

FOREWORD

The Centre for Research in Economics and Business (CREB) was established in 2007, as an independent research centre at the Lahore School of Economics, Pakistan. Its primary objective is to conduct policy-oriented research with a rigorous academic perspective on key development issues facing Pakistan and promote public debate on policy issues through conferences, seminars, and publications. CREB organizes the Lahore School's International Conference on the Management of the Pakistan Economy, and publishes Working Paper and Policy Paper Series to disseminate the research being done at the Centre.

At CREB, we place great emphasis on building research networks and linkages with researchers, within and outside the country, to bring together people with the right set of skills to help achieve these goals. CREB hosts visiting international scholars undertaking research on Pakistan, facilitates and coordinates research by the faculty at the Lahore School, and administers the postgraduate program leading to the MPhil and PhD degrees at the Lahore School.

In the short period since its inception, CREB has built an excellent reputation for the quality of its research. Our faculty and researchers have received funding support from regional partners and international agencies such as British Academy UK, Department for International Development (DIFD), International Growth Centre (IGC), National Science Foundation, USA, Open Society Foundation (OSF) and South Asia Network of Economic Institutes (SANEI).

Our staff members are highly skilled in applied research and have been actively involved in projects that help build strong policies. The research interests of our staff include Economic Growth, Political Economy, Economic Policy, Finance, Education and Labor Economics – with a special country focus on Pakistan.

The aim of the CREB Research News is to provide a perspective regarding the scope and depth of research being carried out at CREB. We invite you to visit our website www.creb.org.pk and browse through our ongoing and completed research.

Naved Hamid
Director
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Editor's Note

This issue of the CREB Research Newsletter is the seventh in a series of research newsletters from CREB. It has information on current and completed research projects at CREB; conferences and workshops attended by CREB staff; and a list of CREB publications and other research publications by the CREB team members. Moreover, it also provides abstracts of completed MPhil theses. **It covers the period between April, 2016 and March, 2017.**

For more information please visit:
<http://creb.org.pk/>

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Research

I. Ongoing Projects

1. Analysis of Technology in the Sialkot Soccer Ball industry

The project has been developed under the International Growth Centre (IGC) is led by a team of researchers including Azam Chaudhry and Shamyla Chaudry (Lahore School), David Atkin (MIT), Amit K. Khandelwal and Eric Verhoogen (Columbia University).

The Sialkot soccer ball cluster is made up of a large number of manufactures who export approximately 60 million hand-stitched soccer balls each year, accounting for about 70 percent of global production. But over the last few years, the amount of soccer balls produced in Sialkot has fallen. This project aims to better understand the technologies within the industry and determine the characteristics of the firms that are able to identify and implement new technologies.

The research team developed a cost saving technology in 2012 which it has given to a number of soccer ball manufacturers in Pakistan in order to determine the factors affecting technology adoption in firms and technology spillovers between firms. The research team has also looked at how misaligned incentives between firms and employees can affect technology adoption. The preliminary data analysis was presented at the IGC Growth Week in September 2012 and September 2013 in London. The

researchers have presented this work in seminars and conferences at University of Berkley, Yale University, Columbia University, Harvard University and University of Oxford. It has also been presented at the Government of Punjab in 2015. After these presentations the Secretary Finance and the Secretary Industries, Punjab Government used the project's findings to propose and initiate an Innovation Development Fund (IDF). Currently, the Punjab Government has initiated this fund and the Lahore School is represented on its executive board. The findings of this project have been published in Atkin, A., Chaudhry, A., Chaudry, S., Khandelwal, A. K and Verhoogan, E. "Organizational Barriers to Technology Adoption: Evidence from Soccer-Ball Producers in Pakistan". *Quarterly Journal of Economics* (forthcoming); Atkin, A., Chaudhry, A., Chaudry, S., Khandelwal, A. K., Raza, T and Verhoogan, E. "On the Origins and Development of Pakistan's Soccer-Ball Cluster". *World Bank Economic Review* 2016; Atkin, A., Chaudhry, A., Chaudry, S., Khandelwal, A. K and Verhoogan, E. "Markup and Cost Dispersion across Firms: Direct Evidence from Producer Surveys in Pakistan". *American Economic Review, Papers and Proceedings* 2015.

2. Barriers to Upgrading in the Sialkot Football Sector

The project has been developed under the International Growth Centre (IGC) is led by a team of researchers including *Azam Chaudhry* and *Shamyla Chaudry* (Lahore School), *David Atkin* (MIT), *Amit K. Khandelwal* and *Eric Verhoogen* (Columbia University).

In this project, they investigate the extent to which *high costs of high-quality inputs* are a barrier to upgrading in the football sector. One of the primary inputs into football production is an artificial leather called rexine. They propose an experiment to offer subsidies for high-quality rexine to a random subset of firms and examine if this subsidy spurs upgrading. They will look at two related but distinct dimensions of behavioural responses by firms. First, since high-quality inputs are likely to be complements in production, the subsidy may induce firms to purchase complementary high-quality inputs and produce higher-quality footballs, using their existing technologies and production processes. Second, the subsidy may potentially stimulate learning and spur technological improvements in the production process, if for instance innovation has a higher return in high-quality segments of the industry or if producing higher-quality balls leads firms to transact with more knowledgeable buyers.

3. Incentivizing Development: A Field Experiment on Third Tier Organizations (TTOs) in Pakistan

Incentivizing NGOs: A Research Partnership with PPAF

The project is an academic collaboration between Asha Gul (Lahore School/University of New South Wales), Hamna Ahmed (Lahore School /University of Kent), Kate Vyborny (Duke University) and Simon Quinn (University of Oxford). This

study is being funded by the Pakistan Poverty Alleviation Fund (PPAF) and the International Growth Centre (IGC) and focuses on incentivizing development across almost 800 TTOs spread across Pakistan by testing the impact of two sustainable measures the donor can take to engage with these organizations: (i) self-reporting and (ii) non-financial incentives.

The design of the study was presented at the First International Conference on Research and Learning organized by PPAF on 2-3 April 2014.

The Baseline Survey for the project was completed between August to October 2014. The survey gathered information about the characteristics of TTOs, the scope of activities in their communities and the level of inclusion in these organizations. The preliminary findings from the Baseline Survey were presented to PPAF in January 2015. Between May and June 2015, treatment for the experiment was rolled out. This involved conducting an extensive round of training with members from treated LSOs. A total of 39 trainings sessions were conducted at 9 trainings hubs spread across all provinces. The research team worked closely with CHIP Training and Consulting firm for successful completion of the treatment roll-out.

The first round of the Experiment spanned from May to October 2015 with the second round covering November 2015 to April 2016. The Research Team along with CHIP Training and Consulting firm has been actively engaged in collecting the performance reports from all the treatment LSOs. This has also involved an

active engagement with both the PPAF and Partner Organizations in an attempt to increase active participation of the LSOs in the scheme. Currently, the research team is analyzing the performance reports of the LSOs to calculate the winners from the first round. The winners will be felicitated in a local recognition ceremony attended by members of the PO, local officials and local community members.

Alongside, the research team presented the main findings from the Baseline Survey to a gathering of all the Partner Organisations organized by PPAF on 12 Jan 2016, which will soon be followed by a series of briefs that address several LSO issues like women involvement, relationship with POs, nature of activities, funding sources, etc.

4. Microcredit and Microsaving for Microenterprises in Pakistan: Finding from framed field experiments in Pakistan

Marcel Fafchamps (Stanford), *Simon Quinn* (Oxford), *Giovanna d'Adda* (Milan

Resisting temptation to spend: Microcredit and Microsaving for Microenterprise in Pakistan

Politecnico) are working with *Naved Hamid*, *Farah Said* and *Uzma Afzal* (CREB, Lahore School) to design a Randomized Control Trial in 4 districts of Punjab

to compare the effectiveness of micro-savings and micro-loans as means for households to manage risk and liquidity.

The study is being conducted in collaboration with the National Rural Support Programme (NRSP) funded by the Department for International Development (DfID) and Economic and Social Research Council (ESRC). The study explores the role of commitment and reminders in product take-up and repayment.

This project builds on existing research and pilots funded by the IGC with a sample of microfinance clients of NRSP. Results indicate that for microfinance clients, savings and credit products are often substitutes, satisfying the same underlying demand for a regular schedule of deposits and a lump-sum withdrawal (forthcoming in *Economic Journal*, working paper available here: http://ibread.org/bread/system/files/bread_wpapers/449.pdf)

5. Impact assessment of startup loans to female run micro-enterprises

Azam Chaudhry, Naved Hamid, Farah Said (Lahore School), *Giovanna d’Adda* (Milan Politecnico) and *Mahreen Mahmud*, (CSAE, University of Oxford).

This study is a Randomized Control Trial to evaluate the socio-economic and welfare impacts of micro-loans to female micro-entrepreneurs. This study looks at whether access to finance leads to female setting up their business and attempts to measure household dynamics faced by

borrowers that may act as a constraint on the decision to set up a business. This study was conducted in collaboration with Kashf and the fieldwork completed in October 2016. The project was funded by the International Growth Centre (IGC).

There was a positive, but transitory, impact of the microfinance product on the likelihood of setting up a business but no improvement in household asset holdings or in women’s independence when making ordinary household decisions. To provide measures of social and household dynamics these borrowers operate in, this study also made use of lab-in-the-field experiments at the time of the first follow up survey in 2015, with 267 randomly selected RCT participants and male members of their households. Experimental results show that in pairs where women were entrepreneurs, men and women did not hide experiment money from each other. However, husbands of housewives chose to keep more for themselves when this allocation could be kept hidden from their partners. In literature, this is taken as evidence of ‘hiding’ of resources from the spouse. In addition, men and self-employed women exhibit entitlement over their earnings, whereas housewives do not. These results point towards possibly adversarial dynamics in households where the woman is not working.

What
constraints
female
enterprise –
Finance or
family?

6. Pressures from peers and spouses and self-control problems as constraints to microenterprise growth: Experimental evidence from Pakistan

Marcel Fafchamps (Stanford), Giovanna d'Adda (Milan Politecnico) are working with Farah Said and Uzma Afzal (CREB, Lahore School) on a research that assesses the role of self-control problems and peer pressures on take-up and use of a financial product by female micro-entrepreneurs in Pakistan by combining laboratory and field experiments.

Indoctrination, fear and lack of agency: constraints on women outside the home

The project received IGC funding in March 2015 and experimental sessions were carried out in Chakwal in April-May 2015. A second round of experiments will be conducted in 2017.

Results from the experiments in 2015 indicate that female involvement in household decision making is decreasing in the importance of the decision, a. Authors find no evidence that women have pent up demand for agency. Instead, women are less willing to pay for agency when facing an unknown man. This evidence suggests that women in the study population have internalized gender norms, and that these norms regulate interactions between genders most strongly outside of the household.

7. Barriers to Product Upgradation in the Sialkot Surgical Goods Sector

The project has been developed under the International Growth Centre (IGC) is led by a team of researchers including *Azam Chaudhry* and *Shamyla Chaudry* (Lahore School), *David Atkin* (MIT), *Amit K. Khandelwal* and *Eric Verhoogen* (Columbia University).

In this project, they investigate the extent to which *fixed costs of innovation* are a barrier to upgrading in the surgical-goods sector in Sialkot. If there are externalities in the process of innovation, there may be an important role for governments in subsidizing the costs of innovation. A leading policy idea is to provide *matching grants*, in which governments provide supplemental funding for projects chosen by individual firms. However, there has never been a rigorous randomized evaluation of such a program (Campos et al, 2012). They are conducting such an evaluation in the surgical-goods industry in Sialkot and plan to offer matching grants for innovations that increase exports.

8. Access to solar electricity in rural Sindh: Role of payment schedule and planning

The project is led by a team of researchers including Farah Said, Lahore School of Economics, Jacopo Bonan, Fondazione Eni Enrico Mattei, Giovanna d'Adda, Politecnico di Milano, Massimo Tavoni, Politecnico di Milano and Mahreen Mahmud, University of Oxford.

Almost 70 million people in Pakistan (35% of the population) do not have access to electricity, as they live in areas, mostly rural, not reached by the grid. Over 75 million (38%), while on-grid, receive low quality energy and experience outages for more than 12 hours per day (IFC, 2015). In spite of the significant benefits of access to electricity, the long-run feasibility of grid expansion for the provision of quality electricity to remote areas is often a concern.

We collaborate with a for-profit company supplying sustainable and efficient solar energy solutions (e.g. lights, fans, mobile chargers, TV) to small businesses in off-grid areas of rural Sindh, to evaluate one market solution to increase access to energy. The product is innovative, as it alleviates credit constraints to adoption and has strong enforcement features: customers access energy through a pay-as-you-go monthly payment scheme and are disconnected when the credit expires. We investigate key determinants of the sustainability of the business model and of product take-up, by looking at the trade-off between discipline and flexibility in repayment schedule. We explore the behavioural underpinnings of two repayment schemes, by testing soft ways to increase the salience of repayment.

9. Behavioural insights for evidence-based policy making - impact of maternal depression intervention on individual preferences

The project is led by a team of researchers including Farah Said, Lahore School of Economics, Sonia Balhotra, University of

Essex, Asia Maselko, Duke, Siham Sikander, HDRF, Utteeyo DasGupta, Wagner College & Fordham University.

Depression is often associated with significant economic costs. For instance, depression is considered to reduce productivity by decreasing the motivation in performing everyday tasks or creating pessimistic views on returns on effort (de Quidt & Haushofer, 2016). However, economics literature does not provide us with any evidence quantify these effects. This research aims to use lab-in-the-field experiments with women who participated in a cognitive behavioral therapy treatment RCT in Rawalpindi to identify such behavioural effects of maternal depression on women. Among preferences that we expect are modified by depression or violence exposure are risk-aversion, decisiveness, altruism, trust and effort.

10. Innovation and Firm Performance in the Pakistani Textiles Sector

The project has been developed under the firm capabilities program of the International Growth Centre (IGC) and is led by *Waqar Wadho* and *Azam Chaudhry* (Lahore School) and will look at the innovation activities, innovation rate; its types and level in the Pakistani textile sector.

In this project they analyze the determinants of product innovation and its impact on firm performance in the context

of a developing country. We employ a multi-stage model linking the decision of a firm to innovate, its innovation investment, product innovation, and firm performance using firm level data from the textiles and wearing apparel sector, which is the largest export sector of Pakistan.

11. Business Confidence Survey of the Business Community in Lahore

In March 2015, the Lahore Chamber of Commerce & Industry (LCCI) and the Lahore School of Economics signed a Memorandum of Understanding, which established a link between academia and the business community. As part of this collaboration, the Lahore School and the LCCI has conducted three annual business confidence surveys (starting in 2015) to understand the perceptions of the business community regarding the prevailing economic conditions and the level of innovation being done.

12. A Partial Lagrangian Approach to Solving Dynamic Models of Economic Growth

Azam Chaudhry and Rehana Naz from the Lahore School Economics are developing a new approach termed as a discount free or partial Lagrangian method for construction of first integrals for dynamical systems of ordinary differential equations (ODEs). It is shown how one can utilize the Legendre transformation in a more general setting to provide the equivalence between a current value Hamiltonian and a partial or discount free Lagrangian when it exists. As a

consequence, they develop a discount factor free Lagrangian framework to deduce reductions and closed-form solutions via first integrals for ODEs arising from economics by proving three important propositions. The approach is algorithmic and applies to many state variables of the Lagrangian. In order to show its effectiveness, they apply the method to models, one linear and two nonlinear, with one state variable. They obtain new exact solutions for the last model. The discount free Lagrangian naturally arises in economic growth theory and many other economic models when the control variables can be eliminated at the outset which is not always possible in optimal control theory applications of economics.

13. A partial Hamiltonian Approach for current value Hamiltonian systems

Azam Chaudhry and Rehana Naz from the Lahore School Economics are developing a partial Hamiltonian framework to obtain reductions and closed-form solutions via first integrals of current value Hamiltonian systems of ordinary differential equations (ODEs). The approach is algorithmic and applies to many state and costate variables of the current value Hamiltonian. However, they apply the method to models with one control, one state and one costate variable to illustrate its effectiveness. The current value Hamiltonian systems arise in economic growth theory and other economic models. They explain their approach with the help of a simple illustrative example and then apply it to two widely used economic growth models: the Ramsey model with a constant relative risk aversion (CRRA) utility function and

Cobb Douglas technology and a one-sector AK model of endogenous growth are considered. They show that our newly developed systematic approach can be used to deduce results given in the literature and also to find new solutions.

14. Analysis to Institutional Barriers to Technology Adoption in the Pakistani Manufacturing Sector

Matthew McCartney (University of Oxford) and Theresa Chaudhry (Lahore School of Economics) plan to study the historical barriers to technology adoption in the Pakistani manufacturing sector with a special emphasis on institutional barriers like the conflict between workers and management, the impact of family run firms on organizational structures and the relationship between producers and suppliers in an uncertain business environment.

II. Completed Projects

1. Economic Geography and Misallocation in Pakistan's Manufacturing Hub

Theresa Chaudhry (Lahore School), with Muhammad Haseeb (University of Warwick) and Maryiam Haroon (CREB/Lahore School) looked at whether localization of industries can reduce economic distortions and dispersion in total factor productivity (TFP) among firms in Punjab using the Punjab Census of Manufacturing Industries (2005-06). This project was completed in 2016.

They considered two types of misallocation: i) dispersion in the distribution of output-based TFP (TFPQ), in particular, the survival of low productivity firms in the left tail; and ii) dispersion in revenue-based TFP (TFPR), indicative of allocative inefficiency. On one hand, we find that the distribution of TFPQ is less dispersed in more agglomerated areas (measured by the localization quotient, local productive concentration, and average firm size) and that average TFPQ is positively related to localization. On the other hand, we do not find evidence that agglomeration improves allocative efficiency measured as deviations in TFPR from the sector average, concluding rather that greater localization of small firms is associated with firms being more output and capital constrained. Findings of this project are published in Chaudhry, T., Haseeb, M. and Haroon, M. "Economic Geography and misallocation in Pakistan's manufacturing hub" *The Annals of Regional Science* (2017).

2. Understanding and Addressing Rural Poverty in Pakistan: Oxford University–Lahore School Collaboration

With funding from the British Academy and the Lahore School of Economics, researchers at Oxford and CREB have completed the 3-year collaborative program on the Economics of Rural Poverty in Punjab. The collaboration has led to several joint academic projects between the two institutions, involving work between *Dr. Marcel Fafchamps*, *Dr. Simon Quinn* at Oxford, *Dr. Kate Vyborny* at Duke University and *Dr. Naved Hamid*, *Dr. Azam Chaudhry*, *Dr. Theresa Chaudhry*, *Hamna*

Ahmed, Asha Gul, Uzma Afzal and Farah Said at the Lahore School of Economics and *Muhammad Haseeb* at University of Warwick. The collaboration has now far exceeded the scope originally planned, leading to new joint projects that have continued beyond the end of the grant. This project was completed in 2014.

The collaborative work includes research on the following topics:

a. Patron-Client Relationships and Rural Development in Pakistan

How do social networks and local “patrons” affect household wellbeing and access to public services? Patron-client relationships, or vertical social relationships in which individual powerful “patrons” have multifaceted relationships with “clients”, are said to be key features of both markets and politics in many developing country settings, including rural Pakistan. But how do these relationships work in practice and how do they affect the delivery of government goods and services?

These questions were explored by *Azam Chaudhry* (Lahore School of Economics), *Muhammad Haseeb* (Lahore School of Economics/University of Warwick) and *Kate Vyborny* (Duke University/Lahore School) initially with data collected from the Lahore School's Privatization in Education Initiative (PERI) survey and then with the new survey under this project. The researchers have developed several research papers analyzing these data, which examine questions including how local context affects the patron-client relationship, how political connections affect targeting of government

programs, and whether different types of program design make programs for the poor more robust to the influence of patronage. The researchers have presented this work in Lahore at the Lahore Economic Development Research Seminar Series (LEDRS) and at International Food Policy Research Institute (IFPRI), AIMS-Manila and Duke University as well as at seminars and conferences in Oxford, Ottawa and Paris and will submit papers for publication soon.

b. Learning about Flood Risk: Evidence from a Field Experiment in Pakistan

Farah Said, Uzma Afzal (Lahore School) and *Ginger Turner* (The Wharton School) investigated how individuals learn about flood risk through the experience and observation of flood events. The study tested the theory that individual risk perceptions and preferences could change with disaster experience, even when controlling for variation in initial asset constraints and losses. The aim was to improve on previous studies by matching game choices with survey data that included questions on expectations, asset, information sets, and timing by complementing surveys with experimental design.

A main contribution of this study was to improve the identification of individual loss measures, to test whether variation in flood damages at an individual level can explain differences in observed risk aversion changes. This research was particularly innovative in the Pakistan context, where there has been little work to date on behavioral economics. Findings on behavioral changes have been published in *Turner, G., Said, F. and Afzal, U.* “Microinsurance

Demand after a Rare Event: Evidence from a field experiment in Pakistan". *The Geneva Papers on Risk and Insurance – Issues and Practice* 39, 201 – 223, 2014; Turner, G., Said, F., Afzal, U., Campbell, K. "The Effect of Early Flood Warnings on Mitigation and Recovery during the 2010 Pakistan Floods". A. Singh and Z. Zommers (Eds.), *Preventing Disaster: Early Warning Systems for Climate Change*. London: Springer 2014; Said, F, Turner, G. and Afzal, U. "Attitudes Towards Risk in the Wake of a Rare Event: Evidence from Pakistan", *CREB Working Paper No. 02-14*, 2014 and Said, F; Turner, G. and Afzal, U. "Risk Taking and Risk Learning after a Rare Event: Evidence from a Field Experiment in Pakistan", *Journal of Economic Behavior & Organization* 118, 167 – 183, 2015.

C. Evaluating the Impact of Punjab's Girls Stipend Program

The government of Punjab, starting in 2004, offered a conditional cash transfer (CCT) of Rs 200 per month, to girls in class 6 to 8 with minimum 80 percent attendance, in order to increase the educational attainment of girls in districts with less than 40 percent literacy. The program was later extended up to grade 10.

Using two rounds of data collected, a 2009 survey of urban and rural households in Punjab (supported by NSF and the Lahore School of Economics) and a 2013 survey of only rural households (supported by the British Academy and the Lahore School of Economics), Amar Shuja and Theresa Chaudhry are analyzing the impacts of this CCT on enrollment and marriage outcomes by means of triple difference-in-differences approaches, comparing eligible girls to their

non-eligible elder sisters younger siblings in both stipend and non-stipend districts.

3. Caste, Social Exclusion and Education in Rural Punjab: World Bank and CREB joint Research Initiative

This funded research was in collaboration with Taryaba Tamim (Lahore School) and Rehan Jamil (World Bank). They used a multiple case study design and mixed methods approach to capture in-depth processes by which caste-based social exclusion shapes the educational opportunity for the marginalized castes in rural Punjab. Three villages were selected from the PERI 2011 data based on geographical spread (North, south and Centre of Punjab), caste and religious complexity and lowest school enrollment. Each village was taken as a case. Amartya Sen's capability approach to human development was used to evaluate educational opportunity in the space of capabilities and opportunities, in combination with forms of social exclusion identified by (Whitley, 2005), while Pierre Bourdieu's social critical theory provided the analytical toolkit. Data from 105 interviews with low and high caste parents of (10 -16 year old children) and school heads along with questionnaires, revealed that the caste-based social exclusion stemming from socioeconomic dimension refracted into active and passive forms of institutional exclusionary processes at macro and micro levels, across temporal, spatial and social planes on the one hand; and unfavorable inclusion of the low castes in their own groups, on the other hand; forcing the poorest and most excluded

castes to self-deselect themselves from accessing educational opportunity. This project was completed in 2013.

The results of the study were published as: CREB working paper “Caste, Social Exclusion, and Opportunities for Education in Rural Punjab”, *CREB Working Paper No. 01-15*, 2015 and in an international journal Tamim, T. and Tariq, H (2015). “The Intersection of caste, social exclusion and educational opportunity in rural Punjab”, *International Journal of Educational Development*, 43, 51-62. Two other papers from the same study are in the pipe line: ‘Factors affecting low - caste parents’ choices for schooling their children: case study of a village in southern Punjab’; ‘Caste, social capital and education in rural Punjab’.

4. Public Vs Private Schooling Choice at the Household Level

With a grant from Open Society Institute (OSI) Privatization in Education Initiative (PERI), researchers led by Masooma Habib, Hamna Ahmad and Sahar Amjad (Lahore School) undertook a study titled Determinants of School Choice – Evidence from Punjab, Pakistan. The study addressed the following overarching question: Why do parents choose low cost private schools when free public schools are available? The main emphasis of the study in answering this question was on the role of parents’ perceptions in school choice while controlling for a range of child, household and school specific characteristics. The study was based on a sample of 1024 rural households in 64 clusters spanning over 8 tehsils and 7 districts of the Punjab. This project was completed in 2012.

Findings of the study have been published in Ahmed, H., Amjad, S., & Habib, M. “Private Schooling: Determinants and Implications for Social Justice in Rural Punjab, Pakistan”. I. Macpherson, S. Robertson, & G. Walford (Eds.), *Education, Privatisation and Social Justice: Case studies from Africa, South Asia and South East Asia*. Oxford: Symposium Books Ltd 2014 and Ahmed, H., Amjad, S., Habib, M & Shah., S. A. “Determinants of School Choice: Evidence from Rural Punjab, Pakistan”, CREB Working Paper No. 01-13, 2013.

5. Financial Crisis and Migrant Remittances: Effects on Growth and Poverty in Selected South Asian Countries

With a grant from South Asia Network for Economic Institutes (SANEI), researchers led by Azam Chaudhry, Naved Hamid and Mahreen Mahmud from the Lahore School of Economics empirically investigated the effects of the global financial crisis on remittance growth and national income in Bangladesh, Sri Lanka and Pakistan. This project was completed in 2011.

Findings of the study have been published in Mahmud, M., and Hamid, N. “Migrant Remittances to South Asia: Determinants and Effect on Growth”. In M. K. Mujeri, and M. Wahiduddin (Eds.), *Adjusting to Global Economic Volatility. The Case of South Asia*. New Delhi: Academic Foundation 2014.

CREB Publications

CREB publishes papers to bring research being done at the Centre to a wider audience. **Working Paper series** comprise of rigorous analytical and empirical research studies while the **Policy Paper series** publishes papers more directly targeted towards a policy audience. The papers published since the last International Conference are listed below:

- **CREB Working Paper No. 03-16**
Connections and Elections in Lahore: How Network Centrality Affects Electoral Politics in Pakistan
Mahnoor Asif and Azam Chaudhry
- **CREB Working Paper No. 01-17**
The Theory of the Natural Resource Curse: A Political Economy View
Sadia Hussain and Waqar Wadho

CREB Team Research

A. Staff Publications

CREB staff have produced research which has been published in national and international journals. The papers published since the last International Conference are listed below:

1. **Two Sides of the Same Rupee? Comparing Demand for Microcredit and Microsaving in a Framed Field Experiment in Rural Pakistan.** *Economic Journal* (Forthcoming)
Uzma Afzal, Giovanna d'Adda, Marcel Fafchamps, Simon Quinn, and Farah Said

2. **Economic Geography and misallocation in Pakistan's manufacturing hub.** *The Annals of Regional Science*, 2017.
doi:10.1007/s00168-017-0824-7
Theresa Chaudhry, Mohammad Haseeb and Maryiam Haroon
3. **Entrepreneurship and Innovation in the Digital Economy.** *Lahore Journal of Economics*, Special Edition, Vol 21, September 2016
Naved Hamid and Faizan Khalid
4. **The Diversification and Sophistication of Pakistan's Exports: The Need for Structural Transformation.** *Lahore Journal of Economics*, Special Edition, Vol 21, September 2016
Maha Khan and Uzma Afzal
5. **Access to Finance and Agency: An Overview of the Constraints to Female-Run Enterprise.** *Lahore Journal of Economics*, Special Edition, Vol 21, September 2016
Farah Said
6. **Innovation in the Textiles Sector: A Firm-Level Analysis of Technological and Non-technological Innovation.** *Lahore Journal of Economics*, Special Edition, Vol 21, September 2016
Waqar Wadho and Azam Chaudhry

Other

Publications by other members of the CREB team (i.e. Senior Research Fellows and Visiting Fellows) in 2016 are listed below:

1. **Organizational Barriers to Technology Adoption: Evidence from Soccer-Ball Producers in Pakistan.** *Quarterly Journal of Economics*, (forthcoming). David Atkin, Azam Chaudhry, Shamyla Chaudhry, Amit Khandelwal, and Eric Verhoogen
2. **English language and social capital in organizational culture: A Case study.** *British Council Report* (forthcoming) Tayyaba Tamim
3. **On the Origins and Development of Pakistan's Soccer-Ball Cluster.** *World Bank Economic Review*, David Atkin, Azam Chaudhry, Shamyla Chaudry, Amit K. Khandelwal, Tariq Raza and Eric Verhoogen
4. **Closed-form solutions for the Lucas - Uzawa model of economic growth via the partial Hamiltonian approach.** *Communications in Nonlinear Science and Numerical Simulation*, 2016
Azam Chaudhry, Rehana Naz and F. M. Mahomed
5. **A partial Lagrangian method for dynamical systems.** *Nonlinear Dynamics*, 2016
Azam Chaudhry, Rehana Naz and F. M. Mahomed
6. **A Panel Data Analysis of Electricity Demand in the Pakistani Industrial Sector.** *Energy Sources Part B: Economics, Planning and Policy*. Vol 11 Issue 1, 2016
Azam Chaudhry

More from the Centre

International Conference on the Management of the Pakistan Economy

The Centre organizes the Lahore School's International Conference on Management of the Pakistan's Economy. The proceedings of the Conference are published in a special issue of the Lahore Journal of Economics. This year's conference is titled "**Igniting Technology led Growth in Pakistan: Role of Monetary, Fiscal and Investment Policies**". Previous conferences have focused on a range of themes covering topics in growth, trade, and development.

Seminar on Creating Capabilities for Growth 2016

Dr. Naved Hamid, Director, Centre for Research in Economics & Business (CREB), Lahore School of Economics and Resident Director International Growth Centre and Dr. Waqar Ahmed Wadho, Assistant Professor & Senior Research Fellow, Centre for Research in Economics & Business (CREB), Lahore School of Economics presented Research Papers at a Seminar in Islamabad on "Creating Capabilities for Growth" organized by the Consortium for Development Policy Research (CDPR) in collaboration with the International Growth Centre (IGC) Pakistan.

The seminar "Creating Capabilities for Growth" to connect policymakers and academics was held in Serena Hotel, Islamabad on 3rd December, 2016. It focused on Creating Capabilities for Growth through various channels such as Firm Capabilities,

State Capabilities, Trade, and Growth via China-Pakistan Economic Corridor (CPEC). Dr. Naved Hamid presented on “Implementing Competitive Policies for Garments Manufacturing”. Dr. Waqar Ahmed Wadho presented on “Innovation and Firm Performance in Developing Countries: A case of Pakistani Textiles Manufacturers”. The audience included local and international researchers, academics and members of the civil society.

Conference on Advances with Field Experiments 2016

Farah Said, Assistant Professor and Research Fellow, Centre for Research in Economics and Business (CREB), Lahore School of Economics, attended Advances with Field Experiments held on 15-16th September, 2016 at the University of Chicago, Illinois, USA. The conference was a gathering of eminent scholars and presenters from all over the world on innovative economic field experiments to address developing world issues. This year, the conference was hosted by the Department of Economics, University of Chicago and was organized by Dr John List, Dr. Robert Metcalfe (University of Chicago) and Dr Anya Samek (University of South California). It was attended by academics and researchers based at universities such as Tufts, University of Southern California, University of Pennsylvania, Harvard, Yale, Columbia, UC Berkley, London School of Economics, NYU, amongst others. This years’ keynote addresses were given by Professor James Heckman from University of Chicago, Dr. Juanna Joensen from University of Chicago and Dr. Jonathan Meer from Texas A&M University.

The research presented at the conference is at the forefront of field and experimental economics. Ms. Said was able to present her work on instrumental and pure demand for agency shown in households in Pakistan and received valuable feedback from the esteemed audience.

Global Summit on What Works, 2016

Farah Said, Assistant Professor and Research Fellow, Centre for Research in Economics and Business (CREB), Lahore School of Economics, attended What Works Global Summit organized by 3ie on 25-27th September 2016. Practitioners and researchers from over the world attended the summit. The purpose of the summit was to bring practitioners and researchers on one platform and allow a discussion of relevant issues in development and poverty alleviation. Ms. Said was able to present her work on agency shown in female micro-entrepreneurs in Pakistan and received useful feedback from practitioners on how the results of this, and other on-going studies can be used in policy making.

Health & Gender workshop 2016

Farah Said, Assistant Professor and Research Fellow, Centre for Research in Economics and Business (CREB), Lahore School of Economics, attended Health & Gender Workshop at the University of Essex on 23rd and 24th September, 2016. The workshop was attended by junior academics and researchers based at universities such as UCL, UC Davis, Essex, Warwick and others. Ms. Said was able to present her work on pure demand for agency shown by women in rural

households in Pakistan in Pakistan and received constructive feedback on her work with co-authors.

Symposium on Economic Experiments in Developing Countries (SEEDEC) 2016

Farah Said, Assistant Professor and Research Fellow, Centre for Research in Economics and Business (CREB), Lahore School of Economics, attended the Symposium on Economic Experiments in Developing Countries (SEEDEC) held on 12-13th July, 2016 in Nairobi, Kenya. SEEDEC is a prestigious conference that show-cased presentations on innovative economic experiments to address developing world issues. Over the last 5 years, SEEDEC has become an well recognized and leading international conference of academics, engaged in some of the most innovative research around the developing world. In the past, it has been hosted by UC Berkeley and Princeton University. This year, the conference was held at the Strathmore Business School and was hosted by the Busara Centre for Behavioral Economics, an independent experimental economics lab facility, originally set up by economists based at Princeton University. It was attended by junior academics and researchers based at universities such as UC Berkeley, Princeton, Oxford, Stanford, Duke, Michigan, Houston, Gottingen and Maastricht, amongst others.

Ms. Said was able to present her work on agency shown in female micro-entrepreneurs in Pakistan and received valuable feedback from the esteemed audience. Ms. Said was the only researcher from South and East Asia who was asked to

present her research. Her work was well received by the attendees and is a good example of rigorous research being carried out by researchers at the Lahore School. She was also able to network and attend the keynote sessions. Keynote addresses this years were given by Professor Edward Miguel from University of California, Berkeley and Professor Muriel Nierderle from Stanford University.

International Conference on Energy and Environment (ICEE) 2016

Zenab Naseem, Office Manager, Centre for Research in Economics and Business (CREB), Lahore School of Economics. She presented her paper "Assessing the Viability of Solar Water Pumps Economically, Socially and Environmentally in Soan Valley, Punjab" at "ICEE 2016: International Conference on Energy and Environment" which was held on June 13-14, 2016 in Venice, Italy. The conference was hosted by the world Academy of Science, Engineering and Technology (WASET). Attending the conference was a very exciting and learning experience for her in terms of sharing research ideas and networking with other researches. She received a certificate for the oral presentation. The paper was published in the International Journal of Environmental, Chemical, Ecological, Geological and Geophysical Engineering Vol: 10, No: 6, 2016.

Seminar on Innovation and Technological Progress 2016

Dr. Waqar Ahmed Wadho, Assistant Professor & Senior Research Fellow, Centre for Research in Economics & Business

(CREB), Lahore School of Economics was a guest speaker in a seminar on Innovation and Technological Progress organized by the Ministry of Science and Technology of Pakistan on 27 April 2016 in Islamabad. The seminar was attended by officials of the ministry including Federal Secretary Mr. Fazal Abbas Maken, and chairs and directors of various wings/divisions of the ministry. Dr. Wadho discussed the findings of their new research (jointly with Dr. Azam Chaudhry, Professor at Lahore School) on innovation in the Textiles sector of Pakistan as well as on how their study could be used for the future research and policy making by the ministry of Science and Technology of Pakistan. The findings of this research provide a detailed status of innovation activities and their intensities, the determinants and obstacles of innovation, as well as the impact of innovation on firm performance such as labour productivity and profitability. In the discussion session, participants highlighted the need of quality research for better policy making and showed their interest in collaborating with Lahore School of Economics for Ministry's proposed innovation survey.

Completed MPhil Theses

1. ***The Role of International Migration of Unskilled Labor and Parental Absenteeism in the Human Capital Formation of Children Left Behind***
Yumna Hasan (Supervisor Waqar Ahmed Wadho)

This study builds up a theoretical model to explore the combined effect of parental absenteeism due to emigration of unskilled labor and remittances on the economic growth in the source country through the channel of human capital accumulation of children left behind. The results of the study reveal that the international migration of unskilled adults constructively lowers down child labor in the economy. Moreover, this emigration is beneficial for the human capital formation of children left behind and economic growth in the source country only when the unskilled workers relative wage is above a threshold level. In such a scenario, the positive effect of unskilled migration, in the form of an increase in the optimal proportion of time devoted to education by the child, overpowers the negative effect of parental absenteeism. The reverse holds true when the unskilled workers relative wage is below a threshold level. This is because parental absenteeism emerges as a dominant force in this case and hampers human capital formation of children left behind, thus, adversely affecting the source country's growth rate.

2. *Technology Adoption and Productivity Analysis in the Sialkot Sport Gloves Industry: A Comparison Among Small, Medium and Large Enterprises*

Saba Fazal Firdousi (Supervisor Azam Chaudhry)

This study aims at analyzing technology adoption and productivity levels across firms classified as small, medium and large. The research questions address whether adopting latest technologies in gloves production process will lead to higher total factor, total revenue and labor productivity. In order to test the research hypothesis, this thesis focuses on the sports gloves manufacturing industry in Sialkot, Pakistan. An index of technological sophistication is developed primarily based on a mapping of the various technologies used in each step of gloves production process. A causal inspection of the data reveals clustering of total factor productivity and total revenue productivity around the mean levels and thick lower tail of the total revenue productivity indicates significant number of low productivity firms keeping in view their actual potential. The results were further reinforced by labor productivity data which shows a fat lower tail implying large number of firms clustered around low labor productivity. Similarly, there are significant differences in total factor productivities of medium and high tech firms in comparison to medium to low tech firms. The main findings were technology adoption to be positively related to productivity. Other, interesting results were level of retained earnings having negative affect on total factor productivity and total revenue productivity

across firms. It suggests that firms with higher retained earnings are less interested in research and development and adoption of latest technologies as discussed above due to conventional production approach and mind-sets. Lastly, it is suggested that government should lower the import duties on advance machinery to make it affordable for medium to low tech firms. For future studies data should be collected across countries to make comparative analysis and application of advanced econometric models.

3. *Social and Economic Networks: An Investigation of Retailer Networks in Lahore & their Impact on Enterprise Performance*

Amar Shuja (Supervisor Theresa Chaudhry and Azam Chaudhry)

A detailed study of a market in Lahore was conducted to create a map of the socioeconomic network of different retailers located in this particular area. The aim was to distinguish various ways in which these individual sellers were connected to one another, and then investigate how these network ties affected their economic lives. As opposed to developed economies where economic exchange is buttressed by formal market institutions, developing economies often depend on personal relationships between different economic actors for business transactions. This study looks at how networks allow entrepreneurs to navigate through a business environment that is troubled with sluggish and costly information transfer, prohibitive terms of credit, and feeble (often-exploitative)

formal institutions that are a detriment to contract enforcement. This research uses a respondent driven sampling method to obtain comprehensive social network data through extensive structured interviews with sellers of water pumps and motors in the Brandreth Road area of Lahore. Information on 6 different types of relationships, from who respondents took advice from, to who they shared information, and inventory with were obtained to construct a network of connections representative of the many ways in which retailers in these markets engage with and benefit from one another. Each individual seller's centrality in these networks was then determined to confirm that more central players in the market had a significantly different demographic makeup than their less central counterparts, and that they leveraged this position to secure more favorable terms of exchange for themselves: more central sellers paid significantly less for borrowed inventory, and did so with a significantly relaxed repayment schedule. Centrality, however, had an unexpected impact on the sellers' joint purchases arrangements, where less central sellers in the market reported receiving significantly larger discounts on jointly purchased supplies.

4. Cognitive Reflection and Decision

Making

*Taimoor Naseer Waraich (Supervisor
Azam Chaudhry)*

We conduct a study which tests the impact of Cognitive Reflection on decision-making theories of time and risk preferences. Decision theorists have suggest that people make lottery decisions according to the

expected maximum value assigned to the lottery and they also claim that people generally discount the future more. We test these theories using the Cognitive Reflection Test (CRT). We use an extension of the original CRT which was a 3 item test based on the dual system theory and was used to divide people into different cognitive groups according to their scores. Originally the test was developed by Fredrick (2005) and then worked on by Primi etal (2013); they extended it to a 7 version item of the test which has greater predictive powers as compared to the original one. We also conduct an additional behavioral experiment which measures time and risk preferences but with real monetary rewards to see whether the decisions of the respondents change when presented with real life choices. The aim is to see the impact on both risk and time preferences using the instruments initially used by Fredrick (2005) and our additional experiment. We find a significant difference between decision making of respondents divided into two groups of low and high CRT scores. We also find that that new version of CRT has a stronger correlation with time and risk preferences. Our results show that the relation persists when we switch from hypothetical to real choices.