23
1980	1,044	20,230	19,220	52	54
1990	1,890	20,940	21,460	90	88
2000	2,832	21,960	22,740	129	125
2010	4,360	21,400	24,120	204	181

Source: Pakistan Economic Survey (Statistical Supplement) 2012-13

Farm mechanization is an important part of modern agriculture. In Pakistan, farm mechanization has revolved around the use of tractors as a source of draft power. Farm tractors of various makes and sizes have over time increasingly replaced the use of farm animals and bullocks in various cultural operations such as ploughing, planking, land levelling, etc. From the reports of various Agricultural Censuses, we have tried to glean data on the adoption of farm tractors in the Punjab (Table No. 1). The adoption of tractors estimated at 24% during the 1972 census year had become almost universal by 2010. It may be mentioned that not only has the adoption rate of tractors hiked over time but the incidence of mechanization in various farm operations has also increased, involving ever increasing use of POL which entails substantial expenditures at the national level in terms of foreign exchange, implying that changes in exchange rate will impact the cost of agricultural production in the country.

From the foregoing evidence and discussion, it is evident that the use of modern and purchased farm inputs has trended upwards and any changes in the foreign exchange rate will not only impact the cost of production of farm products but will also affect their transportation, processing and marketing costs.

3. An overview of changing cropping patterns in the Punjab

The climatic conditions in the Punjab are suitable for all year round farming activities and a several of crops are grown across various regions. The major field crops cultivated in the province, inter alia, include wheat, rice, cotton, maize, sugarcane, oilseeds, pulses tobacco, and fodder (Pakistan 2013). In the wake of technological changes and innovations experienced in Punjab's agriculture over time, the relative economics of various crops and crop combinations must have witnessed changes as well, necessitating portfolio adjustments at the farm level. Consequently, the allocation of land and other resources will also have changed, resulting in changes in cropping patterns as manifested in varying shares of important crops in the total cropped area. To examine these changes, the shares of various crops in total crop area as estimated from the data in the census reports are presented in Table 3 and discussed below. In the course of this review and discussion on changes in cropping patterns, the likely repercussions of realignment in the foreign exchange rate of the Pak rupee are also highlighted.

Table 3: Share of Important Crops in Total Crop Area in Punjab: 1972 - 2010

Crop	1972	1980	1990	2000	2010
Total cropped area in Punjab: million acres					
	30.93	32.52	34.54	39.22	45.05
			... % ...		
Wheat	38.03	39.67	39.35	41.16	41.48
Rice	5.91	9.51	9.66	10.68	13.90
Cotton	14.19	12.52	15.51	15.40	14.71
Maize	1.42	1.69	1.31	1.36	1.42
Sugarcane	2.76	3.55	3.01	3.39	3.52
Oilseeds	2.58	2.04	1.86	1.96	1.53
All Pulses	8.56	8.24	6.01	6.67	6.40
All Fodders	18.66	17.34	16.25	13.32	10.95
Others	7.89	5.45	7.04	6.05	6.10
Crop groups					
Food grains	45.36	50.87	50.33	53.20	56.80
Industrial crops	16.95	16.06	18.52	18.79	18.23
Oilseeds+pulses	11.14	10.28	7.87	8.64	7.92
Fodders	18.66	17.34	16.25	13.32	10.95

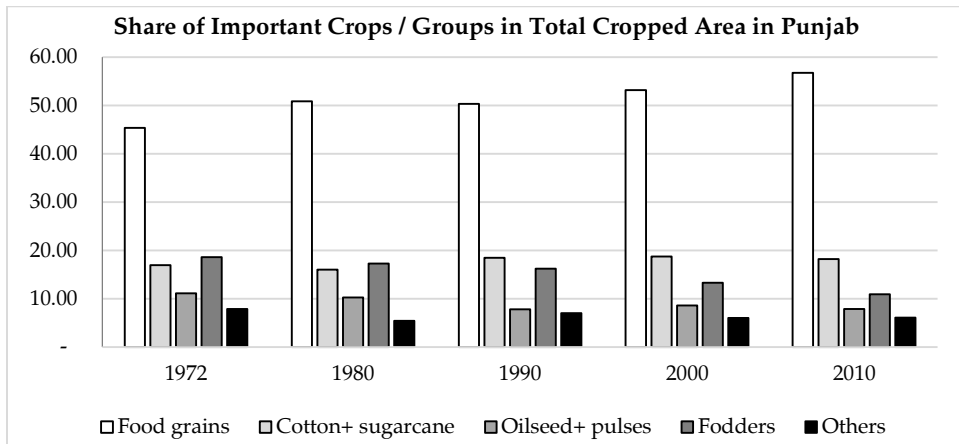
Source: Author's calculations from the data reported in respective reports of Census of Agriculture.

3.1. Industrial Crops: Cotton and Sugarcane

According to the available data, the share of food grains- wheat, rice and maize, estimated at 45.36% in 1972, trending upward, increased to 56.80 % in 2010, an increase of 11.44%. This translates into an increase of 11.56 million acres in the area under food grains. The area under cotton and sugarcane, the principal industrial and cash crops in the country, calculated at 16.95% of the total crop area in 1972, had increased to 18.79 % in 2000 but experienced a slight decline to 18.23% in 2010. The share of pulses in the total cropped area, estimated at 8.56% in 1972 and generally following a declining trend was estimated at 6.40% in 2010. Similarly, the share of various oilseeds, which had worked out to 2.58% in 1972 declined to 1.53% in 2010. The share of miscellaneous crops has also fallen from 7.89% in 1972 to 6.10% in 2010. Fodder crops constituting 18.66 percent of the total crop area in 1972 had been reduced to only 10.95% by 2010.

From the changing shares of various crop groups as described above, it can be concluded that there has been a shift towards greater specialization in crop production in response to changes in the economic environment. The crops the shares of which have increased are: wheat, rice, maize, cotton and sugarcane, and which involve a higher use of modern and purchased inputs of fertilizers, pesticides, farm machines, etc. in their cultivation. On the other hand, various pulses- gram, mung, mash, and other lentils, etc. which do not involve much use of the above purchased inputs have lost ground. Similarly, oilseed crops- primarily rape and mustard that did not require extensive use of purchased inputs- fertilizers, herbicides, and pesticides have experienced losses in their area

which has been replaced by the crops mentioned above. Further, the cultivation of both oilseeds and pulses entail greater risks. The role of fodder in cropping pattern and agricultural production seems to have also declined. All these changes in cropping pattern, requiring greater reliance on modern inputs which are invariably imported, suggest that the realignment of the foreign exchange rate may not be an unmixed blessing for the agriculture sector in the country.



Source: Author's calculations from the data reported in respective reports of Census of Agriculture.

4. Changes in the foreign exchange rate and cost of cultivation

For our examination and analysis of the impact of changes in the exchange rate on agriculture in the Punjab, we have selected wheat, rice, cotton and sugarcane. These crops include not only the staple food crops but also the most important cash and industrial crops in the country. The crops are also important from the perspective of international trade and have implications in absorbing the impact of changes in the foreign exchange rate. Together, the selected crops account for about 75% of the annual cropped(cultivated?) area in the Punjab. All operations involved in the production, processing and marketing of the produce as well marketing of various farm inputs used in their cultivation are in the private sector. The costs entailed in all these operations will change as a result of changes in exchange rate alignments, with repercussions for their competitiveness in domestic and international markets.

4.1. Methodological framework

The cultivation of field crops as listed above, involves a number of field operations and use of farm inputs, starting with land preparation for sowing and planting operations till the harvesting of the produce. An examination of the crop budgets

provides the relevant details of these operations as well as the use of various inputs. These can be arranged under the following sub heads:

- preparatory tillage and seed bed preparation,
- seed and sowing,
- use of farm yard manure (FYM) and fertilizers,
- Inter culture and plant protection,
- Irrigation- canal and tube well,
- harvesting and threshing,
- management,
- land rent.

Following the Policy Analysis Matrix framework developed by Eric Monke and Scott Pearson (Monke and Pearson 1989), costs entailed in the performance of different field operations, cultural practices and use of farm inputs can be sub-divided into:

- costs of tradable inputs and
- cost of non- tradable inputs.

Detailed crop budgets for the cultivation of these crops in 2014-15 adopted from the policy analysis reports of the Agriculture Policy Institute, which is located in the Ministry of National Food Security and Research, Islamabad are set out in Annexures 1 to 4.

The costs of tradable and non-tradable inputs have been separated from the total cost of their cultivation, as detailed in Annexures 1- 4. As several of the farm operations, cultural practices and use of inputs are composite inputs involving the use of both tradable and non- tradable inputs, e.g. land preparation requires the use of farm machinery and equipment requiring the use of labor, POL and machine time. Similarly, the transport of inputs requires labor to load and unload as well as the use of transport vehicles and energy. Likewise the use of tube well irrigation in crop production includes labor, farm machinery and energy. Based on discussions with “progressive” farmers and agricultural engineers working in the field, formulae bases for dividing these costs and inputs into tradables and non-tradables were developed and are given in Annexure 5.

4.2. Tradable inputs costs

Expenditures incurred on the items listed below are included in the tradable inputs costs:

- costs involved in the use of farm machinery (capital cost, POL) in land preparation, sowing, threshing and the transportation of inputs,
- costs of seeds,
- cost of fertilizers
- cost of and pesticides and weedicides,
- cost of machinery and energy used in tube well irrigation,
- cost of working capital

Tradable input costs are prone to changes with the fluctuations in the exchange rate, some in the short run and others in the long run.

4.3. Non-tradable inputs

Non-tradable inputs used in cultivation are listed below:

- wages of farm labor used in different field operations including the management of farm operations,
- cost of farm yard manure,
- water rate for canal water,
- land rent.

The cost of cultivation incurred on account of the use of non- tradable inputs may not change directly with the changes in the foreign exchange rate. But given the macroeconomic changes in the economy, triggered by the varying foreign exchange rate and other factors including money supply and inflation rate, the costs of non-tradable may also change in due course. The major proportion of non – tradable inputs in cultivation cost is made up of land rent, which is also likely to vary with changes in the profitability and comparative economics of various crop combinations.

A summary of the crop wise details of tradable and non-tradable costs and related crop statistics is given in Table 3. A brief discussion of the salient features of the tradable and non- tradable costs with respect to the selected crops, highlighting the implications of changes in the exchange rate is given below.

4.4. Cost of cultivation of selected crops

4.4.1. Wheat

Wheat is not only the staple food but also the most widely cultivated crop of the country, annually planted over an area of 9 million hectares. About 75% of the

wheat area and production is contributed by the Punjab (Pakistan, 2013). It is grown both under irrigated and rain fed conditions but a major share of its annual production comes from the irrigated areas.

The cost of cultivation of one acre of wheat, inclusive of land rent, during the 2014-15 crop year was estimated at Rs.38,455. The cost of cultivation included expenditure of Rs. 21,112 on account of the use of tradable inputs, accounting for 54. 90% of the total cost of cultivation. These costs are bound to change directly with the changes in the foreign exchange rate and also impact the competitiveness of wheat production in the domestic as well as international markets.

The balance cost of cultivation, consisting of non-tradable inputs, constituted 45.10% of the total cultivation cost. These costs may not change directly but may change in response to changes in the comparative economics of various crops in response to fluctuations in international commodity prices and changes in the exchange rate.

The market value of wheat "bhusa", a valuable by product and joint product of the farming of wheat and used in livestock feeding and packing was reported at Rs. 5,500 per acre. Subtracting the value of wheat 'bhusa' from the cost of cultivation cost of wheat production worked out to Rs. 32, 955. Distributing this cost over the wheat yield, reported at 1108 kg per acre, the cost of production of wheat at the farm gate totals Rs. 29.74 or 1,190 / 40 kg.

4.4.2. Basmati paddy

Annually cultivated rice on an area approximately around 2.8 million hectares (Pakistan, 2013) is the third most widely cultivated crop of the country, after wheat and cotton. With annual production of over 6 million tons and exports of more than 2 million tons, Pakistan is the 4th or 5th largest exporter of rice. Pakistan is famous the world over for producing and exporting long grain aromatic – basmati rice, which is primarily cultivated in the Punjab. Grown as a summer crop, it requires a large amounts of irrigation water, often supplemented by tube-wells-powered by diesel or electric motors.

The cost of raising one acre of "basmati" rice, the long grain aromatic variety of the rice crop in the Punjab, during the 2014-15 crop year on "average farms" was estimated at Rs. 49, 242/. Expenditures incurred on the use of tradable inputs, as listed above, amounted to Rs. 21, 156, constituting 43% of the total cost of cultivation. As already explained, the changing foreign exchange rate will lead to changes in these costs and will be reflected in the total cost of basmati cultivation.

The expenditures on account of the use of non - tradable inputs made up 57% of the cost of cultivation of basmati rice. The market value of paddy straw, used in

animal fodder and as packing material was reported at Rs. 7, 000/. Thus, the farm level cost of production of 1, 053 kg of Basmati paddy was estimated at Rs. 42,242 i.e. Rs. 41.30 / kg or Rs. 1,652 / 40 kg.

4.4.3. Cotton

The cultivation of cotton is the source of raw material for the textile industry- the largest industry in Pakistan. A valuable by product of cotton production is cotton seed which is used in the manufacture of vegetable ghee and livestock feed. Pakistan is the 4th biggest producer of cotton and 73% of total production is contributed by the Punjab (Pakistan, 2013). The cost of growing one acre of cotton on the "average farms" in the Punjab during the 2014-15 crop year, according to the data adopted from the cotton policy analysis report of the Agriculture Policy Institute, worked out at Rs. 55,367. The cost of tradable inputs was estimated at Rs. 25,789, constituting 46.58per cent of the total cultivation cost. The principal components of tradable input costs were made up of chemical fertilizers and pesticides, costs of energy used in tractors performing field operations and tube well irrigation. The net cost of cultivation, after accounting for the value of cotton sticks used as fuel in rural areas, worked out to Rs. 54,367 per acre. Given the seed cotton yield of 760 kg / acre of "average farms", the farm level cost of production of seed cotton is calculated at Rs. 71.54 / kg or Rs. 2,861.43 / 40 kg.

Table 4: Summary of Cost of Cultivation of Wheat, Basmati, Cotton and Sugarcane Crops in Punjab: 2014-15 crop Year

Items	Unit	Wheat	Basmati Paddy	Cotton	Sugarcane
-Total cost of cultivation	Rs/acre	38,455	49,242	55,367	89,069
-Cost of tradable inputs	Rs/acre	21,112	21,156	25,789	45,009
-Share of tradable inputs in total cost	%	54.90	42.96	46.58	50.53
-Cost of non- tradable inputs	Rs/acre	17,343	28,086	29,578	44,060
-Share of tradable inputs in total cost	%	45.10	57.04	53.42	49.47
-Principal Produce	Kg/acre	1,108	1,053	760	22,606
-Value of by product*	Rs/acre	5,500	7,000	1,000	7,343
-Cost of production =(Total cost of cultivation – value of by products)	Rs/acre	32,955	42,242	54,367	81,726
-Cost of production	Rs / kg	29.74	40.12	71.54	3.62
-Cost of production	Rs/ 40 kg	1,189.71	1,604.63	2,861.43	144.61

*By products for wheat, basmati, cotton and sugarcane crops, respectively, are "bhusa", straw, cotton stick and sugarcane tops.

4.4.4. Sugarcane

Sugarcane farming provides raw material for the manufacture of sugar, the second largest industry in Pakistan. The area under sugarcane has approximated around one million hectares in Pakistan, the Punjab accounting for about 65% of this (Pakistan, 2013). The sugarcane crop is cultivated on the land for more than a year and is grown in irrigated regions. It is a high water delta and politically sensitive crop in the country. According to the available data, the cost of raising one acre of sugarcane on the “average farms” in the Punjab is estimated at Rs. 89, 069 and about 51% of it is expended on the use of tradable inputs. The rest goes to the non-tradable inputs.

The net cost of sugarcane production, arrived at after the deduction of the value of sugarcane tops from the cost of cultivation, is estimated at Rs. 81,726, with sugarcane yield per acre on “average farms” reported at 22, 606 kgs. Thus, the farm level cost of production of sugarcane, during the 2014-15 crop year, came to Rs. 3.62 or Rs. 144.61 per 40 kg.

5. Imports and Exports of Agricultural Related Products

Data on the gross values of annual imports and agricultural related imports from 2013-14 to 2017-18 are presented in Annex 6. The corresponding data relating to agricultural exports are set out in Annex 7. According to these data, the total value of agricultural related imports estimated at US \$ 2,780 million in 2013-14 increased to 7,947 million in 2017-18. During the same period the exports of agricultural related products increased from US \$ 4, 676.5 million to 8, 524.6 million. Agricultural imports have increased much faster as compared to corresponding exports. One of the possible factors responsible for the deceleration in the value of agricultural exports from Pakistan may be the rising prices of farm inputs in the country, adversely affecting their competitiveness in world markets.

The major imports of agricultural related goods comprise vegetable products, vegetable oils, chemical fertilizers and cotton, accounting for 93 to 97% of all agricultural imports and about 13% of gross annual imports. The principal agricultural related exports consist of vegetables, sugar, cotton and live animals (livestock?), contributing 90 to 94% of all agricultural exports. The share of these exports in the gross value of annual exports ranged from 31 to 37% in the recent past. The surplus of agricultural exports over imports estimated at US\$ 1, 894.5 million in 2013-14 rose to 2,181.9 million in 2014-15 and 3,118. 5 million in 2015-16 but declined to only US \$ 557.59 million in 2017-18.

6. Concluding remarks

With the passage of time agriculture in Pakistan has slowly but steadily moved away from subsistence farming towards commercial production. As a result of this transformation, the role of purchased farm inputs, namely, fertilizers, pesticides, weedicides, tractors and other equipment, energy, etc. has assumed greater importance. Since most of these inputs or a major part of their annual supply is imported, the changes in the foreign exchange rate are likely to impact their cost price and use level with implications for farm production and land productivity. In a situation like ours, the change in the exchange rate is most likely to result in the depreciation of Pakistani Rupee. This will directly push up the cost of tradable inputs resulting in a higher cost of cultivation. A higher cost of cultivation will be, inter alia, reflected in a higher cost of farm production. It will also adversely affect the competitiveness of agricultural exports in the first round. In addition to the cost of cultivation, costs of transportation, the processing and the marketing of various farm commodities, all involving use of tradable inputs, will also increase adversely affecting the competitiveness of exports of commodities in world markets.

Currency depreciation may encourage the exports of primary commodities but it is going to be a double edged sword, making the exports of primary goods less expensive for importers but it will also raise the cost of their domestic production. This will adversely affect the competitiveness of farm commodities in domestic and world markets.

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Annex 1: Crop Budget for One Acre of Wheat in Punjab: 2014-15 Crop

S.No	Field operations / farm inputs	Units	Quantity/ acre	Unit rate Rs / unit	Total cost Rs / acre
1	Seed bed preparation				
	Deep ploughing / rotavator	Number	0.60	1,400	837
	Land levelling	Number	0.50	800	398
	Ploughing	Number	2.14	700	1,496
	Ploughing & planking	Number	0.71	800	571
	Planking	Number	0.65	350	45
2	Sowing				
	Seed used	kg	52.58	42	2,208
	Drilling	Number	0.17	700	116
	Ploughing		1.39	700	973
	Planking		0.32	350	112
	Manual labor for sowing	Hours	0.86	44	38
	Labor for bund making etc		1.03	44	45
	Tractor used for bund making	Hours	0.20	800	160
3	Farm yard manure				400
4	Fertilizers				
	Urea	bags	1.75	1,896	3,312
	DAP	bags	1.09	3,578	3,900
	Transportation charges	bags	3.00	55	165
	labor for fertilizer application	Hours	2.00	80	160
5	Irrigation				
	Tube well	Number	3.00	900	2,700
	Canal	Number	0.51	50	50
	Mixed	Number	0.23	600	138
	labor for irrigation & water course cleaning	Days	1.55	350	543
6	Plant protection				
	Weedicides	Number	0.79	800	630
7	Mark up @15 % / year on costs incurred before harvesting	6 months			1,421
8	Harvesting & threshing				
	Manual harvesting	40 kg	3.00	1,206	3,614
	Mechanical thresher @ 3.23 kg/ 40 kg	40 kg	2.24	1,206	2,698
	Labor used in threshing	Days	1.81	350	634
9	Land rent /acre	6 months		10,000	10,000
10	Management charges	6 months			1,090
11	Total Cost of cultivation				38,455
12	Crop production				38,455
	Principal produce wheat grains	Kgs	1,108.00		
	Wheat bhusa (1:1 ratio)	Kgs	1,108.00	5,500	

Source: Data adapted from: Wheat Policy Analysis for 2014-15 Crop.

**Annex 2: Crop Budget for One Acre of Basmati (Paddy) in Punjab: 2014-15
Crop**

S. No	Field operations / farm inputs	Unit	Quantity / acre	Unit rate	Total cost
				Rs	Rs/acre
1	Seed bed preparation				
	Ploughing	Number	4.00	700	2,800
	Wet ploughing	Number	2.00	900	1,800
	Wet planking	Number	2.00	450	900
2	Sowing				
	Seed	Marlas	3.39	1,396	4,732
	Manual labor for sowing	Hours	53.00	45	2,385
	Labor for bund making etc	Hours	8.00	45	360
3	Farm yard manure (50%)				
	Trolley (mat.,transpt,& application)	Number	0.20	2,300	230
4	Fertilizers				
	Urea	Bags	1.15	1,854	2,125
	DAP	Bags	0.59	3,574	2,091
	Nitrophos	Bags	0.20	2,535	494
	Others (Zinc Sulphate)		0.32	600	190
	Transportation charges bags	Bags	2.00	55	110
	Labour for fertilizer application	Hours	2.27	55	125
5	Irrigation				
	Tube well	Number	8.32	1,100	9,152
	Canal	Number	10.78		85
	Mixed	Number			
	Labour for irrigation & water course cleaning	Days	6.12	350	2,141
6	Plant protection				
	Weedicides	Number	0.37	600	220
	Manual weeding	day	1.15	350	404
	Pesticides/ insecticides		0.79	700	550
7	Mark up @15 % /year for 6 months on costs before harvesting excluding canal water rate			17,609	1,314
			17,524.00		
8	Harvesting & threshing				
	Manual harvesting & threshing	40 kgs	2.23	2,215	4,944
9	Management charges	6 months		1,090	1,090
10	Land rent	6 months		11,000	11,000
11	Total Cost of cultivation				49,242
12	Crop production				
	Principal produce	kgs / acre	1,053.00		
	Value of by product /joint product	Rs / acre			7,000

Source: Data adapted from: Rice Paddy Policy Analysis for 2014-15 Crop.

Annex 3: Crop Budget for One Acre of Cotton in Punjab: 2014-15 Crop

S.No	Field operations / farm inputs	Units	Quantity / acre	Unit rate Rs	Total cost Rs/ acre
1	Seed bed preparation				
	Deep ploughing/ disc plough	Number	0.228	1,400	319
	Rotavator	Number	0.233	1,600	373
	Land levelling	Tractor hrs	0.537	700	376
	Ploughing	Number	3.2	700	2,240
	Ploughing & planking	Number	1.341	700	939
	Planking	Number	0.421	350	147
2	Seed and Sowing				
	Seed used	kgs	7.643	250	1,911
	Ploughing & planking	Number	0.394	700	276
	Ridging	Number	0.228	700	160
	Drilling	Number	0.772	700	540
	Manual labor for sowing, bund making and gap filling	M.days	0.369	350	129
3	Irrigation	Number			
	Tube well		1.706	900	1,535
	Canal		2.156		96
	Mixed		2.739	700	1,917
	labor for irrigation & water course cleaning	M.days	3.482	350	1,219
4	Interculture				
	With tractor	Number	2.64	700	1,848
	Manual weeding/ thinning	M.days	4.6	350	1,610
5	Plant protection	Number			
	Weedicides+pesticides including application		5.769	700	4,038
6	Farm yard manure including transport & application	Cost		650	650
7	Fertilizers	Bags			
	DAP		0.731	3,587	2,622
	SSP		0.071	967	69
	SOP		0.029	4,367	127
	NPK		0.046	3,048	140
	Urea		2.297	1,824	4,190
	CAN		0.224	1,547	347
	NPK		0.069	2,462	170
	Transportation charges labor for fertilizer application		3.467	45	156
8	Mark up @15%/year on costs incurred before harvesting	8 months		28,047	2,805
9	land rent	8 months		25,000	16,667
10	Management	8months			1,453
11	Cotton picking				
	Manual picking	Rs/ 40 kg		300	5,700
	cutting of cotton sticks/ Manual	Rs/ acre			600
13	Total Cost of cultivation				55,367
14	Production				
	Yield of seed cotton	kg/ acre		760	
	Value of cotton sticks	Rs/acre			1,000

Source: Data adopted from: Cotton Policy Analysis for 2015-16 Crop.

Annex 4: Crop Budget for One Acre of Sugarcane in Punjab: 2014-15 Crop

S. No.	Field operations / farm inputs	Units	Quantity / acre	Unit rate Rs.	Total cost Rs/acre...
1	Preparatory tillage				
	Deep ploughing	Number	0.48	1,500	714
	Rotavator	Number	0.15	1,600	243
	Land levelling	Number	0.56	750	421
	Ploughing	Number	7.85	700	5,493
	Planking	Number	3.31	350	1,158
2	Seed bed preparation				
	Ploughing / furrow making	Number	0.49	700	341
	Planking		0.19	350	68
	Manual trench making	M.days	0.11	350	37
	Tractor trench making	number	0.70	700	490
	Manual bund making	M.days	1.66	350	579
	Tractor bund making		0.16	700	111
3	Seed and sowing operation				
	Seed used	40 kg unit	6.58	190	1,249
		Marla	10.64	950	10,108
	Harvesting & set making	M.days	4.80	350	1,679
	Seed transport	Rs/acre			400
	Contract sowing	labor			400
4	Interculture & earthing up				
	Manual		0.61	1,400	853
	Bullock / Tractor		2.01	700	1,406
5	Plant protection				
	Weedicides		0.12	600	74
	Granules		0.12	550	66
	Sprays		0.31	625	191
6	Fertilizers	Bags			
	DAP	Bags	1.28	3,587	4,591
	Urea	Bags	1.73	1,824	3,156
	Nitrophos	Bags	0.36	2,462	886
	SSP	Bags	0.91	967	880
	CAN	Bags	0.01	1,547	15
	SOP	Bags	0.07	4,367	306
	Gypsum	Bags	0.44	200	88
	Ferti. Transport & application	Bags	3.89	80	311
7	Irrigation				
	Tube well		4.40	1,300	5,720
	Canal	Number	8.90		260
	Mixed		2.16	300	648
	labor for irrigation & water course cleaning	M.days	4.86	350	1,701
8	Farm yard manure				
	Material cost				1,200
	Transport + application				1,100
9	Mark up @15 %/ year on cost of inputs used before harvesting	13 months			7,628
10	Harvesting & stripping	40 kg units	565.15	13	7,347
11	Land rent /acre	Months	13.00	23,000	24,917
12	Management charges	Months	13.00		2,235
13	Total Cost of cultivation	Rs/acre			89,069
14	Cost shares				
15	Crop yield / acre	40 kg units	565.00		

Source: Data adopted from: Sugarcane Policy Analysis for 2015-16 Crop.

Annex 5: Bases for Dividing Composite Farm Inputs into Tradable and Non – tradable

The formulae for division of composite farm inputs and costs of such field operations into tradable and non - tradable are given below:

- Labor component in deep ploughing, ploughing with rotavator and land levelling estimated at @ 0.75 hours/acre. Labor component in seed drilling adopted @ 0.50 hours/acre
- Labor component in ploughing with or without planking estimated @ 0.4 to 0.5 hours / acre
- Labor component in planking with tractor adopted @ 0.2 hours / acre
- Labor component in bund making / ridging with tractor assumed 0.5 hours/acre
- Tractor operators' time involved in all the above listed field operations valued 25% higher as compared to the wage rate for unskilled labor
- Labor component in plant protection costs adopted @ 15%
- Labor component in tube well irrigation cost assumed @ 20 %
- Labor share in cost of transportation of fertilizers on account of loading/unloading assumed 27 - 31 %
- In case of farm yard manure 25% cost apportioned to labor on account of application.

Annex 6. Important Agriculture Related Imports

HS Code ---Commodity Description	2004-05	2009-10	2014-15	2017-18
		... 000 US \$...		
01---Live Animals and Animals Products	25,971	86,714	230,214	257,966
02---Vegetable Products	884,830	1,314,128	2,260,545	2,852,307
03---Animal or Vegetable Fats, Oils and Waxes	800,850	1,336,013	1,953,381	2,152,003
17---Sugars and Sugar Confectionery	135,563	303,658	39,278	40,791
19---Preparation of Cereals, Flour and Starch etc.	21,451	41,302	96,578	149,902
20---Preparation of Vegetables, Fruits and Nuts etc.	6,913	18,111	37,037	47,211
31---Fertilizers	348,494	868,483	702,365	790,947
52---Cotton	556,002	622,135	625,861	1,655,912
Sum of the above imports	2,780,074	4,590,544	5,945,260	7,947,040
Total Imports as per BOP	18,996,094	31,238,112	40,222,000	56,866,000
Share of agri. imports in total imports (%)	14.63	14.70	14.78	14.98

Source: State Bank of Pakistan, Balance of trade Statistics

Annex 7. Important Agriculture Related Exports

HS Code ---Commodity Description	2004-05	2009-10	2014-15	2017-18
		...000 US \$...		
01---Live Animals and Animals Products	201,513	334,909	756,866	783,546
02---Vegetable Products	1,121,800	2,679,484	3,097,877	3,046,586
03---Animal or Vegetable Fats, Oils and Waxes	87,365	104,054	75,637	44,331
17---Sugars and Sugar Confectionery	140,040	93,112	425,874	835,761
19---Preparation of Cereals, Flour and Starch etc.	10,442	30,585	57,866	47,447
20---Preparation of Vegetables, Fruits and Nuts etc.	18,466	66,300	60,397	57,678
31---Fertilizers	2,532	180	152	115,763
52---Cotton	3,092,365	3,463,851	4,589,081	3,593,519
Sum of the above	4,674,523	6,772,474	9,063,750	8,524,630
Total Export as per BOP (III+IV)	14,481,386	20,050,628	23,787,997	25,030,000
Share of agri. exports in total exports (%)	32.28	33.78	38'10	34.06

Source: State Bank of Pakistan Balance of Trade Statistics

Promoting Growth in the Livestock Sector - Issues and Policy Reforms

Talat Naseer Pasha*

Abstract

Pakistan's economy is heavily reliant upon agricultural production, which accounts for about 20% of the country's GDP. Within agriculture, the livestock sector has the largest share, contributing about 58.6% to the value added of agriculture and about 11.4% to the national GDP. Moreover, the livestock's value exceeds the combined value of all the major and minor crops. The share of livestock products in the generation of foreign exchange is about 13%. More significantly, livestock is an integral part (30-40%) of the livelihood of about 30 to 35 million rural farmers. Presently, the gross value addition of livestock stands at PKR 1,333 billion, whereas the livestock share in exports is 5%. Pakistan ranks 4th in the total livestock population of the world, 2nd in the population of buffaloes, 4th in population of goats, 5th in the number of equids (horses, donkeys and mules), 12th and 8th in poultry production. The healthy growth of the livestock sector has a significant impact on the mitigation of poverty and the improvement in the livelihoods of the rural population. Despite a huge potential, the livestock sector has been facing a number of impediments. Reliance on traditional marketing systems results in the suboptimal performance of the sector. The sector's optimal performance is also constrained, due largely to the non-availability of a robust and efficient marketing strategy and mechanisms. Additionally, there is little value addition in the value chains of livestock characterized by a lack of grading of livestock and livestock products, inadequate infrastructure for processing and the poor handling of livestock products. Further, processing costs are high, and farmers generally have inadequate knowledge and skills about small scale processing. There is a need to develop farmer friendly policies and discourage the import of milk and meat products to encourage local production in line with international best practices and the enforcement of a regulatory framework, as well as technical support to farming communities.

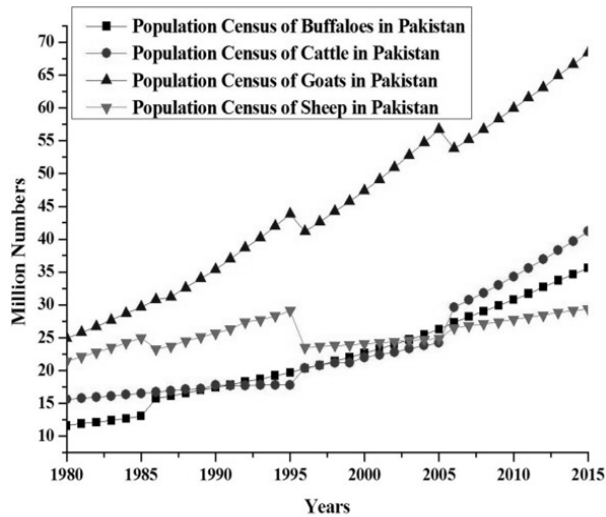
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1. Introduction

Pakistan's economy is heavily dependent upon agricultural production which accounts for 21% of the country's GDP, with livestock production contributing 56% of agriculture's contribution (Anon., 2015). The overall agricultural sector recorded a growth of 2.9% during 2014–2015. However, the growth rate of livestock was recorded at 4.1%, crops at 1.0%, forestry at 3.3% and fishing at 5.8%. The livestock sector is dominated by milk and meat production with 62% of milk coming from the population of buffaloes of 34.6 million and the remainder coming from 39.7 million cattle (Anon., 2015). The combined value of milk and meat of \$16.7 million exceeds the economic value of all cash crops (FAO, 2013).

Pakistan has a total animal population of 165.51 million with a yearly growth rate of 2.6% (Fig. 1). However, an average milk production per lactation in buffaloes of 4 lit and cows 3 lit (Warriach et al., 2012) showed clearly that productivity per animal is very low by world standards and native cattle breeds struggle to maintain productivity beyond 200 days. The annual increase in milk demand is 15% but the annual growth rate is just 5% which is a great matter of concern. Unfortunately, Pakistan is facing a shortfall in the dairy sector despite having more of milked animals. As a result, the animals produce less milk, which affects the overall economy of the country (Ahmad et al., 2008).

Figure 1: Population trend of large and small ruminants from 1980 to 2015



Potential reasons of the low productivity of animals include small herds, poor availability of nutrients, low genetic potential, poor management practices, insufficient marketing channels, lack of technical man-power, high environmental

stresses, animal health and reproductive issues. Given the structure of the dairy industry in Pakistan based on small-holder production and the reliance of both urban and rural communities on milk as the major source of animal protein, we need to focus on the ways of increasing productivity and profitability of small-holder farms.

Therefore, the objective of the paper is to review the key issues and policy reforms associated with the growth of the livestock sector in Pakistan.

2. Inadequate extension services

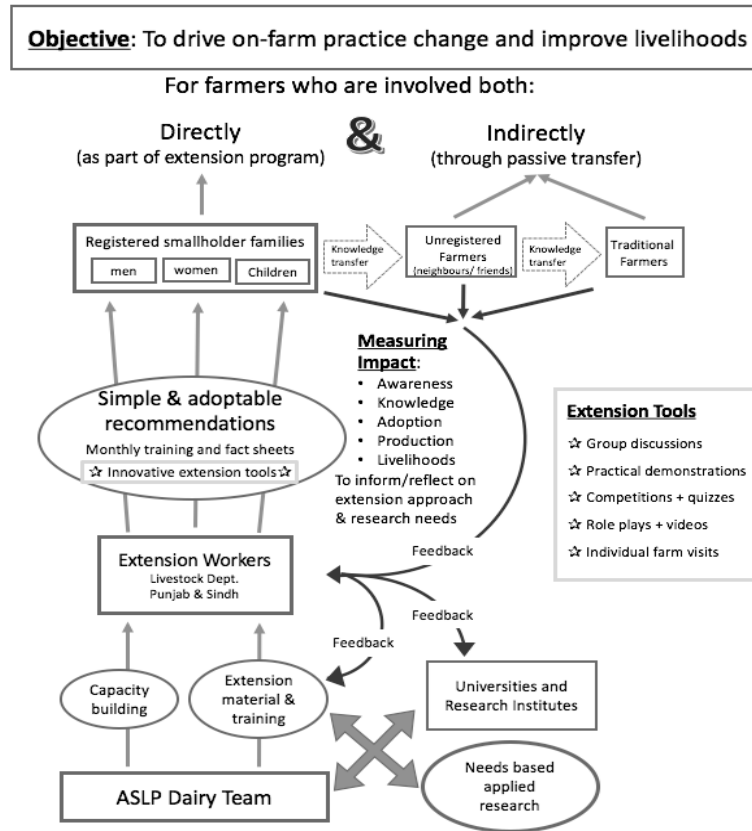
Extension services play a vital role in the improvement of the dairy sector in developing countries. The goal of extension is to provide research based knowledge to rural communities to improve their farm productivity and this would lead to poverty reduction, rural development and more sustainable rural livelihoods (Zwane 2012).

In Pakistan, government agencies and many non-government organizations (NGOs) that provide services to the dairy sector, focus mainly on the treatment of animal health, vaccinations and artificial insemination. Although useful, these programs do not address the entire farm system and have major limitations including a lack of needs based applied research, poor monitoring and evaluation procedures and a low proficiency among extension workers (Abbas et al. 2009).

The government invests in infrastructure and human resources in their departments of agriculture, livestock and research institutions as a high priority. However, other equally important aspects for profitable dairy farming and extension services are being neglected. There is a dire need to run a countrywide extension program including both mass awareness and 'one to one' extension processes without offering any incentives. These programs need to be tailored to meet the differing needs of farming communities across the farming regions of the country.

The Agriculture Sector Linkages Program (ASLP) dairy project supported by the Australian and Pakistani governments clearly demonstrated that extension programs can be scaled-out efficiently using the existing resources provided by the government. The program must be run on a sustainable basis with effective linkages with the veterinary universities and research institutions. A program of this nature has great potential to significantly increase milk production and the livelihoods of smallholder farming households (Fig 2; Warriach et al., 2018 unpublished data).

Figure 2: Extension model developed by the Agricultural Sector Linkages (ASLP) dairy project in Pakistan



Source: Warriach et al., 2018 unpublished data.

3. Developing and connecting markets for smallholder dairy farmers

Markets provide opportunities for smallholders to improve their incomes and livelihoods. High marketing costs, poor transportation networks, limited market information and a lack of competitiveness of markets, often leaves them “unconnected”. Smallholders have to rely on middlemen to market their produce. Drawing on their monopolistic role, middlemen can exploit farmers by paying low prices, executing binding sales contracts and not passing on gains when prices are seasonally high in response to lower supply.

Policy interventions can help smallholder farmers to connect with markets by reducing the costs and risks of doing so. This can be accomplished by creating a stable policy environment; investing in roads and other marketing infrastructure;

providing effective market information systems; developing market institutions such as grades and standards to facilitate trade; improving extension services; introducing weather and price risk management mechanisms; and promoting contract farming.

The Australian Government has initiated the Agriculture Value Chain Collaborative Research program (AVCCR) in close collaboration with the Pakistani government. The overarching goal of this program is “that the rural poor, particularly women, living in the Punjab and Sindh significantly and equitably benefit from improvements in strategic value chains”. It will also provide a stronger focus on social equity, with particular reference to gender equity and the empowerment of women as fundamental to development.

AVCCR aims to work with strategic value chains to benefit the rural poor of Pakistan by carrying out quality research and by incorporating the private sector and striving for smallholder adoption. The meat and milk value chains of livestock are deeply embedded in rural Pakistan, involving millions of farming households and value chain personnel (private and public), linking remote communities with consumer markets.

4. Future of corporate dairy farming in Pakistan

A significant amount of milk produced in Pakistan is by smallholder dairy farmers. More than 8.5 million families raise dairy animals and a vast majority (>83%) have less than 6 animals having average milk production per lactation in buffaloes of 4 lit and cows 3 lit (Warriach et al., 2012) This showed clearly that these smallholder dairy operations were not profitable (Godfrey, 2016). Further, a lack of extension services, the shrinking of common grazing areas, decrease of fodder production, poor milk marketing channels and inconsistent government policies are the biggest hurdle in improving the productivity of smallholder dairy farms. The demand of the dairy industry for raw milk is increasing by 20% annually. This demand however, cannot be met by just emphasizing improved milk production from the smallholder dairy farmers.

In the last ten years many big investors have started planning investment in dairy farming in the country. The government has also announced incentives for setting up corporate livestock farms, including permission for 100 % foreign equity; local or foreign private or public limited companies can invest in corporate farming; no government sanction is required except registration with the Board of Investment; availability of liberal credit; no restriction on the size of the farm; possibility of lease or purchase of state land; application of Agricultural Income Tax regime on incomes; exemption of dividends from tax; exemption of duty on transfer of land and zero-rated duty on the import of machinery and equipment

not manufactured locally, are some of the examples of incentives that may be availed of by investors.

Un-availability of animals of high production potential from a known source in the country has resulted in the import of animals from abroad for the establishment of these farms. These imported animals suffer from adaptability problems and are particularly prone to tick borne diseases and foot and mouth disease. The success of these corporate livestock farms will depend upon the professional competence of farm management. So far almost everyone has hired managers from abroad. The success of these large dairy farms will also be directly correlated to the degree of mechanization at the farm, particularly in milking by machines, cutting of fodder and the making of silage. The cost of production of milk at these corporate farms is expected to be higher than the one seen at smallholders' farms. However, the availability of better quality milk in sizeable quantities from a single source will result in the payment of higher prices for milk from these corporate dairy farms by the dairy industry. Many of these corporate entities will also directly enter into processing and marketing themselves.

The government should focus on 8.5 million smallholder farmers and devise long term and sustainable dairy development strategies throughout the country. We can significantly increase the productivity of smallholder dairy farmers through effective extension programs, increasing resources of fodder, genetic improvement, enabling government policies and through effective milk marketing linkages with the private sector.

5. Non-conductive government policies

Dairy sector development has been badly hampered by non-conductive government policies that have gradually shaken the interests of dairy farmers in Pakistan.

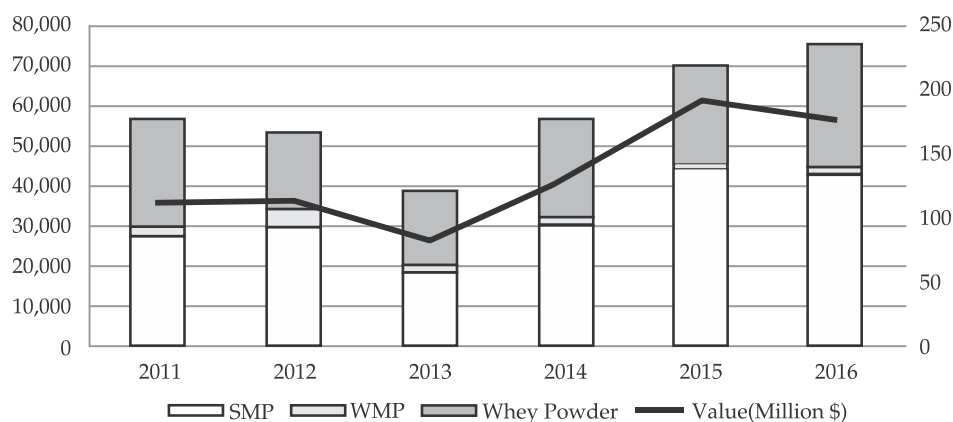
5.1. Import of milk and whey powders

Import of milk and whey powders in the country at a very low percentage of custom duty, has been a vital reason for the impairment of growth of the local dairy sector. Low prices of milk powders in the international market, in the absence of high tariffs of custom duties in Pakistan, enabled local dairy processors and milk traders to import powder and significantly replace it with fresh milk purchase from the farmers (Table 1). Further, the increasing trend by the processors of selling tea-whiteners and dairy liquid products instead of milk also substantially contributed to the decreasing demand of locally produced fresh milk. The entire situation on the one hand damaged dairy farmers, while on the other it adversely impacted the severe issues of food safety and consumer health with white liquids by calling it milk.

Table 1. Import of milk and whey powders in Pakistan over the last few years

Year	Skimmed Milk Powder		Whole Milk Powder		Whey Powder	
	Quantity (Tons)	Value (Million \$)	Quantity (Tons)	Value (Million \$)	Quantity (Tons)	Value (Million \$)
2011	27,706	89.1	2,083	6.4	26,784	17.0
2012	30,412	87.9	3,766	12.2	19,516	13.4
2013	18,888	62.2	1,735	5.7	18,257	15.1
2014	30,441	108.6	1,497	4.5	20,191	16.9
2015	44,226	167.3	407	1.3	25,420	22.1
2016	43,068	147.0	1,287	4.4	30,841	24.2

Import of milk & Whey Powders in Pakistan (Tons)



The import of powders has almost doubled between 2013 and 2016 and over 175 a million dollars in importing these powders was spent in 2016 alone while 692 million dollars was spent over the last five years on the import of milk and whey powders. Despite having one of the largest animal population-base and enormous local production of milk, the import of powders indicates the manipulation in the value chain resulting in net economic loss both for the producers as well as consumers. The import of powders has deprived the local farmers from obtaining the right price of milk and eventually triggering a discouraging effect in the developing dairy farming sector.

The farming communities and the stakeholders have been raising their voices to highlight this situation and have been urging the government to take the necessary steps by imposing 100% custom duty on the import of milk and whey powders in order to protect local dairy farmers. For instance, India and Turkey have imposed 68% and 180% duties respectively. Unfortunately, this genuine demand by the farmers has long been ignored by the government. On persistent demands, the government finally imposed an additional 25% regulatory duty on the imports of powder milk through the Finance Act 2016-17 thereby elevating the

overall duty level from 20% to 45%. However, this is still not sufficient to completely restore and develop the local dairy sector.

5.2. Price capping of milk & meat

The prices of milk and meat are regulated by the local governments in the cities despite the fact that there is no price control mechanism for the inputs being supplied to the livestock farmers. It is irrational and unjustified to control the price of the end product of the farmers, especially when no such control exists on the input supplies to the farmers. In the absence of a demand and quality driven price mechanism, there is less focus on quality and ultimately the consumers also suffer. The supply shortage and inefficient markets are the fundamental outcomes of such policies. Further, the price capping results in economic loss for the producer whereby at the same time it triggers a black market and adulteration. This ultimately results in a net economic loss for the consumers as well. It effectively means that price capping is leading to the decrease of total economic surplus and welfare in the country at both ends.

There is a dire need to understand that price capping is being done keeping in mind the help of urban consumers so that milk and meat are in their reach. However, they are not actually benefitting with this approach as urban consumers are not able to obtain the quality product. They are forced to pay more for the inferior quality through widely practiced adulteration, malpractices and supply shortages. At the same time, they are overcharged in the name of quality and consumers are paying high prices relative to the sub-standard quality. If prices are de-capped and consumers are made aware of the quality, the demand for the quality products will rise, leading to short-term price increases. This will attract more investment in the farming sectors and eventually will rationalize the pricing in the medium to long term. That is the only way to provide good quality milk and meat to the consumers at affordable prices. The poultry sector is a very good example for study where price capping is not applicable and the prices are determined based on demand and supply.

5.3. Livestock farming is not treated as agriculture

The agricultural sector is provided with various benefits including subsidies, reduced electricity tariffs, reduced duties, income tax exemption, reduced & exempt duties on agricultural machinery, etc. Livestock is the fundamental contributing sub-sector of agriculture with a 58.3% share within agriculture. Despite an enormous contribution of the livestock sector within agriculture, livestock farming is not treated as agricultural farming, hence the aforementioned benefits that are provided to the agriculture sector are not applicable to the livestock sector. This is totally irrational and is a case of clear discrimination. It is evident of the fact that the majority of raw material, particularly feed items used for animal feeding in the livestock and dairy sector are subject to substantial duties and taxes that are overburdening the farmers (Table 2, 3 & 4).

Table 2: Livestock and dairy sector duties and taxes

RATES OF CUSTOM DUTIES					
HS Code	Description of Items	2014-15	2015-16	2016-17	2017-18
0511.1000	Bovine Semen	1%	2%	3% + 1%	3% + 1%
2304.0000	Soya (Preparation of Animal Feeding)	5%	-	11%	12%
2309.9020	Minerals (used for animal feeding)	5%	10%	10%	10%
2309.9090	Calf Milk Replacer (product for animal feed)	5%	10%	10%	10%
2303.3000	Brewing or Distilling Dregs and Waste (DDGS) – animal feed	-	12% +1%	12% +1%	12% +1%

Table 3: Livestock and dairy sector duties and taxes

RATES OF SALES TAX					
HS Code	Description of Items	2014-15	2015-16	2016-17	2017-18
0511.1000	Bovine Semen	17%	17%	17%	17%
2304.0000	Soya (Preparation of Animal Feeding)	5%	10%	10%	10%
2309.9020	Minerals (used for animal feeding)	0%	5%	10%	10%
2309.9090	Calf Milk Replacer (product for animal feed)	0%	5%	10%	10%
2303.3000	Brewing or Distilling Dregs and Waste (DDGS) – animal feed	-	10%	10%	10%

Table 4: Livestock and dairy sector duties and taxes

RATES OF INCOME TAX ON IMPORT					
HS Code	Description of Items	2014-15	2015-16	2016-17	2017-18
0511.1000	Bovine Semen	5.5%	5.5%	5.5%	5.5%
2304.0000	Soya (Preparation of Animal Feeding)	5.5%	5.5%	5.5%	5.5%
2309.9020	Minerals (used for animal feeding)	5.5%	5.5%	5.5%	5.5%
2309.9090	Calf Milk Replacer (product for animal feed)	5.5%	5.5%	5.5%	5.5%
2303.3000	Brewing or Distilling Dregs and Waste (DDGS) – animal feed	-	5.5%	5.5%	5.5%

It is important to note that with an increasing population, the landholding per family continues to decrease and the crop production is no longer a viable and preferred source of income for the farmers. On the other hand, the vast majority of livestock farmers are landless or own a small piece of land, hence the dependence on livestock farming is increasing day by day. The performance of the livestock sector and its increasing role within the agricultural sector, despite the discrimination, proves that there is enormous potential that could be exploited once livestock farming is treated as agriculture and similar policies are applied on it. As we move forward, it appears that livestock farming will need to be focused as a prime agricultural sub-sector that can provide adequate employment to the rural youth as well as contribute in considerable economic development of the country.

6. Conclusion

The livestock sector is playing a remarkable role in the national economy by providing livelihood to more than 30 million rural families. Productivity per animal is very low resulting in loss for smallholder farmers and the overall economy of the country. There is a dire need to run a countrywide extension program, develop market opportunities and establish conducive government policies for the support of smallholder farmers, which may lead to a true white revolution in the country.

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12

Survey on Water Resource Management in Pakistan National and Provincial Perspectives on Institutions and Policies

Mahmood Ahmad* and Mahira Khan**

Abstract

Surveys in water resource management reveal that Pakistan has a large set of well-prepared strategies and policy documents which however carry poor record of the implementation of key reforms in addressing water issues and challenges. The newly crafted National Water Policy (NWP) attempted to provide the much-needed framework for addressing the country's water woes. However, it falls short in addressing the deeply embedded policy failures and both institutional and market failure issues in the water sector. A recently completed consultative dialogue examined the NWP from the perspective of a provincial lens, focusing on institutional mechanisms, technical challenges, and practices, contextualized in local socio-economic and environmental realities. The authors took part in this unique exercise; this consultative process brought out water management issues shared by all provinces - some unique to each province - requiring both local and innovative solutions. Under this backdrop the paper highlights the need to adopt demand management policies instead of a continuous focus on supply-side options. Demand management policies are far more cost efficient in mobilizing and saving extra units of water- especially in agriculture which uses the bulk of available water (95%), wastes the most, and pays the least. Addressing these issues necessitates, among other responses, policy options, improving the productive ('more crop per drop') and allocative ('more value per drop') efficiency of water use in agriculture. There is also a need to better understand the myriad ways in which water, salt balances and dynamics are interlinked and impacted by management decisions. Improving allocative efficiency would require significant policy work in terms of sugarcane and other water-intensive crops. The central problem being the underpricing of water – a huge wedge between the private and social price of water requiring incremental movements towards full cost pricing. There is an urgent need to

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explore more innovative ways to solve groundwater overexploitation problems in lockstep with maintaining the current levels of agricultural production in view of a larger dependence in meeting water needs. Some feasible suggestions vary from participatory groundwater management to transforming electricity pricing policies, as in the case of Gujrat-India, and this would have an impact in controlling the overdraft of groundwater.

1. Introduction

Over the past 60 years, a several policies and studies has been prepared to help identify the water resources problems in the country. The most recent document among these is the World Bank report entitled “Pakistan’s Water Economy: Running Dry”, which clearly highlights key water-based issues, challenges and possible solutions, and offers a balanced outlook on the supply and demand side of water management in Pakistan. Prior to this, in 1995, the World Bank supported significant water policy reforms by the Government of Pakistan, aimed at decentralizing operations and maintaining the irrigation and drainage systems. Consequently, this initiated a program of institutional reforms meant to establish autonomous organizations at the level of the four provinces, of the 43 canal systems, and at the distributaries and minor canal level. These institutional reforms envisaged the formation of autonomous, self-accounting and self-financing Provincial Irrigation and Drainage Authorities (PIDAs); Area Water Boards (AWBs) along canal commands; and Water User Associations (WUAs) at the watercourse level. However, implementation has proceeded slowly, and to different extents in different provinces. Certain aspects, such as AWBs, proceeded satisfactorily for some years, but then deteriorated with time mainly due to a lack of political, financial and technical support.

Following the failure of these water policy reforms, no significant efforts were made to address key issues, and the well-publicized national water policy (NWP) took ten years to be formulated and finally adopted in 2018. The new National Water Policy attempted to provide the much-needed framework for addressing the country’s water woes. However, it still falls short on certain critical issues that need to be addressed. In the case of the supply of water management, a proposition can be made that on the demand side if certain gaps are plugged, in the short to medium term, it would effectively address the country’s water challenges in a cost-effective way. The solution to a rising water scarcity accompanied by demand increase lies in valuing the scarce resource. With the existing negligible water prices and flat-fee water charges, there is a lack of incentive in rationalizing water use, specifically in the agriculture sector.

Furthermore, existing policies fail to consider issues from a provincial perspective which are important and regionally specific. The author’s involvement in water policy consultations among the four provinces provided a unique insight where some common issues existed in all provinces and conversely province- specific issues as

well. However, the success of the policy implementation at both the national and provincial levels significantly depends on policy instruments and institutional vigor for the implementation of the suggested reforms. Considering water prior policies, the paper highlights issues and challenges both from the national and provincial perspective to provide a prioritized road map for the way forward.

2. Historical Perspective

According to Basharat and Ahmad (2016), regular irrigation in IBIS began in 1875 following the completion of the Upper Bari Doab Canal (UBDC) from Madhopur Headworks (now in India) on Ravi River. The last inundation canals were connected to weir-controlled supplies in 1962 with the completion of the Guddu Barrage. A consequence of this large-scale water diversion was that the water table came close to land surface within a few decades. A series of irrigation drainage efforts continued with supporting policy and strategy documents. The comprehensive history of irrigation and drainage developments in IBIS is given in Table 1.

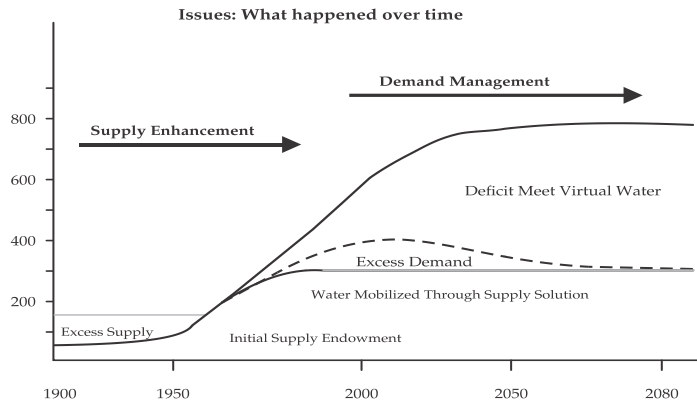
Table 1: Sequence of Irrigation, Waterlogging and Drainage developments in IBIS

Period	Irrigation, Waterlogging and Drainage Developments
17 th - 18 th Century	<ul style="list-style-type: none"> ● Inundation canals dug in 17th century ● Weir-controlled irrigation started in late 18th century
1800's – 1940's	<ul style="list-style-type: none"> ● Majority of the existing irrigation system were developed. Twin menace of water-logging and salinity also appeared in many areas
1950's – 1960's	<ul style="list-style-type: none"> ● Waterlogging reached its peak by 1960 ● Water and Power Development Authority (WAPDA) established in 1958 ● SCARP projects were launched
1970's	<ul style="list-style-type: none"> ● Extensive surface-drainage and canal-lining measures were taken; ● 1977-79 soil salinity survey showed reduction compared to 1950's
1980's	<ul style="list-style-type: none"> ● Public wells privatized and more than 200,000 private wells installed, enhancing groundwater use and drainage.
1990's	<ul style="list-style-type: none"> ● High floods in 1988, 1992 and 1994 further aggravating waterlogging; ● Left Bank Outfall Drainage (LBOD) project in Sindh initiated in 1990
2000	<ul style="list-style-type: none"> ● In Upper Indus, groundwater contribution came at par with surface water; ● In Lower Indus, surface irrigation still contributed the largest due to abundant surface supplies and underlying saline groundwater
1999 – 2002	<ul style="list-style-type: none"> ● A severe drought enhanced water table lowering in Punjab, in Bari Doab groundwater mining was triggered, that continues at alarming rates; ● In Lower Indus, temporary lowering of water table was observed.
2010	<ul style="list-style-type: none"> ● Heavy flooding, recharged the aquifer in adjoining areas and enhanced water-logging in lower Indus
2011	<ul style="list-style-type: none"> ● Heavy floods in Lower Indus due to high intensity rainfall, particularly south-eastern parts, further aggravated waterlogging and salinity.
Present	<ul style="list-style-type: none"> ● In Upper Indus, pumping for irrigation is larger than recharge, leading to declining ground-water levels to various extents ● In Lower Indus, SCARP tube wells and tile drainage is hardly functioning. Waterlogging and salinity problems persist on wider areas.

Source: Basharat, M, Ahmad, S, Irrigation and Drainage Efforts in Indus Basin—A Review of past, present and future requirement, 2nd World Irrigation forum, 6 to 8 November 2016, Chiang Mai, Thailand.

This historical development (also depicted in Figure 1) suggests that Pakistan was initially a country blessed with abundant water resources as measured by per capita availability. This scenario has evolved in distinct phases, shedding light on the nature of water policy issues not only within Pakistan, but also various countries in the near East, Central Asia and Asia (Figure 1).

Figure 1: Water Policy Shift Over Time



Source: Adopted from: A.R. Turton, L. Ohlsson, Water Scarcity and Social Adaptive Capacity: Towards an Understanding of the Social Dynamics of Managing Water Scarcity in Developing Countries, SOAS Water Issues Study Group (University of London) & African Water Issues Research Unit (AWIRU) (Pretoria University Department of Political Sciences), Pretoria, 0002, Republic of South Africa.

The first phase evolved over the millennia; as societies developed, they adapted to the variability and scarcity of water. Elaborate water institutions and complex structures were developed, aiding the region in establishing some of the world's oldest and most accomplished civilizations. The second phase emerged in the twentieth century, marked by creating supplies by damming rivers. When low-cost drilling technology became available, the groundwater was used as a source of irrigation, often as supplementary irrigation. This was also an era of the 'green revolution', largely driven by the mobilization of sizable water supplies. Following the continued push for securing more water, more and more countries are falling in the 'water scarce' category with many river basins running dry, and barely any water left for outflow to the sea.

Initiated a couple of decades ago, the third phase is gradually introducing a series of technical and policy changes in the water sector to avoid the economic and social hardships that could occur as a result of water shortages. In Pakistan, like in many other countries, supply options are reaching their physical and financial limits, and as a result, improved water management is being explored (termed 'water demand management'), a topic that will be discussed in this article.

To summarize, the existing key challenges for Pakistan in the water sector are:

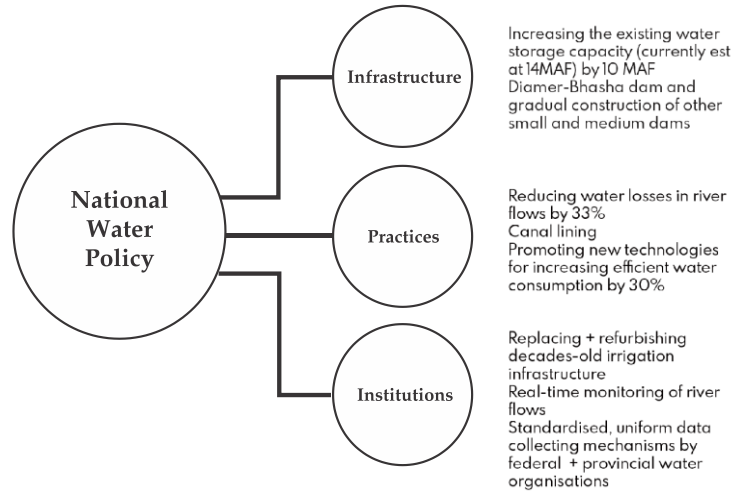
- Critical reforms in the water sector – which remains an unfinished business;
- Increasing scarcity resulting from fast-rising demand and diminishing reservoir capacity. Climate change is influencing water flows – too much or too little water;
- Excessive (nearly 60%) losses in the water conveyance system;
- Deteriorating condition of infrastructure due to inadequate maintenance;
- High cost of financing operations and maintenance and new infrastructure;¹
- Excessive/unregulated use of groundwater resulting in a falling water table and related salinity problems;

3. Existing Water Policy Review

Recently the federal government, in consultation with the provinces, drafted the National Water Policy (2018), aimed at disentangling the emerging water crisis, and providing an overall policy framework and guidelines for a comprehensive plan of action. Sustaining water resources is a national responsibility, while irrigation and agriculture, rural and urban water supply, ground water administration, environment and other water related sub-sectors are provincial subjects. The National Water Policy (2018) is a national framework within which provinces can develop their master plans for sustainable development and the management of water resources. This also addressed the need of raising the capacity building of water-related public sector organizations at the federal and the provincial levels to ensure more integrated water resource planning, development, and management. As a part of institutional and functional arrangements, it also calls for the establishment of Ground Water Regulatory Authorities among all provinces to regulate water safety, pricing, sustainability etc. The main features of the new water policies within a broad classification of infrastructure development, the adoption of good water management practices, and institutions and governance are presented in figure 2.

¹ According to one source, the average cost of irrigation development is estimated at US\$ 1300/hectare, the cost of drainage at around US\$ 2659/ha, of O&M at US\$65/ha, and of sprinkler and micro irrigation at around US\$ 1750/ha. This level of funding is not feasible under the present charges and cost recovery arrangements in Pakistan. (Hisaar Foundation Report, Think Tank on the Rational Use of Water, 2016).

Figure 2: Main Features of NWP



4. Gaps in the National Water Policy

The newly adopted national water policy has attempted to provide the much-needed framework for addressing the country’s water woes. However, there are gaps and more importantly, it lacks the prioritization of key areas for intervention. Table 2 highlights the existing gaps at the national level in managing water resource.

Table 2: Existing gaps in NWP at the national level

Concerned Areas	Existing Gaps
<i>Focus is still largely on the supply side</i>	<ul style="list-style-type: none"> ● Demand management options, short-to-medium term options, cost-effective options ● Rationalize water use in agriculture ● Begin with sugarcane
<i>Integrated Planning and Development of Water Resources</i>	<ul style="list-style-type: none"> ● No mention of indigenous resources ● Rainwater harvesting, hydel power, success story in KP ● Flash floods
<i>Irrigated Agriculture Sustainable Land Management</i>	<ul style="list-style-type: none"> ● Biodiversity, ecological integrity and natural capital ● Watershed management, deforestation and desertification
<i>Institutional, Economic and Legal</i>	<ul style="list-style-type: none"> ● Making a case for full cost pricing ● Case of policy, institutional and market failure ● Built-Neglect-Built (BNB) concept still prevails, ● Land and water rights should be separated ● Internalize environmental cost

Furthermore, the rationalization of water usage in agriculture requires specific attention – given that the agriculture sector consumes most water (96%), yet only

contributes about 20.9% of GDP (Government of Pakistan, 2015), wasting a sizable part, and further pays the least.

In short, NWP lacks the focus and innovative ideas needed to make it a holistic forward-looking document. The emerging literature now points to the fact that water sector solutions largely lie outside the sector itself, such as tackling the issue of climate change, using non-conventional water resources, population control, and proposing multidisciplinary approaches, while spurring the requisite economic growth that will truly set the stage for major water policy reforms.

5. Legal Dimensions

In its present form, NWP lacks a legal mandate. Since water is a provincial subject, the process of water policy formulation must first be considered at this level. According to Naseer. T (2019), assigning rights over water has always been categorized as a provincial matter, and the constitution has accorded much autonomy to provincial governments to regulate according to their needs and requirements. The current constitutional scheme maintains that the Federal Government has a negligible role to play in water management and water lawmaking. Article 157 of the Constitution of Pakistan limits the regulatory role of the Federal Government to constructing hydro-power or thermal power plants, which requires prior consultation with the corresponding provincial government. With this, the Federal government has a minimal control over formulating water laws.

The relevant powers of the Federal Government were first stipulated in 1991, in the form of a water-sharing agreement pertaining to the Indus River, divided between the four provinces of Pakistan via the Water Apportionment Accord (WAA), which had two important features: (a) protecting the existing uses of canal water in each province, and (b) apportioning the balance of river supplies (like flood surpluses and future storages) among the provinces. This Water Accord was the first institutional measure aimed at reducing conflict over the much-needed major water infrastructure, demonstrating a unique blend of cooperation and national spirit.

The Accord also catered to the existing and future water needs of the four provinces. In its pursuance, the Federal Government established the Indus River System Authority (IRSA) vide IRSA Act in 1992 for the regulation and distribution of water in tandem with the Water Accord, and to resolve any questions that may arise between two or more provinces with respect to the distribution of river and reservoir waters. The Council of Common Interest (CCI) also has an important role in resolving any issues related to water, attributed to Article 155 of the constitution, which maintains that in the event the IRSA fails to exercise any of its powers (with respect to the use, distribution, or control of water from any natural

source), the federal government or the provincial government concerned may make a complaint in writing to the CCI.

In conclusion, it is recommended that:

- All water related laws, whether federal or provincial, should be reviewed and updated. Where appropriate, they should be integrated through more comprehensive and updated laws to avoid overlaps.
- Providing each water related public sector organization with a much-needed supporting legal cover is strongly urged.
- Restructuring water related public sector organizations including WAPDA, PIDAs, Water Management Boards, and Provincial Irrigation Departments, and enhancing capacity-building.
- Drawing up legislation for the sustainable development and utilization of groundwater, with an emphasis on rights regulation and control.

6. Provincial Water Policies

The following section is based on the consultancy support recently provided by the author to the Civil Society Coalition for Climate Change (CSCCC), Islamabad, in conducting a water policy dialogue through the lens of provincial governance. The interactive process revealed a number of issues and challenges and contributed a Water Master Plan for each province to the NWP framework. This involved setting targets for water conservation, water storage, irrigation, water treatment and drinking water.

Sindh

For Sindh, the Indus River acts as a primary surface water source; water issues are typically of a lower riparian region, diverting approximately 48 million-acre feet, and largely depending on canal water, as groundwater caters to only 13 % of the overall supply (CSCCC Provincial Water Dialogue 2018). There has been no legislation in Sindh for regulating the use of groundwater. It is necessary to emphasize the significance of groundwater exploitation wherever fresh water is available, especially since water shortage goes hand in hand with persistent drought conditions in Sindh, affecting the province's agriculture and livestock sector the most. Groundwater acts as a critical buffer against the variability of monsoon rains. For example, a rainfall deficit in 1963-66 decreased India's food production by 20%, but a similar drought in 1987-88 had very small impact on food production, mainly owing to the widespread use of groundwater by that time (Koundouri, P, Groom. B 2001). Farms irrigated with groundwater have two times the crop water productivity of those that rely on surface-water alone. This is

largely because the resource allows farmers greater control over deciding when to irrigate their fields and how much water to use each time.

The main issue of concern for Sindh is the decreasing water flow below Kotri, which not only affects the coastal ecology, but also depletes water intended for agriculture and domestic use in cities such as Karachi. Seawater intrusion is a serious, growing problem, decreasing the amount of water flowing out to the sea. Water shortages in metropolitan cities such as Karachi represent a wider problem of policy and institutional failures. Moreover, current water markets in the city, peri-urban and rural areas would continue to profit unless the public sector's water delivery system service improves.

Waterlogging and salinity, groundwater depletion, sedimentation, and the degradation of water quality for agriculture and other uses are critical water resource management issues in Sindh. Water quality issues are equally important, and both surface water and groundwater quality pose major concerns. A significant portion of the population is deprived of improved access to safe drinking water and sanitation. Existing laws governing the disposal of wastewater into the rivers/sea are held back by ineffective enforcement, and the provision of clean water comes with high environmental costs. Agricultural drainage is also a significant issue from the perspective of irrigated land sustainability, as well as that of the environment. The solution lies in better regulations and improved implementation for point and nonpoint pollution. The appropriate treatment of sewage and industrial toxic waste is necessary for the improvement of water quality. There are cost effective ways to treat water to be used for economic activities. Additionally, a proper ground water management and drainage system are key to solving the issues. However, without the relevant education and public awareness, especially among the youth, preventing pollution at the source will not be possible.

Punjab

Punjab is a province where demand among competing sectors is intense. The competition is intensifying among canal water versus groundwater, agriculture versus non-agriculture, and water-intensive versus non-water-intensive crops. Agriculture devours more than 90% of our available water and is therefore central to any water policy analysis. Two crops are being debated at the moment - the first being sugarcane, water-intensive and supported by a huge direct and indirect subsidy, and the second being cotton, a less water-intensive crop and a main export, now on the decline in terms of acreage devoted to production. The late 50's and 60's ushered in a rapid growth in cotton cultivation, spreading from Central Punjab to Southern Punjab (Afzal, 1970). The trend is now reversing, and sugarcane is being cultivated in areas that were previously allocated solely to cotton.

Like other provinces, Punjab continues to treat water as a free good. A committed policy for pricing water would be the key in rationalizing water use, generating funds for O&M and new investments. Broader policy guidelines in the short-to-medium term would include pricing water to cover the O&M cost, incrementally moving towards full-cost pricing in the long term. It may be noted that to ensure full water cost recovery, the user fees should be 1% of the value of the infrastructure stock, which in Punjab would work out to Rs. 1,800/hectare (Agriculture Department 2017). The actual *abiana* (water rate) collected is Rs.150/hectare, while simple operations and maintenance would require 0.5%, meaning water tariffs for agriculture should be increased to at least Rs. 9000/hectare. Pakistan has adhered far too long to a policy to “build-neglect-build” with escalating costs over time.

Another significant issue for the Punjab is the over-exploitation of groundwater from tube wells, which is becoming a severe threat not only to sustainable agriculture, but also to the domestic water supply. As of now, more than 50 % of the water supply for agriculture comes from groundwater; the depletion of groundwater is rapidly taking place in freshwater areas, resulting in a serious salinization of productive land. Further,, reduced water tables² require more energy to draw water, placing pressure on the already limited energy resources, subsequently increasing the pumping cost. Low water productivity has led to the continuous depletion of underground water resources, posing serious threats to agricultural production in the province.

The World Bank report provides a menu of practical and non-controversial interventions which can be implemented in the current environment. Amongst its many suggestions, the report calls for the community management of groundwater, wherein the user community is the primary custodian of the resource and is charged with implementing management measures. According to M. Ahmad & M. Asif, 2017, a World Bank report showcases a model adopted in the drought-prone areas of the Indian state of Andhra Pradesh, which has produced the first global example of large-scale success in self-regulating groundwater use. At the cost of US\$2,200 per village per year, communities have shown the first large-scale example of self-regulation of groundwater. Farmers have doubled their income while bringing their groundwater use close to sustainable levels. In many cases, farmers have voluntarily reduced their water use, while continuing to safeguard their crops.

Pakistan is steadily matching India in so far as they are growing and exporting rice using valuable groundwater amounts for exporting virtual water. Similarly, it is only a matter of time that rice would become unprofitable unless supported by a huge subsidy. Further, the dictates of climate change and a considerable

² Due to excessive pumping, in many areas of the Punjab, the water table is decreasing two feet per year.

change in the land use pattern since 1980s necessitates a fresh identification and development of new Agriculture Ecological Zones (AEZ) in order to maximize the agriculture potential of Punjab/Pakistan. Water resource conservation and management must be reoriented to move towards a climate-smart agriculture.

Balochistan

The thematic areas of the water basin here are different than that of the Indus Basin. The extent of the water scarcity can be judged from the three main existing challenges: Firstly, water resource literature often conceives groundwater as a leading issue, where 75% of flood waters are under-utilized, while 4% of groundwater is over utilized. Second, Balochistan's water economy is highly segmented, in that there are 18 river basins accounting for the entire province's water resources (CSCCC Provincial water dialogue 2018). There is no pre-existing water authority dedicated to managing this vast and diversified resource base. Lastly, the province of Balochistan is more likely to be affected by climate change, as this area is frequently affected by natural disasters such as droughts and floods. The recent devastating floods and protracted droughts paint a clear picture of how climate change is affecting water availability – either too little or too much water. This winter, both in Balochistan and in Sindh, the region witnessed a wet season with a series of flash floods after a prolonged drought, suggesting a policy failure of underinvestment in much-needed storage at all levels.

Although infrastructure is given much significance under the CPEC, water remains a completely overlooked sector. Balochistan represents a case of severe water scarcity, where CPEC projects are facing serious constraints in meeting water requirements. The port of Gwadar is a flagship project, and the price of tankers (water markets) around the port is in the range of Rs. 22,000 to 24,000 per tanker, as compared to Rs. 4,000 to 8,000 in Karachi, and about Rs. 3,000 in rural Punjab. Water is needed for different competing demands, and a policy should have been put in place to rationalize its use. A combination of price and non-price instruments are available – appropriate water pricing is needed not only in the province of Balochistan, but also in other provinces with the policy objectives to incrementally move towards full-cost pricing, including the regulation of groundwater use on a sustainable basis. (Ahmad, 2019).

Balochistan is the first - and so far, the only - province in Pakistan to issue legislation on regulating groundwater. The Provincial assembly of Balochistan enacted the Groundwater Rights Administration Ordinance, 1978, with the objective of regulating the use of groundwater and administering the rights of the various individuals therein, while noting that the unbridled use of water by various users is seriously worsening the water table, and adversely affecting both the quality and quantity of water.

Khyber Pakhtunkhwa (KP)

Water is not much of a constraint for KP, unlike other provinces. However, the growing demand of water for industrial purposes and CPEC may put pressure on the existing supply. Agriculture demands most of the available water. The total area of Khyber Pakhtunkhwa (KP), including FATA, is 25.4 million acres, with a cultivable area of only 6.27 million acres, and a total irrigated area spanning 2.277 million acres including canals, lift irrigation schemes and tube wells. The potential area for irrigation is 4.443 million acres. The Agriculture Policy Document (2017) describes water as a critical constraint in KP, claiming that the greatest potential for increasing irrigation in the region lies in improved water management and conservation works - such as small dams, diversion structures and conveyance channels. Improving spate irrigation is another critically needed policy action in both perennial water rights areas and floodwater rights areas. Similarly, there is significant potential for improving water use efficiency by adopting better farm-level water management measures such as improving productive and allocative efficiency. Table 3 summarizes the water potential of the province.

Table 3: Water Development Potential of KP

Source	Potential for Increase (million acre feet)	Comments
Reducing surface water run-off	5-6	Small dams, water harvesting, diversions from streams and rivers
Increasing groundwater pumping	0.4	Increased supply from doubling the number of tubewells from 3,000 to 6,000 (assuming operational utilization of 25%)
Improved on-farm water management	???	Make sure water saving is real Gear Policies to improve allocative efficiency

Source: Draft KP Agriculture Policy, Ten Years Perspective, 2017.

The province is also a leader in using low-cost technology for harnessing the water/energy and livelihood nexus. (see box 1)

Box 1: Mini and micro hydropower projects (MHPs) in KPK, a success story

In KPK, 250 mini and micro hydropower projects (MHPs) will become fully operational and functional to provide electricity to around 245,000 people in hilly areas of the province through community-based local institutional mechanisms by the end of 2016. These hydropower projects would help tap the water potential and enable people to get electricity on low cost to increase their income. Besides the people's dependence on fuel (kerosene) would be reduced and they would be encouraged to protect their forests. Further it will bring local people with low cost electricity from Rs. 2 to Rs. 4 per unit to the local community.

NGOs/construction firms were working with the Pakhtunkhwa Energy Development Organization (PEDO) under close supervision of the Energy and Power (E&P) Department of Khyber Pakhtunkhwa since 2014. These MHPs were purely government-funded community empowerment and participatory projects working successfully. PEDO's new management and E&P Department committed to reforming and transforming the organization into a self-sustainable institution that will not only fulfil the provincial energy demands, but also contribute to the national energy security, claimed that Pedo was being run transparently and license was given during two weeks of application and feasibility submitted within six months.

Source: Adopted from Dawn, June 27th, 2016.

Gilgit-Baltistan

Gilgit-Baltistan is termed the 'water bank' of the country, with the country's main water source, the Indus River, surging through the area. However, there prevails a shortage of water for agricultural, domestic and tourism consumption, and while the region provides the 'catchment areas' for the Indus, it lacks proper watershed management, a grave policy failure resulting in excessive siltation and reducing the lifespan of the few dams the country possesses. The billions of dollars that the country is now readily prepared to invest in desilting could have been better used elsewhere, had other provinces provided funds (cross subsidy) to reduce such environmental externalities.

Water quality is an additional concern for this region - waste is emptied into smaller water streams, with 78% among these posing a high risk for human health. Gilgit-Baltistan is now in the process of undertaking institutional reforms to allocate and manage water among competing sectors. Much can be gleaned from water policy reform-failures in the Punjab and Sindh. Water needs to be valued for its sustainable usage today and for future generations. Demand-side solutions suggest innovative approaches be employed to meet growing demand, including solar technology to lift water for the development of climate-smart' agriculture, high-value farming where no water under gravity flow is currently available, and the development of a highly efficient (90%) drip-irrigation system to irrigate high-value orchards (Cherry, Apple).

7. Conclusions and way forward

The key takeaways from the National Water Policy review and provincial dialogue are as follows:

- Formulating a Pakistan Water Policy for the 21st century requires a major shift from the classic paradigm currently employed in water resource management (supply enhancement, command-and-control water allocation) to a more adaptive new paradigm (based on demand management and economic incentives).
- The NWP in our view provides a broader framework falling short in highlighting in detail provincial issues which are specific to each province or are common to all. Some of these are summarized below.
- In terms of supply, Pakistan has been unable to augment water storage capacity via the construction of large and smaller dams to cope with seasonal variations in water supply. According to the Indus River System Authority, “Pakistan dumps water worth approximately \$21 billion into the sea each year due to the lack of a water conservation system.” Water storages are needed at all levels - rainwater harvesting is a potential solution, a modern technique used globally for effective water storage.
- Several economic and non-economic instruments are available for the implementation of incentive policies for the conservation of water resources and the protection of environments that carry a high rate of return on investments. These tools promote water demand management by improving the productive and allocative efficiencies of water use.
- Rationalizing water use in agriculture is central to policy reforms in all the provinces. The well-documented knowledge that agriculture uses 95% of water, pays the least, and wastes the most, supports the argument that a drastic shift in agriculture policy is necessary for formulating water shortage solutions. Planners should spearhead a policy shift in the provincial Department of Agriculture from ‘yield optimization per unit of land’ to ‘yield optimization per unit of water.’ - this is the only way to help the country’s agricultural sector survive an oncoming era of water scarcity.
- Water pricing is a critically needed reform in all provinces, but there is not a generalized strategy or model for the adoption of the specific water-pricing policy of a particular country and/or province. **Every province must develop its own strategy.** Some basic principles for setting water prices can include (1) meeting the revenue needs of the system, (2) distributing the cost equitably, (3) incentivizing the efficient use of water and capital, (4) keeping the tariff rate structure simple so it can be well understood and implemented, and (5) protecting the environment.

- Both the Punjab and Sindh continue to promote rice and sugarcane, but neither of these water-thirsty crops can be justified under the prevailing and imminent water scarcities, unless we rationalize water use in agriculture. Enhancing land and water productivity is the key to justifying the economics of these two crops.
- Water quality issues are equally important. The quality of both surface water and groundwater is a major problem. Existing laws governing the disposal of wastewater into the rivers are prone to ineffective implementation, and access to clean domestic water is limited.
- Agricultural drainage is also posing several complications from the perspective of sustainability of irrigated land as well as the environment. Critical water resource management issues include waterlogging and salinity, groundwater depletion, and the sedimentation and degradation of water quality for agriculture and other uses. The solution lies in better regulation and policy implementation for point and nonpoint pollution, including the proper treatment of sewage and industrial toxic waste. There are cost effective ways to treat water to be used for economic activities.
- A proper ground water management and drainage system is necessary, and without the relevant education and public awareness, especially among the youth, preventing pollution at the source will not be possible. Groundwater management must take precedence over mega-dam construction for all the provinces. Amongst its many recommendations, the report calls for the community management of groundwater, wherein the user community is the primary custodian of the resource and is charged with the implementation of management measures.
- Institutional reforms call for a change in attitudes, away from a 'business-as-usual' framework, towards benefit-sharing mechanisms between provinces, so that the needs and priorities of all provinces are met by the new water management legislative and institutional frameworks.
- The country is not prepared to face the catastrophic adversities of climate change, including extreme weather events such as floods, prolonged droughts, and heat waves, as well as rising sea levels inundating coastal land and aquifers. Of all the provinces, Sindh and Balochistan are the most vulnerable to climate change, and a mix of adaptive, mitigating and productivity enhancement policy must be initiated at the provincial levels.

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13

Role of Financial Services in Economic Growth: Policy Implications for Pakistan[†]

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Abstract

In the last two decades, the financial services sector in Pakistan has seen remarkable growth and structural development. However, it is debatable whether the financial markets and institutions have contributed meaningfully towards promoting growth in the real economy. This paper provides a brief background of the theoretical and empirical literature on the linkage between the financial services sector and economic growth. It evaluates the development of Pakistan's financial markets and institutions in comparison to a cohort of developing countries. The country's governance and regulatory environment in light of these theories and the empirical evidence is compared with other countries. The weaknesses in the linkages between finance and economic growth are identified within the framework of the theoretical models and relevant empirical evidence. The final section discusses the challenges Pakistan faces in making its financial services sector become an effective driver of economic growth.

1. Background

Notwithstanding the earlier dismissal by neo-classical economists of the role of finance in economic development (Lucas, 1988; Robinson, 1952), the nexus between the development of financial sectors and economic growth is now so widely accepted that “[the idea] that financial markets contribute to economic growth is a proposition too obvious for serious discussion” (Miller, 1998). Pioneering studies by Gurley and Shaw (1955) and McKinnon (1973) firmly

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established the finance-growth link, which is well-stated in the following: “The preponderance of theoretical reasoning and empirical evidence suggests a positive, first-order relationship between financial development and economic growth” (Levine, 1997, p. x).

The theoretical underpinning and the empirical evidence are summarized in review studies such as those by Thiel (2001) and Levine (2005). The economic theory and extant empirical evidence also suggest plausible rationales for why well-functioning financial systems matter for growth: by reducing information costs and allocating capital; monitoring firm behavior and exerting corporate governance; facilitating the hedging, trading, and pooling of risk; mobilizing savings for investment; and reducing the transactions costs of economic exchange and activity.

The key message for economic policy-makers which emerges from the understanding of the finance-growth nexus is that financial development should be a crucial piece in any country’s strategy for economic growth. In particular, developing countries need to strengthen institutional infrastructure by building effective legal and regulatory frameworks, and adopting best accounting and auditing standards and practices. The Global Financial Crisis (2008-09) has underscored the havoc that financial instability can wreak on the real economy and the critical importance of financial stability for growth. A resilient financial sector bolstered by prudential regulation will better equip developing countries to deal with the speed and scope of financial innovation, and new financial products, services and technologies in a globalized world.

In the last couple of decades, the financial services sector in Pakistan has seen remarkable growth and structural development. However, it is debatable if its financial markets and institutions have contributed meaningfully towards promoting growth in the real economy. This paper provides a brief background of the theoretical and empirical literature on the linkage between the financial services sector and economic growth. Next, it evaluates the development of Pakistan’s financial markets and institutions in comparison to a cohort of developing countries. The country’s governance and regulatory environment in light of these theories and the empirical evidence is compared with other countries. The weaknesses in the linkages between finance, economic growth and governance are identified within the framework of the theoretical models and the relevant empirical evidence. The final section discusses the challenges Pakistan faces in its financial services sector becoming an effective driver of economic growth and proposes policy recommendations.

2. Finance and Growth

Among development economists, a consensus has emerged that a well-functioning financial sector is a precondition for the efficient allocation of resources and for achieving an economy's full potential for growth. Levine (2005, 2004) has presented a comprehensive review of the theory and evidence on the connections between the operation of the financial system and economic growth. The study concluded that "the preponderance of evidence suggests that both financial intermediaries and markets matter for growth and that reverse causality alone is not driving this relationship." This implies that "better developed financial systems ease external financing constraints facing firms, which illuminates one mechanism through which financial development influences economic growth." Thiel (2001) showed that "financial development is related to economic growth even in industrial countries."

Among the more recent studies, Durusu-Ciftci, Ispir and Yetkiner (2017) have shown that debt from credit markets and equity from stock markets are two long-run determinants of GDP per capita. Their empirical study of 40 countries over the period 1989–2011 revealed that "both channels have positive long-run effects on steady-state level of GDP per capita, and the contribution of the credit markets is substantially greater." With reference to the developing and Asian countries, Estrada, Park and Ramayandi (2010) argued that sound and efficient financial systems are especially important for sustaining growth "because efficiency of investment will overshadow quantity of investment as the driver of growth in the region." Their panel data study of 125 countries has confirmed that financial development has a significant positive effect on growth, especially in developing countries, supporting the notion that further development of the financial sector matters for sustaining growth. Zhang, Wang and Wang (2012) used data from 286 Chinese cities over the period 2001–06 to investigate the relationship between financial development and economic growth. Their results suggest that most traditional indicators of financial development are positively associated with economic growth and that finance-growth linkages are present even in countries where the banking sector is state-ruled (e.g., China). Masoud and Hardaker (2012) presented an empirical analysis of the relationship between financial development and economic growth for 42 emerging markets. Their results indicated that "stock market development has a significant effect on economic growth, and this effect remains strong even after the influence of banking sector and other control variables." Their findings suggest that the stock market and the banking sector play a complementary role in the economy.

In the wake of the 2008 Global Financial Crisis (GFC), serious concerns have been raised about the disruptive potential of finance for economic growth. Such issues have been detailed in a number of studies. For example, Yongseok (2013) has argued that developed financial markets are still an essential ingredient of long-run

economic growth. Cournède and Denk (2015) have shown that while finance has been a key ingredient of long-term economic growth in the Organisation for Economic Co-operation and Development (OECD) and G20 countries over the past half-century, there can be too much finance, that is, at some levels of household and business credit, “further expansion slows rather than boosts growth.” Cecchetti and Kharroubi (2015) have explored the possible crowding out of real economic growth by the financial sector, suggesting that the growth of a country’s financial system can be a drag on productivity growth, since “financial booms are not, in general, growth-enhancing, likely because the financial sector competes with the rest of the economy for resources.” Further, they have concluded that credit booms harm what we normally think of as the engines for growth – those that are more R&D intensive. The contagion effects of the GFC were amplified by the globalized nature of the financial industry and led to economic disruptions and crisis across the globe. According to a report by the Group of Thirty (2013), “Globally, cross-border capital flows increased from US\$4.9 trillion in 2000 to US\$11.7 trillion in 2007. Nearly 60% of this growth was driven by cross-border lending, but most of this was short-term in nature.” The implications are that developing countries need to prioritize enabling more stable flows of long-term capital.

The recent experience during the GFC suggests that the relationship of finance and real economic growth needs to be reexamined to identify both the growth-enhancing and the growth-retarding roles of finance. Economic growth strategies attach considerable weight to the development of efficiently functioning and complete financial markets. By fostering the development of the financial services sector, a country’s economic growth would be accelerated. Emphasis is placed on policy measures that lead to the deepening of financial markets that include, in particular, institutional and legal measures to strengthen creditor rights, investor rights and contract enforcement.

However, there is still a wide divergence of opinions as to how and to what extent finance affects economic growth. Outstanding questions are pertinent for implementing strategies for the development of the financial sector as an engine for economic growth. Three questions require particular attention: (1) How does financial sector development lead to economic growth?; (2) what features of the financial sector structure provide maximum support to economic growth?; and (3) how do financial structures lead to structural changes in the economy and technological progress?

Though it is now empirically well-established that financial development leads to economic growth, empirical analysis at the aggregate level does not capture the complexities of the financial structures and the multiple channels through which finance and the growth processes are linked. For such reasons, it is more instructive to study these issues at the country level. This paper reviews the underlying conduits between financial developments and economic growth, and seeks to apply

the principles identified in the academic literature to the three questions with reference to the role of Pakistan's financial sector. We seek to identify weaknesses in the transmission channels and suggest remedial measures such that the financial services sector may play a robust role in economic growth.

3. How Does Finance Affect Economic Growth?

Economic growth depends upon the accumulation of production input factors and technical progress. Traditionally, finance has been linked primarily with the accumulation of capital leading to economic growth. Furthermore, finance makes it possible to realize technical progress as technical advances are embedded in the capital stock. In growth theory under the assumption of perfect markets, the interest rate brings into equilibrium the economy's savings and investment. Therefore, in the presence of perfect markets, the financial sector is "nothing but a veil on the true determinants of economic developments," and financing decisions become irrelevant. Over time there has been recognition of the problems arising out of asymmetric information and how it affects financial contracting between borrowers and lenders.

In dealing with the problems associated with asymmetric information, adverse selection and agency costs, the financial system assumes a more prominent role in facilitating an efficient allocation of capital. Financial institutions specialize in evaluating and monitoring investment opportunities, and thus obtain a comparative advantage in evaluating risks and designing financial contracts. In particular, banks build up information advantages from lasting relations with borrowers from accumulated experience. They also enjoy economies of scale from offering transaction services. Therefore, an increase in the efficiency of the financial system would lead to higher rates of economic growth.

The finance-growth nexus, in theory, may run through various transmission channels. Thiel (2001) has put these into three main categories, stating that financial development: (1) reduces the transaction costs required to allocate capital; (2) increases the savings ratio; and (3) raises capital productivity. Lower transaction costs mean more efficient transformation of savings into investment, and that more net savings can be used for productive investments. A more efficient financial system improves the return-risk combinations for savers. It is uncertain, however, whether it can induce an increase of the saving ratio and thus stimulate higher economic growth. Financial development raises the productivity of capital through: (1) more efficient allocation of capital over investment projects; (2) the provision of liquidity; and (3) the allocation of risks. The development of the financial sector has an ongoing effect as it leads to a durable positive feedback effect between finance and growth.

The financial system contributes to economic development by reducing costs associated with acquiring information, enforcing contracts and conducting transactions. Financial systems also mitigate problems of moral hazard and adverse selection by producing information on investment returns, facilitating a more efficient allocation of resources. By providing diversification and risk-sharing opportunities, the financial systems also help mobilize saving and efficient intermediation of financial resources.

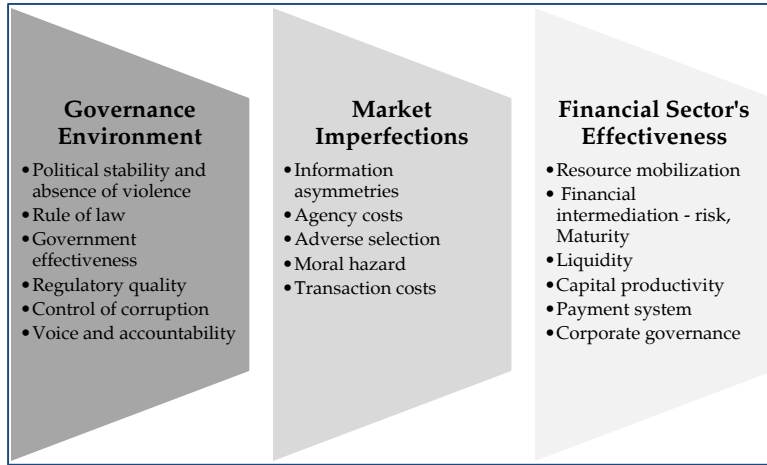
4. Governance, Financial Development and Growth

The main role of financial development is tackling the imperfections in the capital markets, and a growing body of research points to a strong link between corporate governance measures and financial development. Financial markets' depth and breadth is associated with higher quality institutions in general, including better property rights and rule of law (North, 1981; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1999). La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997, 1998) have provided empirical evidence that measures of investor protection derived from corporate law are associated with stock market development. La Porta, Lopez-de-Silanes and Shleifer (2006) have examined the effect of securities laws on stock market development and have found strong evidence that laws mandating disclosure and facilitating private enforcement through liability rules benefit stock markets. Similarly, Burger and Warnock (2006) have concluded that policies and laws matter in the development of the local currency bond market. Their analysis indicated that both creditor-friendly policies and creditor-friendly laws can play an effective role in bond market development. They have shown that "strong rule of law is associated with deeper local bond markets, whereas countries with better creditor rights are able to issue a higher share of bonds in their local currency." In the context of Pakistan, Uppal (2007, 2011) has provided evidence that the securities laws play an important role in the development of bond markets, because they facilitate private contracting rather than public enforcement.

Acknowledging the nexus between development and governance, World Bank's World Development Report for 2017 is subtitled "Governance and the Law". Governance is defined as "the process through which state and non-state actors interact to design and implement policies within a given set of formal and informal rules that shape and are shaped by power." The report addresses three core development outcomes: security, growth, and equity. It advocates that "commitment, coordination, and cooperation fundamentally underlie the effectiveness of policies to promote these outcomes, but the unequal distribution of power can constrain policy effectiveness."

Figure 1 presents a conceptual mapping of the linkages running from the governance and regulatory environment to lessening of the market imperfection and to a more effective role of the financial sector in economic growth.

Figure 1: Governance, Market Imperfections and Financial Sector's Role



Source: World Bank, 2006.

5. Patterns of Corporate Financing in Pakistan

The fundamental role of finance is to channel savings to investment. Therefore, it is instructive to examine how corporations in Pakistan have sourced funds to finance their operating assets up to now. Table 1 summarizes the liabilities and equity structure of the private corporations listed on the Karachi Stock Exchange (KSE) for the years 2011-2016. The data show that the shareholders' equity dominates the sources of funding at 44.2% in 2016. While it is consistent with the pecking order hypothesis whereby corporations' first choice is to use internally generated funds for investments, the steady trend of increasing use of equity over the six year period is notable; equity ratio increased from 35.9% in 2011 to 44.2% in 2016. While the overall equity ratio increased, the paid-up-capital decreased, from 14.0% to 12.2%, but equity reserves increased from 21.9% to 32.0% over the same period.

Table 1: Summarized Liabilities and Equity of KSE Listed Companies

Liabilities & Equity	2010		2011		2012		2013		2014		2015		2016	
	Rs	%	Rs	%	Rs	%	Rs	%	Rs	%	Rs	%	Rs	%
Rs in billions	1,129	35.9	1,269	36.0	1,354	34.9	1,554	39.8	1,662	39.4	1,857	42.0	2,067	44.2
Shareholders' equity	441	14.0	488	13.8	517	13.3	527	13.5	555	13.2	553	12.5	571	12.2
Paid up capital	689	21.9	781	22.2	837	21.6	1,027	26.3	1,106	26.3	1,303	29.5	1,495	32.0
Reserves	565	17.9	563	16.0	561	14.4	548	14.0	483	11.5	503	11.4	516	11.1
Long-term borrowing	208	6.6	215	6.1	247	6.4	272	7.0	316	7.5	323	7.3	320	6.9
Other non-current liabilities	437	13.9	562	16.0	586	15.1	569	14.6	701	16.6	675	15.3	674	14.4
Short-term borrowing	810	25.7	913	25.9	1,136	29.2	962	24.6	1,051	25.0	1,064	24.1	1,093	23.4
Current liabilities	3,150	100.0	3,523	100.0	3,884	100.0	3,905	100.0	4,212	100.0	4,423	100.0	4,671	100.0
Total														

Source: Authors' analysis from the Financial Statements Analysis of Companies (Non-Financial) Listed on the Karachi Stock Exchange, 2015, State Bank of Pakistan.

At the same time, we observed a lowering of the long-term debt ratios; long-term borrowing decreased as a percentage from 17.9% to 11.1% over the five year period. There was also an increase in the use of short-term borrowing; from 13.9% to 14.4% and a greater reliance on other non-current liabilities (e.g., employees benefit obligations) and current liabilities (e.g., trade credit).

The increasing use of internally generated funds indicates a trend of moving away from engagement with the financial sector, either with the banking sector for long-term loans or the financial markets for debt or equity issues. It implies that the pecking order considerations are increasingly dominating corporations' funding decisions. It points to an aggravation of the problems originating in informational asymmetry and agency cost on which the pecking order hypothesis is based.

Further insights are obtained by examining the corporate sectors' uses and sources of funds. This is presented in Table 2 in a format which shows the amounts and the percent of the funds raised (or remitted) in relation to the corporations' total investments.

Table 2: Summary of Investments and Sources of Finance of KSE Listed Companies

Rs in billions	2010-11		2011-12		2012-13		2013-14		2014-15		2105-16		Total	
	Rs	%	Rs	%	Rs	%	Rs	%	Rs	%	Rs	%	Rs	%
Total Investments	243		185		325		269		294		339		1,656	
Sources of Financing														
Cash flow from operations	206	84.9	266	143.3	506	155.7	311	115.4	443	150.5	512	151.1	2,244	135.5
Bank borrowing	113	46.5	26	14.2	(27)	-8.2	21	7.7	(25)	-8.6	10	2.9	(39)	-2.3
Debentures/TFCs(bonds)	10	4.3	(4)	-2.3	(4)	-1.1	(2)	-0.6	21	7.0	(6)	-1.8	18	1.1
Other non-current liabilities	6	2.6	32	17.3	25	7.6	44	16.4	8	2.6	(3)	-0.9	26	1.6
Paid-up capital & reserves	(5)	-2.0	(21)	-11.4	20	6.1	34	12.7	37	12.5	56	16.6	57	3.5
Dividends paid	(111)	-45.8	(109)	-58.9	(149)	-45.7	(151)	-56.0	(159)	-54.2	(187)	-55.1	(182)	-11.0
Changes in cash balances	23	9.5	(4)	-2.3	(47)	-14.4	12	4.6	(29)	-9.9	(43)	-12.7	(468)	-28.3
Total Sources	243	100.0	185	100.0	325	100.0	269	100.0	294	100.0	339	100.0	1,656	100.0

Source: Authors' analysis from the Financial Statements Analysis of Companies (Non-Financial) Listed on the Karachi Stock Exchange, 2015, State Bank of Pakistan.

Table 2 shows that for the six-year period, the cash flow from operations-generated funds was overall in excess (135%) of the investment need of the sector. Though the contribution of the operating cash flows to the investment requirements of the firms varies (min 85%, max 151%) from year to year, it is the dominant source. Bank borrowing or additional paid-up capital is not a major source, and the least important source is the financial securities, debentures and TFCs (bonds). The operating cash flows typically provide a surplus which is used to pay back loans and distribute substantial dividends. The dividends are so far in excess of the additional equity capital (from new equity issues/reserves) that there seems to be a drawdown of the capital by the shareholders, rather than a net inflow of capital into the firms.

The picture that emerges from the balance sheet and cash flow analyses is that there seems to be an increasing disengagement from the financial sector pointing to a diminishing role of the financial sector in providing funds for real investment. The changes in the pattern of financing imply that the ubiquitous problems of information asymmetry, agency costs and adverse selection have not improved. This phenomenon is reflected in the decreasing use of external financing and high dividends payouts.

6. Financial Development in Pakistan

The landmark year in Pakistan's financial development was 1991 when the country's capital markets were substantially opened to international investors. This was part of a larger set of measures to place the economy on market-based principles and end an era of financial repression. This included measures to liberalize foreign exchange regulations and foreign trade, and to privatize industrial units and banks. Securities markets were deregulated and auction markets for government securities were established. The regulatory controls on corporate public offering of equity and on foreign ownership and underwriting of securities were removed. The tax system was simplified and tax rates were reduced, particularly including exemption of capital gains on equity stock and a tax holiday for selected industrial and financial institutions.

As a result of the post-1991 liberalization, the financial sector saw the establishment of private sector mutual funds, off-shore funds, the creation of Employees' Stock Option Plans, corporate brokerage houses, investment advisory firms (many in collaboration with foreign securities firms) and investment banks. A process of privatization of nationalized commercial banks was initiated during the year 1991-92. A number of private commercial banks sprang up creating greater competition within the banking sector. State controls on interest rates charged on bank loans and paid on deposits were removed. The banking sector's balance sheets were strengthened by removing non-performing loans (NPLs) and strengthening the legal framework for the recovery of bank dues. A credit rating agency, the

Pakistan Credit Rating Agency, Limited (PACRA), was established in 1994. Another credit rating agency was incorporated in 1997. In 1994-95, a Central Depository Company (CDS) was established to implement an electronic book entry system for securities settlement.

In 1997, the government initiated a Capital Market Development Program (CMDP) with the help of the Asian Development Bank (ADB) to strengthen the capital market. The securities' regulatory body, the Corporate Law Authority, was reconstituted in 1999 as an autonomous Securities and Exchange Commission of Pakistan (SECP). The governance structure of stock exchanges was improved and its regulatory powers were enhanced. Towards the turn of the century, the policy emphasis shifted towards deepening and broadening the markets with the initiation of the Financial (Non-bank) Markets and Governance Program (FMGP) financed by the ADP. The 2000s saw continued broadening and deepening of financial markets through market-based financial instruments and institutions.

Since the market liberation measures of 1991, the equity market in Pakistan has undergone substantial structural changes and growth. Market capitalization, as a percentage of GDP, was only 6.5% in 1989, and rose to 23.9% by 1993 post-liberalization. The following years have seen a period of steady and strong growth pushing the capitalization ratio to 42.0 at the end of 2005. In the post-2001 period, continued privatization and liberalization policies, together with regulatory and structural reforms, have led to further maturation of the capital markets. The market capitalization was largely boosted by the listing of a number of large state-owned enterprises (SOEs), whose privatization drove market growth. Domestic institutional investors, such as mutual funds and insurance companies, also increased engagement in the capital markets, though the individual investors account for the bulk of exchange trading. The investor base has also expanded due to interest by foreign portfolio investors.

Despite the series of reforms and structural developments, capital market instruments still play a minor role in mobilizing primary financing to the real sector. In 2005 capital raised by corporations and financial institutions through equity and bond issues totaled only 0.3% of GDP. Pakistan lags behind other emerging markets in resource mobilization issues of new equity through the capital market. Similarly, bond market issues in Pakistan compared to other emerging markets are almost non-existent. The market for derivative instruments also has not developed. The stock market lacks breadth, as well as depth. The 10 largest stocks accounted for 55% of the total market capitalization in 2007. Trading of stocks is likewise highly concentrated. Free float is also rather limited; an average of only 20 of the shares of the listed companies are available for trading, resulting in relatively low market liquidity. This, coupled with a high turnover, paints a picture of a highly speculative market.

According to Asian Development Bank report (ADB, 2007), the key issues of concern, among others, are high equity market volatility, small public float (shares available for trading) and weak securities market legislation. The ADB report also noted that the Pakistan stock market's volatility is due partly to a high volume of speculative short-term individual investment in shares and thin public float of the listed companies.

7. State of Financial Development in Pakistan

As the financial sector is crucial to any economy's growth, it is important that we monitor and compare its development across economies and over time. The World Bank's Financial Sector Development Indicators (FSDI) project has developed a comprehensive database containing financial sector statistics, which provide analytical tools for enhanced assessment and understanding of financial sector development (Svirydzenka, 2016; World Bank, 2006).

The FSDI database provides numerous variables spanning banking systems, capital markets, non-bank financial sectors, the accessibility to finance and institutional environments. It presents the main dimensions of a financial sector—size, access, efficiency and stability—for the traditional financial sub-sectors, such as banking and capital markets, thus providing practical assessment measures and the basis for assessing a country's overall financial sector, especially when benchmarked against international, regional, or cross-country standards.

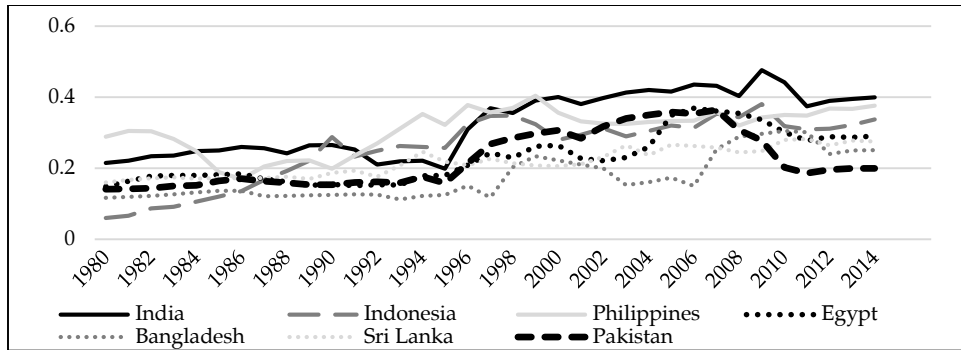
The FSDI indicators are grouped into four broad dimensions: (1) size; (2) efficiency; (3) access; and (4) stability. These headline indicators include traditional measures, such as private credit-to-GDP ratios, stock market capitalization-to-GDP ratios, non-performing loans and banking spreads, but also new indicators (collected via surveys), such as ease of access to a bank account by a household and ease of access to financing for a company. The benchmarking indicators, combinations of ratios and synthetic statistics allow for the sorting of countries according to these four dimensions.

We examine the FSDI indicators for Pakistan, comparing these with cohort countries (i.e., lower-middle income countries). This analysis is done initially for the overall financial development index, and subsequently, for the financial institutions and financial markets, each having three constituent dimensions (access, depth and efficiency). Figure 2 below shows the Financial Development Index for Pakistan and six other developing countries. Table 3 in the Appendix provides a comparison for Pakistan with other lower-middle countries on the selected statistics underlying the FSDI.

As Figure 2 shows the financial development in Pakistan (thick line) took off around 1995, and, for a number of years, it ranked towards the top of the group,

except for India. The country's position continued to improve until about 2007, after which, the index shows rapid decline. According to the latest available data, the country ranks at the bottom of the group, with India's score being twice as high.

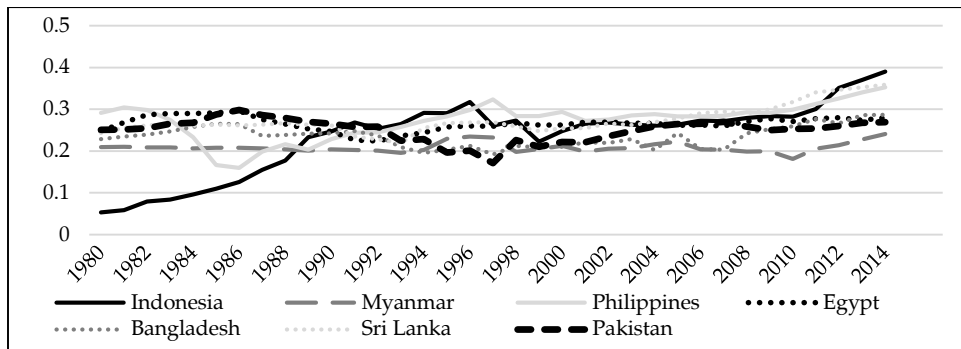
Figure 2: Financial Development Index



Source: Authors' compilation using data from World Bank (2006).

Figure 3 plots the FSDI's Financial Institutions Index from 1980-2014 for Pakistan and six other comparable countries. It depicts a picture of varying trends. There is a marked deterioration over the period of 1985-1996, which is followed by institutional improvements observed over the next ten years. However, all other countries register steady improvement in institutional development over the last two decades, leaving Pakistan at the bottom of the group.

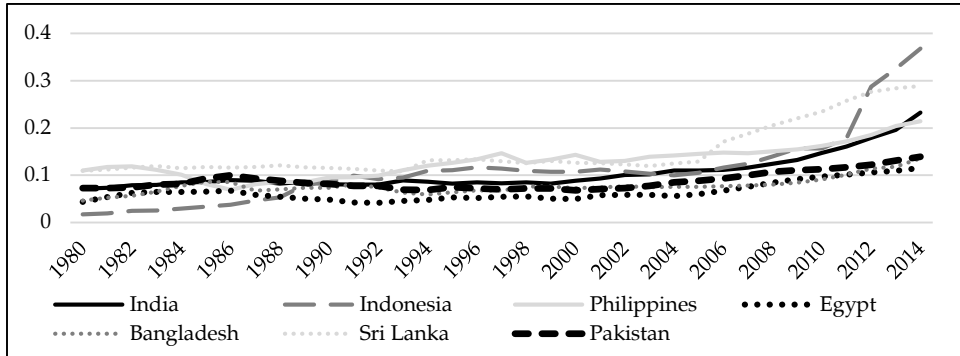
Figure 3: Financial Institutions Index



Source: Authors' compilation using data from World Bank (2006).

The Institutional Development Index is further broken into three indices - access, depth and efficiency - each shown in Figures 4, 5 & 6. The Institutional Access Index (Figure 4) does indicate a steady improvement over the years, but the trend is weaker when compared with the indices for other countries, especially Indonesia and India.

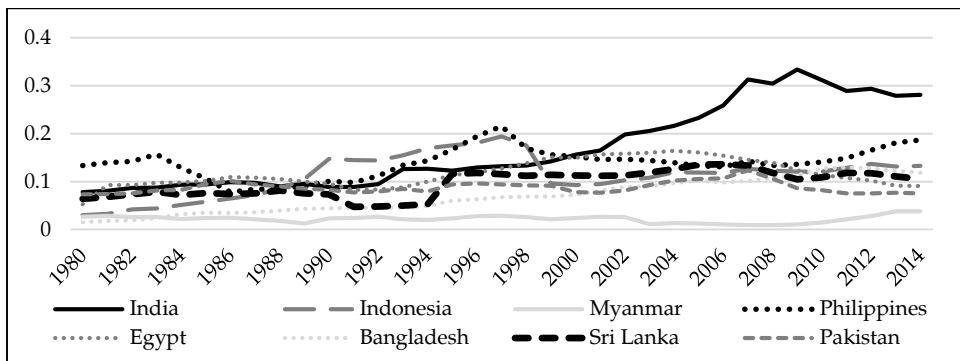
Figure 4: Financial Institutions Access Index



Source: Authors' compilation using data from World Bank (2006).

Pakistan particularly seems to be lagging with respect to the Institutions Depth Index (Figure 5). It has lagged behind the cohort significantly since about the year 2000. There is a significant difference in the ratings in comparison with India.

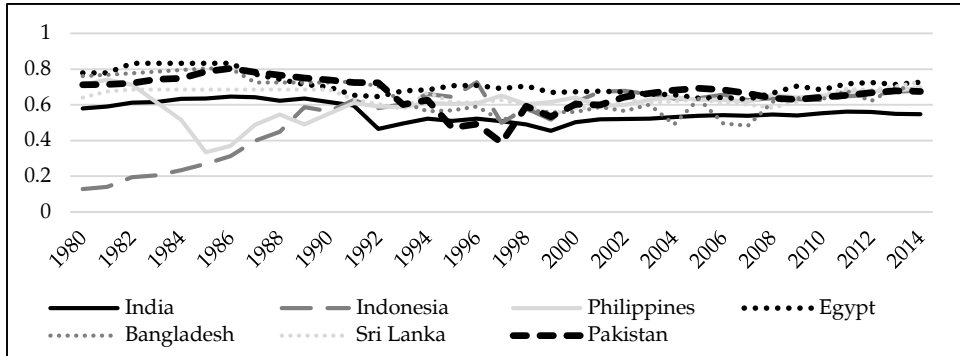
Figure 5: Financial Institutions Depth Index



Source: Authors' compilation using data from World Bank (2006).

The relative score of Pakistan on the Institution Efficiency Index (Figure 6) depicts a better picture. The country is placed in the middle of the reference group. It is noteworthy that India's position is least favorable within this group.

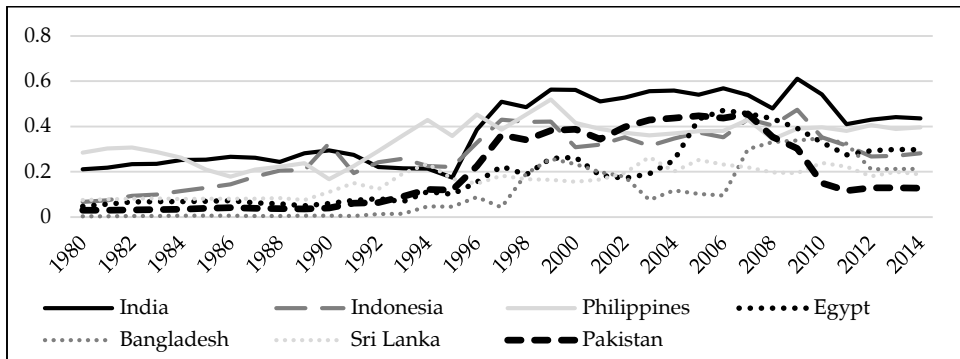
Figure 6: Financial Institutions Efficiency Index



Source: Authors' compilation using data from World Bank (2006).

The next set of indices displays the development of the financial markets (Figures 7 to 10). Figure 7 plots the overall Financial Markets Index over the period 1980-2014. There is a rapid rise in the index concurrent with financial market development in other emerging markets, beginning around the time financial liberalization measures were taken. The index understandably took a nosedive around 2007, when all markets were hit by the Global Financial Crisis. Other countries, however, seem to have either not been affected as much (India or Sri Lanka) or not at all (Bangladesh). Pakistan's capital market seems to have suffered a lasting setback.

Figure 7: Financial Markets Index

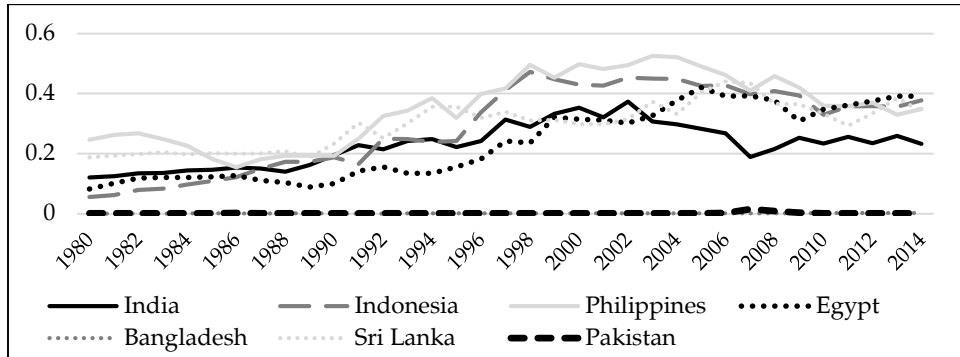


Source: Authors' compilation using data from World Bank (2006).

Regarding market access, the index shown in Figure 8 places Pakistan at the bottom of the group, with scores that are almost zero. This index is based on statistics such as, concentration of top 10 firms (market capitalization), concentration of top 10 firms based on volume, closely held shares in top 10 firms, number of issuers, bonds listed and newly listed and foreign issues in local

currencies. In summary, it is a reflection of Pakistani corporations not tapping into the financial markets, which confirms the observation made in the first section.

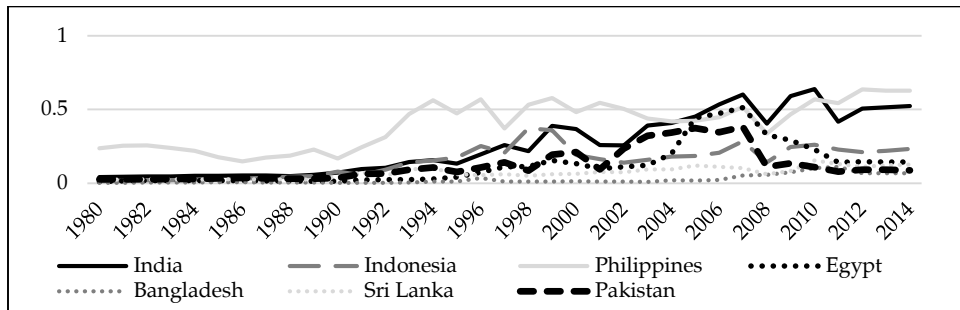
Figure 8: Financial Markets Access Index



Source: Authors' compilation using data from World Bank (2006).

The Markets Depth Index (Figure 9) also shows significant drop around 2007. Again, the country does not seem to have recovered from the external shock, unlike the other countries included in the index. It indicates that the markets lack resilience.

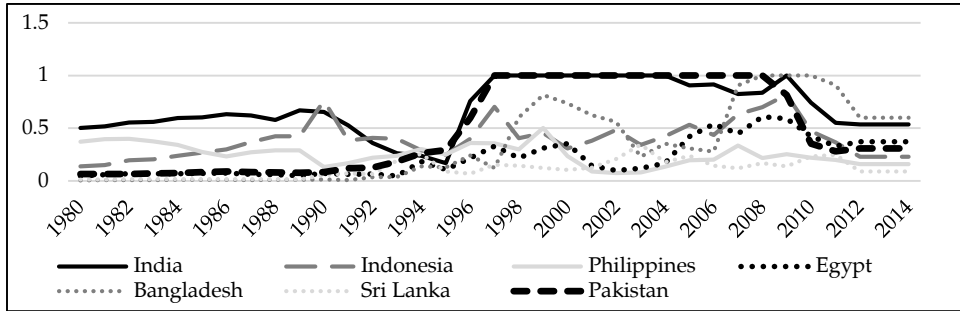
Figure 9: Financial Markets Depth Index



Source: Authors' compilation using data from World Bank (2006).

The Financial Markets Efficiency Index (Figure 10) depicts a contrasting picture. The Index increased sharply around 1995 to its maximum possible value. It dropped precipitously in 2007 and has been rather stable in the middle of the set of indices for the cohort group. It may be that the index is heavily based on trading volume, co-movement of stock returns, and market turnover ratio. All of these may also be indications of excessive trading based on speculation, and may not be significantly correlated with allocative efficiency of the stock market.

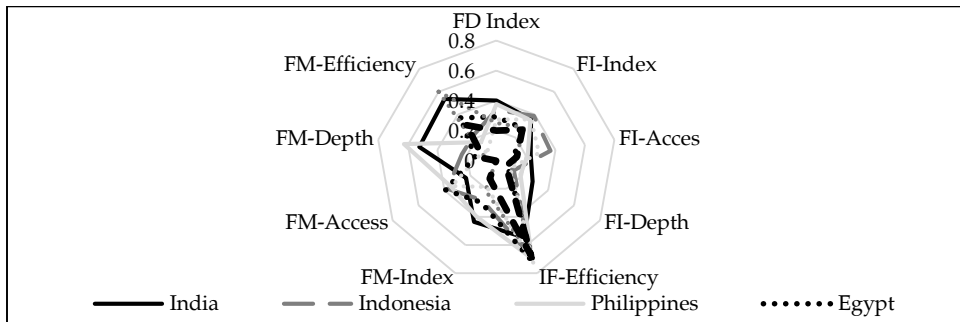
Figure 10: Financial Markets Efficiency Index



Source: Authors' compilation using data from World Bank (2006).

The overall profile of the Pakistan's financial sector is depicted in Figure 11 below.

Figure 11: Financial Development Indices



Source: Authors' compilation using data from World Bank (2006).

The figure shows that the country's financial development stands compares relatively unfavorably with six other countries from the lower-middle income group. The country fares unfavorably in all three dimensions of financial development: access, depth and efficiency.

The above comparative analysis was done with respect to the selected sample of countries in terms of the Financial Sector Development Indicators, based on extensive databases, the Global Financial Development Database and the Financial Structure Development Database (Beck, Demirgüç-Kunt & Levine, 2000). Table 3 in the Appendix presents selected variables from these datasets, allowing for further comparison of Pakistan's financial sector with the lower-middle income countries. A comparison based on detailed statistics allows for more precise focus on the weaknesses in the financial sector that could be targeted for remedial policies. The detailed comparison supports conclusions based on these indices.

Examining the individual indicators (Table 3) we can compare Pakistan's standing vis-a-vis the other countries in the lower-middle income group with respect to the four dimensions of financial development - access, depth, efficiency and stability. Note that the country fares particularly unfavorably with respect to bank access by individuals and firms. For example, the country is placed in the lowest quartile of the indicators in Table 5 below:

Table 5

A: Indicator	Percent Rank
1. Firms with a bank loan or line of credit (%)	15
2. Small firms with a bank loan or line of credit (%)	5
3. Account at a formal financial institution (% age 15+)	2
4. Saved at a financial institution in the past year (% age 15+)	11

Source: Worldwide Governance Indicators (WGI) dataset, the World Bank Group.

Despite that, the indicator labelled "Bank branches per 100,000 adults" has a percent rank of 56, and the use of banking services is rather limited by the firm as shown on Table 6 below:

Table 6

B: Indicator	Percent Rank
1. Firms with a checking or savings account (%)	10
2. Firms using banks to finance investments (%)	10
3. Firms using banks to finance working capital (%)	15
4. Private credit by deposit money banks and other financial institutions to GDP (%)	6

Source: Worldwide Governance Indicators (WGI) dataset, the World Bank Group.

Fifty-seven of the firms are labelled as "not needing a loan", a percent rank of 63. Table 7 indicates that individuals tend to rely on informal credit.

Table 7

C: Indicator	Percent Rank
1. Loan through store credit in the past year (% age 15+)	94
2. Loan from family or friends in the past year (% age 15+)	68

Source: Worldwide Governance Indicators (WGI) dataset, the World Bank Group.

It seems that rather than tapping into banking loan facilities, firms tend to rely on equity capital; as such, "Investments financed by equity or stock sales (%)" has a percent rank of 84. Similarly, the private corporate sector is lagging behind in accessing capital through the capital markets. The issuance of new equity (IPOs) is negligible and the corporate bond issuance is even scarcer.

In contrast, the public sector seems to be the dominant player in the financial sector. Pakistan's "Central bank assets to GDP (%)" is at the 83rd percentile, and the "Outstanding domestic public debt securities to GDP (%)" is at 45, placing it at the top of the lower-middle income group. In "Credit to government and state owned enterprises to GDP (%)" Pakistan's percent rank is 97.

The uneven role of the Pakistan's financial sector is particularly puzzling when considering that it is quite competitive as well as quite profitable. All indicators of competitiveness (i.e., bank concentration, H-statistic, Lerner index, Boone indicator and 5-bank asset concentration) point to a competitive industrial structure. In addition, profitability ratios, bank return on assets (before tax) and bank return on equity (before tax) place the banks at a very high percentile among their cohorts; 72 and 86, respectively. They also score around the median in institutional stability (i.e., bank Z-score, bank regulatory capital to risk-weighted assets), though are rated unfavorably in terms of the "bank non-performing loans to gross loans" indicator. This raises the question: What is constraining the banking sector from expanding its services to the non-financial private sector?

The tendency of bank financing towards the public sector may reflect the crowding out phenomenon that occurs when public borrowing stifles private borrowing. However, the banking sector does not seem to be short of loanable funds, as indicated by higher than average deposit-to-loan ratios: Bank credit to bank deposits is 49.6 with a percent rank of 9; Financial system deposits to GDP is 30.0 with percent rank of 18. We also note that the percentage of the firms identifying access to finance as a major constraint is only 13.2 (21st percentile). There also does not seem to be any evidence of "disintermediation" where firms would bypass financial intermediaries to directly access funds from capital markets. Therefore, it may be instructive to examine possible institutional and regulatory impediments in the economic environment, as well as ways the financial sector could be playing a more effective role in promoting real investment. However, the booming equity and the real estate markets indicate a large inflow of capital to these sectors.

3. An Empirical Exercise - Governance and Financial Development

In this section we present a brief empirical analysis of the link between effective governance and the development of the financial sector. Our panel data sample consists of 44 countries falling in the lower-middle income group over the period 1996-2014. In order to capture the governance environment in different countries we used aggregate governance indicators developed by the World Bank. The indicators are based on several hundred individual variables measuring perceptions of governance and are drawn from various separate data sources constructed by different organizations. These individual measures of governance are assigned to categories capturing key dimensions of governance and use an unobserved components model

to construct six aggregate governance indicators. A detailed discussion can be found in Kaufmann, Kraay and Mastruzzi (2004). The indicators of the six governance dimensions are as follows:

1. Political stability and absence of violence (PV): perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including political violence and terrorism.
2. Rule of law (RL): the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence.
3. Government effectiveness (GE): the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
4. Regulatory quality (RQ): the ability of the government to formulate and implement sound policies and regulations which permit and promote private sector development.
5. Voice and accountability (VA): the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and free media.
6. Control of corruption (CC): control over the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

In addition to the governance indicators, we used per capita income (GDP) and natural log of Gross Domestic Product (LNGDP) as control variables. Our dependent variables were the Financial Development Index, Financial Institutions Index and the Financial Markets Index.

The results of panel regression are placed in Table 5 in the Appendix. As can be seen from the results, all of the coefficients of the governance indicators were highly statistically significant and were of the expected positive sign. The coefficients on the control variables GDP and Per Capita Income were also significant and with positive signs, as expected. The results provided empirical support for the hypothesis that a country's financial development is linked with its governance environment. The implication is that an improvement in the governance environment would foster financial development, which in turn would nurture economic growth.

For Pakistan there seems to be much room for improvements in the governance environment. As can be seen in Table 8 the country ranks towards the lower quartile of countries across the world. Compared to similar countries, it

scores unfavorably, particularly with respect to “Political Stability and Absence of Violence/Terrorism.”

Table 8

Percentile Rank - 2016							
Governance Indicators	Pakistan	Indonesia	India	Philippines	Egypt	Bangladesh	Sri Lanka
Control of Corruption	19	43	47	34	32	21	48
Government Effectiveness	29	53	57	52	28	25	45
Political Stability and Absence of Violence/Terrorism	1	33	14	10	9	10	50
Regulatory Quality	20	39	52	37	36	31	54
Rule of Law	27	50	41	54	18	22	51
Voice and Accountability	29	50	59	51	14	31	43

Source: Worldwide Governance Indicators (WGI) dataset, the World Bank Group.

4. A Digression – Some Illustrative Governance Issues

Heretofore, we have identified weaknesses in the linkages between finance and economic growth, which center on governance and the regulatory environment. We observed that in recent decades, while Pakistan’s financial services sector has experienced remarkable growth and structural development, it has not contributed meaningfully towards promoting economic growth in the real sector. Our thesis is that this failure is associated with the worsening of the governance environment in Pakistan.¹ To bolster this inference, in this section, we will provide some recent examples to highlight the governance issues.

As of writing of this paper, there are ongoing discussions with the IMF for a possible bailout package which would help alleviate the balance of payment problems and dwindling foreign exchange reserves. Pakistan’s recent approach to the IMF is the latest in a long series of near-defaults on its foreign debt obligations. It seems that the underlying problem is chronic, which cyclically reemerges as a balance of payments and foreign exchange reserve crisis, and necessitates relief and stabilization packages. While the stabilization programs may have helped to maintain a semblance of macroeconomic stability, they have not helped Pakistan to break the “begging bowl” cycle. Orthodox economic stabilization tools have been used to deal with each episode, but this has led to slowdown in economic and social development. Additionally, each episode was addressed with short-term measures, which did stabilize the economy, but adequate follow-through and structural reforms to address the underlying weaknesses were not taken. Unsurprisingly, the economic crises simply manifested themselves again,

¹ Decay of the institutions of governance is lamented by, among others, by Ishrat Husain in “Governing the Ungovernable,” 2018.

triggered by the next external shock, or as a consequence of economic mismanagement. The inability to address the problem of chronic twin deficits, the current account and the fiscal deficit, may have its roots in the politico-economy of the decision-making processes. Real change would necessitate generating the political will to take the proverbial bitter pill of radical structural reforms. This political will has been missing due to weak governments and the diverse interests of key elements of the state and sections of society. Though the current crises were visible on the horizon for almost a year, we have yet to see a clear path forward in the government's approach towards handling these issues. Even the accuracy and clarity of economic projections by the Ministry of Finance (MOF) is doubtful (Pasha, 2018).

With hindsight, it is now evident that over the previous five years, the rupee was overvalued by up to 20-25% until the end of 2017 and early 2018, when the currency was allowed to depreciate. The abrupt and large drop in the foreign exchange rate was disruptive, amplifying uncertainties and sparking speculative adverse bets against the currency. Perhaps, a gradual increase in interest rates and exchange rate depreciation would have been a better policy option. However, it would have been a difficult decision for any government, particularly one whose credibility and public standing had been damaged. The efforts to improve tax collection, likewise, have been hindered by political considerations.

Independence of the institutions making economic decisions according to their mandates is a pillar of good governance. The State Bank of Pakistan (SBP) started raising the policy rates in 2018, rather belatedly, given the impeding economic challenges and the environment of raising interest rates across the globe. Still, the policy rate appears to be below the level required according to the magnitude of the crisis. It could be that the SBP would have played a more effective role if it enjoyed more independence from the MOF. Similarly, in the case of the Federal Board of Revenue, a separation of the functions of policy and administration would empower it to focus on raising revenue by, for example, undertaking more audits and proactively going after non-filers.

The stock market was deeply impacted by the political and economic uncertainties of 2017 and 2018. In 2017, the KSE-100 index saw its worst annual returns since 2008 and yielded a negative return of 16% in 2017. Conversely, 2017 was the best year for Asian markets since 2009. More remarkably, the volumes shrunk by a quarter over 2016, and continue to drop through 2017, from \$146 million in the first quarter to less than half at \$70 million in the final quarter. The macroeconomic policies, in the face of the current balance of payment crisis, have created a level of uncertainty inimical to effective functioning of the financial markets, as well as institutions. Hussain (2018) further points out that the SECP is currently in non-functional as three, of the required five, commissioners' seats are unoccupied. The front line regulator—the Pakistan Stock Exchange (PSX) has also

not shown concern regarding financial markets conditions. Foreign investors are particularly sensitive to the exchange rate risk and have tended to exit the market under the uncertainties around the resolution of the balance of payments crisis. It is reported that the outflow from the stock market in the July-September 2018 period amounted to \$186 million, which was partly responsible for the upheaval in the country's equity market (Hussain, 2018). Improvements in governance at the macroeconomic level would certainly create the environment conducive for better functioning and growth of the financial sector.

There is also room to improve governance at the level of financial institutions and regulatory bodies. Macroeconomic uncertainties have kept the investor base narrow, and have simultaneously discouraged corporations from tapping into the stock market to raise equity.² Thus, the financial markets are unable to fully contribute towards capital formation and economic development in Pakistan. In addition to the high market volatility, there is a general impression that it is a manipulated and unfair playing field. Thus, the retail investors trade mostly on speculation. There is a number of steps that can be taken at the exchange level to address this issue. For example, investor protection - assuring investors that their capital is safe with the PSX stock broker - needs to be improved. As Richard Morin, CEO of the PSX points out, "In the past 20 years, Pakistan has had an average of two broker bankruptcies every year. That is far higher than most markets," Richard Morin, CEO of PSX, quoted by Business Recorder (Business Recorder, 2018).

The exchange also needs to improve its self-regulation to win investors' confidence and create a fair playing field. This year, PSX fired some IT employees for data leaks and some higher management staff were also terminated. It appears that employees were regularly leaking data on major client orders. It is alleged that some investors were also being blackmailed through threats to leak their personal data. Insider trading, irregularities and blackmail are also alleged to be the source of the company's change in status as "defaulter." It is suspected that some of the malpractice at the exchange could be due to unwarranted influence of the brokers on the election of directors and staff appointments. If these allegations are true, the fact that PSX is now under Chinese ownership should help to ameliorate the situation.

5. Summary and Conclusions

The role of finance in economic growth and development is widely accepted. Therefore, promoting financial development should be a central piece of the economic growth strategy. It involves steps to strengthen institutional infrastructure by building effective legal and regulatory frameworks, and adopting best accounting and auditing standards and practices. There is a strong

² Retail investors number less than 0.2 percent of the nation's 200-million plus population, CEO of PSX quoted by Mangi and Kay (2018).

link between the governance environment and development of financial markets and institutions. We have suggested that the linkage runs from the governance and regulatory environment to the lessening of market imperfections and to a more effective role of the financial sector. Hence, public policies should prioritize measures to strengthen rule of law (particularly, enforceability of contracts), effectiveness of government, and regulatory quality, while enhancing control on corruption. Most importantly, in the context of Pakistan, improving political stability and control over violence/terrorism needs to be a top priority.

Even though in recent decades Pakistan's financial services sector has experienced remarkable growth and structural development, it has not contributed meaningfully towards promoting economic growth in the real sector. Our analysis of the financing pattern of the corporate sector suggests that there seems to be an increasing disengagement from the financial sector pointing to its diminishing role in providing funds for real investment. It implies that the problems of information asymmetry, agency costs and adverse selection have become worse in recent years. We infer that this phenomenon is associated with the worsening of the governance environment in Pakistan.

Indeed, the country's governance and regulatory indicators do not compare favorably with other developing countries. Additionally, the development of Pakistan's financial markets and institutions does not fare well in comparison to a cohort of developing countries. The weakness in the linkage between finance and economic growth seems to stem from a weakness in the governance environment. The weaknesses in the country's governance are empirically documented in studies such as Khawja and Mian (2005a and 2005b), Shahzad (2018), and Uppal and Mangla (2011).

Therefore, the foremost challenge Pakistan faces in encouraging its financial services sector to become an effective driver of economic growth is to strengthen the country's governance and regulatory framework. There seems to be much room for improvement, particularly with respect to indicators of political stability and absence of violence.

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Table 3: Global Financial Development Data – Lower Middle Income Countries–2015

No	Code	Indicator name	Lower-Middle Income Countries						Pakistan		
			Year	Count	Average	Median	Max	Min	Score	Rank	% Rank
1	AI	Bank accounts per 1,000 adults	2015	28	617.80	518.02	1864.16	111.11	336.13	22	0.22
2	AI	Bank branches per 100,000 adults	2015	45	13.85	8.37	70.44	0.56	10.04	20	0.56
3	AI	Firms with a bank loan or line of credit (%)	2013	20	28.69	27.80	66.80	4.70	6.70	17	0.15
4	AI	Small firms with a bank loan or line of credit (%)	2013	20	23.99	24.10	56.00	1.90	3.40	19	0.05
5	AI	Account at a formal financial institution (%age 15+)	2014	36	30.99	28.60	91.82	6.45	8.71	35	0.02
6	AI	Saved at a financial institution in the past year (%age 15+)	2014	36	12.46	10.05	33.21	0.86	3.28	32	0.11
7	AI	Saved any money in the past year (%age 15+)	2014	36	47.13	44.66	76.06	20.64	31.56	30	0.17
8	AI	Saved using a savings club in the past year (%age 15+)	2014	36	12.49	10.14	39.94	1.11	11.40	17	0.54
9	AI	Loan from a private lender in the past year (%age 15+)	2014	36	5.15	3.45	18.23	0.81	5.29	12	0.68
10	AI	Loan through store credit in the past year (%age 15+)	2014	35	9.96	6.13	36.53	1.50	25.05	3	0.94
11	AI	Loan from family or friends in the past year (%age 15+)	2014	36	27.88	25.43	60.47	9.00	33.96	12	0.68
12	AI	Credit card (%age 15+)	2014	36	3.81	2.35	27.50	0.00	0.13	35	0.02
13	AI	Debit card (%age 15+)	2014	36	17.06	13.25	65.72	1.70	2.94	34	0.05
14	AI	Mobile phone used to pay bills (%age 15+)	2012	52	17.84	11.55	92.48	0.09	5.47	41	0.21
15	AI	ATMs per 100,000 adults	2015	46	23.78	21.05	86.69	1.90	8.79	38	0.17
16	AI	Firms with a checking or savings account (%)	2013	20	82.61	91.45	98.20	35.00	58.10	18	0.10
17	AI	Firms using banks to finance investments (%)	2013	20	19.30	19.10	43.20	3.80	8.10	18	0.10
18	AI	Firms using banks to finance working capital (%)	2013	20	24.82	24.25	56.10	3.60	8.60	17	0.15
19	AI	Loans requiring collateral (%)	2013	20	85.18	88.20	99.50	56.40	64.00	19	0.05
20	AI	Value of collateral needed for a loan (% of the loan amount)	2013	20	217.53	226.60	299.30	130.80	153.40	19	0.05
21	AI	Firms not needing a loan (%)	2013	20	52.01	48.20	74.70	22.50	57.00	8	0.63
22	AI	Firms whose recent loan application was rejected (%)	2013	20	11.64	8.55	42.20	0.00	13.50	6	0.73
23	AI	Investments financed by banks (%)	2013	20	10.28	10.25	23.90	1.20	2.00	19	0.05
24	AI	Working capital financed by banks (%)	2013	20	9.84	9.95	20.60	1.20	2.50	17	0.15

No	Code	Indicator name	Lower-Middle Income Countries					Pakistan			
			Year	Count	Average	Median	Max	Min	Score	Rank	% Rank
25	AI	Firms identifying access to finance as a major constraint (%)	2013	20	26.19	24.90	62.20	5.20	13.20	16	0.21
26	AM	Investments financed by equity or stock sales (%)	2013	20	5.46	5.45	14.20	0.30	8.50	4	0.84
27	DI	Private credit by deposit money banks to GDP (%)	2015	45	35.09	31.53	102.79	6.70	14.90	41	0.09
28	DI	Deposit money banks' assets to GDP (%)	2015	45	43.68	39.90	118.06	9.88	39.90	23	0.50
29	DI	Nonbank financial institutions' assets to GDP (%)	2013	18	7.85	3.54	28.56	0.80	0.00	na	na
30	DI	Deposit money bank assets to deposit money bank assets and central bank assets (%)	2015	44	89.92	94.52	99.95	59.08	81.13	36	0.18
31	DI	Liquid liabilities to GDP (%)	2015	45	48.69	39.77	128.38	14.81	39.46	24	0.47
32	DI	Central bank assets to GDP (%)	2015	44	4.62	2.46	26.28	0.02	9.28	8	0.83
33	DI	Mutual fund assets to GDP (%)	2015	3	3.54	1.72	7.33	1.56	1.56	3	0.00
34	DI	Financial system deposits to GDP (%)	2015	45	41.41	39.18	89.84	10.04	30.05	32	0.29
35	DI	Life insurance premium volume to GDP (%)	2014	32	0.45	0.31	2.51	0.00	0.49	12	0.64
36	DI	Non-life insurance premium volume to GDP (%)	2014	36	0.62	0.52	1.69	0.05	0.22	30	0.17
37	DI	Insurance company assets to GDP (%)	2014	18	3.71	2.59	16.79	0.57	1.10	15	0.17
38	DI	Private credit by deposit money banks and other financial institutions to GDP (%)	2015	45	37.31	33.49	102.79	6.70	14.90	42	0.06
39	DI	Pension fund assets to GDP (%)	2014	10	9.24	3.37	32.31	0.04	0.04	10	0.00
40	DI	Domestic credit to private sector (% of GDP)	2015	45	38.40	34.89	111.93	7.14	15.38	41	0.09
41	DM	Stock market capitalization to GDP (%)	2013	10	37.86	31.50	81.92	13.24	0.00	na	na
42	DM	Stock market total value traded to GDP (%)	2014	14	5.91	2.46	30.93	0.13	0.22	13	0.07
43	DM	Outstanding domestic private debt securities to GDP (%)	2013	2	1.28	1.28	2.09	0.46	0.00	na	na
44	DM	Outstanding domestic public debt securities to GDP (%)	2015	4	28.91	28.99	45.44	12.24	45.44	1	1.00
45	DM	Outstanding international private debt securities to GDP (%)	2013	12	3.60	2.05	14.19	0.48	0.00	na	na
46	DM	Outstanding international public debt securities to GDP (%)	2015	17	7.03	4.49	21.57	0.38	1.87	14	0.18
47	DM	Outstanding total international debt securities / GDP (%)	2015	17	10.33	10.07	36.59	1.71	1.87	15	0.12
48	DM	Gross portfolio equity liabilities to GDP (%)	2015	22	2.80	1.21	15.19	0.00	2.15	8	0.66
49	DM	Gross portfolio equity assets to GDP (%)	2015	19	1.51	0.20	18.12	0.01	0.05	16	0.16

No Code	Indicator name	Lower-Middle Income Countries					Pakistan				
		Year	Count	Average	Median	Max	Min	Score	Rank	% Rank	
50	DM	2015	19	7.44	4.63	27.57	0.00	1.90	12	0.38	
51	DM	2015	24	1.53	0.53	9.32	0.00	0.07	19	0.21	
52	DM	2015	22	3.07	0.96	39.24	0.11	0.79	13	0.42	
53	DM	2013	9	0.88	0.84	1.77	0.11	0.00	na	na	
54	DM	2014	22	8.28	6.76	20.01	0.94	3.00	18	0.14	
55	EI	2015	43	4.81	4.36	10.92	1.46	4.07	28	0.35	
56	EI	2013	36	7.60	6.88	19.48	0.45	4.81	28	0.22	
58	EI	2015	41	19.28	11.73	93.18	2.47	6.33	37	0.10	
59	EI	2015	44	5.35	2.97	89.42	0.71	2.36	30	0.32	
60	EI	2015	43	1.27	1.26	4.69	-4.22	1.47	16	0.64	
61	EI	2015	44	11.91	11.53	29.23	-18.91	15.56	14	0.69	
62	EI	2015	41	77.22	75.43	155.94	20.00	62.16	31	0.25	
63	EI	2015	42	10.02	6.69	49.14	0.04	28.15	2	0.97	
	Credit to government and state owned enterprises to GDP (%)										
64	EI	2015	44	1.15	1.81	4.69	-26.51	2.46	13	0.72	
65	EI	2015	44	16.84	16.15	38.41	-19.36	26.12	7	0.86	
66	EM	2012	37	7.66	5.44	25.70	0.53	14.47	5	0.88	
67	SI	2015	42	14.26	11.75	53.63	2.52	11.21	22	0.48	
68	SI	2015	33	8.12	5.99	28.03	0.42	11.36	8	0.78	
69	SI	2015	31	11.64	11.31	19.59	5.43	8.42	24	0.23	
70	SI	2015	45	96.97	79.88	684.20	32.28	49.60	41	0.09	
71	SI	2015	33	17.89	16.18	36.70	10.15	17.34	15	0.56	
72	SI	2015	45	29.73	25.57	85.04	10.96	11.84	44	0.02	
73	SI	2015	32	66.70	60.57	243.30	23.42	84.95	5	0.87	
74	SM	2015	17	14.23	13.37	29.18	6.84	13.26	11	0.37	
75	OI	2015	36	62.93	56.99	100.00	28.48	46.09	27	0.25	
76	OI	2015	45	41.36	39.18	89.84	10.04	30.05	32	0.29	
77	OI	2015	27	0.54	0.54	0.97	0.12	0.74	6	0.80	
78	OI	2012	34	72.26	71.52	100.00	34.52	58.91	24	0.30	
79	OI	2015	43	-0.05	-0.03	0.27	-0.66	0.23	2	0.97	

No Code	Indicator name	Lower-Middle Income Countries					Pakistan			
		Year	Count	Average	Median	Max	Min	Score	Rank	% Rank
80	OI 5-bank asset concentration	2015	31	73.36	68.91	100.00	35.93	63.22	23	0.26
81	OI Loans from nonresident banks (net) to GDP (%)	2014	10	0.32	0.23	1.24	-0.90	0.41	5	0.55
82	OI Loans from nonresident banks (amounts outstanding) to GDP (%)	2015	18	10.18	9.30	36.66	1.76	1.87	16	0.11
83	OI External loans and deposits of reporting banks vis-à-vis the banking sector (of domestic bank deposits)	2015	43	23.03	14.39	100.95	1.80	12.50	24	0.45
84	OI External loans and deposits of reporting banks vis-à-vis the nonbanking sectors (of domestic bank deposits)	2015	44	113.61	7.25	4491.24	0.59	3.46	32	0.27
85	OI External loans and deposits of reporting banks vis-à-vis all sectors (% of domestic bank deposits)	2015	44	142.99	23.61	4819.92	3.81	15.96	30	0.32
86	OI Remittance inflows to GDP (%)	2015	48	8.42	6.63	28.76	0.16	7.12	22	0.55
87	OI Consolidated foreign claims of BIS reporting banks to GDP (%)	2015	48	35.82	11.95	1033.59	0.22	3.95	36	0.25
88	OI Foreign banks among total banks (%)	2013	32	43.47	45.00	94.00	0.00	43.00	17	0.48
89	OI Foreign bank assets among total bank assets (%)	2013	22	36.50	27.00	100.00	0.00	52.00	7	0.71
90	OM Number of listed companies per 1,000,000 people	2014	16	3.94	2.68	14.15	0.80	3.01	7	0.60
91	OM Stock market return (, year-on-year)	2015	17	-0.39	-0.01	14.83	-21.50	10.64	3	0.87

Source: World Bank, 2006.

Table 4: Financial Development Indices and Governance Indicators – Results

A) Dependent Variable: Financial Development Index																							
Control of Corruption (CC)			Government Effectiveness (GE)			Political Stability and Absence of Violence/Terrorism (PV)			Rule of Law (RL)			Regulatory Quality (RQ)			Voice and Accountability (VA)								
Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.				
CC	0.063	11.531	0.000	GE	0.083	14.308	0.000	PV	0.024	3.755	0.000	RL	0.065	14.323	0.000	VA	0.032	8.637	0.000				
LNGDP	0.032	25.719	0.000	LNGDP	0.025	23.366	0.000	LNGDP	0.032	19.833	0.000	LNGDP	0.031	27.479	0.000	LNGDP	0.024	20.324	0.000	LNGDP	0.028	23.844	0.000
PCAP	0.000	2.985	0.003	PCAP	0.000	3.727	0.000	PCAP	0.000	4.844	0.000	PCAP	0.000	3.080	0.002	PCAP	0.000	4.699	0.000	PCAP	0.000	5.173	0.000
C	-0.539	-19.582	0.000	C	-0.373	-14.228	0.000	C	-0.578	-16.392	0.000	C	-0.511	-19.971	0.000	C	-0.379	-12.788	0.000	C	-0.490	-17.730	0.000
Total panel observations 691			Total panel observations 688			Total panel observations 685			Total panel observations 693			Total panel observations 689			Total panel observations 693								
Adj R-sq	0.534	Akaike IC	-2.675	Adj R-sq	0.547	Akaike IC	-2.763	Adj R-sq	0.434	Akaike IC	-2.539	Adj R-sq	0.546	Akaike IC	-2.761	Adj R-sq	0.454	Akaike IC	-2.579	Adj R-sq	0.468	Akaike IC	-2.603
F-stat	234.4	Prob F	0.000	F-stat	277.2	Prob F	0.000	F-stat	175.5	Prob F	0.000	F-stat	278.4	Prob F	0.000	F-stat	192.0	Prob F	0.000	F-stat	204.3	Prob F	0.000
B) Dependent Variable: Financial Institutions Index																							
Control of Corruption (CC)			Government Effectiveness (GE)			Political Stability and Absence of Violence/Terrorism (PV)			Rule of Law (RL)			Regulatory Quality (RQ)			Voice and Accountability (VA)								
Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.				
CC	0.063	11.755	0.000	GE	0.067	11.847	0.000	PV	0.030	7.739	0.000	RL	0.041	8.617	0.000	VA	0.019	5.308	0.000				
LNGDP	0.019	16.445	0.000	LNGDP	0.013	12.031	0.000	LNGDP	0.021	13.813	0.000	LNGDP	0.017	14.416	0.000	LNGDP	0.012	10.617	0.000	LNGDP	0.015	12.924	0.000
PCAP	0.000	15.886	0.000	PCAP	0.000	17.862	0.000	PCAP	0.000	16.362	0.000	PCAP	0.000	17.359	0.000	PCAP	0.000	17.958	0.000	PCAP	0.000	18.654	0.000
C	-0.237	-9.072	0.000	C	-0.089	-3.436	0.001	C	-0.300	-9.112	0.000	C	-0.197	-7.438	0.000	C	-0.110	-3.790	0.000	C	-0.183	-6.727	0.000
Total panel observations 691			Total panel observations 688			Total panel observations 685			Total panel observations 693			Total panel observations 689			Total panel observations 693								
Adj R-sq	0.531	Akaike IC	-2.779	Adj R-sq	0.534	Akaike IC	-2.781	Adj R-sq	0.483	Akaike IC	-2.674	Adj R-sq	0.493	Akaike IC	-2.692	Adj R-sq	0.454	Akaike IC	-2.625	Adj R-sq	0.460	Akaike IC	-2.630
F-stat	261.7	Prob F	0.000	F-stat	263.1	Prob F	0.000	F-stat	213.9	Prob F	0.000	F-stat	225.3	Prob F	0.000	F-stat	191.9	Prob F	0.000	F-stat	197.8	Prob F	0.000
C) Dependent Variable: Financial Markets Index																							
Control of Corruption (CC)			Government Effectiveness (GE)			Political Stability and Absence of Violence/Terrorism (PV)			Rule of Law (RL)			Regulatory Quality (RQ)			Voice and Accountability (VA)								
Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.	Variable	Coeff	t-Stat	Prob.				
CC	0.066	7.193	0.000	GE	0.098	10.358	0.000	PV	0.017	2.664	0.008	RL	0.089	12.184	0.000	VA	0.044	7.597	0.000				
LNGDP	0.044	21.718	0.000	LNGDP	0.037	20.913	0.000	LNGDP	0.043	16.784	0.000	LNGDP	0.044	24.740	0.000	LNGDP	0.036	19.182	0.000	LNGDP	0.041	22.060	0.000
PCAP	0.000	-5.589	0.000	PCAP	0.000	-6.230	0.000	PCAP	0.000	-3.582	0.000	PCAP	0.000	-7.377	0.000	PCAP	0.000	-5.239	0.000	PCAP	0.000	-5.157	0.000
C	-0.835	-18.536	0.000	C	-0.652	-15.068	0.000	C	-0.849	-15.235	0.000	C	-0.818	-19.940	0.000	C	-0.644	-13.873	0.000	C	-0.791	-18.214	0.000
Total panel observations 691			Total panel observations 688			Total panel observations 685			Total panel observations 693			Total panel observations 689			Total panel observations 693								
Adj R-sq	0.421	Akaike IC	-1.690	Adj R-sq	0.461	Akaike IC	-1.759	Adj R-sq	0.384	Akaike IC	-1.624	Adj R-sq	0.488	Akaike IC	-1.814	Adj R-sq	0.417	Akaike IC	-1.682	Adj R-sq	0.425	Akaike IC	-1.700
F-stat	168.2	Prob F	0.000	F-stat	196.6	Prob F	0.000	F-stat	143.0	Prob F	0.000	F-stat	220.6	Prob F	0.000	F-stat	165.0	Prob F	0.000	F-stat	171.8	Prob F	0.000

Method: Panel Least Squares; Cross-sections included; 44

Is Pakistan Ready to Embrace Fintech Innovation?†

Syed Kumail Abbas Rizvi*, Bushra Naqvi** and Fatima Tanveer***

Abstract

Pakistan is an emerging market for fintech, with increasing facilitation for digital payments, widespread internet and smartphone penetration, consumer preferences for social media and booming online commerce. Also, the State Bank of Pakistan provides sound regulations, which act as a platform for fintech growth. While regulations are necessary, they might also become a threat for an industry still in its infancy. This paper aims to provide a qualitative assessment of economic, demographic and technological factors that are conducive for the penetration and growth of fintech in Pakistan. A second, but no less important, objective of this paper is to look at the regulatory framework governing fintech and its contribution in making the segment an active or dormant player in the financial services industry.

1. Introduction

Fintech is a segment of industries consisting of technology-focused companies with innovative products and services, traditionally provided by the financial services industry. These companies work in the areas of stocks trading, peer-to-peer lending, cryptocurrencies, transfer payments and equity crowdfunding, among others. Globally, fintech innovation has aided financial advancement, resulting in new business models, processes, applications, products, or services, changing the face of global payments with a substantial effect on financial

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institutions and the efficiency of financial services. According to some estimates, by the end of 2017, the size of the global fintech market had already reached 3.6 trillion USD and is expected to reach as high as 8.3 trillion USD by 2022. Fintech influence on financial services is growing, as 82% of incumbents expect to increase fintech partnerships in the next three to five years, and the annual ROI on fintech related projects is expected to be around 20% (Rickert et al. 2017).

The fintech market is continuously evolving and expanding with an increasing diversity of funding sources, scope of business and geographic spread. These innovations are intense in nature; hence they hold a considerable potential to alter and restructure existing financial services. Most fintechs combine financial services with additional activities associated with e-commerce, sharing-economy businesses and big data analytics to provide new added-value (Nakaso 2016). Apart from the technology-led platform for the users of financial services, fintech innovations also provide a wide array of choices for users, ranging from efficient and secure payments to better accessibility of financial services, resulting in improved financial inclusion and an ideal experience in terms of cost and efficiency.

For consumers, fintechs offer personalized and interactive services by allowing them to conduct transactions over their mobile device, boosting customer experience. Among the notable services that allow consumers to make online payments are *PayPal* that supports purchases made through *eBay*, and *Amazon pay* for purchases made through *Amazon.com*. In China, *Alipay* works with *Taobao*, the Chinese equivalent of *eBay*. Among other recent advancements in developed and BRIC markets, companies like *Venmo*, *Google Wallet*, *WeChat*, *Facebook Messenger* and *Snapchat* have set up Person-to-Person (P2P) internet-based solutions that enable people to send money to each other using a mobile device. This seems to be more convenient than physically transferring cash or making online bank transfers (McCaffrey & Schiff, 2017).

Fintechs also complement the conventional role of financial institutions by assisting incumbents in providing products and services efficiently and increasing the spread of the industry. Fintechs, by developing easier and innovative financial products and solutions at lower costs have enabled the provision of these to the poorer segment of society, who heretofore have been financially excluded (KPMG, UK, 2017). For businesses, some fintechs operate to detect fraud (e.g., Ravelin), manage risks and deal with compliance issues (e.g., Covi Analytics).

Among its other significant impacts on the traditional banking sector (payment systems, lending and financial advice) and capital markets, fintechs have provided improved access to services, a reduction in prices, costs of intermediation and information asymmetries, and have improved efficiency (Gregorio, 2017). In terms of transaction payments, banks still dominate the market, but payments made through non-bank sources such as Apple, Google,

PayPal and other mobile payment options are gaining popularity, disrupting traditional modes of payment. Digital currencies, such as *Bitcoin* or *Ethereum*, use advanced encryption methods to control the generation of currency units through blockchain technology. This technology comprises a digital database for the verification of transactions, with a system of decentralized blocks of records. This allows peer-to-peer transfer of value to take place without the need for an intermediary to confirm the transaction, as computers validate every transaction. Blockchain technology has the potential to be disruptive, as it paves the way for various cost-saving innovations and permits a currency without the support of a government or intermediary - the function traditionally performed by banks.

The upsurge of pioneering fintech solutions is posing an ever-growing risk to the existing players in the traditional banking business models. Many fear losing business to innovators, beginning with payments, fund transfer and personal finance sectors. This disruptive shift in technology and business model innovations has also raised regulatory concerns globally, as strong regulations exist for mainstream financial institutions only and may not be adequate to deal with the complexities of fintechs (disruptors). Therefore, most fintech companies face regulatory uncertainty in terms of the laws with which they will need to comply, or possible over-regulation as an intimidation to their growth.

Fintech has reshaped the financial sector on a global scale, and its transformative potential is also seen in developing economies. Pakistan, being the world's sixth most populated country, is a cash-based economy with 85% of its population being financially excluded. The high banking infrastructure costs act as a barrier to the diffusion of financial services beyond a small fraction of the population. At present, only a few fintechs operate in the country, and those are primarily in the developed cities of Lahore, Karachi and Islamabad. This sluggish growth and the shortage of fintechs in Pakistan is a consequence of investment in this sector only at the local level, and therefore inadequate. The fintech ecosystem in the country is hobbled by threats to data security and intellectual property, trouble attracting the right talent and customer base, and uncertainty in future regulation, which discourages entrepreneurs from venturing into the fintech environment (Shahid et al. 2016).

However, Pakistan possesses the potential to be an attractive market for fintech growth, owing to the increasing youth population, disruptive internet and smartphone penetration, consumer preference for mobile phones and social media, booming online commerce facilitating digital payments and an overall financial system having absorption capacity for innovation. The regulatory framework for financial services is fairly strong in Pakistan, with laws such as Payment System Operators (PSOs), Payment Service Providers (PSPs) and Branchless Banking regulations issued by the State Bank of Pakistan (SBP). All of these could act as platforms for carefully controlled and regulated *fintech-led*

growth. Nonetheless, stringent regulations should not be viewed only as a support, as it might also become a threat for the emerging fintech industry, which is still in its infancy stage.

This paper primarily provides a qualitative assessment of economic, demographic and technological factors that could be conducive for the penetration and growth of fintech in Pakistan. The secondary, but equally important, contribution of this paper is the analysis of the regulatory framework governing fintech in Pakistan and the contribution of these regulations in making the segment an active or dormant player in the financial services industry.

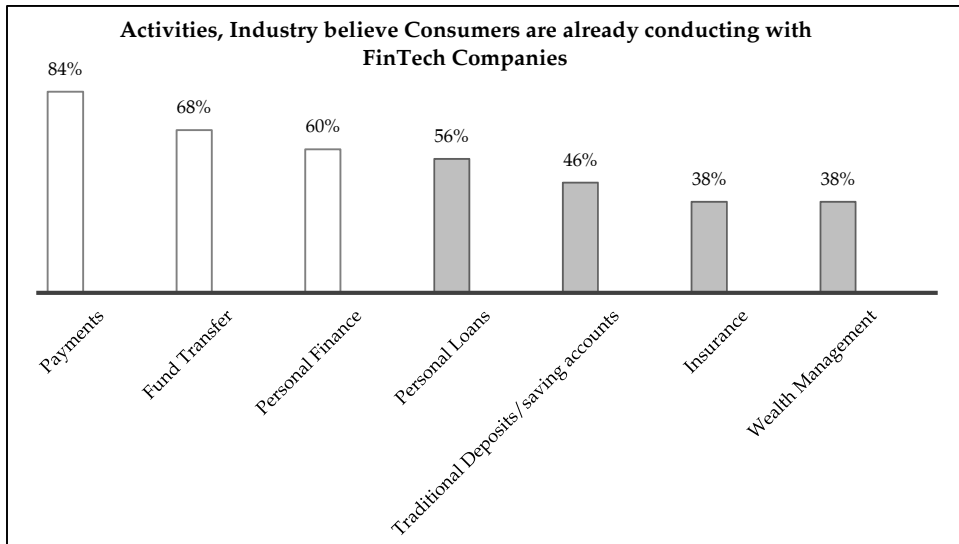
The paper is organized as follows: section 2 provides an overview of the global fintech industry and its various categorizations, drivers, impacts, opportunities and challenges for growth; section 3 presents the current state of the fintech industry in Pakistan; section 4 provides a qualitative assessment of the opportunities and challenges faced by fintechs in Pakistan; section 5 discusses the regulators and regulations governing fintech in Pakistan and stresses the need to create a balance between rectifying inaccuracies of fintechs with the flexibility to revolutionize in order to develop a favorable environment for fintechs in Pakistan; and section 6 concludes with forward-looking policy recommendations, for the industry players and regulators based on the learning of global best practices that several countries have adopted to deal with this digital revolution.

2. Understanding Fintech

Fintech is a global advancement of financial services driven by technology and shifts in customer expectations. Fintech firms employ technology to deliver the best financial solutions to clients with an aim to digitize the financial segment, resulting in cost reductions and new ways of working to gain transparency in the market (Gregorio, 2017).

Primarily operating in areas of banking, insurance and asset management (KPMG UK 2017), fintechs have been classified into various domains. Gregorio (2017) identifies five broad areas where fintech firms are operational. These include 1) finance and investment (venture capital and crowdfunding), 2) internal finance operations and risk management, 3) payments and infrastructure (electronic payments and Over-the-Counter derivative trading), 4) data monetization and security, and 5) customer interface.

Figure 1: Business Domains where Fintechs are Active



Source: Adapted from PWC Global Fintech Report, 2017.

Fintechs spread into many domains of financial services, ranging from products to markets to services. Figure 1 shows that payments, fund transfers, and personal finance are the most active sectors in which fintechs operate. In other domains, such as insurance and wealth management, consumers are less active.

Fintechs, based on the stages of their life cycle, can be classified into start-ups, unicorns and GAFAs. These can be defined as follows:

- a) A **Start-up** is a firm whose aim is to initiate a business activity associated with technology, the internet or innovation. Such young firms have an inventive business plan and are growing in the market. Their human organization develops products and services in diverse ways by applying innovation, with the aim of decreasing costs. The focus of their design and commercialization is customer oriented and the internet platform is used to move it forward (Prashantham & Yip, 2017). These firms provide services using social networks and conduct activities previously managed by banks (Románova & Kudinska, 2016).
- b) **Unicorns** are companies having a theoretical value of more than US\$1 million. Their market value is largely based on the percentage of speculation linked with their expectation of profitability and future growth. The business model focuses on acquiring a large customer base. It is expected that in the future they will have to be regulated to control their actions.

- c) **GAFAs** (Google, Amazon, Facebook and Apple) are the revolutionary firms of the stage “.com” and are presently working as digital monopolies, well known as GAFAnomics (MEDICI Team, 2016).

2.1. Drivers of Fintech Growth

Fintech growth has been driven by a number of factors, including technological evolutions, innovation spirals, changing consumer demands and fluctuations in the macroeconomic and financial background.

Technology is the center of the changing payments setting, with better solutions and capabilities swaying consumer behavior and expectations also driving considerable industry transformation (Broom, 2015). The technological and payment system developments, such as cloud-based solutions and application programming interfaces (APIs), are being adopted by businesses, especially startups, to build and adapt their operations more efficiently. New cloud and API technology has aided the start-up sector to disrupt recognized players and quicken change.

The prevalence of mobile devices has driven the move towards adopting mobile financial services, such as mobile banking and payments. Smartphone technology itself has given a boost to fintech innovations such as mobile payment technologies, online brokerage and banking products that are needed to match the progressively mobile lifestyle that smartphones have facilitated.

The growth in e-commerce, mainly due to demand by consumers, has facilitated further transformation in digital payment experiences, with a shift towards a post-cash economy. Those tech-savvy consumers engaged in online shopping and banking value ease-of-use, convenience and speed, which has pushed businesses to incorporate financial technology into their setup.

Also contributing to fintech growth are millennials, known as Generation Y, who value innovation and are more likely to use new financial services and products. Along with innovation, their social media openness and adaptability towards the latest automated gadgets makes them keen to demand fintech products that fit their busy way of life and mindset. The demand for personalized and easy-to-use products and services by consumers is an opportunity for fintechs to respond by developing products well-suited to their needs (Lei, 2014).

Further, in this era, digital or cashless payments are seen as an alternative to cash and plastic money since they are more convenient and secure in the daily lives of individuals in terms of their consumption (Japan-METI, 2017). Digital technology has begun to dominate so that the physical act of paying is rarely seen. Instead, the automation of payment has converted money from a physical form of

exchange into another form of data (OECD, 2002); thus acting as a key driver of fintech growth.

Globalization and other changes in market trends have also contributed to the rapid development of this sector. The world has become globalized as developing markets have the capacity to surpass their more advanced equivalents, and the transferal of new information is both rapid and worldwide. Currently, penetration of innovations is possible at a much faster rate than ever before. The remarkable growth of smartphone and mobile usage is now placing digital services in the hands of consumers who earlier could not be reached, providing a richer, more valuable experience around the globe.

From an unorthodox perspective, it can be claimed that the global financial crisis in the United States in 2008, which later spread to Europe and Asia, has also played a revolutionary role in increasing the prominence of fintech. During the financial crisis, banks were not willing to borrow money. This dysfunctionality of the credit market had negative effects on the economy in terms of consumption and investment. The increased number of layoffs and uncertainty about the future caused consumption to plummet, further negatively affecting employment. These factors signaled firms to cut their prices and costs in order to keep up sales. As a consequence, fintech companies came into play as one of their objectives was to reduce costs and reach out to many customers over the internet (Gregorio, 2017).

Since the onset of the Global Financial Crisis, the banking industry has witnessed changes in growth, digitization and the regulatory environment. The increasing pressure of competition is fierce. The regulators who were once opposed to non-bank entrants have now become open to the idea of allowing them, acting as threats to banks. The cutthroat competition between banks creates a need for collaboration with fintechs to provide new products in order to meet the growing demand of consumers and digitizing processes.

2.2. The Impact of Fintech in the World

Fintechs have had expected impacts on the banking industry and financial markets. The substantial digitalization of processes has reduced transaction costs and increased convenience for end users. Specifically, widespread internet access and mobile phone penetration have distributed the advantages in reduction of the cost of transactions, due to novel communications technologies, to billions of people. Now, fintechs offer products and services to customers that are much more in line with their demands compared to products offered by traditional intermediaries. By reducing the role of intermediaries and improving working efficiencies, fintech firms are better able to offer products and services at diminished costs, increasing returns for consumers (KPMG, UK, 2017). This reduction in transaction costs eventually puts pressure on the conventional

financial intermediaries who are competing to develop products that meet the ever-growing needs of consumers (Bergara & Ponce, 2017). A possible consequence of this changing market structure could be the vertical integration of the financial intermediaries and fintech firms. Additionally, falling transaction costs have had implications for financial inclusion of the underserved population and business sector, especially in developing economies (KPMG, UK, 2017). According to Manyika, Lund, Singer, White & Berry, 2016, 45% of adults lack access to a financial account at a bank or other financial institution. By providing the underserved population with low cost innovative solutions and small businesses with funding resources and access, fintechs improve financial inclusion. Fintechs also increase the accessibility of information on financial services, such as online/mobile banking services and investment advice (Alexander, 2017). Moreover, business practices improve with digital payments, allowing them to maintain an electronic record of sales and expenses, monitor cash flows that enhances their understanding of business operations, eventually boosting profitability and productivity (Manyika et al., 2016). The development of branchless banking (BB) has reduced the cost of conducting transactions and of setting up bank branches, which contributes to economic growth through networks of output growth, employment creation, productivity, lessened transaction costs, improved functioning markets and financial inclusion, eventually resulting in poverty alleviation (Triki & Faye, 2013).

In conclusion, fintechs have had pronounced effects on economies, ranging from reductions in transaction costs and information asymmetry to improvements in financial inclusion, efficiency and competition, and a wider access to financial services.

2.3. Opportunities and Challenges Faced by Fintechs Globally

The fintech revolution is considered by many to be among the most important global innovations in the financial industry and has been growing rapidly in previous years. Global investment in fintechs have experienced a 67% annual increase from the first quarter of 2015 to 2016, reaching \$5.3 billion, with Europe and Asia-Pacific experiencing the highest increases (Lee & Shin, 2018).

Fintechs require an encouraging business environment in order to develop. Closely integrated technology hubs and the availability of skilled staff, such as IT developers, banking analysts and management staff, are important elements for the development of a healthy fintech environment. The state of physical infrastructure (road networks), utilities (power, telecommunication, internet) and distance to existing business hubs are also imperative. Government support in the form of implementing regulations to facilitate ease of doing business, setting licensing requirements and providing financial support for the construction of the fintech hubs, creation of seed funds, grants, or subsidies provide opportunities for fintech development (Diemers, Lamaa, Salamat & Steffens, 2015).

The U.S. is a successful market for fintech growth as it is a leading international financial hub, has strong support structures, healthy financiers (Barclays, Bank of America, and Wells Fargo), incubators and accelerators, tax credits for research and development, possesses a large financial technology workforce and attracts large investments (Diemers et al., 2015). The Middle East has also witnessed rapid fintech growth, with success primarily due to strong regulatory support, government-driven funding programs (e.g., Hamdan Innovation Incubator, SeedStartup, In5), venture capitalists, and local financial services providing early-stage funding for startups. For China, the growth in its middle-class, together with a progressive educational system and its dynamic participation in global supply chains, has led to a strong tech ecosystem comprising large local tech firms, robust engineering and business skillsets, and active private equity and venture capital investors. India has also experienced advances in infrastructure, specifically the ability to connect a digital identity to bank accounts enabling financial institutions to expand outreach to millions of new customers. These improvements are paving the way for augmented delivery of financial services from both traditional and nontraditional providers. Further, demonetization of currency notes in 2016 has enhanced the shift from paper to electronic payments and driven the technology-based transformation of financial services in the country (IFC, 2017).

Advances in financial technology improve access to services for the financially underserved community or small businesses by improving the speed, cost and ease of use of such services. Fintech businesses offering financial services have an opportunity to improve their product to gain market share and decrease per-customer operating costs (Mnuchin & Phillips, 2018).

Consumer expectations from financial service providers are a major driver of the fintech revolution. Consumers want financial institutions to rapidly respond to their growing needs and have an increased demand for personalized services. Fintechs, in areas of e-commerce and online banking, have an opportunity to capitalize on these consumer needs (Rickert et al., 2017). Digitization increases competition among traditional firms and opens doors for new firms with distinctive business models, such as peer-to-peer lending, digital-only banks and crowdfunding platforms. Though these fintech firms start at a smaller scale, their expertise in technology helps them to disrupt the status quo. Increased digitization in the payment process has also led to significant cost reductions for firms using existing payment processes, for example, substituting paper checks with electronic payments and minimizing inefficiencies in cross-border payments.

Despite growing impressively, fintechs face a number of complex challenges: regulatory concerns, technology integration, and data privacy and security (Lee & Shin, 2018). Unlike conventional banks and financial institutions, fintechs face regulatory uncertainty, i.e., they are unaware or unsure of the regulations and procedures with which they will need to comply. These could be regulatory

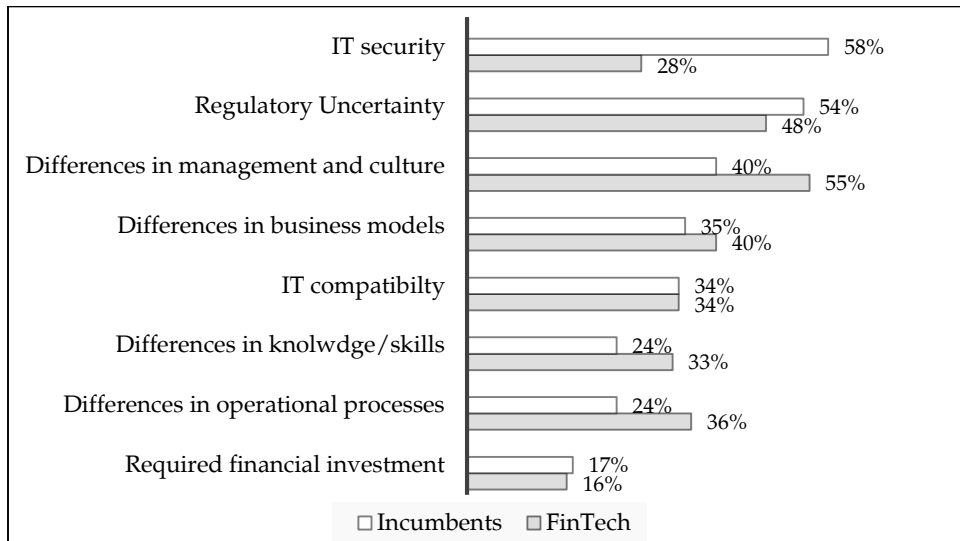
challenges for anti-money laundering, capital requirements, data security, and privacy. Each of these could cause registration delays or raise the possibility of being hit with heavy fines.

Since fintechs are built with new technologies, it is a challenge to integrate the fintech applications with the present systems. For the internal development of fintech startups, it is necessary to collaborate or establish joint ventures with banks through incubator programs and corporate ventures. Without a comprehensive integration design, existing banking processes may become unsuitable for use with new technologies, which financial institutions may then not be able to use.

Information security and privacy breach is another major challenge fintechs have encountered worldwide. In online payment applications, such as Google Wallet and MasterCard Pay Pass, critical information stored on mobile devices can become lost or stolen. To counter this, fintech companies must develop, strengthen and maintain suitable measures to protect sensitive consumer data from illegal access. To accomplish this and build consumer trust, they should work closely with regulatory bodies and consumer protection agencies.

PwC, in their Global Fintech Report 2017, have also identified challenges faced by fintech companies and incumbents globally as shown in the Figure 2 below.

Figure 2: Challenges faced by Fintechs and Incumbents Globally



Source: Adapted from PWC Global Fintech Report, 2017.

Figure 2 shows differences in management and culture (55%), regulatory uncertainty (48%) and business models (40%) are identified as major challenges for

fintechs. Information technology security (58%) is the biggest challenge for most incumbents, followed by differences in management and culture (54%), and regulatory uncertainty (40%).

3. Fintech in Pakistan

Pakistan, the world's sixth most populated country, is a cash-based economy. The problem of low access to finance has long plagued the Pakistani economy (World Bank, 2017). 93% of the adult population remains unbanked (Rizvi, Naqvi & Tanveer, 2017). Pakistan occupies a low rank in financial inclusion when compared to regional and global standards (Nenova & Ahmad, 2009). High intermediation costs with high interest rate spreads, financial illiteracy, high collateral requirements, and prohibitive lending rates have put finance out of the reach of small and medium enterprises. Such high financial exclusion not only makes individuals and businesses vulnerable to income shocks, but also increases their operating costs and dampens future investments. Technology can be harnessed to enlarge geographical outreach, as well as overcome low literacy levels. Through the new technological solutions of branchless banking and mobile banking, physical access to finance can be improved. Partnerships between banks and informal providers could make their services more geographically reachable, less intricate, and more easily understandable for consumers. Pakistani consumers' general perception regarding the (in)significance of formal finance in their daily lives, difficult banking procedures, low outreach, and unsuitable products provides an opportunity for fintechs to design personalized products (World Bank, 2017). Microfinance Institutions (MFIs) in Pakistan are faced with the need for greater funding in order to grow and integrate with financial markets, though they possess immense potential to expand outreach. The use of technology and partnerships with fintech startups will allow them to expand outreach. Current weaknesses of the financial sector could serve as an opportunity for digital financial services to offer solutions to the problem of outreach.

3.1. Type of Fintechs in Pakistan

The fintech industry already exists in Pakistan. Originally, Automatic Teller Machines (ATMs), debit and credit cards were the main products developed by these firms for commercial banks. The introduction of these services was driven by globalization and the rapid technological advancement that was taking place around the globe. Presently, a new class of fintech has emerged in Pakistan that has revolutionized technology and enabled solutions for delivering financial products and services. The products and applications developed by these fintechs aim to revolutionize payment systems, improve financial inclusion, and increase the overall productivity of the economy. The reduced transaction costs for fintech firms allow them to develop products specific to consumer needs, creating competition for the incumbent financial service providers in the country, who, in

order to compete, will need to collaborate with fintech firms. This collaboration can be mutually beneficial for both parties, since fintechs have an entrepreneurial approach and incumbent banks possess a large customer base and a repository of customer data. Banks provide the regulatory cover to firms, which focus on innovation and the development of products to be used by the bank’s customer base. A successful example of this is the FINCA Microfinance Bank-Finja partnership. Finja, a fintech startup, is developing a mobile wallet application, while FINCA provides a regulatory cover by maintaining a branchless banking license.

Table 1 provides an overview of the fintechs that currently operate in Pakistan, classified into traditional and emergent fintechs.

As a distinction, traditional fintechs work together with incumbent financial service providers as their technology providers through traditional pricing models. Emergent fintechs, also known as disruptors, collaborate with a bank or financial service firm by means of new engagement models where they provide new technology solutions to facilitate existing needs.

Table 1: Fintechs Currently Present in Pakistan

Traditional Fintechs	Services Offered	Emergent Fintechs	Services Offered
ABACUS	Management Consulting, Technology and Outsourcing Services	BATWA	Mobile Wallet
AUTOSOFT	Banking products, Consulting Services	FINJA	Zero Cost Payment Systems and Cloud Based Payroll Solutions
INNOV8	Technology and Consulting Solutions	ONELOAD	Online Mobile Top-up
KARLOCOMPARE	Web Application for Personal Finance	PAYLOAD	Payment Solutions
MONET	E-Payment Processing	RED BUFFER	Customized Cloud and Mobile Solutions
TPS	Payment Solutions	STOCKSFM	Social Investment Network

Note: Adapted from (Shahid et al., 2016) and improved by the authors.

- *Abacus Consulting*, founded initially as a management consulting firm, has now grown into one of the leading business solutions providers in Pakistan. Their primary focus is on developing finance-related business solutions for business and organizations.
- *AutoSoft Dynamics* is a software development venture that develops financial applications used by domestic and international banks.

- *Inov8* is a digital payment company that is growing rapidly in the region. In collaboration with *Easypaisa*, it links its massive distribution setup to all commercial banks that have implemented *Inov8*'s technology. Another application under the name, *Fonepay*, has also been launched which allows the use of smartphones for making payments.
- *KarloCompare* is a web and mobile application that allows users to compare and buy easily a range of financial products such as personal/auto loans, credit card and travel insurance, with a few clicks.
- *Monet* is an e-payment provider that focuses on digitizing payments in cash-based economies. It was established with the idea and directive to offer electronic payment processing and flexible services in the Branchless and Alternate Banking Channels sphere. Currently, *Monet* has its own infrastructure and systems operated at *Monet Data Centre(s)* to aid banks, financial institutions, and merchants in furnishing their payment transaction processing requirements.
- *TPS* provides cards and payment solutions enabling banks, payment processors, telecoms and other institutions in digitizing payments. They also offer business and technical expertise in pre-paid cards, card management, delivery channel management, and internet and mobile banking.
- *BATWA* is a small startup and provides a mobile wallet to its users for payment purposes.
- *FINJA*, founded by banking and tech industry experts, is a fintech startup serving as a zero cost payment platform and a unified loan and e-commerce marketplace. The *SimSim* app solution is the first payment solution in Pakistan for free and frictionless payments made instantaneously. This application will be interconnected with the users' current account, allowing them to make payments at a variety of partner retail businesses through their smartphones.
- *OneLoad* is an online platform that allows users to purchase top up credits for their mobile accounts with all mobile companies simply through its efficient mobile application and web portal.
- *Payload* is incubated at *Plan9*, and has developed an easy-to-use technology that permits businesses to receive bitcoin payments while dealing with payments in Pakistani Rupees.
- *Red Buffer* focusses on developing data science services, machine learning/natural language processing (ML/NLP), and cloud and mobile applications.

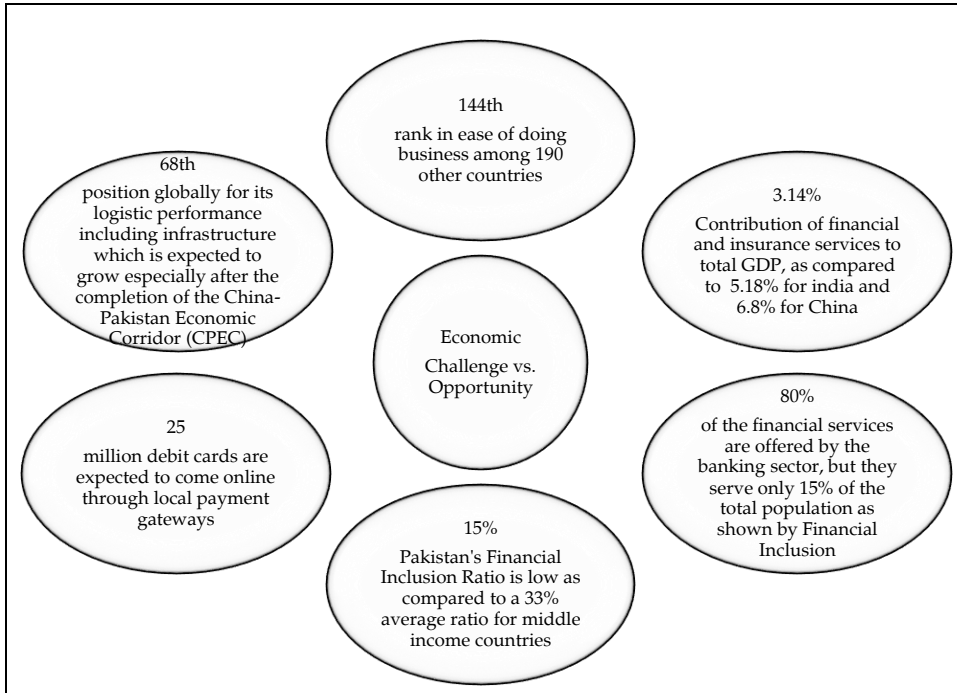
- *Stocksfm* is a financial communications platform for the financial and investing public. *Stocksfm* generated the \$TICKER tag to allow users to organize and establish "streams" of information around stocks and markets across the web and social media. These streams provide new forms of insight, ideas and information that are used by investors, analysts, media and others as they research stocks and manage their investments across the internet and social media websites. This provides understanding and ideas to investors, media analysts, and others for use in researching and managing their financial investments (Tamoor, 2017).

4. Fintech Growth in Pakistan: Challenges vs Potentials

This section provides a qualitative assessment of economic, demographic and technological factors that could serve either as threats or opportunities for the penetration and growth of fintech in Pakistan.

At present, only a few fintechs operate in Pakistan and those are primarily in the developed cities of Lahore, Islamabad and Karachi. The sluggish growth and shortage of fintechs in Pakistan is a consequence of primarily local, and therefore inadequate, investment in the segment. The current fintech ecosystem in Pakistan could be characterized by holes in various information areas, hindering all ecosystem members and hierarchies. Limited fintech investment raised solely from local investors, a dearth of partnership platforms for fintech incumbents and investors, poor quality of the IT sector (Figure 5), an unwelcoming attitude by incumbent organizations towards partnerships with fintech firms, and difficulties in modifying the behavior of customers are among the key challenges fintech firms have faced (Shahid et al., 2016). The Fintech ecosystem is also subject to several hindrances comprising threats to data security and intellectual property, trouble attracting the right talent and customer base, and an uncertain regulatory environment discouraging entrepreneurs from venturing into the fintech environment. The economic, demographic and technological environment in Pakistan also presents a number of challenges to fintech growth as shown in Figures 3, 4 & 5 below.

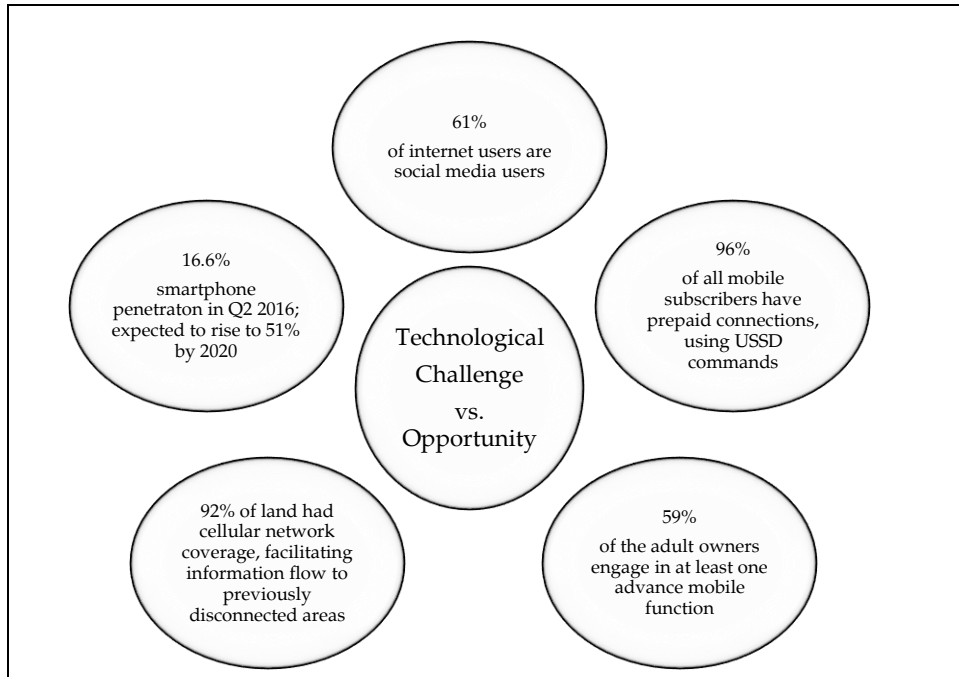
Figure 3: Economic Challenges and Opportunities in Pakistan



Source: World Bank, State Bank of Pakistan, Karandaz, UNESCO, Pakistan Telecommunication Authority.

Figure 3 presents the economic challenges and opportunities for fintechs in Pakistan. The current state of financial inclusion in the country is disappointing as Pakistan is ranked 16th of 26 nations according to *The State of Financial and Digital Inclusion Project Report 2017*. Figure 3 also shows a financial inclusion ratio of 15%, well below the average rate (33%) among middle income countries. However, according to the Fintech Survey 2016, in evolving markets where financial inclusion numbers are low, fintechs play a considerable role as they offer a means to digitization. This weakness of the economy can serve as an opportunity for fintechs to grow (Shahid et al., 2016). The provision of financial services is dominated by banks in Pakistan, which could present a challenge for fintech startups to enter the market. But since only a fraction (15%) of the population is currently being served by the banking sector, this is an open door for fintechs to exploit and target the remaining population with digital payment solutions, eventually improving financial inclusion and the share of financial services in the country's GDP. The improvements in infrastructure expected with the completion of China Pak Economic Corridor (CPEC) are also expected to reap substantial benefits for future fintech growth.

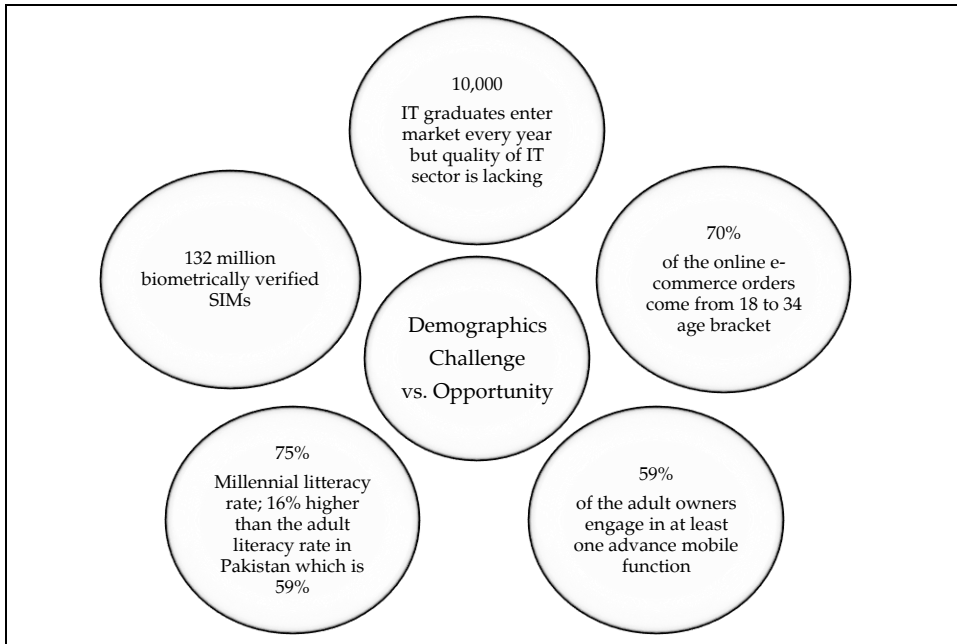
Figure 4: Technological Challenges and Opportunities in Pakistan



Source: World Bank, State Bank of Pakistan, Karandaz, UNESCO, Pakistan Telecommunication Authority.

Technological opportunities and challenges for fintech growth are shown in Figure 4. The still low (16.6%), but growing smartphone penetration, internet and social media usage, improving mobile ownership numbers and adult literacy rate of 59% presents an opportunity to digitize financial services and provide them through mobile phones. The diffusion and adoption of mobile technology in the Pakistani market –mobile teledensity is 69% - has been growing over the years. To further supplement this, the number of mobile internet and mobile internet subscribers is expected to increase from 9 million in 2014 to an estimated 59 million in 2019, making Pakistan the country with the fastest growing mobile internet access rates. In the Global Fintech Survey, mobile data analytics, cyber-security, public cloud infrastructure, biometrics and identity management were considered the most relevant technologies for financial institutions investment by in in order to embrace the disruptive nature of fintechs; it could be safe to say that technological factors in Pakistan are also moving in the right direction.

Figure 5: Demographic Challenges and Opportunities in Pakistan



Source: World Bank, State Bank of Pakistan, Karandaz, UNESCO, Pakistan Telecommunication Authority.

Moreover, current demographics serve as a challenge and opportunity for Fintechs in Pakistan, as presented in Figure 5. Pakistan has the fifth largest youth population, a potential market for the new cohort of financial products and services available over the nexus of Social Media, Mobile, Analytics and Cloud (SMAC). These products are not only appealing, smooth, fast and easy-to-use, but they also match the lifestyle of millennials, who are literate and widely engaged in online e-commerce, demanding fintech products. Secondly, the shift in consumers' preference towards mobile phone usage and social media platforms and away from desktop computers has given rise to digital payments. The verification of 132 million biometrically certified SIMs has paved the way for digital wallets, allowing payments to be made through mobile phones. Many players, including non-bank "banks" and non-profit organizations, are currently working on financial technology to make their applications an actuality in Pakistan. Among non-bank players, one of the biggest examples is that of *Easypaisa*, by Telenor Pakistan, a prominent mobile phone service operator. *Easypaisa* provides financial services such as opening a bank account, withdrawal and deposit of money, funds transfer and bill payments, through more than 70,000 agents in the country. Karandaz Pakistan, a non-profit organization, is also assisting Fintech startups by providing them grants to advance and encourage financial technology solutions in Pakistan.

Access to financial services, payments, e-commerce and interoperability are their main areas of focus.

Together, the assessment of economic, technological and demographic factors reveals that the current fintech ecosystem in Pakistan could be characterized by various challenges hindering all ecosystem members and hierarchies. However, Pakistan still possesses the potential to be an attractive market for fintech companies to grow due to the increasing youth population, disruptive internet and smartphone penetration, consumer preference for mobile phones and social media, booming online commerce facilitating digital payments, and an overall financial system having absorption capacity for innovation.

While fintech innovations are fascinating and can have major positive impacts on any economy like Pakistan's, their darker side should not be ignored. Most fintechs offer financial products which have the ability to generate direct or indirect cash flows. The incentives attached with cash flow generation of fintech products have a strong influence on the product design and usage. Such influences, if compromised, can be used to alter the design or usage of fintech products. This has happened in the past, when derivative instruments that were originally designed for hedging risk became purely speculative instruments due to their inherent leveraged structure. Fintech products are no exception and are prone to such threats, originating both from the innovators and users. One such example is of Bitcoin, which was initially portrayed as a secure alternative digital currency based on blockchain technology. However, as it increased in popularity, its highly secure and complex structure became a vehicle for illegal fund transfers and money laundering. Enormous demand generated by individuals or organizations interested in conducting such covert transactions drove up its price. This price hike, coupled with its online trading, forced ordinary investors to view it as an alternative financial asset. Ironically, no asset with such price volatility as that of Bitcoin can be used as a medium of exchange (i.e., currency), which was the original mandate behind its creation (Chiu, 2016). Nonetheless, regulators are aware of some of these concerns and their approach to fintech regulation can address these concerns.

5. Regulators and Regulations

5.1. *Inside the Minds of Regulators*

Examining the conduct of financial regulators around the globe, we find that approximately three decades ago, their policies and actions were rather supportive for the entities and products being developed within the financial system. In the 1980s, a number of regulators around the globe either significantly reduced the regulatory constraints that supported competition or at least refrained from adding more.

However, a major shift in the regulatory paradigm occurred in the aftermath of the Global Financial Crisis of 2008, which many people view as a direct consequence of the lax regulatory environment prevalent during the years preceding the crisis. Under this new regulatory paradigm, most financial regulators now hold extremely conservative views towards innovative financial products and are preemptive in formulating policies so to avoid another financial meltdown. Of course, not all regulators hold these same views and there exist the so called 'active' regulators working closely with fintech companies. The ideology of these regulators is to understand and address the key challenges of fintech firms as a priority. This active approach of regulators could surely foster the growth of fintech, but it also raises concerns about conflicts of interest if the users' protection is immolated to protect fintech companies.

Let us restate here, that irrespective of the view taken by the regulators, one cannot disagree with the fact that the regulatory framework of a country has valuable effects on the overall economy and it is important, therefore, for governments to create the appropriate balance between supporting fintechs and protecting the public interest. The problem is that the fintech sector has been developing rapidly and institutions have found it difficult to craft regulation, pertinent to this segment. The rapid growth makes it difficult to design laws for firms of various sizes. Technology, primarily the internet, has boosted the development of new players in the market, for instance, venture capital firms, crowdfunding firms, and virtual currencies such as Bitcoin. Though benefits from such innovations accrue in the form of the creation of new assets and reduced firm costs, it does raise risk and security concerns. Therefore, there is a need for regulators to understand the technology's applicability in order to understand what exactly to regulate (Kalmykova & Ryabova, 2016).

5.2. Fintech Regulations in Pakistan

The situation in Pakistan is relatively better than the conservative and pre-emptive view of most regulators around the globe. In fact, the State Bank of Pakistan (SBP) has proven itself to be very progressive in the area of digital finance. The attempts SBP has taken to promote branchless banking and mobile banking (e.g., mobile wallets and over-the-counter transactions) have been documented in detail. One study traces the history and models of mobile banking in Pakistan to assess how the segment evolved and transformed conventional banking structures in the country (Rizvi et al. 2017). Owing to the collective efforts of a number of stakeholders, including the government, regulatory bodies, development agencies, financial institutions, telecom operators and technology companies, developments in the mobile banking sector have been growing.

The State Bank of Pakistan's support for the branchless sector was demonstrated with the issuance of branchless banking regulations and the drafting of a regulatory

framework policy in 2008. Under these regulations, many branchless banking models were encouraged to set up. Since 2008, SBP and other government bodies have continued to promote technology in banking, which has created the necessary foundation on which to build a strong digital financial architecture - including fintech - in the country. Additionally, the National Financial Inclusion Strategy (NFIS), developed by SBP in 2015, with the support of the World Bank, provides clearly defined targets and incentives to strengthen the effort towards the utilization and promotion of fintech in the country.

The most important and direct step taken by SBP to promote and facilitate fintechs was the drafting and enacting of laws pertaining to Payment System Operators (PSOs) and Payment Service Providers (PSPs) in 2014¹. These regulations are applicable to the players interested in becoming licensed operators in Pakistan for payment systems. Interested players can be granted licenses under PSOs and PSPs for the development of an electronic platform with the capability to clear, process route and switch electronic transactions. The entities licensed as a PSO or PSP can also make agreements with banks, financial institutions, merchants, other PSOs and PSPs, or any other company for the provision of services they intend to provide under the license. So far, only two institutions have been granted the status of PSO/PSP, namely, *One Link*² and *NIFT*³.

In May 2016, the SBP introduced Regulations for Mobile Banking Interoperability⁴. Under these regulations, fintechs are expected to achieve long-awaited Transactional Interoperability that would allow users to transfer funds between mobile accounts from one service provider to another. Account-to-Account Interoperability (A2A Interoperability), the other type of interoperability, has been enjoyed by customers and fintech service providers since 2014.

The most significant feature of the 2016 regulations is the clear guidelines regarding Third Party Service Providers (TPSPs), a new player made mandatory by SBP to execute transactional interoperability. The models requiring involvement of TPSPs can also be referred to as a switch arrangement as opposed to a bilateral arrangement. The differences between the two is explained in Figure 6, below.

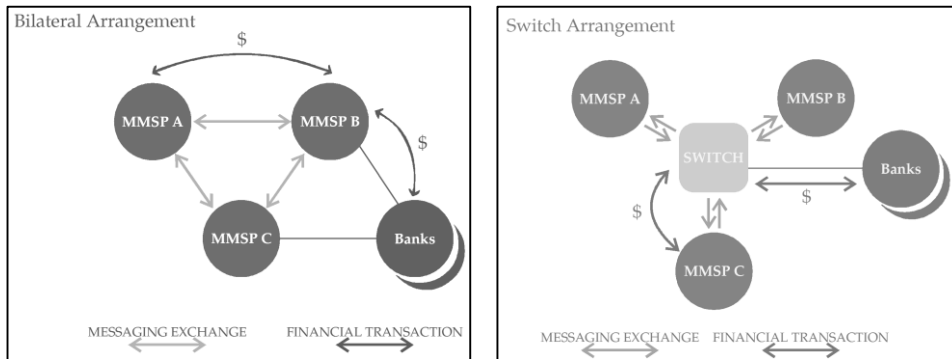
¹ Rules for PSOs and PSPs: <http://www.sbp.org.pk/psd/2014/C3-Annex.pdf>

² <http://1link.net.pk/>

³ <https://www.nift.pk/>

⁴ Regulations for Mobile Banking Interoperability 2016: <http://www.sbp.org.pk/bprd/2016/C3-Annx-A.pdf>

Figure 6: Bilateral vs Switch Arrangement



Source: (GSMA 2015).

Under the bilateral arrangement, each Mobile Money Service Provider (MMSP) must establish one-to-one links with all other players (i.e., other MMSPs or banks). Under the switch arrangement, a third party entity, a TPSP in the case of Pakistan, takes the responsibility of creating a hub with which all MMSPs and banks must establish a link.

The Regulations for Mobile Banking Interoperability (2016) enabled the Pakistan Telecommunication Authority (PTA) to make a decision to issue the first Third Party Service Provider (TPSP) license in April 2017, which upon realization will set the foundations to achieve full interoperability across the telecom networks and entities providing mobile wallets or BB accounts. On the basis of the information available through PTA, we have compiled some important features of TPSP licensing in the following table.

Table 2: Salient Features of Third Party Service Provider (TPSP) License in Pakistan

License Period	10 Years
Due Diligence by	PTA-SBP Joint Regulatory Committee
License Issuing Authority	PTA
Initial License Fee (ILF)	Rs. 1,000,000/- (Pak Rupees one million)
Non Refundable Processing Fee	Rs. 50,000/-
Performance Bond	Rs. 10 Million in the shape of Bank Guarantees
Paid-up Capital Requirement	Rs. 200 Million (Set by SBP) with the following caveats; <u>10% as security deposit at the Central Bank</u> 5% of security deposit in a non-remunerative current account with the SBP Banking Service Corporation. 5% of security deposit in the form of Government securities to be kept under lien at the same department.
Scope of Work	TPSP license authorizes the licensee to establish, maintain and operate for the provision of Financial and Application Service Provider and permits the Channeling, Routing and Switching Transactions for branchless/mobile banking only under Service Level Agreement(s) between Financial Institution (bank), cellular mobile operator(s) and TPSP(s)
Technical Requirement	Capability of switching and routing all interbank Wallet to Wallet and Wallet to Bank account transfers from BB Issuer to BB Acquirer through an authorized PSO which will be responsible for clearing and providing day-end reports for reconciliation.
Jurisdiction	TPSP License shall be granted nationwide for the whole of Pakistan excluding Azad Jammu & Kashmir and Gilgit Baltistan.
License Holder	“None” as of March 2018 at the time of writing this paper. However two applications have been received by PTA and decision to award license is expected by Mid-2018.

Rather than waiting for other commercial players to act first, SBP has proactively developed a mobile application for Asaan Mobile Account (AMA) to facilitate mobile banking interoperability. The app is expected to achieve universal operability by providing a single platform to all bank account holders on different mobile phone networks to conduct financial transactions. According to SBP officials, the app will be simple and available to the users of feature phones as well as users of fully-capable smart phones. An account can be easily opened after verification from NADRA, which is expected to cost the user PRs. 10. With these features, AMA may prove to be an important and innovative fintech product, and can also help to achieve the target of 50 million mobile wallet users set in NFIS 2015. National Financial Inclusion Council (NFIC) approved the AMA scheme in September 2017.

5.3. Future Challenges for State Bank of Pakistan as a Fintech Regulator

Despite the progressive attitude of SBP as a fintech regulator, there are pending issues that require immediate regulatory deliberation. The first issue to address is: Who should actually be the regulator for fintechs in Pakistan? As explained earlier, fintech is on the frontier where finance meets technology, creating questions regarding its main regulator. Should fintechs be treated as financial institutions and be governed by SBP (the current situation, owing to the bank-led model of fintechs prevailing in Pakistan)? Or should the players be treated as mobile technology providers? This is an essential element of fintechs. If they should be treated as a mobile technology, would they consequently be placed under the purview of Pakistan Telecom Authority (PTA)? Is there a need for a new regulator specifically for fintech, considering its unique and evolutionary structure?

Presently, every form of fintech is heavily dependent on digitally-stored data, which is not only susceptible to privacy concerns, but is also exposed to theft and cyber-attacks. In Pakistan, where a large number of intermediaries (e.g., financial institutions, telcos, PSPs, PSOs, TPSPs, NADRA etc.), are mandatory in order to set up viable fintechs, the task of determining exact liability in the case of data breach is itself nontrivial, and the measures that must be taken to ensure data security are a top regulatory priority.

Fintech products or services, being either heavily reliant on mobile technology or based on complex coding technologies (e.g., blockchain, Directed Acyclic Graph (DAG), Tangle, or IOTA), open the doors for unlimited possibilities, but can also create opportunities for fraudsters aiming to extract money from consumers and Fintech companies. The world saw a glimpse of this danger when the popularity of Bitcoin helped a number of fake cryptocurrency providers to sell hoax products to customers and investors.

Another important concern is the potential use of fintech in money laundering and breach of capital controls. The archaic, bureaucratic structure of regulations in Pakistan has proven itself ineffective in dealing with such issues. Incidents like the recent inclusion of Pakistan in the grey list of the Financial Action Task Force (FATF) are enough to expose the weaknesses of regulators in this domain. Now the question is how regulators would deal with the fintech transactions which are far more secured, protected, encrypted, and faster paced compared to conventional financial transactions. This is an area which requires further thought and discussion.

It is also important for regulators in Pakistan to allow healthy competition. Around the globe, fintechs are primarily driven by startups, and Pakistan is no exception. However, it has been observed that the innovative technology developed by these startups is subsequently acquired by existing industry players of variable sizes. The recent partnership between Finja and FINCA Microfinance Bank, which allowed the fintech to receive regulatory approval for its innovative

product, a mobile wallet called SimSim, is one such example where a small startup needs to seek the patronage of larger industry players to advance to a higher level.

The SBP has made efforts to promote and outline regulations for the fintech sector as it has a role to play in improving financial inclusion, which is viewed as a key driver of economic growth. However, the proliferation of fintechs is accompanied by threats of cybercrime, money laundering, terror financing, and privacy breach of customer data. SBP and other regulatory bodies have outlined guidelines to protect against the perceived risks associated with fintechs, as public security cannot be compromised.

5.4. Regulator as Competitor

Finally, despite its good deeds and inherent role of guardian, there are incentives for a regulator to become a competitor – a potential threat for much of the fintech sector. The threat arises from the possibility of a Central Bank-Issued Digital Currency (CBDC) or Central Bank-issued Crypto Currency (CBCC). The idea of CBDC creation is feared due to the increasing use of electronic payment systems all over the world and the resulting influx of alternative digital currencies such as Bitcoin. However, there are several reasons why a central bank would not be incentivized to pursue the creation of CBDCs or CBCCs. First, being a regulator, no central bank can actually offer what is considered the primary attraction of digital currencies - anonymity. Digital currencies maintain their popularity so long as they provide anonymity for financial transactions and any action taken by central banks to offer something similar could become a topic of public debate or even lead to litigation. The idea of CBDC creation is far from reality. Another important reason to not pursue this is that any central bank-issued currency, whether physical or digital, is meant for payment purposes and its value should remain stable and on par with the other forms of currencies in the country. If that is the case, then the CBDC would be no different from the already existing currency in bank accounts that exist in digital form. Additionally, although central banks could pitch CBDC as an alternative payment system for retail transactions, the question remains as to what do CBDCs offer that is superior to existing payment systems like Alibaba, Tencent, Facebook, WeChat, and, in Pakistan's case, Finja or Masterpay.

Proponents of CBDC provide a range of possibilities and objectives a central bank can achieve with its issuance, such as a wider spectrum of monetary policy options, direct provision of risk-free assets, general public and consequent safety of financial systems by the reduced systemic importance of commercial banks, and more control over money creation (Dyson & Hodgson, 2016). At the same time, even these proponents are concerned that if a central bank were to issue CBDC and begin to realize these objectives, it could potentially fuel bank runs all over the world (Bech & Garratt, 2017).

6. Conclusion and Policy Recommendations

Fintech growth has been phenomenal worldwide, driven mainly by changing consumer preferences and behaviors, and technological innovations and regulations. Being at the confluence of different technologies, fintechs offer well-personalized and interactive services to consumers by allowing them to conduct transactions over their phone, boosting customer experience. On a broader level, fintechs have the capacity to promote financial inclusion by enabling the provision of new products and services to groups who were previously deprived of access to traditional financial services.

Pakistan, being a developing economy with high banking infrastructure costs acting as a barrier to diffusion of financial services, has a large percentage of the population which remains underbanked. Poor financial inclusion, along with growing mobile phone and internet penetration, changing consumer needs in favor of digitization and online commerce, biometric verification of mobile SIMs and a supportive regulatory environment serve as opportunities for fintechs to step in and provide financial products at low costs. At present, a few traditional and emergent fintechs operate in Pakistan, primarily in areas of banking and insurance. The regulatory framework for financial services is fairly strong and supportive in Pakistan, with laws such as Payment System Operators (PSOs), Payment Service Providers (PSPs) and Branchless banking regulations by the State Bank of Pakistan acting as platforms for Fintech-led growth.

However, fintechs in Pakistan are also faced with a number of challenges such as regulatory uncertainty, limited investment raised solely from local investors, a dearth of partnership platforms for fintech incumbents and investors, an unwelcoming attitude of incumbent organizations towards partnerships with fintech firms, and threats to data privacy and security.

The SBP has made efforts to promote and outline regulations for the fintech sector as it has a role to play in improving financial inclusion, which is viewed as a key driver of economic growth. However, the proliferation of fintechs is accompanied by threats of cybercrime, money laundering, terror financing, and privacy breach of customer data for which SBP and other regulatory bodies have outlined guidelines, so as to be cautious toward these perceived risks, as public security cannot be compromised.

It is important to understand that aside from being providers of mobile payment systems and other financial services, fintech companies create an ecosystem that fosters the collection of a vast amount of data and builds trusted relationships with clients. Financial institutions and banks in Pakistan have realized the importance of these ecosystems and are attempting to innovate within their companies through partnerships with fintech companies. These partnerships will benefit both parties. Incumbent banks will be able to outsource part of their R&D and bring solutions to market quickly, while fintech firms will have access to the large and existing

customer base of banks. This is further emphasized by fintech segments that are starting to transition from purely B2C to B2B. We believe that, going forward, adopting effective growth strategies and integrating with fintechs will be essential for innovation. The government should also support the growing fintech sector by formulating regional development plans where they would identify regions on the basis of current capabilities and infrastructure as potential hubs and would offer incentives (such as funding) to boost their growth.

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Cryptocurrencies, Blockchain and Regulation: A Review[†]

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Abstract

The evolution of money has accompanied the development of civilizations and technological innovations, leading to today's cryptocurrencies. Cryptocurrencies have become a popular mode of payment globally because of their low cost, high-speed transferability and a decentralized tracking network that provides secure transactions and a high degree of anonymity. However, the decentralized system of cryptocurrencies has made global monetary systems more dynamic and therefore more prone to misuse as well as posing a threat to financial stability. Cryptocurrencies are also gaining popularity in Pakistan: its first cryptocurrency, named 'Pakcoin', was launched in 2015. The State Bank of Pakistan does not recognize any digital currency, and the Federal Board of Revenue and Federal Investigation Agency have taken legal action against local and internationally traded cryptocurrencies. This article reviews these risks and provides various regulatory solutions so that methods can be developed to improve the management of financial innovations and create a safer environment in which financial innovation can continue. Furthermore, developing countries such as Pakistan can take advantage of distributed ledger technology (used in cryptocurrencies) in applications including: microfinance to help the unbanked, in data identification systems and in land registries to help enforce property rights.

1. Introduction

Money has been used as a medium of exchange for about 3,000 years, following the usage of the barter system. The evolution of money has accompanied the development of societies and technological innovation, from precious stones to metal coins and paper currency. Initially, money was in the form of commodities,

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but as civilizations progressed to using precious commodities and metals or stones, this led to the formation of coins (similar to those used today), typically made of gold or silver. During the Middle Ages, as people looked to goldsmiths for the safekeeping of their money, the latter started issuing receipts as a guarantee of repayment when required. Over time, these receipts became a currency that was repayable in gold or silver on presentation. This led to the development of the gold standard, where government-issued notes became trusts that could be exchanged for gold. At the turn of the twenty-first century, further developments in currency took place in the form of e-money and virtual currencies (Davies, 2010).

Money is now classified as real, electronic and virtual, and these all exist simultaneously in the global financial system. Real currency comprises all cash or coins circulating in an economy, which have been declared legal tender by the government (Financial Crimes Enforcement Network, 2013). E-money or 'plastic money' is an extension of real currency notes, and includes credit cards, debit cards and other instruments issued by banks to simulate the exchange of real currency.¹ While virtual currency does not hold the status of legal tender, it does act as a substitute for real currency and is convertible into real money (Financial Crimes Enforcement Network, 2013). Thus, it is often considered an important medium of exchange as well as an important store of value.²

Innovations in digital systems have transformed the workings of the global economy of exchange and, as a result, virtual currencies are gaining immense popularity. Cryptocurrency offers a decentralized system without an intermediary, which allows people to remain in control of managing their funds. Moreover, as currencies such as the Venezuelan bolivar are quickly losing value, cryptocurrencies have the potential to provide a better store of value than fiat currency. Cryptocurrencies are gaining increased acceptance because of their low cost, high-speed transferability and a decentralized tracking network that provides secure transactions and anonymity. Among virtual currencies, cryptocurrencies have shown faster growth and acceptability, with immense potential.

A cryptocurrency is an electronic cash system, working on a peer-to-peer basis to facilitate the transfer of funds between users without a financial intermediary or central repository. These types of virtual currencies are unregulated and are not backed by any government. Their rapid growth presents a challenge to governments around the world, given that the wide acceptance of cryptocurrencies has the potential to disrupt regulated payment systems and affect the implementation of monetary policy. Moreover, because they promote anonymity, these currencies can be used for unlawful purposes (Middlebrooke & Hughes, 2014).

¹ http://lexicon.ft.com/Term?term=e_money

² After the global financial crisis in 2007/08, for instance, people who had trusted financial intermediaries such as banks were unable to recover their savings due to institutional mismanagement.

The decentralized system of cryptocurrencies has made global monetary systems more dynamic and is thus more prone to misuse as well as posing a threat to financial stability. There is a need for governments to provide effective regulation to minimize the risks associated with this innovative payment system and to maximize its potential benefits. Cryptocurrencies are revolutionary in terms of their distributed ledger technology (DLT), which has many different applications both for the public as well as governments and public institutions. In fact, Davidson et al. (2016) argue that these may compete with various economic institutions due to their widespread applications.

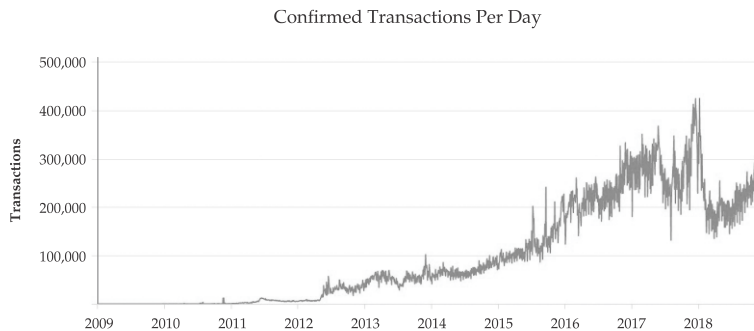
Bitcoin was the first cryptocurrency launched in 2008 by an individual or group of individuals operating under the name of 'Satoshi Nakamoto'. This currency adopted blockchain technology and created a peer-to-peer payment system that ensures anonymity and transparency in transactions. Further, the technology is deemed to be practical for trade as the transactions are irreversible and can help prevent fraud through smart contracts (Satoshi Nakamoto, 2008).

This article addresses the various risks associated with an unregulated cryptocurrency market and, taking a step further, discusses possible avenues of regulation as well as applications of the technology for Pakistan.

2. The Growth of Cryptocurrency

Toward the end of 2017, Bitcoin was the most popular and widely traded cryptocurrency out of over 1,800 cryptocurrencies (Leong & Chavez-Dreyfuss, 2018), with daily transactions in bitcoins at an all-time high of 490,000 in December 2017 (Figure 1). There are several other cryptocurrencies in the market today, some examples including Litecoins, Altcoins, Etheruem, Ripple, Auroracoins, Mastercoin, Dogecoin and Peercoin.

Figure 1: Daily transactions for Bitcoin



Source: Blockchain.info

As of April 2018, the total market capitalization of cryptocurrencies was over \$278 billion and the record high daily volume is larger than \$500 billion.³ Estimates suggest that between 2.9 million and 5.8 million people all around the world have invested in cryptocurrencies, with a total market value of \$27 billion (Hileman & Rauchs, 2017). Details concerning some major cryptocurrencies are given in Table 1.

Table 1: Some major cryptocurrencies, November 2018

Currency	Characteristics	Market capitalization
Bitcoin	The first and most popular cryptocurrency	\$111,667,324,912
Ripple	A currency developed for peer-based debt transfer	\$21,503,755,339
Ethereum	A currency that supports smart contracts	\$21,692,737,457
Swiftcoin	The first currency to be patented in the US	\$8,443,833
Petro	The first oil-backed cryptocurrency	\$1,872,677

Source: CoinMarketCap.com

The growing popularity of cryptocurrencies is evident from the growth in number of cryptocurrency transactions taking place, particularly in Bitcoin. Figure 2 shows that, in a short span of two years, this number has grown from about 100,000 transactions a day to over 490,000 transactions, peaking in December 2017. While the value of Bitcoin had increased due to speculation, Bitcoin prices have seen a tremendous reduction given the risks associated with cryptocurrencies. Despite this, cryptocurrency participation has been growing in emerging and developed economies including Japan, China, India and Bangladesh among other countries in the Asia-Pacific region. There is a marked increase in the number of investors or active users as well as the employment being generated in the cryptocurrency industry, in which the number of active users has potentially reached 5.8 million.

Figure 2: Bitcoin prices



Source: Blockchain.info

³ Cryptocurrency prices and global market cap list. <https://www.livecoinwatch.com>

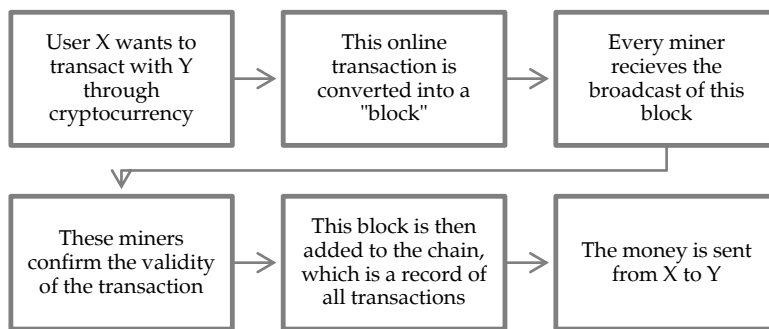
The development of newer currencies such as Bitcoin cash, NEM and IOTA has advanced especially in the Asia-Pacific region, which has the highest number of people – over 700 out of 1,876 – developing or employed in the sector. Moreover, the region contributes approximately 20% of wallet users, most of whom tend to use large wallet providers. This makes them more susceptible to changes in the global cryptocurrency market (Hileman & Rauchs, 2017). However, given the trend of growth in cryptocurrency prices, including not only Bitcoin, but also Etheruem, Litecoin and Ripple, the number of users and the market capitalization values of all cryptocurrencies is expected to increase.

Considering the various uses of cryptocurrencies and particularly illicit transactions and the associated risks, these figures indicate the need for regulation in the industry. These currencies have made a significant contribution to people’s lives, but it is important to understand that they cannot survive without appropriate legislation. The technology they have introduced has already made its mark on the world and is now prompting financial system stakeholders to look at alternatives to traditional banking for all sorts of legal and illegal transactions.

3. How Cryptocurrencies Work

There are three major parties involved in any transaction pertaining to cryptocurrencies: the user, the exchanger and the issuer. Users include all entities who obtain virtual currencies to purchase goods and services or simply to transact on the network. Exchangers include all entities involved in the conversion of real currency to virtual and vice versa. Issuers and redeemers of virtual currency are the entities known as administrators (Financial Crimes Enforcement Network, 2013). A simplified version of this process is given in Figure 3.

Figure 3: How Blockchain works



Source: World Economic Forum

Cryptocurrencies have the potential to redefine the workings of the monetary system. They promote an advanced level of technology based on blockchains and other security protocols such as CryptoNote (van Saberhagen, 2013) and SNARK

(Ben-Sasson et. al., 2013). Harvey and Tymoigne (2015) emphasize the level of security provided by these networks, along with a high level of transparency.

Bitcoin, one of the most popular cryptocurrencies in the world, is based on this system. Every transaction that takes place is verified by network nodes and entered in the blockchain system, which is similar to a public ledger. This distributed network has been designed to avoid any double-spending errors. All transactions are traceable on the blockchain, providing an indisputable record. The security protocols in the electronic financial ledger prevent transaction details from being removed or altered, thus creating a complete record of all transactions involving the currency.

Blockchain also provides a way to verify the ownership of each unit and often helps in setting up and executing smart contracts, such as those involving a transfer of title (Harvey & Tymoigne, 2015). Smart contracts are essentially a set of instructions that can perform some level of calculations and send transactions as well as store information (Omohundro, 2014). In Ethereum, for instance, a transaction may trigger a contract, resulting in actions such as the creation of a new account (Hu et al., 2017). For each transaction, the owner provides a private key, considered a digital signature for the transaction. The corresponding public key is used to verify this signature. It is essential that the private key is not lost because it is the sole evidence of ownership that the Bitcoin network will accept. Once verified, this transaction becomes part of the blockchain. The process of verifying these transactions is performed by a miner and is called 'Bitcoin mining'. A miner is the creator of a cryptocurrency, who solves complex puzzles to create blockchains and 'unlock' virtual coins for a reward in the form of bitcoins (Financial Crimes Enforcement Network, 2013).

Cryptocurrencies provide a direct method of exchange and thus mitigate the role of the intermediary. The peer-to-peer function is advantageous in tax saving for money transfers, especially in the form of remittances. These currencies allow an improved flow of funds without loss of income in the form of payments to intermediaries or in the form of taxes. Furthermore, cryptocurrencies can recognize any digital information as an asset providing a more valid title to intellectual property. Each asset held in the digital wallet, also called an 'e-wallet', stores a transaction history. With a more valid title, given the secure nature of the Blockchain network, intellectual property theft can be reduced significantly (Tapscott & Tapscott, 2016).

4. Risks Associated with Unregulated Cryptocurrencies

The growing popularity of cryptocurrencies and financial innovation carries associated risks that raise concerns for their viability and future integration in the monetary system, especially in the absence of appropriate regulation.

4.1. Black Markets

Fernandez (2012) finds that online roleplaying games or other interactive online entertainment sites, such as World of Warcraft, have been involved in illegal activity such as money laundering. These platforms are used to disguise criminal activities online, with an estimated value of \$500 million. They simulate a monetary system that is used as a front for illegal transactions, including money laundering, drug trading and child pornography (Brezo & Bringas, 2013; Bryans, 2014).

As cryptocurrency payments move closer to replacing traditional fiat currencies, the expected value of the black economy could certainly escalate. This is primarily because transactions have become extremely difficult to trace back to the wallet owner. In some cases, such as the Silk Road system – labelled the ‘Amazon of illegal drugs’ – governments have taken action, as these systems were designed primarily to ensure anonymity at both ends of a transaction (Jacobs, 2011; Barrat, 2012). In this case, the European Cybercrime Centre, the FBI and other law enforcement agencies took control of all drugs, cash and other assets, and arrested all the administrators and sellers on the network. Bitcoins worth over a million dollars were also seized (Europol, 2014). An interesting development comes from prosecutors in Utah, who have decided to start selling bitcoins that were seized last year as part of a drug ring bust. The value of the seized cryptocurrencies was \$8.5 million in December 2017 (CNBC, 2018).

4.2. Technology Market

As the popularity of cryptocurrencies grows, the effects spill over into other industries as well. Blockchain technology requires graphic processing units (GPUs), including graphic cards and other power-intensive computing technology to mine cryptocurrencies and create blockchains. However, as miners look to setting up server farms, demand for the technology has caused a price surge for GPUs. Parts can sell for up to twice the suggested retail price, creating a black market for the sale and resale of computing parts required for mining and hashing (Mearian, 2018). Since NVIDIA, a GPU manufacturer, prefers retailing to gamers rather than miners, this limits the growth of blockchain technology as each new blockchain requires more power.

4.3. Energy Consumption

The technology involved in mining and creating blockchains is highly power-intensive: the Bitcoin network alone consumes as much energy as Austria. According to Digiconomist, the entire Bitcoin network consumes 73 terawatt-hours (73 million megawatt-hours) of electricity,⁴ whereas Ethereum’s

⁴ <https://digiconomist.net/bitcoin-energy-consumption>

consumption is estimated at 15.92 terawatt-hours, or as much electricity as the Dominican Republic.⁵ This poses a problem because, as cryptocurrencies are adopted globally and prices rise to \$50,000, the associated energy consumption could increase tenfold. Even though mining technology is becoming power-efficient, as the currencies grow, energy consumption will increase to an extent that it may become unprofitable for miners (Hern, 2018). This could become a serious concern for power sectors in each country and may become unsustainable if a network grows beyond measure.

4.4. Taxation and Tax Evasion

On a wider level, countries such as the US, Germany and China have been among the first to take action against cryptocurrencies. Germany considered taxing cryptocurrency as a capital asset as it gained popularity in 2013/14 ('Germany plans tax', 2013). More recently, the German central bank has discouraged investment in cryptocurrencies.⁶ Similarly, in China, due to growing distrust of the technology, the central bank has decided to control these cryptocurrencies by banning their initial coin offerings (van Steenis, 2017). With the growing use of cryptocurrencies as payment tools, tax evasion has become a major issue for governments globally. Marian (2013) underlines two important characteristics of these currencies that facilitate illicit transactions. First, there is no cap on the number of wallets users can keep, allowing them to trade without providing any information about the owner. Second, due to the nature of the currencies, users do not rely on financial intermediaries.

Given the rapid growth of cryptocurrencies, the governments of Germany and China have tried to control them by imposing taxes and bans on initial coin offerings (ICOs) (Wildau, 2017). The US government has also made efforts in the matter by bringing these currencies under the laws for money transmitting businesses, particularly Sections 1960 and 5313 of the U.S. Code (Middlebrook & Hughes, 2014). While some governments, including Switzerland, the EU, OECD and the US, are cooperating to eliminate offshore tax evasion, there has been a simultaneous growth in cryptocurrencies in those regions. Without sufficient regulation, cryptocurrencies and their ability to act as tax havens could entirely defeat governments' attempts at reducing tax evasion (Marian, 2013; Grinberg, 2012).

One such attempt in the US is the Foreign Accounts Tax Compliance Act, which was developed in 2010 and has been gradually implemented since 2014. It requires foreign financial institutions to report any customers who are US nationals to the Internal Revenue Service (Marian, 2013). In January 2018, Steven Mnuchin, the Secretary of the Treasury, announced that the Financial Stability Oversight Council

⁵ <https://digiconomist.net/ethereum-energy-consumption>

⁶ http://www.bundesbank.de/Redaktion/EN/Reden/2017/2017_09_20_thiele.html

would address the growing cryptocurrency market and work on regulations to prevent the emergence of a digital Swiss account alternative. He also emphasized that his focus was to prevent the use of these currencies for illicit transactions (Nelson, 2018).

The Canadian Securities Administrators issued a notice in August 2017 hinting that cryptocurrencies may be brought under Canadian securities legislation. However, in January 2018, the head of the central bank of Canada spoke of cryptocurrencies as being 'essentially speculative'. Canada has joined a cautionary directive as part of the North American Securities Administrators Association, whose representatives consider cryptocurrencies to be highly risky.

The European Central Bank has also moved cryptocurrencies higher up on their priorities, given the accelerating optimism witnessed in Ethereum and Ripple, among other cryptocurrencies. Several board members, including Yves Mersch, have shown concern over this surge, emphasizing that these 'very risky assets' have a significant social and psychological impact similar to that of a gold rush, but without any actual asset backing (Megaw, 2018). Mersch also discussed the possible use of cryptocurrency in funding terrorism and money laundering, highlighting that their globalization requires globalized action to be taken.

4.5. Hacking

The security features of cryptocurrencies employ the blockchain system with 'proof of work' puzzles (Bonneau et al., 2015), which make them immune to hacking and theft. Empirically, however, this has been proven otherwise. The Mt. Gox exchange in Tokyo experienced the 'disappearance' of about half a billion dollars' worth of bitcoins, the causes of which remain elusive. A document was circulated on behalf of Mt. Gox, claiming that this was a theft that had been ongoing for several years. However, it may also have been a failure of the Bitcoin security system. Due to the anonymity of the transactions and the ability of a single user to hold multiple wallets, such theft cannot be traced, suggesting that the system can be hacked (Wagstaff, 2014).

Similar incidents have taken place all over the world, including Swansea, Massachusetts, in 2013 (Bray, 2015) and the Presbyterian Medical Centre in Los Angeles in 2016 (McClean, 2016), where a virus by the name of CryptoLocker encrypted users' files, demanding ransom in bitcoins for the decryption key (Garber, 2014). This raises security concerns for those investing in cryptocurrencies (Bonneau et al., 2015).

4.6. Speculation Bubble

Cryptocurrencies are highly sensitive to speculation, particularly when it comes to real currency conversion. While some countries are still trying to recover from the impact of the financial crisis of 2007/08, caused by a housing market bubble, little thought has been given to the potential speculative bubble that may be growing due to cryptocurrencies – the Bitcoin bubble (Maurer, 2011). Many people are now investing in cryptocurrencies, hoping to profit from speculation. However, the lack of asset backing and changes in the market or macroeconomic conditions can affect their prices significantly (Brezo & Bringas, 2013). In short, the illiquid nature of cryptocurrencies means that the industry is highly volatile and, therefore, very risky for the economy. Bitcoin, for one, has seen immense volatility, its price having risen from \$13 in January 2013 to \$1,242 only ten months later (Hughes & Middlebrooke, 2014).

Warnings over this matter are already being issued by regulators around the world and by investors and bankers, most prominent of which has been Jamie Dimon, the CEO of JP Morgan Chase. Moreover, Andrew Bailey, chief executive at the Financial Conduct Authority, suggests that investors should be prepared to lose all their money (Meredith, 2017). Similarly, Warren Buffet has also warned that investing in cryptocurrency is pure speculation as it has no intrinsic value (Montag, 2018). These warnings have grown significantly louder as Bitcoin reached new heights in mid-December 2017, with bitcoin trading prices crossing \$18,000. As reported by the New York Times, Wall Street companies have shown growing interest in the market, which can be credited for these price hikes (Popper, 2017).

4.7. Volatility

The introduction of bitcoin futures in early December 2017 has increased the risk of investing in these currencies by making the market more volatile. As suggested by Thomas Petterfy, the CEO of Interactive Brokers, this volatility could potentially cause a crisis similar to that of 2008 (Roberts, 2017). The effects of this, as well as other factors, including changes in investor sentiment, caused an immense decline from close to \$20,000 to around \$8,000 in bitcoin prices. Those who had bought the cryptocurrency shortly prior faced losses in the short term, given that the currency has not recovered as quickly as expected. However, experts suggest that longer-term investors are still far from the risk.

This decline has shown how volatile the currency really is, with small movements from regulators leading to a change in price and volume (Popken, 2018). For instance, the subpoenas sent to two of the largest cryptocurrency exchanges, Bitfinex and Tether, caused the Bitcoin to decline by 10% the same day, according to Bloomberg (Leising, 2018). However, since they do not have any asset backing and their actual number or origin is unknown, there is a very high risk of collapsing

virtual currency exchanges, leading to the next global recession. This can be avoided if, unlike in 2007, regulators and governments decide to regulate the industry.

5. Existing Regulations and Recommendations

Zug, a small town in Switzerland, is proof that cryptocurrencies are here to stay. It has been dubbed 'Crypto Valley' and is home to over 20 virtual currency exchanges, asset managers and brokers. The town began to adopt this new system in May 2015 and now houses 12 Bitcoin ATMs (Miller, 2017). Utility bills and taxes are also being paid in virtual currencies. The Financial Market Supervisory Authority is developing licenses for businesses to be able to regulate the currency in Switzerland, although any other self-regulatory organizations can also be contacted to obtain a license.

A similar approach was taken by Bitcoin, where a self-regulatory body called the Digital Asset Transfer Authority has been established with the sole purpose of developing compliance standards and performing risk management activities (Bradbury, 2013; Middlebrooke & Hughes, 2014). In early 2018, the Swiss economics minister, Johann Schneider-Ammann, showed interest in making Switzerland the first crypto-nation while maintaining the integrity of the financial system.

A similar trend has been observed in other countries. The Reserve Bank of Australia, for example, is now considering the 'digital Australian dollar' after pressure from FinTech Australia. These startups suggest a digital currency, backed by Australia's fiat currency, to hedge the liquidity and volatility risks of cryptocurrencies (Yoo, 2017). However, as far as other cryptocurrencies are concerned, the Australian Taxation Office passed a statement in December 2017, hinting that these may be brought under capital gains taxation. Estonia has completely digitized its government systems, with experts working on a government cloud storage system. Their use of blockchain technology has enabled them to prevent hacking. Moreover, with the country's Estonian ID systems, a digital currency could improve its payments systems and make them truly transparent (Lufkin, 2017).

Venezuela is seeking refuge from its economic problems in Bitcoin, where people are now looking to pay through Bitcoin for a multitude of transactions (Leary, 2017). In fact, the country might as well convert completely to Bitcoin to improve its economic situation. Venezuela has been unable to make its bond payments on time and tops the list of countries with a failing currency (Buck, 2017). The government is working on developing a cryptocurrency backed by petroleum and oil, including a registry of cryptocurrency miners, being compiled since December 2017.

Nigeria has also faced a crisis because of its fiat currency, due to which cryptocurrency trading showed immense growth. Nigeria's central bank is now being called on to make the necessary regulatory changes, as its governor, Edwin Emefield, has called these currencies a gamble, emphasizing that the government will not support such a venture. South Africa has, unlike other African countries, taken a progressive approach to the subject. The government has been working on a blockchain-based cryptocurrency to create a balanced approach to regulating these currencies (Nelson, 2018). On the contrary, Russia has emphasized the importance of regulating cryptocurrencies, but without any agreement on how to achieve this. While the finance ministry has presented a draft law, this legislation has been criticized heavily for being too stringent. However, the government has begun crackdowns on the instruction of President Putin in January 2018. Ghana has shown significant openness to the idea of cryptocurrency: the governor of the Bank of Ghana has talked of recommendations for regulating the currency, although Ghana is still one of the six countries that have banned Bitcoin.

The question of whether cryptocurrencies are merely a fad has become outdated with the growing interest of investment banks, as Morgan Stanley's CEO established (Martin, 2017). It is now time to focus on how to overcome the challenges they present through various regulations. One way is to follow the path of the US and bring the exchanges under existing laws pertaining to money transmitters and currency exchanges (Middlebrooke & Hughes, 2014). However, the downside to such a policy is that it regulates only those users converting their virtual currencies into fiat currencies or vice versa. Another suggestion for regulating these currencies is to give them asset backing through gold, silver or other valuable assets.

The founder of e-gold, a failed virtual currency, is making this attempt to revive the currency and make it more secure (Middlebrooke & Hughes, 2014; Foley, 2013). The currency was shut down in 2007 because of its involvement in illegal transactions (US Department of Justice, 2007). However, Dibbell (2002) establishes that an asset-backed virtual currency will not only help regulate it, but it will also be safer against pricing bubbles and market crashes. It is not only important to regulate the industry, but also to separate the different currencies based on their protocols. The need for this action arises because each of these brands emphasizes certain attributes, thus requiring specific attention (Middlebrooke & Hughes, 2014). Ideally, different currencies that support similar business models should adhere to different regulatory schemes.

One approach to regulating cryptocurrencies that was adopted by the US involves bringing them under the money transmission laws. In the case of e-gold, Section 1960 of the Constitution, pertaining to money transmitters, was used to indict the company. This section defines the need for money transmitters to obtain licenses for operating, whereby any form of funds can be transferred, not just cash. This has set a precedent that defines a money transmitting business as one that

includes all unconventional financial institutions (Middlebrooke & Hughes, 2014). There is pressure for greater transparency on the cryptocurrency exchanges to regulate them better. However, while these regulate the currency administrators and exchangers, users are not regulated under this law, creating a loophole. A more comprehensive approach to regulating these currencies would be to allow central banks to purchase bitcoins. Being finite in nature, these currencies could theoretically be eliminated if governments start mining cryptocurrencies and stop them from circulating. However, this approach does not ensure that other virtual currencies will not replace them (Marian, 2013).

Similar to the joint action taken to prevent tax evasion by the governments of the US, Switzerland, EU and OECD countries, there is a need for collaborative efforts. Without this, the treatment of violators may be inconsistent, preventing policies from being effective (He et al., 2016). Yves Mersch, an executive board member of the European Central Bank, has explained how some cryptocurrencies have no national base and are not centric to one country or region. He believes that, although cryptocurrencies are not widespread enough to cause major economic disruptions, they have had a social as well as psychological effect similar to that of a gold rush (Megaw, 2018). To resolve this, he suggests taking globalized action whereby central authorities enforce the reporting of transactions on unregulated platforms such that the banking authorities have access to this information and can take action where necessary.

In January 2018, there were several calls for cryptocurrency regulation, including statements by the French minister, Bruno Le Maire, Bundesbank member Joachim Wuermeling, and vice-president of the European Commission, Valdis Dombrovskis. However, no regulation has been finalized or announced yet. The regulation of these cryptocurrencies still occurs in some shape, although it is not formal. Lehdonvirta (2016) of the Alan Turing Institute at Oxford explains DLT and why the technology may have little effect on the economy as a whole even though it is considered “revolutionary”. He explains that third-party enforcement and governance exist in blockchain technology, particularly in the case of Bitcoin, except that the regulators are miners and programmers who have the ability not only to enforce rules but also to make those rules.

The lack of formal regulation, such as that by a banking authority, for such currencies means that the rules can be changed at any point in time, creating a bureaucracy of programmers who are free to change the rules as they please. Since the technology is not self-governed – and instead governed by a group of programmers – at the end of the day, there are still humans governing the process. Therefore, it is better to have formal structure in accordance with a legal system rather than a structure ruled over by a group of individuals without a unified goal.

In Asia, while Japan has been able to attract the cryptocurrency industry, with several crypto-exchanges and an increasing number of miners, the enthusiasm has been dampened due to Japanese exchanges being hacked: on 28 January 2018, this caused a loss of \$530 million. China, however, has banned ICOs as well as all cryptocurrency-related activity (including trading and mining) over the Internet, and strict sentences to violators. These regulatory restrictions have been imposed to prevent capital outflows from China. In January 2018, officials imposed regulation by preventing cryptocurrency trade through anonymous accounts. However, the lack of coordination between different regulatory authorities across countries presents a challenge.

Unlike other Asian countries, Singapore has shown support for cryptocurrencies, with deputy Prime Minister Tharman Shanmugaratnam saying that the country does not differentiate between fiat and digital currency. Moreover, the Monetary Authority of Singapore is working on Project Ubin under which various applications of blockchain technology are being researched. The motivation behind this project is to create a more efficient and low-cost alternative to monetary applications (Pollock, 2018). The government's support for the development of blockchain technologies has encouraged Singapore Airlines to develop a digital wallet that will help improve its loyalty program and make it more efficient by allowing members to register transactions through blockchain technology (Zhao, 2018). Local private sector banks are also making collaborative efforts to create a system to manage trading and logistical transactions between different parties (Gupta, 2018). Meanwhile, India has begun a crackdown against cryptocurrencies due to increased activity in the black market and illicit transactions pertaining to money laundering, terrorism and tax evasion.

Cryptocurrencies are also gaining popularity in Pakistan. Its first cryptocurrency, Pakcoin, was launched in 2015. Since 2009, payment systems have witnessed a great deal of innovation, including solutions such as Easypaisa. The popularity and growth of these systems suggests there is potential for the growth of cryptocurrencies in the country. In November 2017, the IMF chief advised Pakistan not to dismiss these virtual currencies because of consumer preferences (Husain, 2017). However, the State Bank of Pakistan (SBP) and Federal Board of Revenue have shut down the use of digital currencies in the economy. The SBP (2016) does not recognize any digital currency. A circular issued in April 2018 clearly states that the government does not support the trade of such currencies; rather, transactions involving such assets should be reported.⁷ The Federal Board of Revenue and Federal Investigation Agency have taken legal action against Pakcoin as well as globally recognized currencies such as OneCoin and Bitcoin (Khan, 2017), charging them with tax evasion and money laundering.

⁷ <http://www.sbp.org.pk/epd/2018/FEC3.htm>

It is, however, essential for the central bank to acknowledge that cryptocurrencies are a rapidly growing global phenomenon and that the National Financial Inclusion Strategy must start paying attention to such drastic global changes. Measures that the SBP could take to reduce the risks associated with these currencies is to classify ICOs and bring them under the regulation of the Securities and Exchange Commission of Pakistan (SECP) by categorizing them as Hacker and Thomale (2018) advise. They suggest making a clear distinction among types of currency, that is, assets commonly used for the exchange of goods, investment and utility tokens. Simply put, ICOs should be regulated as IPOs whereas tokens can be regulated as securities.

Two pathways for regulation could also be adopted to clarify these differences. The first is the disclosure of the characteristics of cryptocurrencies through prospectus regulation, which is governed by the SECP, and using these to obtain all the information necessary, which might otherwise be omitted, thus creating a safe, stable harbor for investors. The second regulatory track the SBP could adopt is to try to become part of an international convention for cryptocurrencies and strive for collective efforts with similar countries where implementation strategies need to be devised to centralize all regulatory efforts (Hacker & Thomale, 2018).

The SBP could also follow the example set by Poland where cryptocurrencies are now subject to different categories of contract law, including private or company law. Once specified that cryptocurrencies do not fall in the category of financial instruments and are not an alternative form of payment, but rather personal belongings, the revenues from cryptocurrencies – primarily capital gains – could be taxed as personal income (see Ruminski & Lichnowska, 2016). Taking such a step would help the government track how the public is using Bitcoin.

6. Going Beyond the Currency: Further Uses of DLT and Blockchain

The rise of cryptocurrencies has brought DLT and blockchain technology into the limelight. Around the world, these technologies are now being used to help improve people's lives. This section discusses different ways in which Pakistan could adopt and use this technology similar to other countries, with a view to improving governance and providing greater security and transparency in transactions.

As recent developments have shown, the application of this technology in the field of microfinance can help provide access to banking services and lead to greater financial inclusion (Baruri, 2016). Using digital accounts, lending transactions can take place on a platform backed by blockchain technology, which makes banking quicker and allows for lower banking costs, making it highly efficient and attractive for the unbanked in developing countries. Project Glass is one such blockchain startup that has the potential to grow because it will be able to reduce bank

transaction costs for small and medium enterprises (SMEs). Similarly, Moeda is gaining attention as a microfinance platform linking investors to businesses in different parts of Brazil; it has been able to raise over \$20 million in an ICO (Schiller, 2018). BC Finance, in collaboration with a Japanese software house, is developing and implementing a peer-to-peer service for borrowers in Myanmar (Gilmore, 2016).

While these efforts are being made by private individuals, governments, such as that of Singapore, have also shown an interest in developing blockchain solutions to bank the unbanked (Bermingham, 2017). Pakistan has seen great benefits due to the growth of microfinance banking. However, if such a system was made available to the unbanked, with lower lending and banking transaction costs, it could help boost the microfinance and SME sector beyond the capacity of traditional banking, thereby improving the quality of life and helping channel entrepreneurship in both rural and urban areas.

Another application of blockchains and DLT is the digital identification system (DIS), used across the world. With the increase in use of online accounts for different activities, there has been a significant increase in identity fraud, where people have lost personal information as well as great sums of money and other assets. What the DIS does is prevent third-party access to people's personal information while allowing them full access to all services, like regular users. Some companies are now ensuring personal data security by employing blockchain technology and using cryptographic hashes to authenticate users without the information leaving a person's device. This enables them to decentralize personal information, similar to an ID card: a user's identity is safe as long as his or her personal devices are secure (Chester, 2017).

The Pakistan government could use such a system as part of the National Database and Registration Authority and Verisys systems to ensure that people feel safe in a digital environment. This could also help in data integration, bringing together physical and intellectual assets, thereby increasing transparency and reducing red tape in the economy. Moreover, such a digital system would allow the government to keep track of individuals' assets, enabling it to better protect their rights.

Blockchain and DLT technology can also be used to help developing countries such as Pakistan develop and improve their democratic processes, such as voting. While digital voting systems are being used all over the world – Estonia is one of the pioneers that implemented the technology in 2005 – such systems can be risky. Given the high replacement cost of the technology and lack of trust in the process (Penn Wharton Public Policy Initiative, 2017), a more transparent, efficient and trustworthy system needs to be developed.

The application of DLT and blockchain technology could help do so, although very little attention is being paid to this application. In Pakistan, where the electoral process is heavily criticized for inefficiency and corruption, adopting such a system would not be as costly in the long run and would help improve the democratic process. The system would operate such that the Blockchain protocol is designed by the Election Commission of Pakistan, which would set rules for the electoral process. The system would be used to log in each citizen and verify his or her identity, after which the votes would be recorded and counted by a central authority (the Election Commission of Pakistan). This would help prevent illegitimate voters from voting and create greater transparency in the system (Boucher, 2016).

One problem that has had a spiraling effect on Pakistan's economy is its energy crisis. While its governments have tried to reduce the shortfall in supply, the crisis is far from being resolved. Incorporating blockchain technology has the potential to help eliminate the added costs and delays in payment that have created "circular debt". The peer-to-peer electricity sharing system was first used in New York in April 2016 through Bitcoin. At present, several different platforms are being developed to eliminate the intermediary in this transaction, such as Wien Energie in Austria, Innogy in Germany and Electron in Britain (Basden & Cottrell, 2017).

Similarly, land registry systems based on blockchain technology are now widely accepted and have been adopted by many countries. The UK has been testing the HM Land Registry and will soon make it fully functional, while Georgia has taken the lead by implementing its own system in February 2017, where it has registered over 100,000 documents. The Ukraine has entered into a partnership with a Blockchain provider to make its real estate sector more attractive to foreign investors by reducing corruption and fraud through a robust digital system (Osbourne Clarke, 2018).

The Government of Punjab digitized its land registry systems at the end of 2017 as an effort toward a more transparent system (World Bank, 2017). However, following the example set by countries such as the UK and Georgia, incorporating DLT in such a system could help improve it further and create a channel for the elimination of land mafias, helping enforce property rights. The Pakistani government should incorporate Blockchain technology as part of land reforms and partner with a Blockchain provider to implement a more effective land registry based on DLT and blockchain technology. This should be done for all parts of Pakistan, rural and urban, since it would improve the enforcement of property rights, reduce corruption and improve investor confidence.

Foreign aid is often lost at the hand of corrupt officials. According to UN Secretary General Ban Ki-moon, as much as 30% of development aid is lost to corruption. Using biometric data, systems can be designed to distribute all sorts of aid, especially food, to recipients, based on a blockchain system that records all transactions, making the system more transparent. This was implemented in 2017

when Syrian refugees in Jordan used retinal scans to pay for their food instead of money, which was done as part of the World Food Programme's aid. Pakistan could use a similar system for various aid distribution programs under international organizations such as UN as well as for local programs by government and private organizations (Bacchi, 2017).

7. Conclusion

In a rapidly growing digitized world, organizations need to keep up with the increased efficiency and productivity provided by highly advanced technologies. The increasing popularity of cryptocurrencies is an indicator of the inability of the global financial system to cater to people's needs and concerns, especially in the aftermath of the 2007 financial crisis. Technology has always preceded regulation, making regulatory options more complicated. There is therefore a need for regulators to meet this technological challenge and take a proactive approach to harnessing this complex modern technology.

The DLT adopted by cryptocurrencies has numerous uses that could reap multiple long-term benefits, especially for developing economies. The Blockchain market is predicted to grow from £160.5 million in 2016 to £1.7 billion by 2021 (Research and Markets, 2018) and it has the capacity to be used as a regulatory tool for achieving public policy goals. Regulators in Pakistan must recognize the importance of this technological breakthrough and join global efforts to regulate the riskier aspects of cryptocurrencies while adopting DLT and Blockchain for their numerous productive uses.

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16

Targeting efficiency and effectiveness of national cash transfers program: Lessons from BISP, Pakistan

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Abstract

This paper intends to review the design and implementation of BISP with reference to other renowned social safety nets in the world. Specifically, it reviews the selection and targeting methods of BISP. In this context, the paper reviews the impact of BISP cash transfers on poverty, health, education and livelihood using the available literature. This analysis provides the basis for future design and targeting methods to graduate the ultra-poor. The analysis mainly relies on the published literature on BISP and other cash transfers program implemented at different parts of the world.

1. Introduction

Recent decades have witnessed an exponential increase in cash transfers programs (CTP) to eradicate poverty across the global, especially in developing countries (WB, 2017). In line with the global trend, the government of Pakistan launched the National Cash Transfers Program (NCTP), namely Benazir Income Support Program (BISP) in 2008. The BISP was designed with an objective of consumption smoothening for the ultra-poor against negative economic shocks, including financial crises (Saleem, 2019). The long-term objectives include the eradication of extreme and chronic poverty, human capital development and women empowerment to achieve sustainable development goals (SDGs) (Afzal, Mirza, & Arshad, 2019; GoP, 2018). The BISP serves over 5.7 million ultra-poor families across Pakistan under the unconditional CTP. Over 2 million families are receiving grants for primary education under conditional CTP (Nawaz & Iqbal,

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2019). This makes BISP the largest social protection program not only in Pakistan, but also in South Asia (Watson, Lone, Qazi, Smith, & Rashid, 2017).¹

With the rapid increase in CTP around the world, the design and implementation issues have become major areas of discussion among the stakeholders (Handa et al., 2012). The success of any CTP depends on targeting method, enrollment procedure, payment disbursement mechanism and financial stability. Targeting is a mechanism to identify the eligible individuals and screening out the ineligible individuals to transfer resources such as cash grants, asset transfers and access to social services (Devereux et al., 2017). Right targeting, transparent enrollment, efficient and low-cost service delivery and long-term financial sustainability are the pre-requisites to deliver the desired objectives of poverty alleviation and social development. The design of program and method of implementation depends on social goals, institutional capabilities and financial resources (Hanna & Karlan, 2017). Right targeting ultimately helps to achieve the intended objectives of the CTP within given budget limits. Devereux et al. (2017) pointed out that right and transparent targeting of CTP is important to maximize their poverty reduction impacts, to make efficient use of limited public money and also attain the political objectives.

This paper intends to review the design and implementation of BISP with reference to other renowned social safety nets in the world. Specifically, it reviews the selection and targeting methods of BISP. It is important to know how well BISP is performing in terms of targeting the right group. The impact assessment of cash transfer programs has become an area of great interest to academics, policy makers and government institutions around the world. These evaluations seek to investigate the effects of these initiatives on poverty, education, health and productive assets. It is important to know whether BISP cash transfers are achieving their goal, consumption smoothening and human capital development. In this context, the paper reviews the impact of BISP cash transfers on poverty, health, education and livelihood using the available

¹ According to the World Bank, over 768 million people live below international poverty line of \$1.9 a day. While about 29.5% people live below the official poverty line in Pakistan. Pakistan also faces health poverty, education poverty and environmental poverty (Iqbal & Nawaz, 2017; Nawaz & Iqbal, 2016). Ending poverty in all forms and dimension by 2030 is the first goal of the Sustainable Development Goals (SDGs). Implementation of nationally adequate social protection system is the key proposed intervention to achieve “No Poverty” goal (Target 1.3 – Goal 1). Cash transfers programs are the key instruments of social protection. Cash transfers program (CTP) provide financial assistance to beneficiaries (generally poor households/families) to address poverty and meet other socio-economic needs. CTP may be divided into unconditional CTP and conditional CTP (Afzal et al., 2019). *Unconditional CTP* comprises the transfer of cash without imposing any condition on households. The UCT works to provide money directly to the vulnerable people. Under this program, there is no need of repaying the received amount and household can spend it without any condition by donors. On contrary, *Conditional CTP* is provided by imposing some behavioral conditions on households to receive help in child education and health outcomes, and human capital accumulation (Thompson, 2014; WB, 2017). Conditional CTP imposes condition to use transfer in human capital development among poor families (Parker & Todd, 2017). More than 77% countries have opted unconditional CTP while 42% have implemented conditional CTP.

literature. This analysis provides the basis for future design and targeting methods to graduate the ultra-poor. The analysis mainly relies on the published literature on BISP and other cash transfers program implemented at different parts of the world.

The rest of the paper is structured as follows: Section 2 gives a brief overview of programs run by the BISP. Section 3 reviews the targeting performance of BISP while section 4 presents the analysis on impact of BISP cash transfers on key socioeconomic indicators. The last section concludes the discussion with key implications and lessons for BISP management.

2. BISP: An Overview

BISP is an autonomous federal authority established through an Act of Parliament (Act No XVIII of 2010)² called Benazir Income Support Program Act, 2010. The BISP has a nationwide presence with headquarters in the capital and six regional offices in the provincial capitals, Azad Jammu & Kashmir (AJK) and Gilgit Baltistan (GB), 34 divisional offices and over 350 Tehsil offices all across the country. Currently, the BISP runs unconditional CTP and conditional CTP.

The unconditional CTP was initiated in 2008 with an objective to cushion the adverse impacts of the food, fuel and financial crisis. In the long run, the program aims to meet redistributive goals by providing a minimum income support package to the ultra-poor and those who are more likely to be affected negatively by economic shocks. Over 5.7 million families across Pakistan receive cash grant of Rs. 5,000 per family per quarter. The province and region wise distribution of beneficiaries is given in Table 1. Table 1 shows that 36% beneficiaries belong to Punjab, whereas 34% beneficiaries belong to Sindh followed by 20% beneficiaries from KPK and 4.2% beneficiaries from Balochistan.

Table 1: Regions and Province Wise Beneficiaries as of 30th June 2017

Province/Regions	No of Beneficiaries	Share in total
Punjab	2,072,781	35.9
Sindh	1,965,971	34.0
KPK	1,166,267	20.2
Balochistan	243,350	4.2
GB	48,551	0.8
AJ&K	106,202	1.8
FATA (now part of KPK)	161,010	2.8
ICT	10,125	0.2
Pakistan	5,774,257	100

Source: (GoP, 2017)

² http://bisp.gov.pk/wp-content/uploads/2016/10/BISP_ACT_2010.pdf

Apart from unconditional CTPs, the conditional CTPs are very common in the world³. The poor households are not generally inclined to invest in human capital. The conditions are imposed to ensure that recipient households invest in human capital development, improve their chances of employability and move out of poverty permanently. To develop human capital for a permanent exit from poverty in the long run, BISP initiated conditional CTP called Waseel-e-Taleem (WeT) to support primary education of 5-12 years children of BISP beneficiaries. Each beneficiary child receives a cash grant of Rs. 750 per quarter upon fulfilling the admission verification and attendance requirement of 70%. Under this program, so far, over 2 million children are enrolled in 50 districts across Pakistan with a ratio of 52% male and 48% female children and retention rate of 98% (GoP, 2017).

3. Targeting methods, coverage, efficiency and budget allocation

Targeted CTPs become a very common instrument for poverty reduction in the developing world, but identifying the poor can be a challenge, as governments often lack accurate data on incomes. The use of unreliable and wrong data to identify eligible families or individuals may result in the diversion of funds to wealthier families and leave less resources for the intended beneficiaries of the program. Aiming at the right beneficiary is the key to the success of any CTP. The targeting of BISP beneficiaries has gone through two main transition phases since 2008.

3.1. Targeting Phases

In the initial phase (2008-11), no reliable data was available with BISP to identify the target group. The task of identification of potential beneficiaries was assigned to parliamentarians. The elected parliamentarians selected the beneficiaries based on community assessment. Out of the total 4.2 million received forms, 2.2 million families were found eligible for the unconditional CTP.

The initial phase of targeting had its flaws, as it was based on perception i.e. community assessment and it was difficult for everyone to access and request for the program. The transformation of BISP into a modern safety net system with a less subjective and more scientific targeting mechanism was also recognized by the stakeholders and development partners. In the search for international best practices, the government has decided to implement reforms by improving the targeting process and giving everyone equal opportunities to apply for the

³ Few successful programs in the world are: i) Oportunidades/ PROGRESSA in Mexico; ii) Bolsa Escola and Bolsa Familia in Brazil; iii) Food for Education in Bangladesh; & iv) Program of Advancement through Health and Education in Jamaica.

program. The goal was to make targeting for the poorest of society more objective and transparent.

In 2010-11 (the second phase), the BISP adopted the "Poverty Scorecard" to identify the poorest. The National Poverty Scorecard Survey, namely the National Socioeconomic Registry (NSER), the first of its kind in South Asia, allowed the BISP to scientifically identify suitable families. Over 27 million households were covered by NSER, which constituted 150.5 million people across the country⁴. The estimated population in 2010 was 177.94 million, which implies that the coverage of this survey is around 85%. Area wise coverage statistics show that 14.88 million households were covered in the Punjab, 6.6 million households were covered in Sindh, 3.6 million in KPK and 1.1 million in Balochistan (Table 2).

Table 2: Area Wise Coverage under Poverty Scorecard Survey (million)

Province	HHs Covered	Estimated Population	Population Covered	Population Covered (%)
Punjab	14.88	94.36	81.18	86.26
Sindh	6.60	38.92	34.29	88.11
KPK	3.64	26.93	21.30	79.09
Baluchistan	1.10	7.62	6.05	79.40
AJK	0.58	3.87	3.54	88.53
GB	0.15	1.27	1.13	89.44
FATA	0.40	3.69	3.06	82.95
Total	27.35	177.94	150.55	84.61

Source: (GoP, 2017)

3.2. Identification of Eligible Households and Eligibility Criteria

After obtaining reliable data, the next task is to define eligibility using the scientific approach. The BISP selects beneficiary households using the Proxy Means Test (PMT) method which is widely considered to be the most reliable way to gauge poverty, particularly in countries with large informal sectors where incomes are difficult to verify⁵. The BISP uses the Household Integrated Economic Survey (HIES) 2007-08 to design the PMT formula. The household

⁴ For further details on NSER and various targeting method, see <http://bisp.gov.pk/cash-grant/#objective946d-4435>

⁵ A PMT model is a statistical method used to predict the per capita income of a household based on observable characteristics that correlate with income, but are easier to measure, than income. PMT is one of the best methods to identify target groups compared to others such as community-based targeting because it relies on measures of consumption and assets (Alatas, Banerjee, Hanna, Olken, & Tobias, 2012). Other advantages of PMT include: i) simplicity and cost-effectiveness in obtaining a reliable measure of households' poverty and ii) transparency, objectivity, and verifiability – since the formula is based on easy to observe, measure, and verify indicators, and the weights are estimated using a statistical model that limits human subjectivity.

poverty score based on household's demographic characteristics, assets and other measurable socio-economic characteristics, was created by applying the PMT. The poverty score is between 0 and 100 (Afzal et al., 2019). With this formula, 7.7 million families were identified as eligible with a score less than 16.17. The choice of cutoff score is determined based on the available financial resources and stipend amount. All ever-married women with a valid Computerized National Identity Card (CNIC) in an eligible household have become beneficiaries. In addition, these women must get themselves registered in the local offices of the BISP to be beneficiaries of the UCT program.

In the latter, keeping in view the financial space, an appeal was introduced and cut-off score for appeal was set up to 20 for households which fulfilled any of the following four parameters: i) presence of senior citizen in household with age 65 years or above; ii) presence of four or more children between ages 5 to 12 years; iii) presence of one disabled/differently abled family member and iv) household size 3 or less. Presence of any one or more above mentioned parameters declares the household eligible, and an ever-married woman with a valid CNIC in that household becomes a BISP beneficiary. The appeal cut-off was enhanced to up to a PMT score 25 for households with the presence of more than one disabled member as it adds more towards the vulnerability of the surveyed household.

3.3. Coverage

Coverage represents the %age of the total population that benefited from the BISP and how this %age has changed over time. Social safety nets (SSN) programs cover 33% population in Sri Lanka, about 29.7% in India, 17.8% in Bangladesh and only 16.8% in Pakistan. In terms of the coverage of the poorest quintile, Sri Lanka covers 48% followed by India 30.4%, Bangladesh 25.5% and Pakistan 21.2%. Coverage of the extreme poor (< \$ 1.9 PPP a day), Sri Lanka cover more than half of the population followed by India about 31%, 26% in Bangladesh and 19% in Pakistan. SSN programs in Pakistan cover one fifth of the total population. In lower middle and low-income countries, average coverage rate of the SSN program is 54 and 19 % of the poorest quintile, respectively. In terms of coverage of the poorest quintile the Pakistan performance is far below than that of lower income countries. In terms of the coverage of the total population, the poorest quintile, and extreme poor, Pakistan lags behind as compared to other countries in the region⁶.

⁶ See appendix figure 1

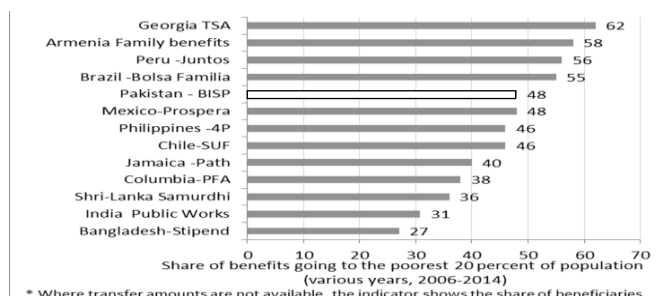
3.4. Beneficiary Incidence

The analysis of beneficiary incidence by SSN instrument for four countries shows the existence of a pro-poor program in each country⁷. Beneficiary incidence in the poorest quintile is highest for Sri Lanka and the least for India. Beneficiary incidence is 29.2 %% for the poorest quintile and 22.9 %% for the second poorest quintile in Sri Lanka. In Bangladesh beneficiary incidence is 28.7 %% for the poorest quintile and 23 %% for the second poorest quintile. In Pakistan and India, beneficiary incidence is 25.3 and 20.5 for the poorest quintile, respectively and 18.9 %% and 20 %% for the second poorest quintile (See Appendix Figure 2). One fourth of the cash transfer under UCT goes to the poorest quintile. On the other hand, in Bangladesh about 13 %% cash transfer under UCT goes to the richest quintile of the population, in Sri Lanka 14 %% , in Pakistan 20 %% and in India 21.5 %%.

3.5. Targeting Performance

The targeting performance of the BISP is among the top five SSN programs in the world. About 48% of the BISP beneficiaries come from the poorest quintile, bottom 20% (Figure 1). The BISP targeting performance compares well with similar programs, including Brazil Bolsa Familia, Mexico Prospera (formerly Oportunidades) and Philippines 4P. Several studies show that the benefits of the BISP are mainly intended for the three poorest quintiles and that the per capita income of the beneficiaries is much lower than that of the non-beneficiaries. Overall targeting shows that 84% of the benefits of the program go to the three poorest quintiles (Saleem, 2019).

Figure1: Targeting Performance Comparison



Source: ECA SP Performance Indicators, State of Social Safety Nets 2015, World Bank.

⁷ Beneficiary incidence captures the proportion of cash transfer that the poorest quintile receives as a %age of total transfer. Beneficiary incidence shows to what extent a given population group benefits from SSN intervention. This indicator ensures that the impact of the intervention on poverty reduction with a given budget. In case the beneficiary incidence indicator is greater than 20 %% , the distribution tends to be pro-poor or progressive, and otherwise the distribution is regressive (WB, 2018).

3.6. Exclusion and inclusion errors

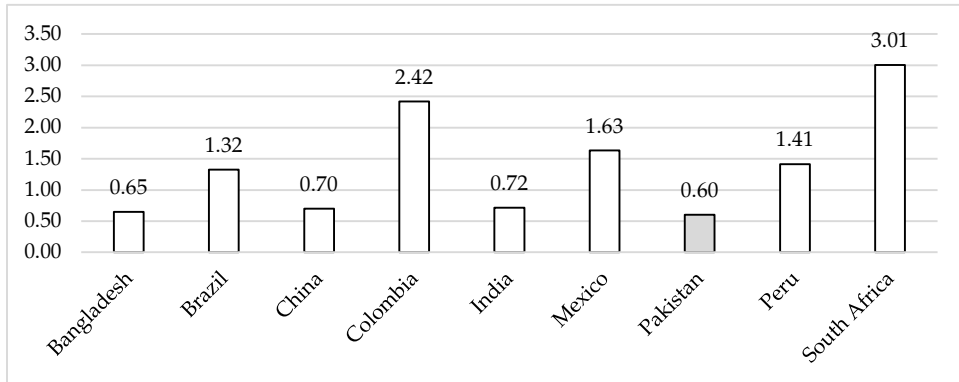
Various studies have evaluated the targeting efficiency of BISP using the exclusion and inclusion errors method⁸. The World Bank found that the PMT methodology used by the BISP to identify eligible households for cash transfers program would produce 52.1% exclusion error while 37.1% inclusion errors (Sajid, Arif, & Yasin, 2019; Vishwanath & Yoshida, 2009). Recently, Jalal (2017), using impact assessment data, found that BISP has a 52.6% rate of under coverage i.e. exclusion errors while it has a 73.6% rate of over-coverage i.e. inclusion errors. The design of the program would be the likely reason of exclusion and inclusion errors. Given the budget limitation, the BISP cannot include everyone under the poverty line and must fix a threshold that will inevitably exclude households that are poor or are vulnerable to poverty (Jalal, 2017). The literature shows that inclusion and exclusion errors range between 44 and 55 %% when the bottom 20 %% of the population is covered while it ranges between 57 and 71 %% when 10 %% of the population is covered (Kidd, Gelders, & Bailey-Athias, 2017). These errors occur due to various reasons including; i) weak correlation between household consumption and multiple proxies; ii) errors in household survey and iii) problem in verification of the actual value of proxies (Devereux et al., 2017).

3.7. Budget allocation

Allocation of the budget as a % of GDP is the main indicator used to analyze the availability of resources for social safety nets programs. Developing countries spend an average of 1.5% of GDP on SSN programs (WB, 2018). Despite a substantial increase in the budget from Rs. 75 billion in 2013-14 to Rs. 121 billion in 2017-18, the allocation of resources as a % of GDP is only 0.6% which is very low as compared to other developing countries (Figure 2). This allocation is significantly low as compared to other low or low-middle income countries. Low-income and lower-middle-income countries spend on average between 1.3% and 1.5% of GDP, whereas high-income countries spend on average 1.9% of their GDP. Country wise analysis shows that government spending is high in Bangladesh (0.65% of GDP) and India (0.72% of GDP) compared to Pakistan. South Africa has the highest spending on SSN (3% of GDP).

⁸ To assess the targeting efficiency of CTP, the literature has suggested to measure inclusion and exclusion errors. Exclusion error is the number of poor excluded from the program while inclusion error is the number of non-poor who are included in the program. Targeting efficiency means the ability of targeting to minimize both exclusion and inclusion errors (Sajid et al., 2019).

Figure 2: Government spending as % of GDP



Source: ASPIRE

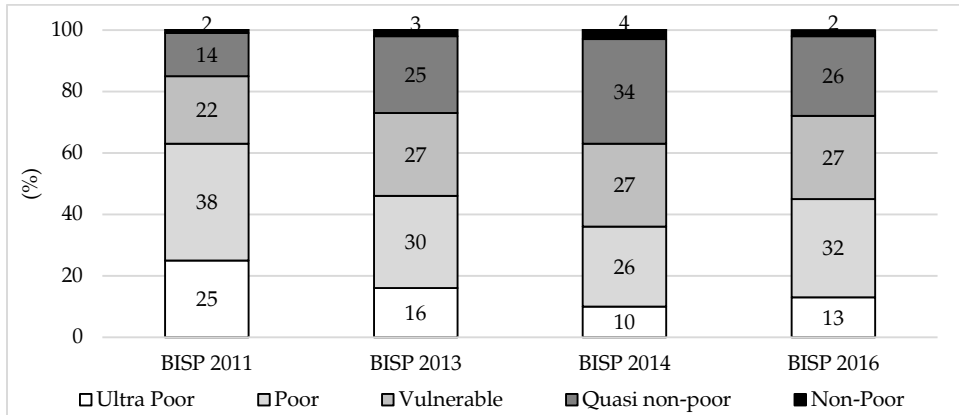
4. Impact Assessment of BISP

Impact assessment is a common feature of any social safety net program in the world. The BISP has conducted rigorous impact assessments to determine the effectiveness of the program in achieving its general objectives. The theory of change supports the short and long run goals of the BISP. In the short run, the BISP supports basic the consumption requirements and protects families from fluctuating prices of basic consumable goods. In the long run, BISP payments allow beneficiary families at their discretion to make "desirable" investments in nutrition, health, education, productive assets, among others. In turn, these investments in human and physical capital should help poor families out of poverty. This section deals with the main expected and secondary impacts of the BISP.

4.1. Consumption smoothening and poverty reduction

The BISP was designed with the core objective of consumption smoothening in the short run and eradication of extreme and chronic poverty in the long run. The evidence shows that BISP has a significant impact on the monthly consumption expenditure of beneficiary households. The UCT program results in an increase of Rs. 187 per adult equivalent monthly consumption expenditure amongst beneficiary households (GoP, 2018). The BISP has a significant impact on poverty alleviation in Pakistan. BISP reduces the poverty rate by 7 %age points based on FEI poverty line. BISP beneficiaries are characterized by high levels of poverty, with 84% of beneficiaries are poor or vulnerable to poverty. This ratio has fallen to 72% in 2016 due to BISP interventions (Figure 3).

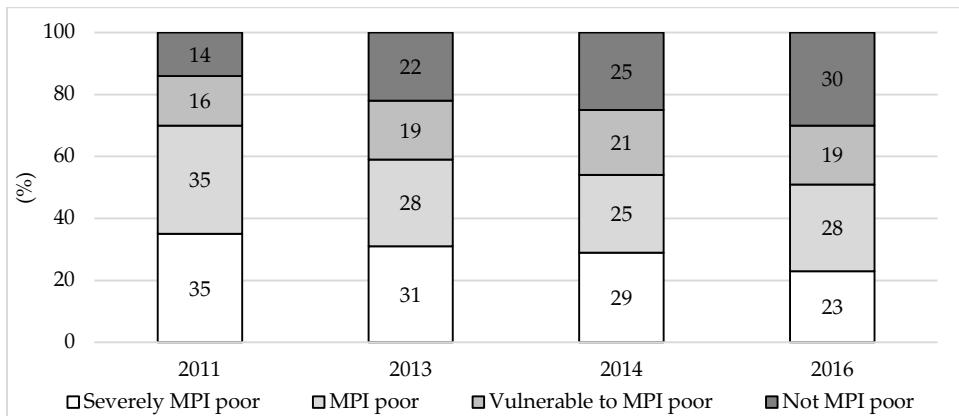
Figure 3: Poverty rates of BISP beneficiaries



Source: BISP Impact Evaluation Survey 2011 2013 2014 2016.

This implies that the BISP has a significant impact on poverty. MPI is also used to examine the impact of BISP on poverty. Figure 4 shows that MPI poor have been falling from 70% in 2011 to 51% in 2016 among BISP beneficiary households. Severely MPI poor have decreased from 35% in 2011 to 23% in 2016 (GoP, 2018). These outcomes are in line with the existing literature. Devereux (2002) shows that cash transfers significantly contributed in poverty reduction in southern African countries. Hall (2008) claims that Bolsa Familia programme effectively reduce income inequality in Barzile.

Figure 4: Proportion of BISP beneficiary households multi-dimensionally poor

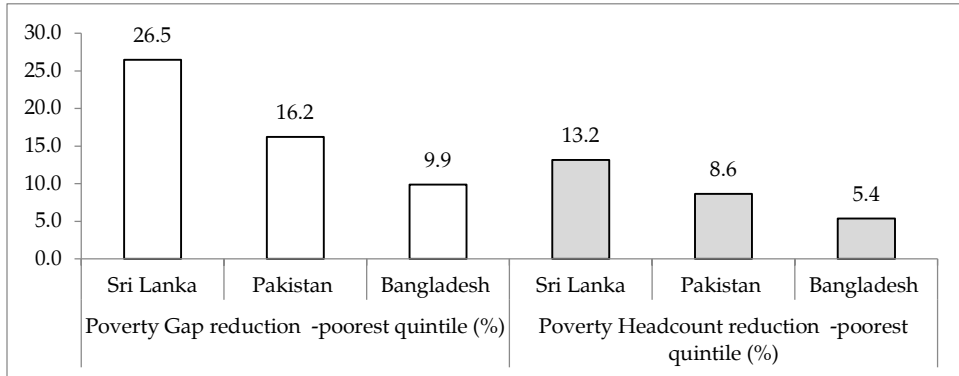


Source: (GoP, 2018).

According to the ASPIRE database, the impact of all social safety nets programs on poverty headcount reduction is 8 % on average across 105 countries

implying SSN cash transfers reduce the poverty headcount rate by 8 % on average. Analysis of the countries included in our study, show that the poverty reducing impact of SSN intervention is higher in Sri Lanka (13.2 %) than Pakistan (8.6 %) and Bangladesh (5.4 %). The SSN impact on reducing the poverty gap is 26.5 % in Sri Lanka, 16.2 % in Pakistan and 9.9 % in Bangladesh (Figure 5).

Figure 5: Impact on Poverty Reduction of SSN Programs in Bangladesh, Pakistan and Sri Lanka



Source: ASPIRE.

Recently Nawaz and Iqbal (2019) investigated the impact of BISP cash transfers on fuel consumption patterns using the impact assessment data collected by Oxford Policy Management (OPM). This study shows that BISP cash transfers have a positive and significant impact on overall fuel consumption and on the share of fuel consumption among beneficiaries. The study concluded that “the significance (significant?) association between economic well-being and fuel consumption among the poorest segments of society requires inclusive economic and energy policies for sustainable development. Therefore, this group should not be excluded in the design of energy policies, especially future energy demand” (Iqbal & Nawaz, 2019). A recent study measures the impact of BISP cash transfers on food seeking behavior as measured by food diversity, quality and access. The study demonstrates positive and significant impacts of the program on food diversity, calorie intake, food stability, and the composite food security index. Moreover, BISP cash transfers increase the access of quality food groups such as meat, fish, and fruits among beneficiaries in the long run (Mustafa, Iqbal, & Rehman, 2019).

4.2. Impact on health and education

The BISP has reduced malnutrition rates among girls (0 to 59 months of age) measured by wasting, a measure of short-term malnutrition. The empirical

evidence reveals that BISP cash transfers are leading to an increase in per adult equivalent monthly food consumption (Rs. 69), driven by high quality proteins that can result in significant improvements in diet quality. The unconditional CTP of BISP does not increase the percentage of beneficiary children who attend school, although conditional CTP of the BISP has a significant impact on children's enrollment (GoP, 2018).

4.3. Women's empowerment

The BISP has continued to influence a change in the way women are seen at home and in the community. Most female beneficiaries stress that they now receive high status within the home as a direct result of the BISP. Around 64% of the beneficiary women claim to maintain control over the transfer of money, in terms of how the transfer is spent. This result seems to be maintained regardless of whether the beneficiary actually collects the transfer (GoP, 2018). Ambler & de Brauw (2017) show that women's empowerment, measured through decision-making, travelling away from home, visiting the market, the use of cash transfers and participation in the local community welfare organizations, has increased among the beneficiaries (Ambler & de Brauw, 2017). The impact assessment reports show that participation in voting has increased substantially among women in the program (GoP, 2018).

4.4. Livelihoods

The BISP has contributed to a significant reduction in the dependence of families on casual labor as the main source of income. The BISP has reduced the percentage of men of working age engaged in casual labor jobs, but the percentage of men who are self-employed has increased. This indicates that BISP could support the adoption of less vulnerable livelihood strategies. The BISP has resulted in a reduction in the percentage of women performing unpaid family work. Another study shows that BISP has an insignificant impact on the change in female labor supply, while there is strong evidence in favor of an increase in the supply of male labor (Ambler & de Brauw, 2019).

5. Conclusion

This paper reviewed the targeting performance and impact assessment of the BISP cash transfer program in Pakistan. The BISP cash transfer has had a visible impact on consumption smoothing, increasing education, health and on poverty reduction. We analyze the performance of the BISP intervention and make a comparison with other countries in the region. Key findings of the study can be summarized as follow:

- a) Budget allocation for BSIP is significantly low as compared to other low or low-middle income countries.
- b) In terms of coverage of poorest quintile, the Pakistan performance is far below that of lower income countries. In terms of coverage of total population, the poorest quintile, and extreme poor, Pakistan lags behind as compared to other countries in the region.
- c) The poverty reduction impact of SSN intervention in Pakistan is 8.6 % and the impact on reducing the poverty gap is 16.2 %. Pakistan's position is better than Bangladesh but worse than Sri Lanka.
- d) One fourth of the cash transfer under UCT goes to the poorest quintile in Pakistan. The Pakistan performance is better than India but worse than Sri Lanka and Bangladesh.

It is an internationally acceptable phenomenon that the socio-economic condition and demographic composition of population change over five years. Due to the static nature of NSER 2010-11, the information regarding the socio-economic condition and composition of demographic transition has not been updated after the survey. Therefore, it is important for BISP management to update the registry for accurate targeting based on updated information. The update of NSER has been completed in ten districts and the national roll out of NSER has been launched. The BISP management should update the registry on a priority basis to overcome leakages due to inclusion and exclusion errors.

The major challenges that face Pakistan is the development of a welfare system regarding the social protection program. Limited financial resources and political will are the major constraints to investment in social protection programs. There is a need to devote the resources for social protection programs and develop a well-designed and effective welfare system in the country.

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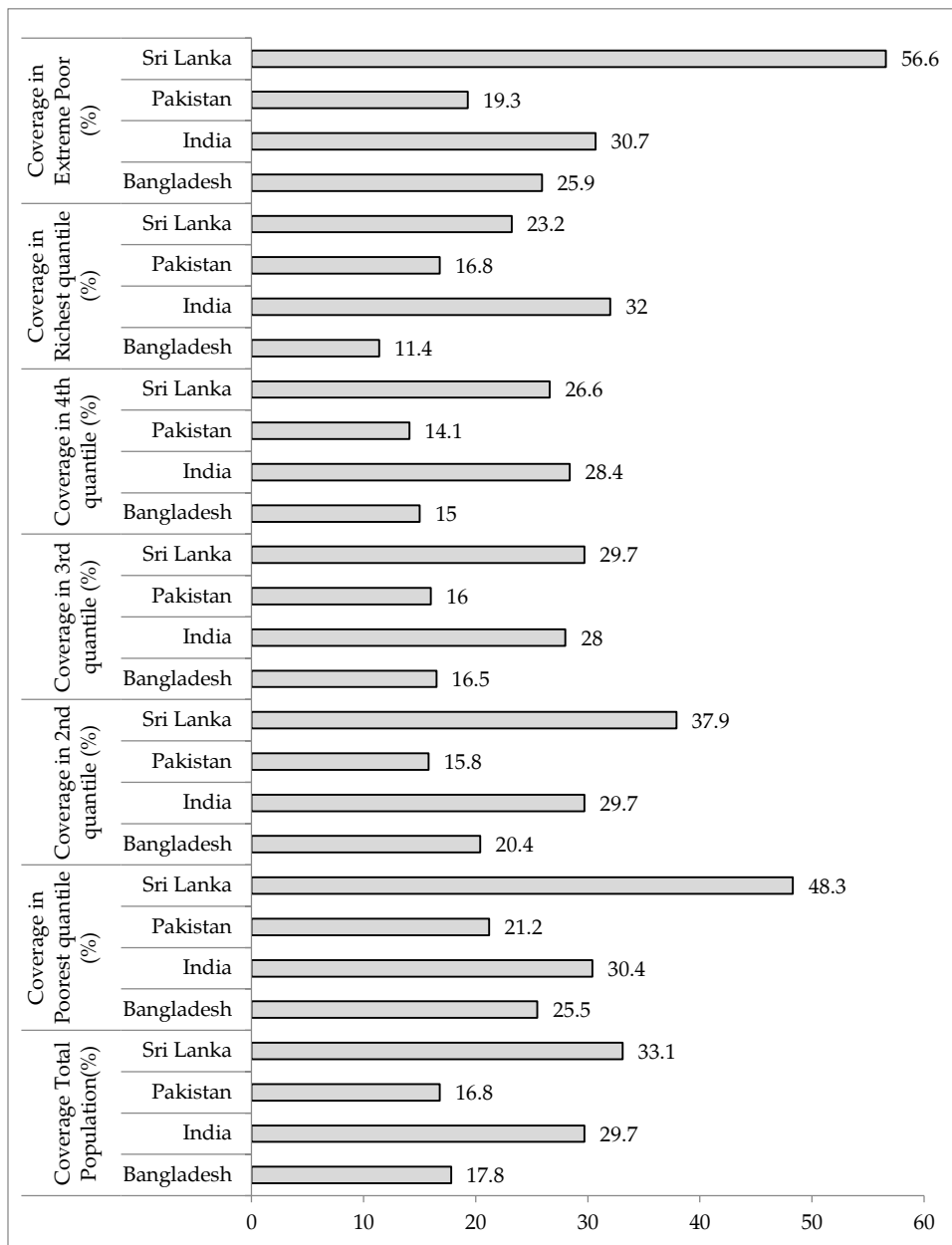
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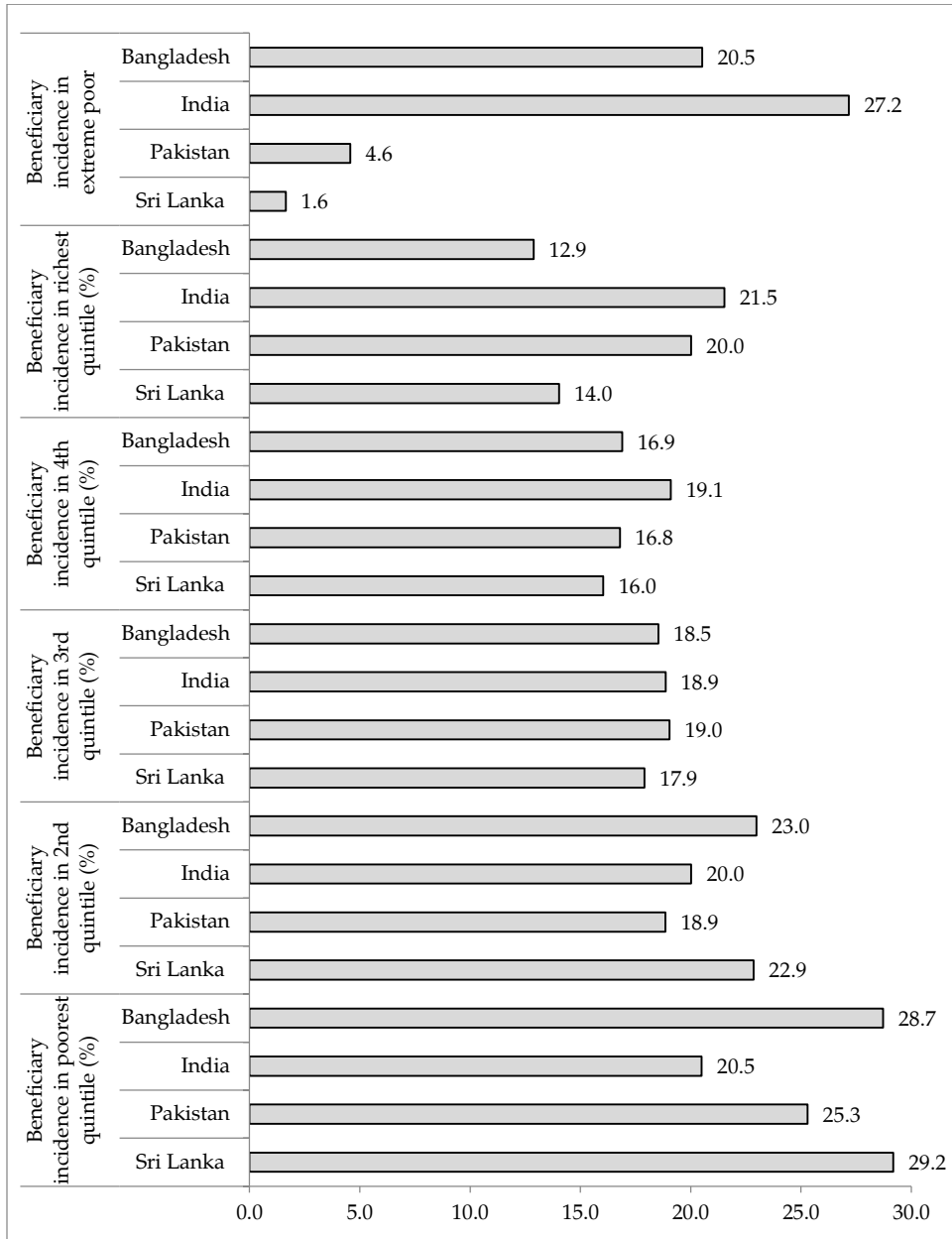
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Appendix 1: Coverage of Social Protection Program



Source: ASPIRE database.

Appendix 2: Targeting accuracy of SSN program in Bangladesh, Pakistan and India



Source: ASPIRE database.

17

Pakistan Energy Sector Overview and Challenges

Daud Ahmad*

Abstract

Energy has been and continues to be a major constraint in Pakistan's economic development for the past couple of decades. The energy sector¹ shortages and the cost to the country's economy have been huge. This paper presents a brief history of the developments of the energy sector since independence in terms of national policies, institutional reforms/changes and current governance structure, physical capacities - production, transmission and distribution, financial arrangements, etc. The energy production modal mix variations the shift to private power production, the resulting financial implications (energy costs, circular debt, subsidies), and major re-haul of the energy sector institutional set-up (un-bundling) of WAPDA, with the support of multilateral organizations is reported. The paper also takes stock of the current situation – the ongoing power shortages despite the addition of significant new generation capacity, continuing circular debt and high cost of energy to the consumers. The potential impact of CPEC energy investments is also discussed. The current Energy Sector Issues / challenges are summarized, along with a possible framework for addressing those. Recommendations on technical, financial and governance (issues) will be tabled as a way forward.

Background

At the time of independence in 1947 Pakistan had installed power generating capacity of only 60 MW, which increased to 119 MW by the late 50's. In 1959 the Water and Power Development Authority (WAPDA) was established to develop and manage the water and power resources in Pakistan, except in the Karachi area, which was being served by the Karachi Electric Service Company (KESC), a company established well before partition. WAPDA was given a huge mandate

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¹ Energy Sector composition for this paper is limited to electric power generation from various sources – hydro, thermal, nuclear, solar and wind etc.

for the generation, transmission and distribution of power along with irrigation, drainage and flood control etc. During the 1960s and 70s, WAPDA undertook major hydro power and irrigation projects under the Indus Basin Treaty Program in which large Mangla and Tarbela dams and an integrated network of link canals were constructed. The power generation capacity reached 6,500 MW towards the end of the 1970s. Pakistan entered the nuclear energy production arena in the 1970s with the commissioning of the first nuclear power station in Karachi. A second nuclear power station was commissioned at Chasma in two phases during the 2000s. The average annual growth in power generation during: 1990-99, 2000-09 and 2010-15 was 8.5%; 2.75% and 5.6% respectively, when the average annual growth in demand was well over 8%.

The Indus Basin Project envisaged a follow-up dam construction to meet the growing power and water needs. Kalabagh Dam, located in Mianwali District, Punjab, was deemed as the best next optimal project. However, the politics of the late 70s and inter-provincial mistrust and rivalries derailed this project. Progress in enhancing the hydel power generating capacity was thus stalled, which affected the overall generation capacity. On the other hand, with growing population and industries, power demand kept increasing. Pakistan started to face serious power shortages in the late 1980s when demand exceeded supply by 2,000 MW. Since then power shortages have become a serious, chronic problem hampering Pakistan's socio economic growth.

Unable to pursue the hydro power route, the subsequent political governments opted for alternative power generation sources -- thermal and renewable energy, mainly through private sector investments. A large number of natural gas plants were installed in the late 90s and early 2000s. Subsequent shortages in the supply of Sui Gas affected this mode of production. Pakistan then started to look for imported fuels for energy generation. The Pakistan Muslim League (PML-N) governments generally favored coal and imported gas projects, while the Pakistan People Party (PPP) governments favored imported oil fuel. They also tried the rental power plants, which did not work. In the beginning of 1995, a major shift in the energy generation mix between hydel and thermal from about 50/50 to the current 30/ 60 occurred, resulting in much higher production costs, fossil fuel imports and government subsidies.

In the last 20 years or so substantial new power generation capacity has been added in the country. According to the Ministry of Water and Power web site, the total installed production capacity in the mid-2018 was 28,704 MW². Wikipedia³ data puts this number at 33,836 MW. The current power demand is estimated at about 17,000 MW. Actual power availability during December 2018 was reported

² MoWP web site.

³ List of Power stations in Pakistan – Wikipedia, March 2109 data.

as 14,500 MW. The country is thus still facing power shortages and load shedding. This paper will attempt to analyze the underlying weaknesses of the power sector in Pakistan and possible ways to address those.

National Power Sector Policy Development

The energy policy of a country is formulated in order to address the issues of energy production, distribution and consumption. It should cover areas such as: proper legislation, international treaties, subsidies and incentives for investments, guidance for energy conservation, taxation and other public policy matters. Over the years, governments in Pakistan have issued various policy documents⁴ to resolve the energy issues. Yet, one cannot say that Pakistan today has a clear and comprehensive national energy policy in place.

In the 1960s, the focus was on the production of electricity through hydroelectric dams and thermal power stations. In the following two decades, nuclear sources were also initiated. In the late 1980s, the PPP government undertook a major initiative to attract private funding for power generation through a Build Own and Operate (BOO) framework. Over the years, Pakistani agencies worked hard to put in place a comprehensive framework for the development of power through Independent Power Producers (IPPs). The Hub Power Station (HUBCO) in Balochistan was the first such experiment to materialize, and this started operating in 1993 with production capacity of 1290 MW and tariff based on “cost plus” basis.

In 1994, the PPP Government formulated a power policy under which for the first time independent power producers (IPPs) were asked to invest in power generation. It issued 70 Memoranda of Understanding (MOUs) and Letters of Intent (LOIs) to IPPs. The Government offered attractive incentives to the investors, including selling their power to WAPDA and KESC through Power Purchase Agreements (PPAs). This 1994 energy policy initiated a major shift in the energy generation mix towards thermal energy. By 1995, nearly 27 IPPs were able to generate 6,335 MW of electricity. Controversially, this energy policy depended less on renewable energy sources and more on imported fuels, which began a big shift in the energy mix. By 1998, Pakistan had surplus power generation capacity. WAPDA and KESC could not purchase expensive power from the IPPs. The PPAs resulted in disputes and litigation over power rates and fuel prices; these were later resolved with the help of international donors.

⁴ 1994; PPP Government; Hydro Power policy, 1995.; Policy for Development of Renewable Energy for Power Generation 2006; Energy Policy 2005; Musharraf Government; Energy Policy 2010; PPP Government; Energy Policy 2013; PMLN Government; Power Generation Policy, 2015; PMLN; Transmission Line Policy, 2015; PMLN etc.

The subsequent PML-N government tried to reduce dependence on furnace oils by focusing on coal and local gas. The Musharraf Government, while contributing to the growth of domestic demand for electricity through the large-scale provision of bank loans for the purchase of air-conditioners and home appliances, did not add much new capacity to the energy system. Former prime minister Shaukat Aziz in 2005 came up with a 'long-term energy security program' with focus on the development of the power infrastructure and privatization of the energy sector. This initiative did not result in much. The Energy Policy 2010, announced by P.M Gilani, aimed to privatize the energy sector, and conserve energy through a ban on neon lights and signs, extension of a two-day weekend, etc. The PPP Government also tried to use 'rental power plants'⁵ as an emergency measure to boost power production, an undertaking which was not successful. The PPP initiatives failed to resolve the energy shortages and forced the Government to shift its focus towards nationalized energy sectors and the regulation of corporations of energy production.

The Energy Policy 2013⁶, issued by the PML-N government, had two major goals: reducing Pakistan's power shortfall from about 5000 MW to zero by 2017 and enhancing the energy mix by incorporating renewable energy sources. This comprehensive document articulates a vision for the power sector, emphasizing its key challenges, setting major goals, summarizing policy principles, and highlighting the strategies for the supply, demand, generation, transmission, distribution and sector financing. Overall, it was a good policy document. The energy sector received prominence during the last PML-N government and a substantial investment boost through the China Pakistan Economic Corridor (CPEC) program. Significant new generation capacity was added. Yet only marginal progress in resolving the fundamental energy issues took place, mainly because the Government was focusing mostly on short term capacity enhancement.

The incumbent PTI government faces an enormous challenge in ensuring the generation of inexpensive and affordable electricity for domestic, commercial and industrial uses; improving transmission and distribution and minimizing pilferage etc. Prime Minister Imran Khan has recently directed the concerned authorities to finalize the policy on renewable energy and has underscored the need for improved coordination between the relevant departments. The new energy policy from the PTI government was expected to be issued in May 2109.

⁵ The PP Government in the late 2000's was at different stages of processing purchase from 19 rental plants for a total capacity of 2734 MW. The plan was much criticized and fizzled out soon.

⁶ National Power Policy 2013, Government of Pakistan, MoWP.

Power Sector Institutional/ Governance Framework

Power Sector Re-Structuring. Until 1998, the power sector in Pakistan was handled by two vertically integrated agencies: WAPDA (handling all aspects of water and power development) and KESC providing power in the Karachi area. WAPDA was perceived to have grown into a far too large and non-sustainable entity. During the 1990s, the World Bank (WB) and the Asian Development Bank (ADB) pushed for a major initiative to restructure Pakistan's power sector with the objective of privatization/ corporatization. In 1992, the World Bank supported WAPDA's *Strategic Plan* was approved, which envisaged: i) The reorganization/ corporatization of WAPDA into a holding company with decentralized power generation, transmission and distribution subsidiaries operating as discrete profit centers; ii) The establishment of a national regulatory authority to set standards and regulate a gradually privately-operated power sector; iii) The adoption of pricing policy to support the restructuring and privatization objectives; iv) The development of a supporting manpower plan, and v) Initial offering for sale of parts of WAPDA's assets to the private sector. The plan was to be implemented in phases during FYs 95-98. The ADB followed this effort with an Energy Sector Restructuring Program in 1998 to improve energy sector governance, enhance reforms and privatization, etc. Only partial implementation on these programs was possible.

WAPDA's thermal generation, transmission and distribution functions were reorganized into 12 companies – 3 generation companies (GENCOs); 8 distribution companies (DISCOs)⁷ and one National Transmission and Dispatch Company (NTDC). The non-hydro generation portfolio of WAPDA was transferred to a "holding company" for privatization, which to date has not happened. Pakistan has had limited success in the privatization of existing facilities - - Kot Addu, a 1,600 MW plant in Punjab, was privatized in 1996 and KESC was privatized in 2005. Subsequent new power generation was mostly financed by the private sector. The transmission and distribution parts have been "corporatized", with substantial government control. These companies now operate under the umbrella of the Pakistan Electric Power Company (PEPCO). The National Electric Power Regulatory Authority (NEPRA) was established in 1997 as the sector regulator. The main outcome of this program was the mushrooming of IPPs (now nearly 50) and the addition of nearly 14,000 MW of generation capacity through private investments. The operational efficiency and cost effectiveness of these undertakings is a separate issue, discussed later.

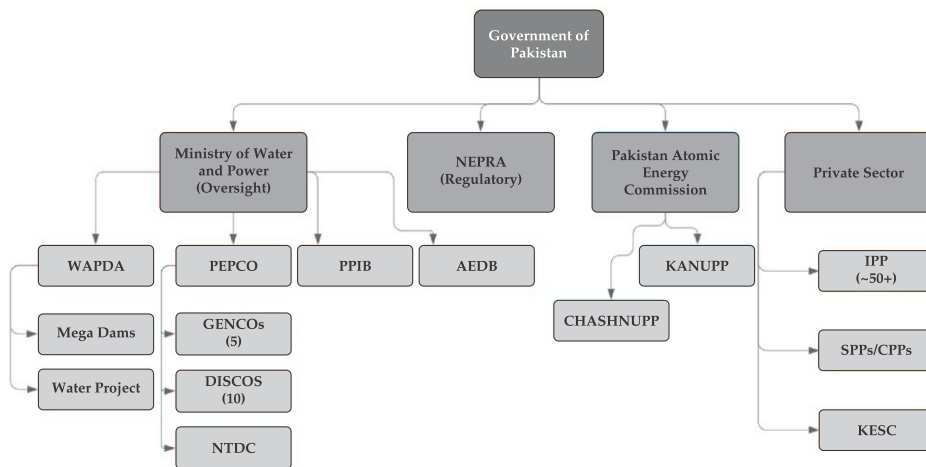
The WB and ADB power sector restructuring programs did not achieve the broader objectives of a rational energy sector meeting power demands with reliability and affordable prices. ADB's own evaluation rated the outcome of their

⁷ More companies were added later, now it is 5 GENCOs and 10 DISCOs.

program as less than satisfactory and effective. A key lesson from these is that unbundling (?) alone is not sufficient, privatization must lead to improvements in operational efficiencies, which has not been the case in Pakistan. This reflects a failure on the part of the oversight and regulatory entities, which failed to ensure rational/ cost effective addition to the power generation capacity. It may be a case of doing the right things, but not doing those right.(?) The stalled WAPDA corporatization plan has resulted in a situation where new power generation is mostly private with high production cost and low operational efficiencies; the rest of the power sector - - regulation, transmission, distribution etc. is in a pseudo “corporate mode”, agencies mostly under government control. This has resulted in weak governance of the sector and financial situation.

The current organization structure of Pakistan’s power sector at the national level is shown below; a brief description of entity functions follows.

Exhibit 1: Organization Chart of Pakistan Power Sector



Source: Government of Pakistan.

Ministry of Water and Power (MoWP) is responsible for all issues relating to electricity generation, transmission and distribution, pricing, regulation, and consumption in the country, and exercises this function through its various line agencies as well as relevant autonomous bodies. It also serves to coordinate and plan the nation’s power sector, formulate policy and specific incentives, and liaise with provincial governments.

Water and Power Development Authority (WAPDA) was established in 1959 to handle all aspects of water and power sectors. After its restructuring, WAPDA is now responsible for mega dams and all water projects. Its current energy portfolio

consists of 13 large hydel projects (>100 MW), and a large number of small dams, with total production capacity of nearly 10,000 MW

National Electric Power Regulatory Authority (NEPRA) was established in 1997 to function as an independent regulator. The Authority's main functions include, inter alia, issuing licenses for the generation, transmission and distribution of electric power; the establishment and enforcement of standards to ensure quality, safety, and the proper accounting of the operation and supply of electric power to consumers; approving investment and power acquisition programs of the utility companies; and determining tariffs for the bulk generation and transmission and retail distribution of electric power.

Private Power and Infrastructure Board (PPIB) was established in 1994 to facilitate and oversee private investments. Its main tasks are to enhance capital formation through the promotion of private investments and to improve the efficiency of the power generation system.

Alternative Energy Development Board (AEDB) was established in 2003 as an autonomous body with the aim of promoting and facilitating the exploitation of renewable energy resources in Pakistan. It is tasked with implementing government policies and plans, developing projects, promoting local manufacturing, creating awareness and facilitating technology transfer, etc.

Karachi Electric Supply Company (KESC) started its work in 1913 as a private limited company; the Government took over its control in 1952. This company produces and supplies electricity to Karachi city and nearby villages of Karachi. It has 4 thermal plants with 1756 MW capacity in its portfolio. It was privatized in December 2005 with 73% stake purchased by a private consortium and the Government assumed PRs 80 billion debt of KESC as equity. The financial performance of the company improved somewhat since it registered a profit in 2012, but now it needs Government subsidies.

Pakistani Atomic Energy Commission (PAEC)- was established in 1960 to contribute to electricity generation. It now operates two nuclear power facilities in Pakistan with total production capacity of 1405 MW.

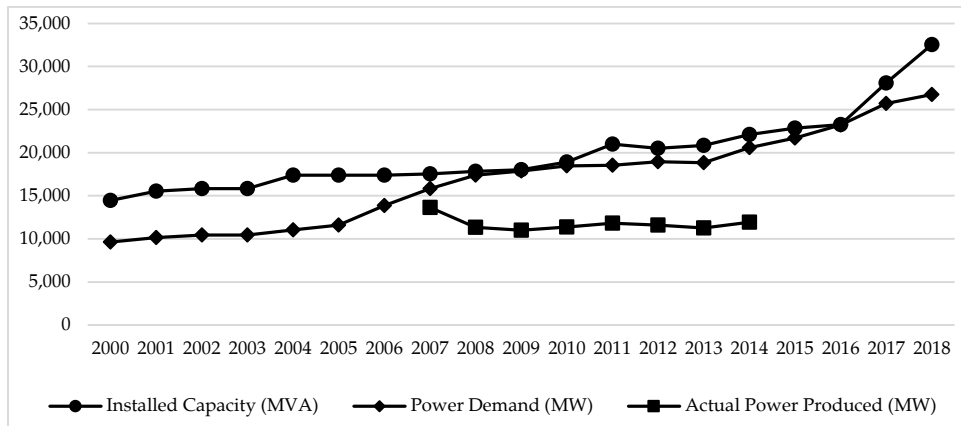
Pakistan Electric Power Company (PEPCO) was established in 1998 as a holding company, owned by the Government, to oversee the unbundled (?) transmission and distribution corporations. PEPCO was tasked to formulate effective corporate policies for these newly created companies, so they could operate as corporate entities. In reality, these entities have little autonomy, as PEPCO exerts substantial control over them. Currently there are 5 generating companies (GENCOs) one transmission company (NTDC) and 10 area-based distribution companies (DISCOs) under the purview of PEPCO.

Independent Power Producers (IPPs). With growing power demands and high capital-intensive costs of power production, Pakistan began to look for private sector investments in the late 1980s. The Hub Power Station (HUBCO) was the first such experiment which involved lengthy planning and negotiations to materialize. Pakistani agencies worked hard over the years to put in place a comprehensive framework for the development of power through the IPPs. Since 1997, almost 50 IPPs have added nearly 12,000 MW to Pakistan's thermal power generation capacity, but actual production has been much lower due to operational and financial issues.

Power Sector Performance and Operational Issues.

Overall Demand and Supply: Exhibit 2 below shows the supply and demand curve for power in Pakistan. Pakistan's average annual growth of demand is around 8 per cent and the average growth rate of supply since 1990 has been around 4.6 per cent. Population growth alone adds about 1000 MW of power demand every year. Since 2005, Pakistan has been facing serious and growing power shortages resulting in a loss to the economy as well as the suffering of the population. Currently, the country has nearly 80 operational power plants with a potential capacity of 35,280 MW for electricity production, but the actual production is about 14,300 MW over the last decade, Pakistan is still facing power shortages due to weak management of the sector. It is estimated that Pakistanis spend about PRs 30 billion a year on domestic power through household generators and battery chargers to cope with load shedding.

Exhibit 2: Power Demand, Production Capacity and Supply Trends



Sourced from: <http://www.ntdc.com.pk/Files/PSSper cent2043rdper cent20Edition.pdf>

Current Production and Capacity: Pakistan's total installed power generating capacity increased almost five-folds since 1990, from 7000 MW to the current 35, 281 MW,

according to the latest Wikipedia data⁸, which is the latest and most comprehensive data. It provides the listed installed capacity of various plants. Actual production capacity from these is much lower. Nearly 35, 000 MW of additional power generation is under construction or active planning, according to Wikipedia data. Annex 1 provides a list of the major existing and under construction power plants in Pakistan. Table 1 below gives a summary of existing and proposed power generation capacity by different modes. This table suggests that power generation capacity is not a problem for Pakistan. In fact, if all the proposed schemes are completed / implemented, Pakistan may have a serious problem of excess power, which cannot be distributed or utilized. The Pakistan government should read this as an old-style telegram saying: ‘start worrying, letter follows’.

Table 1: Installed Power Capacity by Different Power Modes

Power source	Type	In Production		Under construction MW		Under Planning MW		Total Potential Capacity MW
		No. of units	Capacity MW	No. of units	Capacity MW	No. of units	Capacity MW	
Hydel	Large	3	7,488	2	3,284	5	19,410	30,182
	Medium	10	1,902	11	4,736	6	1,730	8,368
	Small	67	715	20	498	7	233	1,446
Thermal	Coal	8	3,678	5	2,910	1	300	6,888
	Multi-Fuels	7	4,263					4,263
	Nat. gas	20	10,498	1	1,263			11,761
	Furn. Oil	13	3,662					3,662
Renewable	Solar	2	418	6	192	23	2002	2,612
	Wind	21	1,252	3	150	21	1,988	3,390
Nuclear		5	1,405	2	2,220			3,625
Total		156	35,281	43	15,253	62	25,663	76,197

Large Unit: > 1,000MW; Medium: 100 – 999 MW; Small; < 100 MW. Under Planning are those for which Letter of Intent or MoU is signed.

Source: Wikipedia Data, February, 2019.

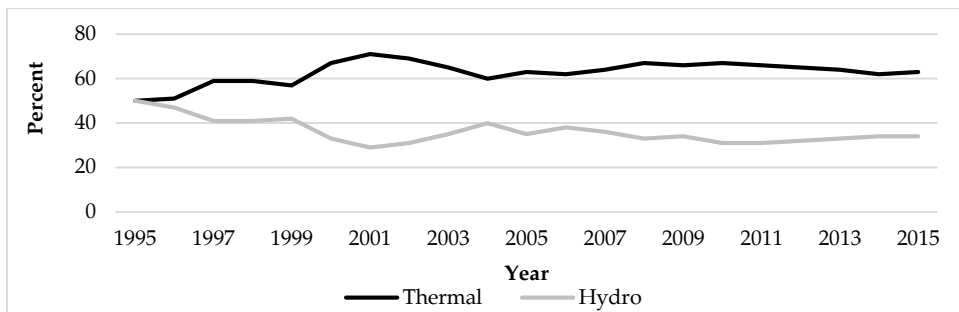
Despite this increase, power plants have had low production rates, because of operational breakdowns and input shortages – fuel, water etc. As a result, according to the latest estimates, less than 75per cent of the Pakistani population has access to electricity, or nearly 50 million people are without access to electricity. It is estimated that power generation needs to grow by at least 7 percent for the next few years in order to reduce load-shedding and support economic growth, thereby necessitating incremental capacity additions of at least 3,000 MW every year. Phasing out inefficient and old power plants may also require replacement generation of 1,000 MW every year, bringing gross additions to 4,000 MW on an annual basis. The power generation projects under construction or active planning will create an additional 40,000 MW capacity (Table 1), which is

⁸ https://en.wikipedia.org/wiki/List_of_power_stations_in_Pakistan

sufficient to meet the growth needs for the next 10 years. A huge existing non-operating capacity is a burden and challenge that needs to be addressed.

Production Modes/ Energy Mix. Pakistan has witnessed a major shift in the modes of energy production since the 1980s after the development of political opposition to hydel power. Exhibit 3 below shows a shifting trend of generation mix between hydel and thermal. It shows that a mix of 50/50 in 1995 has changed to almost 60/30 in favor of thermal. The use of domestic Sui Gas was a prominent and inexpensive fuel source for power generation in the early 2000s. As gas supplies dwindled, the share of gas allocation for power generation decreased significantly between 2005 and 2010. The focus then shifted to imported fuels.

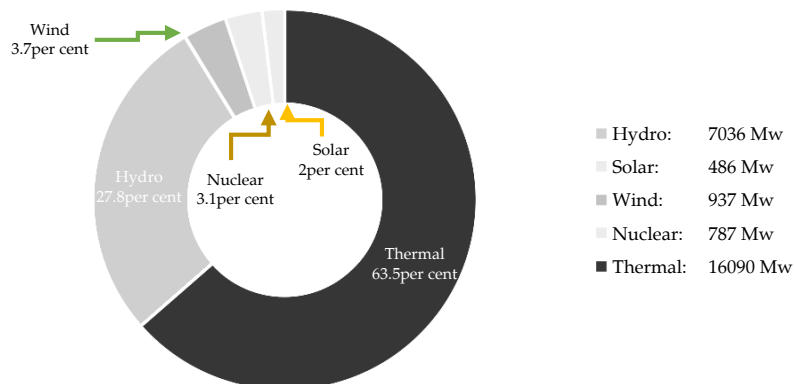
Exhibit 3: Generation Mix Trend



Source 1 Ministry of Water and Power

Exhibit 4, below shows the energy mix charts of Pakistan's installed production capacity for 2018 data, based on Wikipedia and government sources.

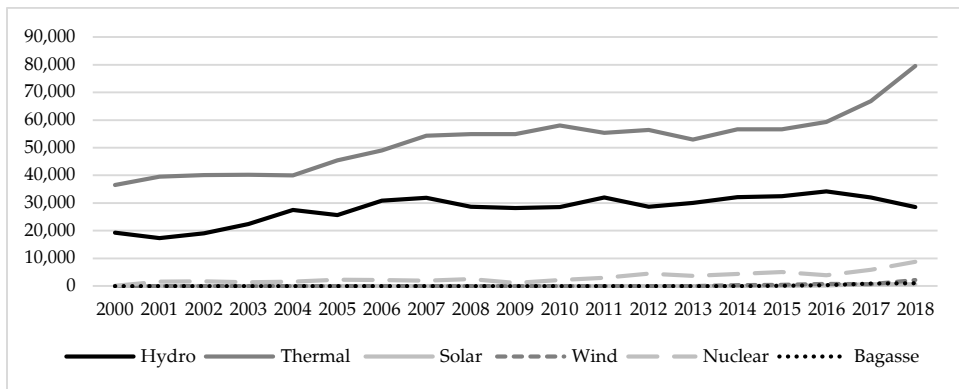
Exhibit 4: Energy Mix Installed Capacity 2108



Source: Wikipedia data.

Exhibit 5 below shows the trends of energy mix for all production modes. Solar and wind are just entering the arena, nuclear is showing an upward trend owing to new installation at Chasma, while thermal depicts a steep increase owing to the commissioning of two large coal based thermal plants under the CPEC.

Exhibit 5: Energy Generation by Sources Trends (GWh)



Source: PEPCO data.

Power production cost has two main components – initial set-up costs and running cost. Available data for these is limited. The table below provides a summary of these costs for various modes of production. In the long run, hydel clearly is the cheapest mode of power production in Pakistan.

Table 2: Energy Production Cost Summary

No.	Source	Initial Set-up Cost PRs million/ MW	Running/ Production Cost PRs million / kwh
1	Hydel	289	3
2	Thermal	198	
	• Coal		11.25
	• Diesel		23.0
	• F. Oil		16
	• Gas		9
3	Nuclear		14.25
4	Solar	176	20.25
5	Wind	353	9

Source: PPT Presentation by Mr. Tahir A. Malik.

A desirable energy policy should focus not only on energy security, but also on decreased reliance on imported sources of energy. Capacity additions should focus on utilizing the two key indigenous sources, hydel and domestic coal, as well as renewable sources to achieve a reduction in energy imports, particularly furnace oil. The potential for domestic power generation in Pakistan is abundant. The potential

of hydro power production in Pakistan is estimated at 60,000 MW. Only 10,000 MW has been developed so far, not all of which can be produced at times due to water storage shortages and irrigation demands. Pakistan's coal reserves are estimated at 186 billion tons, of which Thar coal is 175 billion tons. If this source is developed, it can theoretically generate 100,000 MW of electricity per year for the next two centuries. However, due to shortage of available water alone, a reasonable target for energy production through domestic coal would be 10,000 MW per year in the coming years. This would address the concerns of the environmentalist as well. Currently only one 150 MW thermal plant in Sindh uses domestic coal. Two new large thermal plants (2640 MW)⁹ using imported coal were installed in 2018; 5 imported coal-based projects totaling 4410 MW are under process¹⁰. Pakistan has since taken a strategic decision of not to import coal for power. New coal projects will be Thar coal based. Potential for solar and wind power energy is also substantial; Pakistan is now entering this field, with a number of solar and wind energy plants through private investments and also under the CPEC program. Pakistan's potential for additional renewable energy sources is estimated at 10,000 MW in the next 10 years. China, India and the US are leading the global revolution for renewable energy, currently accounting for two-thirds of expansion whereas most EU and Scandinavian countries are meeting more than 20 per cent of their energy needs from renewables. Pakistan is far behind in the renewable race; only 4 per cent of its energy currently comes from renewables. Relying on pricey fuel imports puts a huge burden on the country's ailing economy whilst also increasing perilous carbon emissions

Operational Performance/ Efficiencies. Past efforts to reform the power sector, with prolonged help from the WB, ADB, IMF and others, have apparently been unsuccessful in terms of fixing the ailing power sector in the public domain or regulating the private sector. As mentioned earlier, Pakistan has adequate installed production capacity to meet its demands. It has not been able to utilize this capacity because of:

Below capacity production of private plants. Most of the power generation plants are reported to suffer from lack of maintenance, equipment fatigue, poor technical expertise and lethargic management. In some cases, the installed plants in the private sector are used ones, imported from other countries. IPPs are reported to suffer from paucity of short-term capital and intermittent fuel supplies.

- Under production from hydel plants due to storages shortages and irrigation demands.

⁹ Sahiwal (Punjab) and Port Qasim (Karachi).

¹⁰ PPIB web site: http://www.ppiib.gov.pk/N_upcoming_ipps.htm

- Establishment of a significant domestic gas-based production capacity, which cannot be utilized due to subsequent gas shortages.
- Most of the private thermal power plants are performing under par due to lack of maintenance, equipment fatigue, poor technical and managerial skills. In some cases, the installed plants are used ones, imported from other countries.
- Intermittent/ unreliable fuel supply chain resulting from the circular debt issue discussed below.
- High cost of production relating to use of expensive imported fossil fuels. The average procurement unit price of furnace oil plant is nearly three times that of a gas-based plant.
- Weak management of IPPs and poor government oversight. It seems that a dedicated power entity is established for each new private power plant, perhaps for isolation of legal/ financial liabilities. It could be leading to overcrowding in the sector and hindering capacity development.

Necessary improvements in operational performance of the power generation facilities would be a key requirement for the health of the sector.

Transmission and Distribution

Transmission and distribution of electric power in Pakistan is managed by separate companies, which were supposed to be privatized under the 1998 restructuring plan. As of now, the transmission part is handled by the NTDC and the 10 local companies (DISCOs) manage the distribution. These companies have not been corporatized and operate essentially under government control. The transmission and distribution systems contribute handsomely to the power sector woes. The main issues in this regard are:

- While substantial addition to the generation system was made in the last 20 years, corresponding improvements in the T&D system did not take place, creating a capacity issue in the aging /inefficient network.
- While notable improvements have been made in reducing T&D losses, the system losses are still not at a desirable level. Currently the total T&D losses, including power theft, are estimated by the Federal Government as 17.9per cent of total power supply. Other sources put this figure around 25per cent.
- The power thefts and payment defaults situation, though improving, is still a big burden. According to the 2013 power policy document, theft losses cost the economy about PRs 150 billion per year.
- The T&D system is still in the public domain, run by the NTDC and 10 DISCOs under the oversight of PEPCO. The original plan of corporatization of these

companies has not been implemented. Due to political interference, the current set up is reported as inefficient and overstaffed.

The Government needs to pay due attention to fix the weaknesses of the T& D system.

Electricity Coverage. More than one-third of Pakistan's primary energy consumption is from biomass and waste, since much of the population lacks access to reliable electricity and relies on traditional sources of energy in the residential sector. Roughly 58per cent of Pakistan's population uses biomass for cooking (about 105 million people) because of inadequate electricity and gas supply. Natural gas accounted for an estimated 30per cent of Pakistan's primary energy consumption in 2013, followed by petroleum and other liquids (26per cent), according to the International Energy Agency. As costs of power generation, which is mainly based on fossil fuels, are very high averaging at around 12 Rps. /kWh and up to 15 Rps. /kWh if technical losses are included. The main factors which are preventing the rollout of rural electrification are the increasingly high distribution costs and the shortage of power generation which results in breakouts as well as load shedding.

Institutional and Governance Issues

Stalled Institutional Reforms. Prolonged efforts of the last 20 years to restructure the power sector, with the help of international agencies, have resulted in only marginal improvements, mainly due to partial implementation of the programs. The 1998 Power Sector Re-Structuring Program called for the establishment of oversight and regulatory frameworks and unbundling (?) of the WAPDA operations into separate generation, transmission and distribution private corporate entities. The regulatory framework was established in the form of NEPRA, PPIB, AEDB, etc. However, these entities are not immune from government influence and may not have the desired professional competence to do the assigned tasks. Power generation was privatized at a much faster than anticipated rate, with inadequate diligence leading to low outputs and inefficient operations. This reflects a failure of the regulatory agencies, which are supposed to ensure that the new power generation portfolio is cost effective and efficient. National transmission and 10 local distribution companies were established, which still are under the public domain. This part of the system has become a critical bottleneck owing to a lack of balanced investment and poor management.

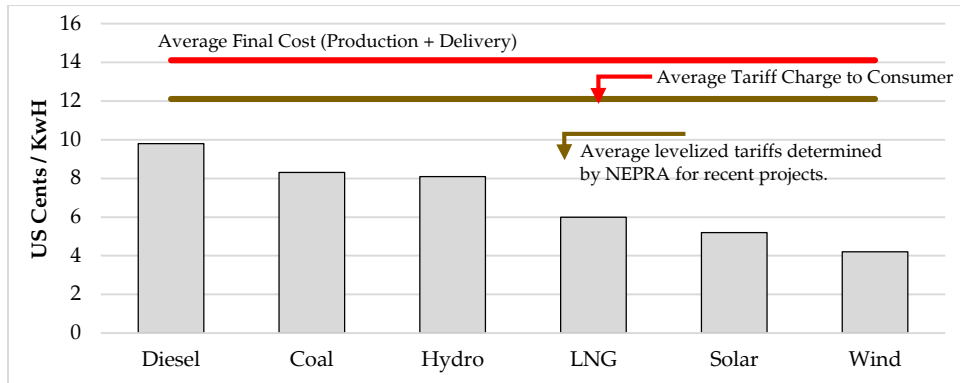
Power Tariffs and Subsidies

Power tariffs in Pakistan are reported to be high from the consumer's perspective and are even then insufficient to recover the sector costs. Electricity prices in Pakistan are reported to be 40per cent higher than the regional averages; gas prices

are 100per cent higher. A transparent and well-established mechanism for tariff setting is in place under NEPRA, which sets the tariff for the generation, transmission, distribution licensees and end consumers. The tariff is set through a regulatory process which is determined on the basis of cost of services and revenue requirements, and provides for automatic adjustments for fuel and other expenses. NEPRA is supposed to adjust tariffs every 4 months. However, the Government has often intervened in the tariff setting process by delaying formal notification of determined tariffs under the Fuel Cost Adjustment Formula.

Historically, charges from the consumers have not recovered the full cost of generating and distributing electricity. Exhibit 6 below illustrates the average tariffs determined by NEPRA for various producers, average full delivery cost of power to the consumers and average tariffs charged to the consumers.

Exhibit 6: Overview of Tariff Levels 2018



Source: NEPRA Estimates.

The difference between actual power system costs and the recovery from the consumer has to be met through Government subsidies, which are high and unsustainable, yet persistent. According to the ADB¹¹, the government subsidies, during FY 2011~ 2014, averaged 91per cent of total government subsidies across all sectors. The energy sector subsidies averaged about PRs 340 billion per year for this period., about 2per cent of gross GDP. The reduction in energy subsidies was part of the reforms initiated under the three-year \$6.6 billion IMF loan program. The situation has only improved marginally since.

Circular Debt can be defined as the amount of cash shortfall within the government-owned Central Power Purchase Agency (CPPA), which it cannot pay to the power supply companies. This shortfall is due to: i) the difference between

¹¹ Pakistan: Energy Sector Restructuring Program, February 2104.

the actual cost of providing electricity and the revenues realized by Discos from sale to the customers, plus subsidies; and ii) insufficient payments by Discos to CPPA out of the revenues realized. Discos in turn failed to fully pay to the power generators resulting in power production decline, estimated to be as much as 30 per cent of the production capacity. According to a conservative estimate, Pakistan loses approximately 2 percent of its GDP growth every year by virtue of the energy conundrum. According to current estimates, the circular debt has reached approximately \$7 billion in 2018, creating a financial bottle-neck for producers due to non-payments. This resulted in protracted and unannounced load shedding in both rural and urban areas. The circular debt is a product of distortions in the energy production mix of the past two decades. Its solution lies in the rationalization of the energy mix by reducing dependence on imported fuels and improving the operational performance of the power facilities.

Inter-Provincial Disputes. Provincial location of hydro power projects has created a unique problem in Pakistan. The 1973 Constitution stipulates that: the net profits earned by the Federal Government for bulk generation of power at hydroelectric stations shall be paid to the province in which the hydro power project is located. "Net Hydel Profit" (NHP) is defined as total revenues accruing from the bulk supply of power from the bus bar, (?) at a rate to be determined by the Council of Common Interests, minus all operating expenses (including taxes, duties, interests or return on investments, overheads, depreciation, provisions for reserves etc.). Determination of NHP has been a matter of controversy. A committee was constituted in 1986 under the chairmanship of Mr. A.G.N. Kazi to resolve the issue. The methodology devised by the Kazi Committee was based on computing the NHP backward from the average selling price per unit at the consumer end and then deducting per unit expenses on the transmission and distribution system to reach revenue at the bus bars of the entire generation system, including hydel as well as thermal power station in the public and private sectors. This average generation revenue was then used to work out the NHP after deducting the operating expenses of the hydel project. This methodology inflated the NHP figure by bringing cheap hydel energy equal to that of total system generation cost. This has created a long-standing controversy and disputes among provinces. Past efforts to rationalize the NHP have not been successful so far. Currently, consumers are paying PRs 1.10 per unit as NHP; this figure would be PRs 3-4 per unit according to the A.G.N. Kazi formula. Huge claims from some provinces, particularly KPK, are on the books for payments in line with this formula. As per an interim settlement between Federal and KPK Governments in 2105, the NHP to KPK increased from PRs 6 billion to 18.8 billion. According to the A.G.N Kazi formula, this amount would have been about four fold. As the electricity tariffs cannot recover full production costs, any NHP payments to the Provinces mean more government subsidies. For future development of the hydel energy, Pakistan needs to address this controversial issue. The country would have been better off,

if all the hydel profits were put into a dedicated “*national energy fund*” to be used for the financing of power investments based on national needs.

Impact of CPEC on the Energy Sector

In 2015, Pakistan and China entered into the China-Pakistan Economic Corridor (CPEC) agreement, which could help Pakistan decrease costs of electricity generation and alleviate electricity shortages by 2020. The agreement includes \$34 billions of investment from China to be used for developing the energy infrastructure, including more than 10,400 MW of power plant capacity from coal and renewable energy. The projects include coal, hydro and wind. It will also significantly change the energy mix, replacing expensive oil and resulting in a reduction of the average cost of generation. Due to the prevailing energy crisis, power projects were given high priority and included in the “early harvest” batch of the CPEC program. To date, 7 energy projects¹² (2 coal and 5 solar/ wind plants) are as completed with total generating capacity of 2840 MW and reported cost of \$ 4,687 million¹³. Another 7 energy projects (2 coal, 2 hydel, 2 transmission and one coal mining) are under implementation for an estimated cost of \$ 12.2 billion. These projects are to generate additional 2,950 MW. Another 10 or so energy projects are underway aiming to produce another 5,450 MWs. The CPEC program would thus add a total of 11,400 MW power generation capacity. With the existing 30,000 + MW and the proposed additions through the CPEC, Pakistan should have an installed production capacity of 38,000+ MW in the next 5-7 years.

The Way Forward

The energy sector cannot be revamped overnight. It needs proper assessment, vision, and strong planning. There is no dearth of analysis and recommendations on how to improve the energy sector in Pakistan, the sum total of which simply may be not doable. The “what to do part” is fairly well analyzed. It is the “how to do part” that is weak. The National 2103 policy document provided a comprehensive overview of the energy situation, issues and possible agenda Yet little progress was possible in addressing the fundamental issues. This can be attributed to lack of political commitment and weak institutional capacities, as well as the Government’s focus on short-term political gains against long-term improvements. In summary the key challenges facing Pakistan’s power sector are:

- Weak governance – lack of national consensus, political commitment and interprovincial disputes.

¹² Some of these projects were on-going and incorporated into CPEC program for quick financing and results.

¹³ <http://www.cpecinfo.com/home>, October 2018 data.

- Institutional and organizational weaknesses – sector restructuring in limbo, staffing capacity and strength limitations, government influence on decision making by “corporate entities”.
- Inefficient operations – low output and high cost of generation and high distribution losses.
- Unsustainable financial situation due to low tariffs, an expensive fuel mix resulting in perennial circular debt and government subsidies.

The real challenge is to adopt a comprehensive national policy and an associated implementation plan which is practical and doable. Political consensus and commitment at the national and provincial level would be critical. The policy and plans formulation process should be professionalized and depoliticized. To achieve this, the following tasks are recommended to be undertaken as necessary “building blocks”.

- *A proper Energy Sector Audit* to have a better estimate of the status quo. Accurate information on consumers all over Pakistan and potential available resources is critical for analysis of the sector issues.
- *An Independent Technical Audit* of the existing power infrastructure – generation and distribution systems – to ascertain technical and operational weaknesses of the existing facilities and how to improve those. The due diligence process used in design and approval of new projects, even by the private sector, should be evaluated. The objective of this audit exercise should be to look at the technical aspects and not the financial ones.
- *A Diagnostic review of the Financial Issues* to recommend how the much talked about perennial financial problems can be solved over a reasonable period of time.
- *A holistic review of Governance and Institutional Weaknesses* to suggest how the Government, Regulatory Authorities and Implementing Agencies can perform their respective duties of oversight, regulation and production / delivery in an efficient and cost-effective manners.

The academic institutions in Pakistan do not seem to be playing their due role in review and analyze of the energy sector issues. There is a need for continuing review and analysis of key power sector issues to provide analytical underpinning and lessons learning feedback to the policy makers. It is recommended that prime institutions like the Lahore School of Economics and others should select a specific energy topic/ issue for specialized research and analysis on a continues basis.

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Acronyms

ADB:	Asian Development Bank
AEDB:	Alternate Energy Development Board
CCPA:	Central Power Purchasing Agency
CPEC:	China Pakistan Economic Corridor
DISCO:	Distribution and Supply Company
GENCO:	Generation Company
GoP:	Government of Pakistan
IPP:	Independent Power Producer
KPK:	Khyber Pashtun Khwa Province.
KESC:	Karachi Electric Supply Company
LoI:	Letter of Intent
MOWP:	Ministry of Water and Power
MoU:	Memorandum of Understanding
MW:	Mega Watts
NEPRA:	National Electric Power Regulatory Authority
NHP:	Net Hydel Profit
NTDC:	National Transmission and Distribution Company
PAEC:	Pakistan Atomic energy Commission
PEPC:	Pakistan Electric Power company
PPA:	Power Purchase agreement
PPIB:	Private Power and Infrastructure Board
T&D:	Transmission and Distribution
WAPDA:	Water and Power development Authority
WB:	World Bank

Annex 1: List of Major Power Plants in Pakistan

A. Plants under Operation.

Type	Name	Location	Production Capacity MW	Set-Up Date	Remarks
Hydel > 500MW	Mangla	Mirpur, AJK	1,150	1967	Jhelum River
	Tarbela	KPK	4,888	1974	Indus River
	Ghazi Bhortha	Punjab	1,450	2002	Indus River
	Neelam Jhelum	AJK	969	2018	Indus River
Thermal > 500 MW Multi -fuel fired	Kot Addu	Punjab	1,600		Multi -Fuel
	Jamshore Power	Sindh	850		Oil & Gas
	Hub Power Co.	Baluchistan	1,292		Furnace oil
	Bin Qasim	Karachi	1,260		Oil & gas
	Guddu	Sindh	2,402		Combined Cycle
	Uch – I, II	Baluchistan	1,000		
	Haveli Bhadar	Jhang, Punjab	1,230		Combined cycle
	Bin Qasim II	Karachi	560		Combined cycle
	Bhikhi RLNG	Sheikhupura, Punjab	1,180		Combined Cycle
	Balloki Power Plant	Balloki, Punjab	1,223		Combined Cycle
Coal Imported	Sahiwal	Punjab	1,320	2017	Imported coal
	Port Qasim	Karachi	1,320	2017	Imported coal
	Hub Coal Project	Baluchistan	1,320	2018/ 19	Imported coal
Nuclear > 300 MW	Chasma I	Mianwali, Punj.	320	1972	
	Chasma II	Mianwali, Punj.	320	2000	
	Chasma III	Mianwali, Punj.	340	2016	
	Chasma IV	Mianwali, Punj.	340	2017	
Solar > 50 MW	Quid e Azam	Bahawalpur	400	2016	
Wind > 100MW	Foundation Wind	Gharo, Sindh	100	2009	
	United Energy	Jhimpur, Sindh	100	2018	
	Three Gorges	Jhimpur, Sindh	100 2018		
	Tricon Boston	Jhimpur, Sindh	150	2018	

B. Plants Under Construction.

Type	Name	Location	Production Capacity MW	Start-Up Date	Remarks
Hydel	Korat Dam	Rawalpindi	720	2021	Jehlum River
	Suki Kinari dam	Manshera, KPK	870	2022	Kunhar River
> 500 MW	Dasu Dam	Dasu, KPK	2,160	2023	River Indus
	Azad Pattan dam	Sudhnoti, AJK	700	2023	
	Kaigan	Kohistan, KPK	548	2025	
	Khola	Muzaffarabad	1,124	2026	
	Mahmund Dam	KPK	800	2026	
Thermal	Punjab Power	Jhang, Punjab	1,263	2019	
	Engro Energy Ltd.	Tharparkur, Sindh	660	2019	Thar Coal
Nuclear	Lucky Group	Karachi	660	2021	
	Kanpur II	Karachi	1,100	2020	
	Kanpur III	Karachi	1,100	2021	



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