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Technical & Vocational Training in Pakistan

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Abstract

Pakistan's economic reforms that were set in motion in 1991 rest on the tripod of privatisation, domestic deregulation and trade liberalisation. A critical component for strengthening the reforms and improving their effectiveness will be the availability and quality of human resources for accelerating industrial growth.

This paper, therefore, attempts to:

a) Review the success of Pakistan's vocational and technical education institutions in satisfying the market demand for various skills.

b) Based on these assessments, identify the key constraints to the availability of technical skills and make recommendations on how the government can improve the efficiency and effectiveness of training arrangements.

The Supply and Demand for Labour

The labour force has been growing at just over 2 per cent per annum as against a I per cent expansion in employment opportunities, resulting in an annual increase of 60,000 in the army of the unemployed. Although employment growth within each sector of the economy has been influenced by the changes in the structure of production, there has been a steady decline in the labour absorptive capacity of the economy. The capital intensification of industry in particular has affected the growth of sectoral employment. The decline in the elasticities of employment is being experienced at a time when the labour force participation rates are changing, partly owing to an improvement in school enrollment rates and partly on account of the growth in female participation.

One of the results of the imbalance between the supply of and demand for manpower has been the emergence of a structure characterised by a large number of educated individuals looking for white collar jobs (especially in the public sector) and an industrial sector struggling to adopt new technologies by providing informal training to a work force handicapped by poor literacy levels.

Institutional Arrangements for the Supply of Skills

Introduction

Faced with competing demands and powerful lobbies, the GNP commitment to education has remained weak throughout the history of the nation. Not surprisingly therefore, whereas successive governments have presented vocational education and technical training as an important component of their strategy for human resource development, only Rs. 2 billion was allocated in the 7th Plan (1989-1993), (barely 8 per cent of the allocations of the provincial government for education and under 0.5 per cent of the total public sector development programme). The allocations in the recurrent budget have also been low. In the Punjab, for instance, only 0.4 per cent of the recurrent budget for education is devoted to technical training.

Sources of Skills

Technical labour is supplied by public sector technical training institutes, private sector programmes and in-house training organised by public and private sector industrial establishments.

Vocational Training Programmes are administered by a number of federal, provincial and private agencies[1] (see Appendix-1 for an overview of the administrative structure of the federal and provincial vocational training system), i.e.:

i) The National Training Board.

ii) Government Vocational Institutes administered by the Provincial Education Departments.

iii) Technical Training Centres and Apprenticeship Training Centres administered by the Provincial Labour Department.

iv) In-plant Training Programmes, i.e.. Apprenticeship Training under the Apprenticeship Training Ordinance 1962 administered by the Provincial Directorates of Manpower and Training of Labour Departments for establishments employing fifty or more workers.

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[1] *Report of the National Manpower Commission*, Government of Pakistan, Ministry of Labour, Manpower and Overseas Pakistanis (Manpower and Overseas Pakistanis Division), TclaiTiaharl I99I.

iv) Training within industry designed for individual and specific needs. Multinationals, public sector concerns and a handful of the more enlightened domestic employers depend largely upon their own sources to provide formal training programmes to their employees.

v) Other training programmes administered by various agencies such as Overseas Pakistanis Foundation, Agency for Barani Areas Development, Small Scale Industries Corporation, etc.

The foremost problem in determining the sources and quality of skills is the level of detail at which information is available on key indicators such as the disciplines and trades for which training is being provided at the training institutions, the extent of formal and informal private sector involvement in vocational training, the type, quality and relevance of the facilities for practical training at the institutes and the nature of shortcomings in the output of the institutes as experienced by employers.

A major part of the manufacturing and services sectors relies on informal training, on the traditional *Ustad-Shagird* relationship to fulfil their needs. A recent study[2] on the self-employed in small-scale manufacturing showed that only 3 per cent of the self-employed in this sector had formal while 65 per cent had had informal training in their area of activity.

The primary weaknesses of training through the informal system are the excessively long periods of informal training, in some cases eight to ten years, its inability to address the demands of rapidly changing production processes and techniques, and its high cost in terms of productivity and quality.

Public Sector Technical Training Institutions

The legal and operative framework for technical training was established in the form of the National Training Board following the promulgation of the National Training Ordinance in 1980.

Studies carried out by various organisations at different times have produced conflicting estimates of the number of institutes/facilities in the country and their training capacities. Table-1 summarises data published by the National Training Board on institutional capacity, enrollment and output. It highlights the degree of underutilisation of existing capacity.

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[2] A.R. Kemal and Zafar Mehmood, "Labour Absorption in the Informal Sector and Economic Growth in Pakistan", Friedrich Ebert Stiftung, Islamabad, 1993.

Table 1: Institutional Capacity, Enrollment and Output

	Capacity	*Enrollment*	*Enrollment as % of Capacity*	*Output*	*Output as % of Capacity*
1985-86	8,577	6,894	80.38	4,790	55.85
1986-87	9,100	7,944	87.30	5,856	64.35

Source: National Training Board.

It is revealing that in 1986 Bangladesh had about 23,500 students enrolled in public sector vocational training institutions and polytechnics, three times the enrollment in the training institutions in Pakistan.

The numbers provided in Tables 2 and 3, although somewhat dated and at odds with those published by the National Training Board, while reinforcing the difficulties of analysis as a result of inconsistencies in published statistics, summarise respectively, the pattern of growth in the numbers of institutions providing training and the output capacities of the training centres.

Table 2 shows that the enrollment in institutes providing training in commercial skills has grown at around 11.3 per cent per annum, while that in the industrial/vocational and technical training institutes has grown at 1.5 per cent and 5.7 per cent per annum respectively.

Table 2: Total Number of Secondary Vocational Institutes by Type 1978-79 to 1991-92

Year	*Type of Institute*					
	Commercial		*Industrial/ Vocational*		*Polytechnic/ Technical*	
	No.	*Enrollment*	*No.*	*Enrollment*	*No.*	*Enrollment*
1978-79	52	5,500	87	9,094	22	10,515
1981-82	61	12,506	79	9,864	23	14,416
1984-85	73	15,304	87	10,537	23	13,074
1987-88	116	20,919	169	11,618	42	21,608
1991-92	237	22,020	188	11,068	52	21,503

Source: *Pakistan Statistical Year Book*. 1994. Tables 14.5 and 14.6.

Table 3: Overall Availability of Vocational Training Facilities and Annual Output in Pakistan

Agency	No.of Training Centres	Output (Annual
Directorates of Manpower and Training and National Training Bureau (including Apprenticeship Training)	73	7030
Directorates of Technical Education.	99	11707
Small Industries Corporations/Boards (Carpet, Centres, TC, Hosiery Centre, Embroidery, Cutlery and Pottery Centre and Metal Centre)	226	9110
Agency for Barani Area Development, Punjab.	6	462
Training Programmes of Overseas Pakistanis Foundation (short courses 3 to 6 months)	3	90
Department of Industries, NWFP	14	1260
Staff Welfare Organisation, Islamabad.	43	11350
Large Public Sector Organisations (in-service) - Pakistan Railways, PIA, WAPDA, PTC, etc.	7	160
Paramedical Staff Training Programme		
Total-	494	43619

Source: *Report of the National Manpower Commission,* 1991.

There is a high social demand for places in government run technical training institutions in some areas and for particular trades. This is partly because the beneficiaries of these training programmes expect to make large private returns on the highly subsidised education. These

institutions, however, have few, if any, links with prospective employers (see further details in the sections on Linkages with Industry and Student Population).

Training Schemes in Public Sector Companies

The government requires public sector companies to run training and apprenticeship programmes. The large public sector organisations such as PIA, WAPDA, Pakistan Telecommunication Corporation and Pakistan Railways also operate training programmes. Their in-service training schemes produce about 11,000 trained technicians annually. The Small Scale Industries Corporations/ Boards also operate schemes which produce about 9,000 trained personnel each year.

However, these enterprises are not overly concerned with the quality of the intake to their programmes - such decisions being influenced by factors such as kinship to existing workers, interventions by politicians, etc. - nor with the results of their training programmes. Survey results, however, show that public sector companies do not view the quality of their employees or their own ability to attract manpower as a hindrance to their operations,

Training Programmes Organised by the Private Sector

Private sector involvement in occupational training is substantial, by way of on-the-job and apprenticeship training schemes (see Apprenticeship Programme below), within industries and through private institutions. However, only the large firms provide serious and effective training. Industry specific institutes have also been set up, for example, by the textile industry. Many enterprises too have developed and institutionalised their own training schemes which are tailored to their specific requirements and which can be constantly updated as new production processes and technologies are acquired.

The private sector also provides training through NGOs. Most NGO-run programmes are directed at the poor and at women.

The Apprenticeship Programme

The Apprenticeship Ordinance, 1962 and the associated Apprenticeship Rules, 1966 require all manufacturing enterprises employing fifty or more skilled workers to recruit one apprentice for every five skilled workers.

At the time of recruitment a contract is signed between the firm and the apprentice for a period ranging from a minimum of six months to three years. This contract is signed under the supervision of the Region: Offices of the Directorate of Apprenticeship. An apprentice, once recruited is required to work in the factory for three months, the probation period. After he has completed his probation period the terms of employment of the apprentice (other than his wage) are protected by the labour laws. Then he can only be dismissed from service with the prior approval of the Regional Directorate.

The apprentice is then required to attend a six month overall basic training course designed to give him exposure to various disciplines. This training is arranged by the Regional Directorates either in the eight apprenticeship institutes (that can cater for 1,200 apprentices) or in private firms which have enrolled for this programme. The firm may run such a training programme within its own premises, provided it can specifically dedicate an area and necessary equipment/tools for this activity.

The wages of an apprentice are 60 per cent of the initial basic wage for that skill, and rise by 10 percentage points per annum over the period of his contract with the enterprise.

Failure to comply with the Ordinance invites a minimum fine of Rs. 10,000 (with an additional penalty of Rs. 1,000 per day on failure to pay the fine) while the maximum penalty is imprisonment for six months.

The formal apprenticeship system produces approximately 1,500 trainees every year while the estimated requirement is more than 20,000. One estimate suggests that training under the apprenticeship programme is imparted by less than half the eligible establishments in Punjab and Sindh and by just a handful of units in NWFP and Balochistan.

Employers are reluctant to participate in a training package over which they have little control and which is thrust upon them under legislation which they consider coercive in nature, particularly in view of legislation which they consider coercive in nature, particularly in view of the rather rudimentary training facilities available throughout the country. They are quite unhappy with the quality of the six month training course organised by the Regional Directorates.

The employers resist the compulsory schemes also because of the legal treatment of apprentices as workers for payroll related levies, e.g., the Industrial Employment Ordinance, 1968, covers apprentices under the definition of skilled workers. Apprentices take advantage of this clause by claiming that this qualifies them for the various concessions announced by the

governments for workers from time to time, e.g., cost of living or other wage increases, etc. These factors act as disincentives to the hiring of apprentices.

Employers also complain. that the enforcers are only using their policing powers to earn rents. They do not have the training to play what should in fact be their role of co-ordinators, supervisors and evaluators of training programmes.

The government complains that employers get around labour legislation by using apprentices as cheap labour and after the completion of the three year contract period do not hire them as permanent workers.

Donor Assistance to Technical Training Programmes

Current donor participation in the sector is devoted to the provision of funds to establish skill development councils and skill management committees involving the concerned Chambers of Commerce at industrial estates.

Assessment of Public Sector Training Institutions Management and Administration of Vocational Training Institutions

As described in the previous section, these institutions function under assorted bodies, bureaus, councils, etc., with little co-ordination amongst themselves. In addition, bureaucratic procedures dictate that those mandated to run these institutions have little or no control over important aspects of their operations. Hiring and firing of staff, salaries and career development, the fee structure and even academic standards fall outside the ambit of those managing these institutes; such powers are vested in boards and bureaus far removed from the scene.

The vocational training institutes have not escaped the general malaise afflicting educational institutions. They are poorly resourced, ill-managed and misdirected. By internationally accepted standards efficiency is low, the student teacher ratio ranges between II to 13 compared with 15 to 25 in other similarly placed countries.

The limitation of resources and their improper deployment directly affects the quality of the training available at these institutions.

Academic Staff

Public sector training institutions face a severe shortage of trained instructors; few have undergone formal training. It is difficult for these institutes to attract staff with the relevant expertise, particularly those that

have good industrial experience. In some cases, because of low salaries, academic staff have to look for other part time employment, with its adverse impact on student motivation and inspiration.

The limited funds for consumer items, research and other operational support, paucity of instructional aids, obsolete and insufficient equipment, the outdated curriculum and a weak pay structure are all contributing factors to the inability of these institutions to equip themselves with sound trainers.

Salaries, increments and promotions are strictly tied to civil service pay scales. Higher levels of effort and achievement do not attract a reward different from that due to an average or even below par performer. Having entered the academic scene, staff are virtually guaranteed tenure, with promotions based almost entirely on the length of tenure. Industry is able to offer higher salaries and incentives for the motivated trainer, and the more competent are inevitably attracted by the private sector.

As conditions of service do not attract qualified trainers, courses that are most in demand suffer from severe staff shortages.

The Curriculum

Vocational institutions have made few attempts to either update their curricula to reflect recent advances in technology or to bring them in line with the needs of the industries they are designed to support. The approach towards training tends to be traditional and theoretical.

The curriculum is designed so as to cover a series of topics in a specified time period with a view to certification. It has not been structured in a modular fashion with self-contained modules (developed on a competency basis) to be taken up by trainees at suitable times, such that the completion of a specified set of modules leads to trade certification.

There is limited, if any, interaction between the employers and these institutions in the design and content of syllabi. Students and institutions, therefore, do not benefit from the inputs that could be provided by industry on current technology and practice.

A UNDP study[3] has shown that of those finding employment after attending training institutions, 27 per cent faced difficulties in performing their jobs. Thirty-two per cent of them attributed this to insufficient

[3] UNDP ILO/ARTEP, "Monitoring of Vocational Training Programmes in Pakistan", April, 1991.

training, while others had problems because the equipment on which they had received training was either at variance with that found in the work place or had become obsolete.

A roughly similar survey carried out in the North West Frontier Province (NWFP)[4] had concluded that around 51 per cent were using the same tools as those on which they had been trained. This was perhaps because 77 per cent of the employed had been accommodated in the public sector (compared with only 16 per cent in the private sector) - that does not regularly update its technological base.

Linkages with Industry

The linkages of these institutions with industry are rudimentary in nature. The vocational training system and the employers who are ostensibly served by the system operate largely in disregard of each other. Generally, industrial and related enterprises have developed their own training procedures and tend to ignore the vocational training institutes altogether.

A World Bank Survey in 1987[5] showed that employers placed little or no value on school based training, preferring on-the-job training in all circumstances. To support this, the survey interviewed 885 employees, of whom only four were found to have attended technical high schools.

Moreover, as industry merely criticises the performance of these institutions the potential for a healthy interchange is also lost.

These problems have been overcome in the Latin American countries, for example, by ensuring strong linkages with industry. These countries finance vocational training institutions through a levy on enterprise payrolls. The resulting financial stability has nurtured autonomy and enhanced training quality.

Student Population

The educational experience at these institutions is largely an unsatisfactory one. Students enter them in pursuit of a certificate regardless of actual motivation and interest; the heavily subsidised education serves as an incentive for uncommitted students. In many cases students enrol for want of alternatives and after exploring other avenues; a large number of

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[4] *Survey Report on Employability of Technical Manpower in NWFP during the period 1982-86*, survey carried out by the NWFP Board of Technical Education in collaboration with Friedrich Ebert Stiftung and the National Manpower Commission, June, 1990.

[5] "Assessment of Employers' and Employees' Opinions on Supply and Demand of Vocational Manpower in Pakistan's Industry", World Bank, 1987.

unemployed youth take up vocational training as something to do. In addition, those who do secure gainful relevant employment are seen to be better off.

The UNDP-ILO (ARTEP) study found that more than 50 per cent of the entrants to vocational training programmes had earned their last academic qualifications more than four years before entering the vocational training programme. The survey of 25 per cent of those who had graduated from Technical Training Institutions during the period 1983-87 revealed that students had enrolled on courses for such reasons as their low cost (20 per cent), and the fact that they were held in the evening (61 per cent). Only 14 per cent had taken into consideration the reputation of the institute or the competence of the faculty. The same survey found that only 60 per cent of those who had enrolled actually had any interest in the trade in which they had obtained training.

The NWFP study had come to a similar conclusion. It had found that only 4 per cent had received training in view of the usefulness of training and 20 per cent because of the perceived opportunities for employment. Not surprisingly, therefore, many of them, despite having received training and acquiring qualifications, fall short of the requirements of industry.

Institution based training has a high cost and is subsidised by the government; training at these institutes is virtually free. Consequently, the government ends up subsidising those who manage to enter these institutions at the cost of those who, for whatever reason, do not; as places are limited, only a few can benefit from the extensive investment made by the government.

The Product of the System

On the one hand, because of non-uniform standards for certification, the quality of the output of different institutions varies greatly. On the other hand, having graduated, candidates regard themselves overqualified for entry level jobs. The cultural attitude, which is discussed in the relevant section, also plays its part. Those emanating from the system demand supervisory positions, which are only a small fraction of the positions available on the shop floor. In any case, such positions are generally assigned by employers as a reward for proven ability, experience and loyalty.

For various reasons, therefore, employing the products of the system is not an easy task. The results of the UNDP study were that 63 per cent of those trained were unemployed; the NWFP study had also discovered that 55 per cent of the polytechnic and 59 per cent of commerce diploma

holders and 72 per cent of those with vocational certificates were unemployed. Nearly 40 per cent of the unemployed in the UNDP sample had been waiting more than two years for a job. Of those employed two-thirds were employees and one-third was self-employed. Almost 25 per cent of those employed had had to wait more than two years for a job and only 35 per cent found jobs within six months.

The NWFP study revealed that 30 per cent found a job after two to three years, 28 per cent were unemployed for over three years, while 20 per cent were unemployed for a period of six months to one year.

The dated and inflexible programmes in the training institutions have meant that workers emanating from this system cannot necessarily expect to have acquired the skills required for gainfill employment.

Other Factors Affecting the Performance of Vocational and Technical Training Institutes

As little information is collected on the requirements of the market, there is an imbalance between the demand and supply of different categories and types of skills, resulting in the simultaneous co-existence of surplus manpower in some skills and severe shortages in others.

A recent survey[6] has shown that there is a locational mismatch of the demand for and the supply of certain skills. It found that inadequate attention had been paid to the siting of the vocational training centres and on the nature of the programmes being offered. In several instances the labour absorptive capacity of the local economy was not only limited it was also not demanding the skills in which training was being offered. The survey clearly showed that the two key players, industry and institutions, were not tallying.

Other Constraints to the Development of Skills

The Policy Environment

The government's economic policies distort the incentive environment for those desiring to invest in the development of skills. Policies have been frequently changed because of the revenue needs of the government and the pressure of lobbying groups, and always at the expense of efficiency. These factors have shortened society's value function for time; reinforced by insecurity and fear that the system will not be fair, the rules of the game will be changed simply to suit family, friends, patrons, etc.

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[6] *ILO-Trainins Needs Survey*, Preliminary Report, 1992.

Furthermore, a nation's response to technological change is influenced by the environment. In a society where profits are made less on the basis of competition and merit and more by 'fixing' deals and by arranging the 'desired' import and excise duty and sales tax rates, productivity is an alien concept. In such a system there is little need for professional or quality management, in the technology embodied in people - human capital.

As the system is not driven by productivity, adaptation to local conditions becomes a problem. When promotions in the public sector are based on seniority or 'right contacts' and not on merit and performance, how can the state recognise and reward productivity? The incongruence of society with technology has made technology and scientific method irrelevant.

Labour Related Legislation

Labour laws also discourage efforts directed at efficiency improvements. Investment in skill development is hindered by the rigidities of hire and fire regulations.

If the issues discussed above are addressed, the environment for entrepreneurial participation in technical training can become more conducive because entrepreneurs can, through quality and efficiency improvements, expect to gain higher returns from investments in such skills.

Cultural Factors

Finally, the cultural attitude to manual work also adversely affects attempts to develop effective training programmes. Those with higher education tend to believe that they are far too 'qualified' to carry out manual work. Most, therefore, seek managerial jobs rather than assignments on the work floor.

The Skill Gap

Modern Technology and the Nature of the Skill Gap

Until recently the private sector had neglected the skill gap, because production technology tended to be rather simple, industry being heavily protected from both internal and external competition. As domestic manufacturing capacity catered essentially to local, in-country demand, its expansion was essentially determined by the growth in domestic demand.

This factor and the lack of competition did not put a large premium on product quality, and thereby the quality of the labour input.

However, with the saturation in domestic demand and the opening up of the economy, more complicated technology has been introduced in the production process. Competition in international markets is forcing Pakistani entrepreneurs to update manufacturing technology. Greater sophistication in quality control procedures has enhanced the role of technology in industries that had hitherto been labour intensive. For example, looms in the country's largest industrial sector, textiles, are now equipped with computers that are programmed not only to steer the production processes but also to provide important feed back on the performance of the looms themselves.

The induction of modern technology is rapidly altering the nature of the skills requirement. With the production structures slowly moving out of the intermediate to the higher range of value added products, there is greater demand for both standardised and higher level skills. Greater emphasis is now placed on the innovation and design skills needed for the graduation of the manufacturing process. The composition of skills required for the new production structures and processes has changed.

Furthermore, the share of the lowest skill level in production is not only much smaller today, it is also relatively easy to develop. The quantum of skill or knowledge required to perform these lower level repetitive functions is not vast. In many cases, two to four week in-house courses are adequate for training unskilled workers to carry out the task of machine operations.

However, the process of technological change requires constant training and retraining of workers. Training, therefore, becomes a continuous process. Operating and fine-tuning production equipment, to arrive at the least cost input mix, therefore, requires a workforce possessing basic minimum educational skills, as well as the ability to be retrained several times over during its working life to assimilate the rapid changes in technology.

Moreover, modern process industry requires skilled maintenance workers who have training in multiple skills, as opposed to the single skilled worker who was the mainstay of the engineering/manufacturing industry in the past. While the demand for the nature of skills has changed significantly institutions have remained wedded to the concept of imparting single skills to trainees.

As discussed in detail in the earlier section, the training structure has proved to be ineffective in responding to the demands of industry. To aggravate the situation further, inadequate resources are allocated for the kind of expansion that is taking place. Whereas priority should clearly be attached to raising deteriorating standards, it is being assigned to expanding facilities. Under the existing conditions the investments in these institutions are simply not productive.

The General Education System

The state of the occupational training institutions is not the sole factor in determining the quality of the product of this system nor in its acceptance by employers. The level of basic education determines not only the material that vocational institutions have to play with but also the capability of workers to acquire new skills.

Low literacy levels and low levels of schooling produce a low quality work force that suffers from a relative inability to adapt quickly to new work methods and technologies. This limits job mobility, within and between firms, and the opportunity to augment skills and adjustment through training.

A great deal needs to be done to improve the general quality of the labour force at the entry level into industry. The literacy level of the industrial labour force has been estimated at 25 per cent.[7] As a result, a large proportion of the potential labour force lacks the educational foundation and the basic skills upon which industry may build. In the Punjab, for example, data suggests that unless something is done to remedy the situation, the prevailing levels of basic education - whereby only 25 per cent workers have completed the first eight grades - will nullify efforts being made by entrepreneurs to remain competitive in international markets.

Although in future the higher enrolment in education will gradually raise the education attainment of the labour force, and thereby its quality, the labour force will be only 50 per cent literate by the turn of the century. Bangladesh, facing similar problems with literacy levels has vocational training schemes in which a key feature is the stress placed on short courses in literacy and numeracy.

What industry requires of the general education system is the instilling of trainability in its prospective workers. A sound general education makes the individual literate and numerate and equips him with

[7] Report of National Manpower Commission. 1991.

the ability to understand instructions and processes, to plan and to give directions. Basic education is required not only to read and understand simple instructions (e.g., on the lot number being processed, size of machine gauge, etc.), but also to evaluate the incentive structure being offered by the employer. Training in specific skills becomes easier and more effective if there is a sound foundation of general education; those who have sound general education can be trained relatively quickly for the vast majority of shop floor jobs offered at the entry level. Such an education enhances the ability of workers to acquire the capability to learn new skills. Lack of education places limits on growth beyond the status of a skilled worker or supervisor. The creative mind required to grow further is not developed.

Therefore, general education serves as a basis for skill development. It increases worker productivity by improving the access of the poor and socially disadvantaged groups to training and wage employment. Literate workers are valued by all sectors. Evidence from a study[8] in 1984 showed that 57 per cent of employers in even the small scale enterprises in the informal sector put a premium on literacy. Basic education is universally seen as the only intervention that has a large scale impact on the quality of skill development.

It is not fortuitous that countries which registered high rates of change in technical efficiency are also among the world leaders in the share of investment in national income and in school enrollment rates.

Basic education is inexpensive compared with technical education. The recurrent cost of a pupil year at primary level is 7 per cent of that of a trainee year in a technical training centre and 17 per cent of a pupil year in secondary school.[9]

It should, however, be noted that while it is being argued that technical skills are more easily acquired by those with a background in formal education, basic education is not being advocated as a substitute for vocational training. Nor does it mean that resources should be diverted from basic education, on which the rate of return is high, to technical and vocational education on which the return is also high, although lower than in primary education. Basic education, by improving access to vocational

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[8] Pakistan/Netherlands Study: "Profiles of Informal Employment in Urban Areas", Ministry of Labour and Manpower, 1984.

[9] It has been estimated that the recurrent unit cost of training at a technical training centre is Rs. 8,000 to Rs. 10,000 whereas it is less than Rs. 3,500 for secondary education and about Rs. 600 for primary education.

training, will complement it. Therefore, resources need to be found for both primary and technical education and vocational training.

Recommendations

Introduction

The overwhelming importance and necessity of good quality basic education stands established. With regard to technical and vocational training, there is much debate not only on its value as it is currently delivered but also on the manner in which this need is to be fulfilled.

Reforms are necessary to improve the efficiency and quality of service delivery of technical training institutions organised by the public sector. However, individuals with the essential knowledge and skills useful to industry will only be produced when there is a demand for technology requiring such skills. This can best be achieved through government and industry acting as partners in the improvement of the training system, private sector collaboration being essential to drive the system.

A concomitant requirement in this regard would be the government's determination to infuse greater competitiveness in the economic system through the creation of an environment (or by putting such incentives in place) that rewards productivity and efficiency.

Establishing the Need

The further expansion of vocational training facilities needs to be carefully examined considering that employers do not indicate any marked preference for vocationally trained applicants over those with no such background.[10]

Although there is a tremendous need to improve and upgrade skills, sectoral investments under the existing institutional arrangements should only be made after a more careful review. Therefore, as a prerequisite, a comprehensive survey of existing training schemes by skill, that are available in the private and public sectors needs to be undertaken.

In the absence of positive findings, linking employability to the training received, the benefits of continued investments in training institutions are not assured. The government should consider declaring a moratorium on the further expansion of facilities which could lead to a

[10] "Assessment of Employers' and Employees' Opinions on Supply and Demand of Vocational Manpower in Pakistan's Industry", World Bank 1987.

further deterioration in standards and a swelling of the ranks of the technically educated unemployed. Future investments should, therefore, be predicated on a substantial restructuring of the system which should enhance efficiency through consolidation and better utilisation of existing capacity.

Restructuring of Existing Technical Institutions

Greater flexibility and job relevance needs to be introduced in the administration of the existing technical training institutions. If they are given adequate funding - while increasing accountability by linking funding to actual placements - and autonomy, they may become more responsive to the needs of the market.

Authority should be decentralised to institutions having the capability and willingness to adopt more innovative approaches for delivering technical and vocational education. They should be empowered to adjust their operations and course offerings to adapt to requirements in their respective catchment areas. Many course offerings are far too long for the objectives and skills being taught. Pruning the length of some courses would help to reduce costs and lower drop-out rates. Also, efforts need to be directed towards an improvement in the currency and content of the programmes.

In order to make such institutions cost-effective, managers should be empowered to effect cost recovery by charging fees from trainees and/or their employers - thus ensuring that only motivated and committed students enroll - by hiring out unused buildings and by allowing academic staff to provide consultancy services to local employers. Funds thus generated could be used to improve the quality of institutional facilities.

The problem of recruiting efficient and experienced instructors could also be overcome by the rationalisation in pay scales that would be possible within an autonomous organisation[11], enabling for example, unemployed engineers to be utilised as teachers. The increased payroll cost could then be met from the savings of operating a leaner establishment, by allowing staff a significant percentage of consultancy assignments undertaken by them for local industry and by other cost recovery measures suggested above.

The measures discussed above would also help establish links with local industry, a critical requirement for improving the effectiveness of these

[11] Currently they have rights inferior to those of teachers in general education.

institutions. Local industry, which is to utilise the product of the vocational training institutes, needs to be more closely involved in the operations of the institutions. Measures that would be beneficial to all parties concerned, industry, trainees and institutions include:

Identification of training needs and prioritisation of training requirements.

Joint planning of curriculum by training institutions and industry.

Setting up of advisory councils comprising senior personnel from industry and from training institutions to monitor standards of training and to ensure their relevance to the needs of local industry.

Encouraging local industry to sponsor trainees and secure first employment for them.

Inviting foremen and supervisors from local industry to be visiting instructors and to discuss standards, level of skills, techniques and current practice.

Including industry representatives in examiners' panels to conduct trade tests.

The Training Needs Survey[12], which established contact with a wide range of employers, reinforces the need to endow the latter with some sense of participation and ownership of Vocational Training Programmes. In this manner they will not only be able to influence the operation of these programmes but also, as a result, be expected to make greater use of their output.

Private Sector Input in Managing Technical Training Institutions

The private sector could be induced into playing a more direct and active role in designing (and perhaps running) the programmes and curricula of the technical training institutions. The governing body of these institutions could have greater representation from the private sector; it could be chaired by a respected industrial employer in the area. In case of institutions not performing to expectations, a reputable industrial organisation in the private sector could be leased the facilities of one or two selected institutes on a pilot basis. The assessments of the institutes

[12] *ILO Training Needs Survey for the National Vocational Training Programme*: Preliminary Report, 1992.

transferred to private management would be carried out on the basis of agreed performance or output indicators, e.g., job placements, pass rates in examinations to be conducted by government agencies, etc.

Improving Private Sector Input in Formulating Training Programmes

To make institutionalised training more focused the private industrial sector should be provided an opportunity to have its views incorporated in setting standards and in the planning and management of training under official auspices. It is, therefore, proposed that to establish a stronger partnership between the government and the private sector a high level National Advisory Committee should be formed to assist the government in developing a national policy and to give it advice on the human resource needs of industry and commerce. Government officials should only have a token representation on the Committee, so that they cannot set its agenda or set its direction of efforts. It should be chaired by a prominent industrialist and should comprise representatives of the Chambers of Commerce, trade associations and technical specialists.

An additional responsibility of the National Advisory Committee (NAC) could be to assess the performance of the training institutions, based on criteria such as enrollment, drop-outs, and pass and placement rates.

The NAC's functional areas of responsibility, the proposed institutional arrangements for mandate implementation and the financing of its activities are discussed below.

Private Sector Input in Formulating Training Programmes
- The Role of the NAC

One of the main responsibilities of the National Advisory Committee (NAC), would be to investigate which sub-sectors and which skills, based on size or priority or expected growth, could benefit from skill development packages. The NAC would then set up sector specific sub-committees which would be mandated to develop such packages.

The sub-committees would supervise package development, establish the training content, prescribe material and books, the method of delivery, class size and duration and design of practical work, together with the criteria for certification and co-ordinate training activities and programmes for the sector. They would also identify and recruit trainers/consultants (see below). The mandate of the sub-committee would include making arrangements to update the training packages, to ensure that they are kept current. This training package would be available for organisations to

purchase. A subsidy might be required if the general skills component of training is high, as it would raise the risk of lost employer investment. The sub-committee would also examine requests for such assistance on the basis of the priority of the sector.

Other means of government assistance to the private sector could be the provision of trainers, partially or wholly at government expense. The consultants could be offered a basic minimum as well as whatever they would be able to raise by selling their services. Such an arrangement would, on the one hand, keep the burden on the exchequer low and, on the other hand, provide the consultant with the incentive to market his skills and create a demand for his services. To check financial abuse, training vouchers could be issued to firms on the basis of employees to be trained. The training consultants could then be paid for their services through these training vouchers which would be encashed by the respective sub-committees.

The above referred sub-committees would include professionals and representatives of the relevant association of industry. Both the professional members of the sub-committees and the training consultants should be recruited on contracts - to ensure that "bureaucratisation" does not creep into these bodies, government employees in these bodies acting as watchdogs of public funds should be rotated at short intervals.

These sub-committees would be located at the secretariat of the relevant association of industry. If this secretariat requires strengthening to support the activities of the sub-committee, the funding could be provided through the allocations for the sub-committee.

The costs associated with these measures should be offset by the sales of these packages and services to the private sector and by gains in export earnings directly attributable to the increase in exports of value added products produced by a higher level of skill acquired from improved training.

In addition, some of the funds could be sourced from the export cess of 0.25 per cent that the government already levies on exports. The burden on the budget is unlikely to increase significantly, especially if rather than providing funds from the earnings of the cess to each industry directly in proportion to its contribution to the cess, the government were to make more judicious use of the funds to sponsor training efforts in promising sectors. This could be done through an in-built mechanism whereby it could support and reward efforts in direct proportion to the annual increase in sectoral exports.

It is a moot point whether employees would be willing to contribute towards their own "general training' on the grounds that they will be able to recoup their investment when it raises their productivity and with it, their wages. This is relevant because employers are likely to be reluctant to risk making substantial investments in training in an environment where technologies are changing so rapidly. The reasons cited for this vary from the apprehension that trained labour demands more by way of compensation (and is better able to gain employment elsewhere) to lack of funds.

The government should also consider establishing a National Training Fund to be administered by this public-private management committee which would fund training projects based on pre-determined criteria.

This Fund could also be used to reimburse the costs incurred by firms on training courses conducted by different institutes or by the consultants hired by the above referred sub-committee; such an arrangement will enable small enterprises to take advantage of the economies of scale in training costs. This method of reimbursement is proposed because it would be easier to monitor. Initially, an upper limit, of say Rs. 50,000 per year, could be placed on reimbursable training costs per company.

The effectiveness of the subsidy built into training programmes financed from this Fund could be improved by targeting them on training for specific occupations and by making eligibility criteria flexible.

Supplementing Private Sector Training

The international experience is that private sector training programmes are more likely than government sponsored schemes to produce workers equipped with the skills that the private sector demands. This is so because the private sector is more aware of current needs and short term trends than government and can adapt to change relatively quickly and more cost effectively than the government machinery. In Pakistan, the rapid growth in computer training institutions in the private sector shows how the private sector has responded to market demand.

Private sector institutes are better able to produce the skills required at any given point in time, thereby increasing the probability that students qualifying from such institutes can be absorbed swiftly and usefully by the sector for which they have been trained

There are some sub-sectors which would obviously benefit from private sector initiatives in the area of training, with the government assisting privately organised institutions through matching grants towards capital and recurrent costs or through long term loans for the construction of buildings and acquisition of equipment, supplemented by fiscal incentives, e.g., duty free imports of tools, permission to charge against the taxable income for the year, two times the expenditure incurred on the training of workers, subject to an overall limit of say x per cent of turnover, etc.

However, in some areas such as electronics and engineering, where higher education institutions already exist in the public sector, private sector programmes would benefit from the support that can be provided by such institutions.

Supporting On-the-Job Training Schemes

Apprenticeship training schemes in the private sector, which have been recognised as an extremely effective means of occupational training to increase skills and productivity, should be promoted by the government. Apprenticeship and on-the-job training schemes carried out within establishments need to be strengthened and standardised and in-plant training needs to be made more structured and systematic. Such training schemes would be all the more beneficial if they were supplemented by revitalised institutional training courses and a tariff structure that does not discourage the import of tools and instructional aids.

In its drive to increase productivity and exports, the government needs to encourage the private sector to invest both funds and other resources in training. It could take an initiative in this regard by sponsoring the development of standardised training packages for essential skills that form the backbone of key industries. This does not imply that the government should become the organiser and the deliverer of training, merely that it should provide incentives and act as the motivator for the private sector to espouse the cause of skills development. However, to protect public funds that may be provided, it must include itself in the monitoring processes.

A broad outline of these packages and the role of the NAC in steering their development and implementation have been discussed in the section on Private Sector Input in Formulating Training Programmes.

Technical Support for the Informal Sector

The above referred efforts at productivity enhancement should no) ignore the utility of the informal sector which provides almost 70 per cent of the employment in the manufacturing sector. This sector needs to be supported through industrial extension services so that improved sub-contracting linkages can be developed between them and industrial units in the formal sector. The expected benefits of the access to skills training, in the shape of better quality products, higher productivity and incomes would reinforce the linkages between these two sectors. It is proposed that this training be carried out through Mobile Training Units (MTUs) which would carry out short courses, perhaps of one week duration, in the major bazars in urban areas.

The content of the training to be delivered by the MTUs would be determined and developed by the sector specific sub-committees set up under the auspices of the NAC. The consultants appointed by the sub-committees would be responsible for imparting this training.

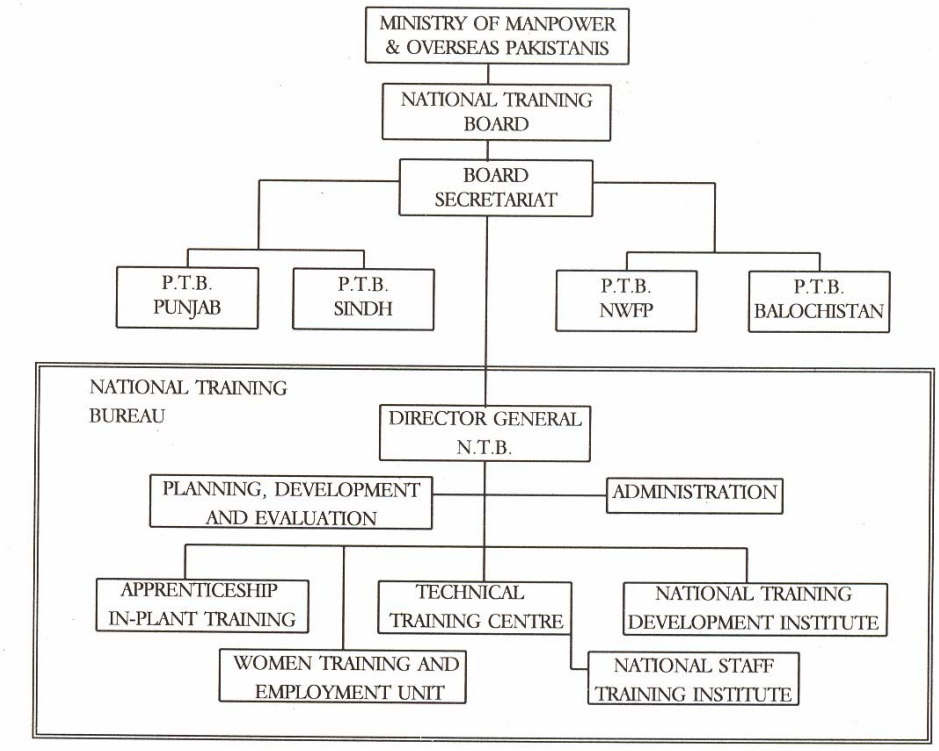
It appears that until the utility of such training is recognised by the "bazars", and is reflected in higher incomes for those engaged in manufacturing activities in the informal sector, the government would have to bear the entire costs of this programme.

Appendix-1

An Overview of the Organisation and Administration of the Federal and Provincial Vocational Training System

The National Training Board is made up of representatives drawn from employers and employees. The National Training Board is organised as below:

ORGANISATIONAL STRUCTURE OF NATIONAL TRAINING BOARD



The National Training Board has the responsibility of developing training programmes, standardising skills, upgrading technical standards in existing institutions and also expanding and regulating standards of the existing institutions and training facilities both in training institutions and in industry.

Provincial Training Boards in each province ensure the execution of training plans, carry out trade testing, and register schemes as well as evaluate training schemes and prepare provincial training plans.

At the level of middle (Grade 6 to Grade 8) and secondary school; (Grades 9 and 10) technical subjects have been introduced in the curricula to give greater emphasis to technical education, in the form of agro-technical courses and vocational subjects. These efforts have not beer particularly successful in achieving the objectives associated with them partly because of the difficulties in establishing and thereafter promoting and sustaining a technical culture in a schooling system dominated by general education focused on the humanities.

The result is not surprising because international experience ha; repeatedly shown that introduction of vocational courses in secondary education does not yield any significant benefit to employers or prospective employees.

References

Government of Pakistan, Ministry of Labour and Manpower, 1984. *Pakistan/Netherlands Study: Profiles of Informal Employment in Urban Areas*.

Government of Pakistan, Ministry of Labour, Manpower and Overseas Pakistanis, 1991. *Report of the National Manpower Commission* (Manpower and Overseas Pakistanis Division).

ILO Training Needs Survey, 1992. Preliminary Report.

Kemal, A.R., and Zafar Mehmood, 1993. "Labour Absorption in the Informal Sector and Economic Growth in Pakistan", Friedrich Ebert Stiftung, Islamabad.

Report of National Manpower Commission, 1991.

Survey Report on Employability of Technical Manpower in NWFP during the period 1982-86, 1990. Survey carried out by the NWFP Board of Technical Education in collaboration with Friedrich Ebert Stiftung and the National Manpower Commission.

UNDP ILO/ARTEP, 1991, Monitoring of Vocational Training Programmes in Pakistan.

World Bank, 1987. "Assessment of Employers' and Employees' Opinions on Supply and Demand of Vocational Manpower in Pakistan's Industry",

Towards a Theoretical Framework for an Analysis of Corruption

Moazam Mahmud

Abstract

This is a conceptual paper on the analytics of the phenomena of economic corruption. And it is very much a working paper, begging comments. The paper concentrates on what appears on first reflection a redundant question -what is the impact of corruption? The almost knee jerk answer is loss of income. However, when modelling economic corruption we run into the problems of determining the questions of: loss of income for whom - the principal, the agent, the state, the consumer, the economy? - how? and by how much?

We will argue here that an economic analysis of corruption must explain how a two agent phenomena, say a principal agent problem, has macro implications. Contrary to much of the literature, especially that on Pakistan, our solution suggests a three agent model to explain micro to macro transmissions of corruption. Our framework draws upon institutional theory, rent seeking and DUP literature, and the analytical device of tradeables and non tradeables borrowed from international trade theory.

The format of this paper is the following. In the following theoretical section, we will summarily examine some representative, formal, theoretical literature on corruption in Pakistan[1]. There are two sets of problems with this literature. One it offers a very narrow definition of corruption, whereas we feel the need to proffer one comprehensive framwork for analysing a wider typology of corruption phenomena. Two, the literature does not explain the analytics of the transmission of corruption from a two agent interaction to the macroeconomy. In the next section we will posit our own contribution towards a theoretical framework for basing an analysis of corruption on, making no claims for comprehensiveness, and merely marking a conceptual direction.

[1] Shahid Alam is the acknowledged published pioneer in the area of corruption in Pakistan whose work has been very inspiring. I would also like to thank Nadeem-ul-Haq with whom preliminary discussions showed our approaches to dovetail, and whose work will be in print shortly.

A Summary Analysis of some Representative Formal Theoretical Literature on Pakistan

While there is considerable discussion of the phenomena of corruption in Pakistan, [see eg. Transparency International 1996], there is very little formal economic analysis. Theoretical analyses, on which hypotheses about corruption must be based, estimates made, and then only solutions offered, are even more scanty. Shahid Alam offers the only such formal theoretical framework in print as yet, [1989, 1990].

Alam accepts the usual definition of economic corruption as 'Sacrifice of the principal's interest for the agent's'. Based on this, the taxonomy of corruption that he addresses is somewhat narrow. It can be cost deceasing for agents, price enhancing of rationed goods by officials, benefit enhancing for agents beyond legal sanctions, and benefit appropriation by officials.

Alam's theoretical framework is even more narrowly based on corruption by an official. The net benefits of corruption for the official are equal to the gross benefits minus the probabilities of detection, transfer, and dismissal multiplied by their costs. The central question for Alam then is to determine the sets of factors contributing to this equation, aversion to corruption, and those that increase the benefits and decrease the probabilities of detection, transfer, and dismissal and their costs.

The accepted aversion to corruption factors for officials in the literature are taken to be ascriptive ties pressurising officials to transfer benefits, low real wages, and demonstration effects. Amongst the net benefit enhancing factors, Scott argues that legislation is universal while demands are parochial and so are met through corruption, [1969]. Leroy adds a twist on Pareto optimality, that corruption is perceived to make someone better off, without perceiving to make anyone worse off, [1985]. And of course monopoly of power can significantly contribute to increasing the net benefits of corruption [Alam 1989].

Alam finally goes from behavioural arguments to debunking hypotheses about the positive impact of corruption in low income countries (LICs). Leffhas argued that in many LICs market prices are set by the state, so corruption actually increases allocative efficiency by efficient producers offering actual market price for goods, [1964]. Nye argues that corruption facilitates capital formation in LICs, [1967]. And Bayley holds that nepotism increases public employment as a substitute for defficient public works, [1966]. Alam's theoretical counter arguments are well made.

Corruption cannot increase allocative efficiency because corrupt officials will avoid increasing tatonement for fear of detection, [Alam 1990]. Corruption cannot increase capital formation because it lowers tax revenues, [Alam 1989]. And excess employment simply leads to underemployment [Alam 1989].

We would like to extend Alam's work in three respects. One, Alam has a narrow definition of corruption. Two, a broader definition of corruption must then be used to give a more comprehensive model of agent's behaviour. Three, this model of agent's behaviour must include the impact on the economy.

(i) The definition of corruption as just official corruption is too narrow. There at least two other broad categories of corruption. There is purely private sector corruption, with both principal and agent in the private sector. Then there is the wider question of corruption of the political mandate, when promised goods and services are not delivered. A more comprehensive definition of corruption must at least include these three broad categories of public, private, and electoral mandate.

(ii & iii) If corruption is perceived as a principal agent problem, then the impact of public sector corruption on the macroeconomy is quite clear. The transmission mechanism from micro to macro in the case of public sector officials is at least a loss of the state's income, in the taxonomy of the four cases dealt with by Alam. The question arises that when we deal with private sector corruption, what, if any, is the transmission mechanism from micro to the macroeconomy. If both the principal and the agent are in the private sector, this becomes a purely private transaction, then is there an impact on the macroeconomy, on consumers, producers, and the state? And what is the nature of this impact? Further, by analogy, what, if any, is the transmission mechanism from micro to the macroeconomy of corruption of the political mandate. If the principal is the political candidate, and the agent is the voter, does the public sector transmission mechanism apply here, or the private sector one?

Finally there is the old chestnut of policy implications. A theoretical framework to analyse corruption must attempt to establish causality on which to base policy. In the following section we will posit a contribution to such an analytical framework.

Towards a Theoretical Frame Work for Analysing Corruption

A Redefinition of Corruption

For a more comprehensive definition of economic corruption we will make some simple assumptions and then pose a set of necessary conditions to define corruption.

Assume:

Two agents A and B in a purely private market

A contracts to sell good/service x to B

If A defaults, (in terms of quantity, quality, timing, price, or credit conditions), or

If B defaults, (in payment conditions)

This now constitutes a breach of a purely personal contract.

The question now is, how does breach of a purely personal contract become corruption?

For this we will posit three sets of necessary conditions:

(i) Externalities in the private sector.

The public must be affected by the breach of a personal contract between A and B. This implies that at least a third agent C must be affected by the breach of contract between A and B, which constitutes an externality. This makes corruption a three agent game.

(ii) The public sector, and state credibility

If either of the two agents, A or B, is the state, again based on Condition (i), a breach of contract between them must affect the public.

(a) If A is the state and defaults, B the member of the public loses. This is still a two agent game.

(b) However, if A is the state and defaults, B as a private agent loses, but additionally agent C will now be reluctant to contract with state A. So the state loses credibility, for example by a run on the banks,

or the central bank, or popular demonetisation, or inflationary expectations, which we regard as very important forms of macro corruption. Therefore again in a personal breach of contract between A and B, C is necessarily affected, and the externality makes it a three agent game even in the public sector.

(iii) Hobbesian political contracts

If A as a political candidate promises political and economic goods and services to their voters B and C. Examples of political goods are liberty, representation, participation, and equity. Examples of economic goods are employment, income, basic needs, and social and physical infrastructure. And if then A reneges on the political contract, affecting B and C, then analogous to (ii) we have an important form of macro corruption. Note that the contract breached this time is not a personal contract between two agents, but a political contract with at least three agents, making it a three agent game in the political sector.

So we have defined corruption as a breach of contract with externalities, constituting at least a three agent game. And the typology of contracts that we consider significant are private, public, and political.

Of these three types of contracts, interestingly economic literature on political contracts (iii) is perhaps the most developed, as public choice theory. Arrow's Impossibility Theorem combined with voting paradoxes give a powerful argument that in a democracy majority political demands will be defeated and so the political contract breached by a number of factors, [1951]. In essence this is a five part argument. One, voter's information on their own issues is not sufficiently detailed given the current information flows in liberal democracies. Two, political candidates information on broader issues that transcend their constituencies is again not suffiently detailed in this system. Three, in a three party game the majority will of the voters will not be dominant and minorities will cut them out. So A will be defeated by B, who will be defeated by C, producing the phenomena of cycling majorities. Four, the order of introducing bills in parliament significantly determines their probability of acceptance, which gives the speaker of the parliament who tables the bills strong dictatorial powers. Five, the bureaucracy which implements policy does not have an incentive system which is related to performance, in that they cannot be sacked easily.

The second type of contract that is well dealt with in economic literature is private contracts (i) with externalities. Institutional theory as represented by Coase, Demsetz, Posner and North argues that institutions

evolve to internalise externalities, [Coase 1937, Demsetz 1967, Posner 1977, and North 1992]. For example, joint property has high transaction costs which inhibit investment and productivity, which moves property rights towards private property over time. There is also a large allied literature on transaction costs and their minimisation, based on moral hazard, monitoring, supervision, enforcement, search costs, efficiency wages, and screening, [see eg Cheung 1969, Braverman and Stiglitz 1972, and Mahmood 19911.

However the models of institutional theory and transaction costs do not suit our problem of corruption very neatly because most of this literature is a two agent problem, with a principal and an agent, with the principal seeking to minimise costs. Our definition of the problem of corruption demands a theory of a breach of contract between two agents A and B with externalities for a third agent C - that is a three agent problem with externalities. We will attempt to lay out some basic building blocks for such a theory in the following subsection.

Breach of Contract with Externalities - A three and four Agent Game.

We will try to trace the analytical steps through which corruption can emerge.

Assume: Agent A contracts to sell good x to agent B, amidst competition from other sellers.

The usual contractual conditions apply, of quantity, quality, time, price, and credit. So demand is given by buyer B and agreed to by supplier A. Now we will argue that corruption can emerge through supplier A in turn offering to buyer B supply based on a number of contingent conditions. We can investigate a number of possible cases.

Case-1: Private Sector Externalities Constituting Corruption

Assume: A offers to supply x at the lowest price, cutting out competing suppliers, but on the contingent condition that for example the quality will be lower than stipulated in the formal contract. If B is a wholesaler in turn merchandising/retailing to consumer C, as the usual stylised market transactions work, C believes the quality to be standard as advertised or stipulated by an external monitoring agency such as the state or a standards bureau which we will call agent D. However, the quality is actually lower through contractual collusion between A and B, for example safety standards in cars or construction work.

Tradeables and Non Tradeables

Now we need to detail what has happened through this transaction. For this we can use an analytical device from trade theory of tradeables and non tradeables. So for instance in international trade, commodities are traded, but national parks may not be so readily tradeable. We can apply this concept of tradeables and non tradeables to the contractual conditions between A and B. Now what has happened in the contractual transaction between A and B, is that a contractual condition which was a non tradeable like quality because it was set by an external agent D, has become a tradeable. Resultantly agent C, the consumer, suffers an externality through an unperceived drop in safety.

Abnormal Profits and Rent

Further, A has secured a contract at the lowest price, by offering supply based on a contingent condition of turning a non tradeable quality since set by an external D, into a tradeable. Resultantly, both A and B split an abnormal profit, by the extent of the lowered cost of producing lower quality, which is over and above the normal profit based on producing standard quality set by D.

There is a further question of how to categorise this abnormal profit created by turning a non tradeable contractual condition into a tradeable. Ricardian rent theory, and rent seeking literature argue that rent is earned on commodities with inelastic to fixed supplies, [Kreuger 1976). Now a non tradeable has an inelastic supply. However, if a commodity is absolutely not traded it has a zero market price. Therefore our inelastic supply non tradeable contractual condition of quality cannot earn any rent. So standardised safety in cars or construction, stipulated by an external D, is not traded, has no price, and earns no rent. However, when A and B now convert this contractual condition of safety from a non tradeable into a tradeable, it now earns a rent. Note that safety earns a rent now because it is traded but still in inelastic supply - that is it is not fully competitively traded. If it were fully competitively traded, supply would become elastic and the rent would cease. So contractual collusion between A and B to convert a non tradeable contractual condition like safety into a tradeable, earns them a rent over and above normal profits. And consumer C suffers an externality through an unperceived drop in safety.

This case then shows the possibility of corruption in a purely private sector market transaction. Corruption in the private sector has been defined as a breach of contract between A and B with an externality affecting C.

Here we have shown that there is a formal contract between A and B with some contractual conditions which are non tradeables like quality, for example (safety standards) stipulated by an external agent like the state D. A and B can collude through a real contract to convert the non tradeable contractual condition of quality into a tradeable lowering quality (lowering safety below set standards), and thereby earning rent over and above normal profits. So the real contract breaches the formal contract, and consumer C suffers an externality of an unperceived drop in quality (lower safety).

Case-2: The Public Sector, Justice and State Preferences

We can now apply the base case of the private sector to the public sector by analogy.

Assume: That the state A has contracted to supply commodity x to individual B.

But A can also supply this same commodity x to another individual C.

The commodity x can be seen for instance as justice, or a school. The contractual condition can be seen as a just preference for B and not C.

Then justice is given by the logical statement: B R C (ie B is preferred to C)

And injustice is given by: C R B

Since justice is a non traded good, B R C is a non tradeable, has no price, and so will earn A no rents.

However if A is now willing to convert the non tradeable contractual condition of a just preference of B R C, to a tradeable, then C R B also becomes a possiblity. Just preference is converted from a non tradeable to a tradeable, and now earns rent. The rent will be earned because both B and C will now compete for A's preference by paying for it. The rent can take a pecuniary form, or the form of a vote for candidate A.

So this case shows the possibility of corruption in the public sector. Public sector corruption was defined as a breach of contract between state A and individual B, with an externality for C. In this case A takes a contract of a just preference for B which is a non tradeable contractual condition, and converts it into a tradeable of a possible preference for C, which allows it to

earn a rent. B and C now bid for state preference because it is a tradeable rather than a non tradeable just preference.

Case-3: Political Contracts and Preferential Votes.

Case 2 of public sector contracts extends simply to politic contracts. The example of horse trading for a majority on the floor is : obvious three agent game with externalities.

Assume: A is a political incumbent, with a contractual condition of preference for a political party or platform B. And C is an alternative political party, or' platform, with both B and C vying for majority.

Now A can B R C, or

C R B

So political preference which is a non tradeable contractual condition earning no rents can be converted into a tradeable earning rents. B and C will then bid for A's political preference. This is a breach of a political contract by A, with externalities for both B and C.

Causality and Policy Implications

We have defined corruption as a breach of contract between two agents with externalities affecting third and fourth agents. Significant forms of these contracts are taken to be private contracts, public contracts, and political contracts.

The base private sector model is a four agent game. Agents A and B enter into a formal contract for good x with some contractual conditions given as non tradeables like quality standards set by an external agent like the state D. Breach of the formal contract takes place when A and B collude to convert the non tradeable contractual condition of say a stipulated quality standard into a tradeable of lower quality. The conversion of non tradeable contractual conditions like quality into tradeables allows both A and B to earn rents over and above normal profits. These rents are based on relatively inelastic supply of the converted non tradeables. Were the supply to become fully elastic and quality fully traded, the rents would cease. Agent C the final consumer of good x suffers an externality through an unperceived loss in quality.

The base case of private contracts extends by analogy to the case of public contracts with a three agent game. State A contracts to deliver good

x to B. The contractual condition is a just preference by A for B over agent C. This contractual condition is breached by A converting the non tradeable just preference of B R C, which earns no rents into a possible unjust preference of C R B, which now earns a rent. B and C then bid for state A's preference.

The case of public contracts extends simply to political contracts. The case of horse trading for a political majority on the floor is a simple three agent game. Political incumbent A has a political contract in a preference for party or platform B over C. The non tradeable contractual condition of B R C however earns no rents for A. This non tradeable contractual condition of B R C can now be converted into a tradeable possibility of C RB which now earns a rent. Both B and C then bid for As vote.

The question then is, what are the enabling factors which allow this conversion of non tradeable contractual conditions into tradeables which earn rents and imply externalities for third and fourth agents. In each of these three cases of private, public, and political contracts we feel that the single most significant enabling factor is the high transaction costs of monitoring, supervision and enforcement of the contractual conditions by the agents affected by externalities and the state. The specific transaction cost which is extremely high is access to timely justice. In the case of the breach of the private contract consumer Cs recourse to consumer protection legislation and timely rulings would inhibit future collusive breaching of non tradeable contractual conditions such as quality between agents A and B. In the case of the breach of public contract again, access to timely appeal and rulings against unjust preferences would inhibit state As breaching of the public contract. In the case of the breach of the political contract, legislation and timely rulings will inhibit the threat of floor crossing.

So the single most effective solution to this three and four agent game of breach of contractual conditions by converting non tradeables into tradeables to earn rents, is reducing the transaction costs of access to justice.

Governance in an International Institution - The World Bank and its Reorganisations

Sikander Rahim

I. Abstract

The governance of an institution is normally partly ensured by other institutions, which depend on yet other institutions for their governance. But who ultimately guards the guardians? For the liberal electoral democracies of Europe and America the answer that evolved from the political thought of the eighteenth century and the limited liability joint stock company of the nineteenth was, crudely put, checks and balances and voters, who could be the electorate or shareholders. Its limitation is that it presupposes a state and the right of the voters to vote in their own interest. How, then, can good governance be ensured for international organisations, especially the World Bank and the International Monetary Fund, in which the representatives of the developed countries hold the majority of the votes on the Boards and are expected to cast them, not in their own immediate interests, but in the long term interest of the developing countries that borrow from these institutions?

For a long time the question did not seem to arise, the only departures from good governance that the Bank was accused of was that its decisions were on occasion influenced by politics, an accusation that did not seem to hurt the institution. The major shareholders, notably the US, were widely believed to have used their power in the Bank to help, deny help or even harm a country or government for motives other than the economic development of the country. Such behaviour is contrary to the Articles of Agreement of the Bank, but the financial markets on which the Bank depended were, if anything, inclined to share the same political biases. Nor were major shareholders of the Bank who disapproved likely to make an issue of it, while the governments that thought they had been treated unfairly and in violation of the Bank's statutes refrained from breaking off with the Bank. Invariably, once such a government had been replaced by one the major shareholders approved, the country resumed borrowing from the Bank. Politically influenced behaviour, provided it was only occasional, did not jeopardise the governance of the Bank and could be tolerated.

The question of governance was finally raised for the Bank in 1986, when allegations that it was over-staffed and cumbersome led to a succession of changes in its internal organisation imposed from outside. Upon

becoming President of the Bank that year, Mr. Conable began preparation for a reorganisation that was carried out in 1987. Some of the salient features of the new organisation were changed soon after and, when Mr. Wolfensohn became President in 1995, a further reorganisation was started that culminated in 1997. The history of the Bank in recent years is, therefore, unlike that of the IMF, which, despite having practically the same external governance mechanisms, has remained unchanged in all important respects; rather it resembles that of UNESCO, the ILO, and the United Nations Secretariat, bodies that have all gone through some reorganisation.

But the requirements of governance at the Bank are different to those of the other UN bodies that have been reorganised; because of the large amounts that it lends to developing countries and the governance functions it itself performs in these countries as a consequence, the Bank is subject to pressures that these bodies are not. To the extent that it was successful in carrying out its mission despite the pressures, it was because it had robust mechanisms of governance. Taken together, developing countries can borrow over $ 20 billion a year. To ensure that this money is correctly used, the Bank must often exercise governance over individual government agencies that implement the projects being financed and sometimes over the government itself. Its governance is also frequently demanded because the Bank's approval of a country's economic management can be needed for obtaining aid from other sources, for rescheduling external debt or for reassuring financial markets. This often means that measures must be carried out that powerful interest groups in the country oppose or that cause widespread discontent. Almost all governments of borrowing countries have found that, at some time or other, perhaps all the time, their relations with the Bank involved high stakes. There has always been motive enough for governments or interest groups to influence the Bank's decisions by offering inducements to its staff.

Yet this did not happen. Up to 1987 the governance of the Bank coped with the pressures. The most obvious evidence, perhaps, was the Bank's reputation for being rigid in applying its methods and standards. To its critics it was doctrinaire and heartless. Neither they nor its supporters suggested that the organisation had become lax in imposing its economic doctrines or that its staff was amenable to personal favours.

In place of a watchful external authority, the Bank relied on internal controls, what can be termed for present purposes, "internal governance", as opposed to the "external governance" deriving from bodies that do not come under the authority of the Bank's management. Their most elaborate form was reached when Mr. MacNamara, as president, reorganised the Bank in 1972 to cope with a rapid growth of its lending and a wider range of

purposes for which it would lend. Some of its features are described below, but its basic logic was straightforward. A substantial part of the Bank was occupied with watching over the activities of the other parts and almost no decision that committed the Bank could be made by a staff member without referral to some other member answering to managers in a different line of command. There was close and independent scrutiny; but it was also collaborative, the scrutinising staff provided expert advice case by case and formulated guidelines, usually in the form of policy notes or papers, for dealing with the myriad specific and general issues that arose in the course of operations and seemed to warrant special attention.

As will be seen, the author believes that the Bank has greatly helped the developing countries, through its loans, its technical expertise in preparing projects, its advice on managing their economies in its reports and, most of all, the governance it provides. Developing economies usually do not have the governance mechanisms of the developed countries, notably the checks balances and voting systems of the democratic market economies, and the Bank often substituted for them. It was bound to fail often, given the magnitude and complexity of the task, but overall its successes were greater than is commonly realised. Some of its failures might be attributed to its economic doctrines - and the author has reservations of his own about some of them - but doctrines are not the subject of this discussion. The subject is how the governance of the Bank affects the governance the institution performs for the developing countries. These countries are still putting their own governance mechanisms in place and, for a long time, they will need a World Bank that can help them there.

II. The Reorganisation of 1987

The organisation put in place by Mr. MacNamara can be said to have been a success in the sense that it lasted, with only minor changes, through a large increase in the volume of the Bank's operations until 1987, without damage to the Bank's reputation. Design of the organisation that replaced it was entrusted in 1986 to a number of committees composed of Bank staff members. In mid-1987 the new organisation began to function, while roughly 600 staff members left with separation packages. It was not a success in the same sense, major changes were made almost immediately and it did not last ten years.

Most of the following discussion concerns the reorganisation of 1987 and the questions of governance that arose from it. Since the reorganisation of 1997 does not address these questions, and what has been said and written in its justification shows no awareness of them, there is no need to discuss it in the same detail. Of the two, that of 1987 was the more

important since it dismantled a successful set of internal governance mechanisms, whereas that of 1997 merely failed to replace them. The important questions of the Bank's internal governance can be understood by comparing incentives and constraints faced by the staff, including the managers, before and after 1987. Specific discussion of the changes made in connection with the reorganisation of 1997 will be mainly confined to those that aggravate existing problems or which purport to remedy a defect identified in this discussion.

What ensued is simple. Before 1987 the staff who prepared projects in developing countries for Bank financing and various types of economic reports had, along with their managers, an incentive to meet targets in terms of numbers of projects and reports prepared. They also faced a constraint, namely that the projects and reports had to meet certain standards. The reorganisation of 1987 eliminated the sections of the Bank that enforced the constraint, but did not alter the incentive. As a result, the same staff and managers responsible for preparing a project or report now decided whether or not the standards were being met.

The First Step

The avowed aim of those who devised the new organisation was to simplify procedures, in particular by uniting all the responsibilities for the Bank's operations in a country under one head. A logical first step was to eliminate two of the three independent sections that scrutinised projects or reports, and had the authority to stop them if they did not meet the Bank's standards. All three and the staff who prepared the projects and reports were under separate lines of authority.

One comprised the central projects departments, which scrutinised projects to ensure that they met the Bank's standards of quality and integrity, i.e. that they satisfied certain criteria for economic justification, soundness of analysis and clarity of exposition, and that they did so through the correct use of the best available information. Without their approval, the project's preparation could not be completed. An analogous system existed for reports.

The second consisted of the Loan Committee and its advisory staff. The Loan Committee was the final and highest level of scrutiny before a project could be presented to the Bank's board of directors for approval, and it was briefed on everything that came before it by its advisory staff, the "Development Policy Staff". The Loan Committee stayed in existence after its advisory staff had been disbanded, but the final scrutiny of most projects was transferred from it to the managers of the staff responsible for preparing

the projects.

From then on, obtaining approval to send a project to the Bank's board was easier. Managers had less incentive to be strict with projects prepared by their own staff. The Bank Loan Committee, bereft of its advisory staff, also had less incentive to be strict; the briefs that had been prepared by the advisory staff were common knowledge for the members of the Loan Committee and had to be respected. But briefs prepared for them individually by their own subordinates were private knowledge, hence criticisms which members of the committee might voice would be at their own initiative. Since most of the members were managers who would also be bringing projects for the Loan Committee's approval in the future, each had an incentive to be lenient and keep on good terms with the other members.

The principle of close, independent scrutiny was narrowed to the third section, the legal departments, which cannot replace the technical specialists and economists. The lawyers from the legal departments are responsible for drafting the legal agreement (loan agreement) governing each project and for verifying that any steps taken by the country authorities and Bank staff conform to it. Loan agreements are the Bank's main formal means for influencing the policies and institutions of a country, and their scope can be wide, but the lawyers cannot judge the economics of their provisions and must depend on the advice of technical professionals from the regions or the central projects staff to judge if they are being observed. Typical of the obligations that countries enter into under loan agreements are raising electricity tariffs to cover costs, improving the tax system or setting up an autonomous institution to manage sanitation in a specified area. The lawyer concerned might not need the advice of a professional in the case of electricity tariffs, since they are precise numbers, not matters of judgement; nor, possibly, for the autonomous institution, whose statutes and the laws of the country may suffice for him to determine if the autonomy is real. But a reform of taxation, entailing a mass of technicalities and, perhaps, a reorganisation of the tax authorities, can usually only be judged by an expert.

The Second Step

A second step in simplifying procedures was taken by maintaining the old division of the borrowing countries into five or six regions headed by Regional Vice Presidents (e.g. the countries of Latin America and the Caribbean, or the countries of Sub-Saharan Africa), but changing the organisation within the regions; Country Departments were created, with Country Directors as their heads, to manage the Bank's operations in set

groups of countries or in single very large countries. To keep the country departments small and to introduce competition, the technical specialists (agronomists, engineers of various kinds, education specialists, economic model builders and so on), including most of the central projects staff, were grouped into Technical Departments attached to the regions and were expected to act as consultants seeking assignments from the country departments. Those who did not get enough assignments to keep them busy were to be dismissed.

In the same spirit of concentrating responsibilities within the country department, the responsibility for preparing a project was entrusted to a single person in the department, the Task Manager of that project. Formerly, projects had been prepared by two persons, a Loan Officer and a Project Officer, both belonging to the same region, hence under the same vice president, but in different lines of authority below that level. If, however, they were going to be in the same department, one of the two seemed redundant,

Thus the 1987 reorganisation jettisoned the mechanisms on which the MacNamara Bank had depended to ensure adherence to its standards ot quality and integrity. Now the preparation of a project was entirely within the purview of the country department and the decision as to whether or not it met the standards was taken within the region. The new structure of incentives and constraints faced by managers and staff was predictable; indeed it had been evident to those who -designed the various organisations of the Bank of 1972 and before, and an understanding of its incentives and constraints underlies the design of any sound institution.

This does not mean that people's behaviour has been entirely determined by these incentives. Many Bank staff had their own motivation for their work, often they had chosen that work for humanitarian and idealistic reasons, and as professionals they had the urge to live up to their professional standards. Peer pressure was also important: as long as professionals with long experience of the Bank from before the reorganisation had much influence, there were commonly known standards and the expectation that they should be met. So behaviour that might, on the face of it, be "rational" could still be uncommon, or at least, not prevalent. What follows is an attempt to examine what the incentives and constraints in the reorganised institution were, and not necessarily what has actually been normal behaviour.

The Effects on Quality and Integrity

Project preparation was immediately affected in two ways: one was

that it had, in many ways, become more difficult and the other that it suffered a hidden loss of quality. Eliminating the loan officer undid the easing of project preparation that could have been expected from the elimination of scrutiny from outside the region. In the division of labour between the loan officer and the project officer, the former saw to the procedures, adherence to the Bank's policies and strategy for the country concerned, relations with the borrowing country's officials and conformity to the Bank's guidelines on a number of matters; the latter to the substance and economic justification of the project, to the selection of staff and consultants working with him and to satisfying the central projects staff that the project was the best of the available choices. Both jobs were specialised and demanding, which the Bank recognised by the practice of making it the loan officer who presented the project to the board for approval, while giving the project officer the task of answering any questions on the substance of the project. The division of labour between them was a natural one, corresponding to the differences in training and experience between people with degrees in economics, business and law, on the one hand, and technical specialists, on the other.

The reorganisation handed the loan officer's responsibilities to the project officer, now called the Task Manager. In theory, holding one person accountable for delivering the project in time and within the budget for staff time and other costs would result in more efficient and faster project preparation. In any case, the mutual support and surveillance between two different departments in the old system seemed to have no place in the simplified new system. As will be seen, there were several reasons why this simple-minded, textbook arrangement could not work. One was that the designers of the reorganisation had put a greater burden on the task manager than they seem to have realised; he now had to be technical specialist, administrator proficient in the Bank's and the borrowing country's procedures, manager and diplomat. To the extent that he did not succeed as all of these, project quality suffered or there were delays. Some experienced former project officers still succeeded in meeting the challenge, but it was harder for those with less experience. In the meantime, the former loan officers, who embodied much of the Bank's administrative skill and its experience in dealing with the administrative systems and procedures of the borrowing countries, gradually disappeared.

The quality of projects was bound to suffer after the disbanding of the central projects staff, who had exercised the scrutiny. These staff were specialists, experienced in development projects, who also provided advice and help. They followed the preparation of a project from its conception to its approval by the Bank's board of directors, they raised questions that might otherwise have been overlooked or left unanswered and they provided

expert advice. They would, for instance, know what problems had been encountered by similar projects in other countries and how best to deal with them. If the project under preparation had been preceded by similar projects in the same country, they would know on what assumptions (e.g. regarding consumption trends or the costs of construction) the projects had been found to have been economically justified and how reliable these assumptions had been. They would then advise as to what the most realistic assumptions might be for the new project. They might also see alternative ways of achieving the goals of the project (e.g. better river transport instead of a new road) and would require that the alternatives be evaluated and compared.

In the difficult and complicated task of preparing a project even seasoned staff members found that such advice from experienced professionals almost always brought improvement. For less experienced staff the advice and the scrutiny were indispensable and part of the learning process. Consequently, many projects after reorganisation were less well prepared than they would have been before and some would not even have been considered viable. Experienced staff could often see this when looking at individual projects whose preparation had been completed; they could point out improvements that could have been made, but were not, and that would certainly have been insisted on by the staff of the central departments. By their nature, such losses are noticed, if at all, only by those who look at the projects closely.

As a substitute for the central projects staff, independent comment and advice were to be provided by "peer reviewers", but it was up to the department to decide what the task manager should accept or ignore. The peer reviewers could not, as the central projects staff had been able to, stop a project from going ahead until they were satisfied that their comments had been taken into account. They were supposed to be chosen because they could be relied up on to give objective, professional comments and advice, and as a rule they were; but their reviews were addressed to the country department, and if a peer reviewer thought that the department was ignoring some essential flaw in a project or report, he had no authority to turn to outside the department.

Friendships and understandings could also influence a peer reviewer, since he was chosen by the task manager responsible for the project or report. There might be the possibility of an interesting assignment from the country department for the peer reviewer, such as leading an important mission, or there might be prospects for a desirable position within the department. And the task manager who chose him could also be his peer reviewer when the occasion arose. The obvious remedy would have been to

take the choice of peer reviewer out of the country department, but although it was discussed in the Bank, the idea came to nothing.

The Proficiency of the Staff

At the same time as the slackening of controls after 1987 made it harder to prepare projects to the Bank's standards, it reduced the incentive to ensure that the staff preparing a project or a report were as well qualified as they had had to be before. As long as scrutiny had been rigorous and procedures rigid, a manager who entrusted the preparation of a project to inexperienced or incompetent staff ran the risk of damage to his own reputation as a manager since the preparation was almost certain to have numerous flaws that experienced staff would have avoided. In addition, he would have had to cope with the accompanying costs of the delays and changes. Consequently, a manager saw to it that only under special circumstances did a staff member who had not worked several years at the Bank take the responsibility for a project or a report.

In effect, a staff member used to undergo an apprenticeship, during which he acquired experience and knowledge through his own work in teams led by others and through assimilation of some of the Bank's accumulated experience transmitted by the central staff. The adage was that a run-of -the-mill economist could, after working at the Bank for some years, produce thoroughly professional reports. As much could have been said of project and loan officers.

The loss of the central staff has also led to a lowering of the proficiency of the Bank's regional staff. It was the central staff who systematically surveyed the Bank's experience across countries, analysed it and drew lessons that furnished guidelines for the regional staff. Centralisation was essential, the staff of a region could not have performed the same functions, except perhaps sporadically, and guidelines they might have prepared would have lacked authority in the other regions. To the extent that the Bank was distinguished by its competence in the problems of developing countries, this was due to a systematic accumulation over decades of analysis of its experience across much of the world. Without that, the Bank runs the risk that only its loans, whose terms remain more favourable than those of the markets, will be in demand and that in other respects, it will be irrelevant.

An attempt is being made under the reorganisation of 1997 to compensate for the lack of a central staff by improving the flow of knowledge. Clear accounts of the reasoning and how the new system is meant to work are not yet available, but it appears that staff in a given

discipline are to constitute "knowledge communities", sharing their knowledge through "knowledge networks" managed by knowledge managers". Apparently, the requisite flow of knowledge demands advanced and costly information technology. No mention is made of experience and, since the experienced permanent staff are being replaced by young people on contracts of, at most, a few years, the assumption seems to be that knowledge is instantly transmissible, or almost so, and that it therefore replaces experience. The officials of borrowing countries will no longer be dealing with experienced, sometimes elderly professionals, but with young people who do not expect to stay long in the institution and who have instant access to "cutting-edge knowledge".

The Concentration of Powers

With all the preparation of a project, or economic report, placed within the department headed by the country director, the question arises as to the extent to which the director's immediate superior, the RVP, had the incentive and the means to ensure that the Bank's standards were met. For the RVP was the only person in a position to scrutinise the department's work and to have the authority and responsibility to evaluate it.

However, he could only look closely at some of the work of the country departments under his authority; his office was not equipped to replace the central projects staff. For the most part he had to rely on the country director, who was closer to the staff preparing the project and the country officials concerned and, therefore, in a position to decide what information to make available to the RVP's office. A determined RVP could, of course, ensure that his office obtained all the information in a department and followed a department's activities closely, but he could not do the same for all the country departments in his region at once.

Nor did the RVP have an incentive to question the quality of the work produced by the country departments; he and the directors had a common interest in having the preparation of a project or economic report completed since they were all judged in theory, on the numbers of such completions under their authorities. Usually the RVP's incentive for interfering in the work of a department was political; he was closer to the political influences that beset the Bank and he might harbour political ambitions himself in the government of his country or in a supranational organisation, like the European Union. RVPs have been presidential candidates, prime ministers, finance ministers of large countries, and the like. A director might have similar ambitions and be just as busy pursuing them, but political pressures impinging on the countries of his department

would be transmitted through the RVP. For example, a major economic power might wish that some developing country carry out certain policies, say a privatisation programme. The RVP would then follow the department's work on the country closely to ensure that the policies were carried out satisfactorily. Conversely, the pressure might be to lend to a country in order to help its government, without looking too closely at the economic justification of the loans. In that case, a director who delayed projects for reasons of quality would have been risking his job.

Thus, the director had an almost free hand in deciding whether or not the preparation of a project or report should be presented as meeting the Bank's standards of quality and integrity. He was liable to close scrutiny from outside the department only if the RVP chose to look himself. The RVP might choose to do this as a matter of principle, or moral choice, though he lacked the means to do this for more than a few projects and reports.

The country director could, in practice, impose whatever decision he liked, provided it were not too egregious. At the main meetings to review the preparation and decide if and how it should be improved, it was he who presided and those attending, apart from the peer reviewers, the lawyer representing the legal departments and someone representing the office of the RVP, were either staff from the department, hence his subordinates, or other staff and consultants collaborating on the preparation. If, for instance, the director declared that a report was "excellent", disagreement was unlikely. The lawyer was not entitled to offer opinions on non-legal matters, while the representative of the RVP's office would be unwise to expect his office's backing in an open disagreement with the director. A peer reviewer who disagreed with the views expressed by the director or with the outcome of the meeting, could express his own views at the meeting and after, but being a peer reviewer in his personal capacity, without institutional backing, he risked making himself unpopular. He might prefer to say nothing or to limit himself to a few anodyne remarks. If he could find out in advance how the meeting was going to be conducted, he might stay away altogether.

The Country Director's Incentives

The country director has similar control over the interactions with the authorities of the countries with which his department deals. Before 1987, any opinions or intentions that Bank staff or managers expressed to the officials of a country concerning matters of importance were likely to need approval within the Bank, if they had not already been cleared, and the approval was not under the control of the country department; after 1987 the director had a free hand. Before 1987, an experienced country

official would have known that a professional or manager from the Bank could not, by himself, commit his institution and that pressures and blandishments to persuade him to deviate from the Bank's standards were usually pointless; after 1987 he knew the country director could take a decision without reference to anybody else.

There is consequently, an asymmetry between the country director and his counterparts among the country authorities, since he is almost a free agent while they are part of a hierarchy in which decision have to be approved by others. It matters little what personal preferences his counterparts may hold, they normally have instructions that have been drawn up and reviewed within the bureaucratic hierarchy or decided by ministers and political leaders in cabinet meetings. Only his principles and strength of character keep the director from allowing personal considerations enter into his decisions. The interaction is between one man's principles and a country's political and administrative structure.

The form of the interaction can, to some extent, be decided by the director. He can for example, send a signal that he intends to adhere to the Bank's standards as best he can by keeping a certain distance from the country officials. This would indicate that he expects his professional staff to deal with all matters of substance and that he will only act on important unresolved matters when they are referred to him by his staff. It may not be as convincing a deterrent to pressures and blandishments from the country authorities as were the central projects staff and Loan Committee, but it would still indicate how the director intends to act. Prudent as it is, a course like this may, nevertheless, be unappealing because it depends on an aloofness that is liable to be misinterpreted as a lack of concern or a bureaucratic mentality. It can also be difficult, since it requires faith in the department's staff and willingness to endure delays when the staffs work is unsatisfactory.

An ambitious director may prefer to appear to country officials to be in close touch with them and directly involved in all important decisions. He will be applauded for that by the higher levels of the management of the Bank. He may also believe that he can in this way circumvent his staffs shortcomings by replacing the staff at will and taking decisions himself. The more active the director, the more likely he is to go over the heads of his staff. He may not be able to avoid doing so even if he wishes to, since the country officials will have understood that there is no fixed rule as to whether the staff or the director make the decisions and that they can confront the director, by-passing his professional staff. Having already taken some decisions out of the hands of the staff, the director cannot, without appearing erratic, refuse to do so again. He may then be in the position of

having to choose between, on the one hand, supporting his own staff and displeasing the country officials and, on the other, disagreeing with his staff and confirming that their opinions as professionals as importance. In the extreme, an ambitious director bent o his power may make a point of choosing the latter.

How the authorities of a borrowing country could wish to persuade a country department director to override his staff's views is best seen from policy loans. In such loans the government agrees with the Bank to carry out certain reforms, which are specified in the loan agreement, as a condition for receiving the money of the loan. They are commonly made to help countries through balance of payments difficulties, the causes of which the reforms are meant to address. Usually the reforms arouse opposition, not surprisingly since they would otherwise in all likelihood have been carried out already, and it is supposed to be the need for the money that obliges a reluctant government to implement them. For instance, reducing food subsidies may be essential for budgetary reasons but it can provoke riots, lowering protection against competing imports angers industrial and agricultural groups and making taxes fairer upsets those who have to pay more, usually the rich.

Caught between its need for the loan and domestic opposition to the conditions, a government may try to persuade the country department of the Bank to deviate from the agreement as initially understood. If there is an element of judgement in deciding whether or not a reform is satisfactory, the government can, for example, carry out a partial reform in a way that placates the reform's opponents and then try to persuade the director of the country department to accept that as satisfactory, even if his staff do not agree. An example might be a tax reform with exemptions that have no economic or social justification but favour specific groups. The government could go further; there being no constraint on the director making misleading statements of fact, as long as they cannot be discovered from the documents submitted to the Bank's legal department, it could attempt to persuade him to accept something as having been done when it has not. For instance, if the audit of a public sector bank did not conform to international norms as required, the legal department would not know unless told.

But the director has also an incentive to propose such deviations to the country authorities. His freedom to decide can be used to ingratiate himself with politicians and officials. The good will of powerful and influential people is always useful, and one may want it without an immediate use in mind. It can help a manager's career at the Bank, especially if he faces problems, it also helps for preparing future careers

outside the Bank, in other international organisations or in the director's home country, which might find his contacts useful. The director also benefits from the appearance that the country has carried out the reforms of the policy loan, especially if they were difficult.

Vanity is another incentive. A manager may set store by being treated as an important person when he visits a country. Politicians, being alive to the power of vanity, know that a manager may be influenced by whether or not he is received by a head of state or head of government and by the attention he is given in the news. He may also be influenced by marks of favour from a head of state or some other powerful person, such as an invitation to his family to be their personal guest. Before 1987 a manager would not have considered an invitation that included his family; he would have known that so much as asking permission from the Bank would have reflected on his judgement, if not worse. To the head of state, a week's visit by the manager's family might be a small price for the manager's pliability.

A by-product of the elimination of external scrutiny has been the gradual abandonment of the practice of not letting staff work in units dealing with their own countries, a practice that was also needed to ensure the quality and integrity of the Bank's work. It was not a written rule, but the only exceptions were some technical staff working on the countries of South Asia and a couple of RVPs. The practice was, otherwise, so strict that it even applied to secretaries. Its abandonment left the manager free to ingratiate himself with country officials by offering positions to their countrymen and evaluating their performance favourably. It also created a conflict of interest for the staff member; he would have the opportunity to gain favour with his own country's officials, for instance by being his government's advocate at internal discussions at the Bank or being lax in applying the Bank's standards to projects for his country.

The deterioration of Projects and the Reorganisation of 1997

The reorganisation of 1997 does not address the problems discussed here. It was not preceded by any systematic study of the Bank's functioning that could have brought them to light and allowed solutions to be found. Some of the consequences of these problems have grown evident, notably a deterioration of the Bank's projects, over which there is no dispute, it is given as a reason for the reorganisation of 1997. But a lack of understanding of the causes has resulted in ineffectual remedies. Some other problems with less visible effects, such as the freedom for staff to work on their own countries, have been aggravated. Rather than a comprehensive discussion of how incentives work in the new organisation, which will add little of importance to what has already been said, it suffices to use these two

examples as illustrations.

How great the deterioration has been and how far it has been due to poor preparation or to poor execution cannot be known, because in addition to the deficiencies in the scrutiny of preparation, less attention was paid to project supervision. As pointed out earlier, the quality and integrity of the preparation of a project can only be judged by following it from the start; the documentation prepared for the Loan Committee and the Board does not suffice. Some projects may have been up to the Bank's official standards, but there is no way of being certain. Alarm was raised over the quality of project supervision a few years after the reorganisation of 1987, by the number of projects in difficulties, estimated at 30%. By supervising a project, usually through two to four visits a year, the staff concerned followed the implementation of the project and addressed any difficulties. Their supervision reports were the Bank's source of information on the progress of its projects under way, i.e. on the bulk of its cash flow. Yet, in the new organisation of 1987 arrangements for supervision were initially omitted and, since there was no longer a central staff to monitor supervision, when arrangements for it were made country directors had little incentive to accord it importance.

The remedy of the reorganisation of 1997 for the deterioration of projects, to reward staff according to the quality of the project as determined from the project documents, will be ineffectual. It fails both to address the causes described earlier and to provide mechanism that ensure that the assessments of the quality of the projects can and will be reliable and that they will determine how the staff are rewarded. Since the preparation of a project cannot be reliably gauged unless there has been independent scrutiny from the start, gauging it from the documentation alone merely amounts to a beauty contest. If there were to be such scrutiny, it would have to apply to all projects; since the staff are being evaluated, and this would require a new central staff. Only, unlike the old central staff, which was collaborative, this one would be investigative. But there may be no incentive to penalise staff for poor project preparation if poorly prepared projects can still be approved. Managers have an incentive to get as many projects approved as possible, and they may reward staff for speed, even if quality suffers.

A mechanism to prevent poorly prepared projects from being approved, the quality assurance group has been established and is likely to prove equally ineffectual. The group has the authority to prevent a project from being presented to the Board unless it is satisfied with it. But it is too small to do more than peruse the documents of a sample of projects. Not being part of a separate hierarchy, its members are unlikely to forget that

their careers will depend on their relations with their colleagues, in particular with the higher managers whose projects they happen to judge. When a project has obvious serious defects, they are more likely to ace some modifications for appearances' sake than to insist on quality.

The main proposal for improving the quality of project preparation is to assess the "total development impact". Admittedly, a method for this does not yet exist, but one is going to be devised. The new method must have the property of being usable well in advance of the completion of project, which may take several years, not to mention of of any development impact, because the Bank is replacing the permanent staff with young people on contracts of a few years, and they will want their efforts to be recognised before they leave. Moreover, the longer it takes to judge the impact of a successful project using the new method, the more people will have been associated with it and the mo0re difficult it becomes to apportion the credit. Unsuccessful projects will pose less of a problem.

III. The Bank's Governance Function

The discussion of the incentives inducing the country director to forego, the proper carrying out of the conditions behind the reforms of a policy loan describes one way in which the Bank's governance function in developing countries becomes ineffectual. Apart from such broad economic management, the Bank can perform its governance function for individual government agencies through its projects and for different parts of-.the economy as adviser through its economic reports. These too can lose their effectiveness,

When the Bank accepts as satisfying the conditions of a policy loan measures that are unsatisfactory, the consequences go beyond the reform at hand; people who would have taken the political risk of advocating an unpopular reform urged by the Bank may not do so in the future. Usually such a reform has supporters among the country's authorities, but the Bank is needed to overcome opposition, which could have various reasons, such as vested interests or fear of wider repercussions. In the debates within the government, the reform's advocates rely on the Bank both as scapegoat and as expert. It is scapegoat when the government has to meet the conditions for the loan that the country needs, or appears to need to be released, the Bank can be blamed within the government and before the public. It is expert when it supplies persuasive analysis and arguments showing the need for the reform and how to reduce its difficulties.

But, the advocates of the reform are proved wrong and its opponents right if the Bank allows the loan to be released without the

conditions having been met, except perhaps in appearance. The Bank loses its credibility and they will be careful about associating themselves with it in the future. Similarly, the Bank loses credibility if its analysis is unconvincing and its staff too inexperienced to manage the arguments for and against the reform.

The greatest and least obvious weakening in the Bank's governance, however, has been the diminution of the Bank's influence on the development and day to day management of the many organisations that are part of the administrative systems of developing countries. Almost every project is implemented through a government organisation, be it one that runs the sanitation of a city, builds low cost housing in a small town, manages small fishing ports or provides veterinary services in a rural area. Its success depends on how well the organisation concerned functions, so it is normal for projects to include steps to improve the functioning of that organisation and sometimes of related organisations as well.

The incentive for such time-consuming and difficult work has diminished with the decline in the quality of projects, especially with the diminution of supervision. Organisations involved in a project benefited from supervision, because this was the means for them to receive constant attention from the Bank's staff. The staff of the organisation benefited from an experienced Bank professional: getting advice on ways of improving their methods of operation, being informed of developments in other parts of the world in their area of work, and receiving training. He could help them formulate plans for the future of the organisation, plan another project that would help the organisation develop, and carry the concerns of the organisation to the higher levels of government, where its needs and difficulties were often misunderstood. Through repeated visits to supervise projects, a competent Bank professional won the trust of the staff of the organisation and the higher levels of administration, and was treated as a confidant.

The Bank's economic reports served to influence discussions of policy questions among the authorities so as to reach decisions that the Bank thought advisable. From the point of view of orthodox economists of the developed market economies, whose representatives dominate the Bank's board, this was a legitimate governance function since the Bank's doctrines were much the same as their own. The purpose of the reports was to provide the authorities with better analysis and advice along orthodox lines than they could otherwise obtain. No other institution matched the Bank's experience in analysing problems of economic development, its data on almost all developing countries or the staff and money it could devote to a report. Institutions like the IMF and some specialised United Nations

agencies are narrower in their ranges and usually confine themselves more to technical matters. Governments of developing countries rarely had enough qualified people to undertake work comparable to the Bank's and could not spare them or the money. Besides, the government often wanted the Bank to provide an outside view to counteract biases in the views they could obtain from their administration or local experts.

This part of the governance function has suffered both from a fall in the quality of the reports and from the new freedom the staff have in giving personal opinions to officials. In several countries the authorities have remarked that the quality of reports is not up to previous standards and they, therefore, take them less seriously. Moreover, the bank staff often ignored the procedures governing which reports could be given to a country's officials. Before 1987, a report could only be given if it had gone through the prescribed internal reviews and clearances. Now staff often give officials reports that turn out to be "informal", the personal views of the staff concerned, or early drafts. Inconsistencies occur and cause confusion, or worse, the Bank's views and the analysis is likely to be especially weak. This invites rebuttals of the Bank's views that hurt its reputation and credibility.

IV. External Governance

If the internal governance of the Bank has been damaged by the reorganisations of 1987 and 1997, the reorganisations themselves show that there was something wrong with the Bank's external governance. No justification deriving from study of the Bank's functioning was provided for either reorganisation. Allegations that the Bank was over-staffed, costly, slow, overtaken by private capital flows, distant from its clients, not co-operative with non-government organisations and so on were not followed by cogent analyses to support them or to explain why total reorganisation, rather than modification, was necessary. The only studies that had been carried out, notably one by the US Treasury in 1982, concluded that the Bank was effective and that its costs were low.

Neither reorganisation was well planned. Some of their defects have been discussed here. The planning of the reorganisation of 1987 was entrusted to a group of Bank staff, all of whom had been recruited young and had little or no experience of private business or government. It took only a year which, in view of the complexity of the institution, would have been too little time even for a large team of experts. The reorganisation of 1997 was begun without a plan, Mr, Wolfensohn stated that he had no "blueprint" and the stair who devised the individual components as they went along hardly had more experience than those who did the planning for

1987. Few large private firms with wide ownership or public institutions would have undertaken reorganisations before obtaining their boards' approval of detailed plans and cost estimates. Both reorganisations have been costly; in addition to the explicit costs of dismissing staff and, in 1997, of acquiring high performance information technology, there were the costs of disrupting the Bank's work. The Bank was paralysed for almost a year in 1986-7, Although Mr. Conable and Mr. Wolfensohn brought experience with them, neither had run a large organisation. In contrast, Mr. McNamara had been the head of two large organisations, one in private industry and the other in government. He took two years to prepare his reorganisation, the costs were low and there was no disruption.

What the reorganisations show is that the paternalism of the developed countries on which the external governance of the Bank rested is being put in doubt by these countries themselves. As mentioned at the start, the developed countries hold the majority of the votes on the Board and thus take it upon themselves to ensure the good governance of the institution. Despite the ability of some of the major shareholders to interfere occasionally in the Bank's work, the arrangement worked well for a long time. It enabled the Bank to provide in turn a modicum of governance to countries that often lacked the institutions to provide governance for themselves. The dedication of the major shareholders could, however, waver at times and the Bank flourished in spite of that because it was led by a long succession of strong and able managers. But the two recent reorganisations cast doubt on the responsibility that the major shareholders feel for the institution.

The major shareholders have also been allowing greater political influence in the Bank's work. One example has been allowing the Board to discuss the Bank staff's document setting out the strategy for a country, originally the Country Policy Paper (CPP) and later the Country Assistance Strategy (CAS). The CPP/CAS was, every year or two, the occasion for a candid assessment of how the Bank had performed in the country and how it should proceed over the next few years. It was subject to stringent requirements intended to make sure that the assessment was realistic and it usually underwent several revisions before its final approval by the Loan Committee. Because it was a candid document, it was not available to the Board. Recently it was changed into a document for discussion at the Board and much of the candour has been lost.

A second example is the greater latitude allowed in special cases in interpreting the restrictions the statutes impose on the Bank's lending. According to them the Bank can only lend for development, the interpretation of which has been stretched wide by the recent Social Sector

Adjustment Loan to Russia. The principal measure under the loan is to raise the lower levels of pensions. Desirable though this may be, supporting consumption has not yet been included in the definition of development. In any case there is nothing to finance since other pensions are being held down to prevent an increase in budgetary outlays (otherwise the IMF would not have allowed it). The loan is unprecedented in that, for the first time, nothing is said about what the money is to be used for.

The Banks will continue to go through upheavals if the major shareholders do not commit themselves more strongly to the institution. Reorganisations that have not been fully justified and carefully prepared will be followed by others. Political influences on its work will increase and observance of the Bank's statutes will grow more casual. How the financial markets, on which the Bank depends for financing its own lending, will interpret all this a few years from now is not hard to foresee.

A strong commitment of the major shareholders is also the only way to escape the Bank's "moral hazard", the situation in which the developed countries make the decisions but the developing countries pay the costs. All the administrative costs of the Bank are defrayed out of the interest the developing countries pay on their loans from the Bank, but these countries have no say in practice in deciding these costs. Moreover, the poorest countries pay most of the costs of the reorganisation since part of the profits of the Bank are used for low interest, long term loans to these countries, and these costs reduce the profits. The developing countries can also look askance at the costs of the increased attention to public relations, much of which is used for favourable publicity for the reorganisations and seems to be self-serving.

The alternative to the dominance of the developed countries on the Bank's board, giving the developing countries at least an equal voice, is unlikely to work. Up to now, the Bank has had the highest possible credit ratings because the developed countries both dominate the board and guarantee the bulk of its bonds. It is conceivable that a way can be found to give the developing countries more say on the board without affecting the Bank's credit ratings, but it is not obvious how. It would have to avoid two moral hazards, one in which the developed countries guarantee the Bank's debts on the financial markets but the developing countries, determine how the Bank lends, and the other, related to the first, in which the developing countries control the board's governance of the Bank while the Bank performs a governance function for them.

Child Workers
In Hazardous Industries in Pakistan*

Akmal Hussain

Abstract

This paper is the first systematic attempt at understanding the nature and extent of hazards faced by child workers in the construction and related industries, which perhaps are not only growing more rapidly but have far greater hazards than any other set of occupations in which children are employed.

This study is based on a field survey of 400 child workers in 200 small-scale establishments in Lahore. Section I places the study in the overall perspective of child work in Pakistan. An estimate of the total number of child workers in the country is made, the latest legislation on child labour discussed and the working conditions of children in the major occupations are analysed. Section II is devoted to a discussion of the specific working conditions of children in the construction and related industries, based on gleaning the available secondary sources. In Section III the evidence of our own field survey which is focussed on the issue of hazards faced by working children in the construction and related industries is presented. The major hazards in addition to sexual abuse and employer violence against child workers are examined on the basis of quantitative data. The numbers of casualties resulting from each type of hazard and in each type of industry are indicated. An attempt is made to construct a standardised index of hazards so as to assess the degree to which a particular hazard is lethal. Similarly, a standardised "Danger Index" is constructed to enable us to assess the degree to which a particular industry is dangerous with respect to work safety risk and accidents. Section III also analyses the survey data on wages and age groups of child workers, the income of their families, their family status and employer education.

The paper ends with Section IV with a discussion on a three fold policy response and action that needs to be urgently undertaken in view of the survey findings.

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* An earlier version of this paper was submitted to the International Labour Organization Geneva, Switzerland on October 1, 1992, and included as an annexure in my book titled: Poverty Alleviation in Pakistan.

I. Child Workers in National Perspective

The Question of Numbers

A range of studies has provided quite different estimates of the number of working children in Pakistan. The UNICEF 1992 Study[1] puts forward the figure of 2.01 million working children, while acknowledging that it may be underestimated. This figure from the 1981 Population Census reports 2.01 million children between the ages of 10 to 14 years as working. Similarly, the earlier UNICEF (1992) Study[2] estimates that 21.5 per cent of the child population in the 10 to 14 age group were working which means 2.7 million working children (Given the 1981 Census figure of 11.1 million for child population in the 10 - 14 age group). Both these estimates are unreliable for two reasons:

(a) The Census figure for working children is likely to be incorrect, since the respondents are male heads of household who are likely to conceal the number of their children at work for fear of legal action against them.

(b) The figure for working children is drawn from the age group 10 - 14, while a significant proportion of working children may be in the age group 5 to <10.

A far better estimate is the one made by the Planning Commission. According to this estimate, there are 8 million working children in Pakistan.[3] While this figure may have to some overcome extent the downward reporting bias for working children that is inherent to the Census methodology, yet it is still an underestimate since it does not include working children in the age group 5 to < 10. I have attempted to cautiously improve the Planning Commission estimate to overcome this bias, and the figure for working children in the age group 5 to < 15 totals 8.65 million in the year 1990.[4]

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[1] UNICEF/Government of Pakistan: "Situation Analysis of Children and Women in Pakistan", 1992.

[2] UNICEF (Punjab Programme Office): "Preliminary. Study and Survey on Health Hazards and Working Children", December 1992.

[3] "National Programme of Action for the Goals for Children and Development in the 1990's", Government of Pakistan, Planning Commission, (Not dated).

[4] My estimate uses the Population Census figure for children in the age group 5 to 9, then estimates the number of children in this age group below the poverty line on the basis of Ercelawn's national average figure of 40 percent (1990). Then number of working children in this age group is estimated by applying the Planning Commission ratio of 12

The New Legislation on Child Work and Employment

After signing the 1990 International Convention on the Rights of the Child, the government of Pakistan repealed the obsolete Employment of Children Act 1938, and enacted a new law called the Employment of Children Act 1991. This law has four parts.

Part I of the 1991 Act defines children as persons below the age of 14 (which is at variance with the Convention which regards all persons below 18 as children).

Part II of the 1991 Act prohibits the employment of children in any occupation or process related to transport or ancillary operations, the manufacture of matches, crackers and fireworks, ***biris*** (which consists of tobacco rolled into a leaf), carpets, cement, cloth dyeing and weaving, mica, soap, wool cleaning, building and construction, slate pencils (making and packing), agate products and toxic substances such as pesticides, chromium, benzene asbestos, etc. However, the catch is that the above prohibition exempts cases where any of these hazardous occupations are carried on by a person with the help of his family members.

Part III of the 1991 Act permits child employment in occupations other than those mentioned above and attempts to regulate the conditions of work of children. Thus they are prohibited from working between 7 p.m. and 8 a.m.; the maximum working hours permitted are seven, with a break of at least one hour after three hours of continuous work. No overtime is allowed, nor is a child allowed to take up two jobs simultaneously. A working child is entitled to at least one weekly holiday. All establishments employing children are required by this law to notify the government about the nature of work and working conditions. These establishments are expected to conform to health and safety standards prescribed by the government and to ensure clean and hazard-free working conditions for children.

Part IV of the 1991 Act prescribes penalties for breaches of any of the provisions of the Act by employers. These include imprisonment for a period extending to one year and a fine of upto twenty thousand Rupees. While these penalties are more severe than those provided under the earlier child labour legislation, yet they are mild when we consider the impact on the health, safety and psyche of the child when the provisions are violated.

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percent to the category of poor children in this age group. The working children in this age group are then added on to the Planning Commission figure of working children in the age group 10 to 14.

Moreover, they are not enforceable against family members and unregistered establishments.

Manufacturing units employing less than ten persons on a regular basis do not fall within the definition of factories and are not regulated by the Factories Act. Thus, while the new Employment of Children Act of 1991 may at best help reduce the number of children employed in hazardous occupations in the formal sector, it is unable to do anything about children employed in unregistered establishments in the informal sector where the overwhelming proportion of working children are actually employed.

Working Conditions of Children in Major Occupations

Since the statistics on child workers reflect mainly the numbers in wage employment, child workers in the agricultural sector do not find an adequate place in quantitative estimates. Yet children working alongside their families in agricultural operations such as seed bed preparations, fodder cutting, rice transplanting, weeding and harvesting may constitute the majority of working children in Pakistan. Such children are increasingly exposed without protective devices to toxic substances in pesticides and fertilizers.[5] There is now evidence that indiscriminate use of pesticides, many of which are banned in the advanced industrial countries, are responsible for growing health hazards in countries such as Pakistan. For example, during the last decade, 25 percent of pesticides exported to developing countries (including Pakistan) from the U.S. were banned or unregistered in the U.S. Consequently, although developing countries account for only one sixth of the pesticides users, the rate of poisoning there is 13 times as great as in the U.S.[6]

Another dimension of the hazards to which rural child workers are exposed, arises from the production conditions in agriculture: The traditional ties of dependence of poor peasants on landlords in large parts of Punjab and Sindh have been reinforced by cash indebtedness following the "Green Revolution".[7] Children of poor peasant families are often subjected to extra economic coercion. They are in many cases made to work without money wages, as domestic servants in the landlord's manor where they are frequently subjected to humiliation, beating and abuse.

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[5] See: Akmal Hussain, "Women, Environment and Development". Paper presented to the Centre for Research and Management, Islamabad, February 12, 1991.

[6] Catherine Canfield: "Pesticides Exporting Death", *New Scientist*, August 16, 1984.

[7] For a detailed analysis of this issue see: Akmal Hussain: " Technical Change and Social Polarization in Rural Punjab", in Strategic Issues in Pakistan's Economic Policy, Progressive Publishers, Lahore, 1988.

In the urban and semi-urban areas, most of the working children are employed in small scale unregistered establishments in the informal sector where the employers can easily evade the legislative protections granted to working children with respect to protection against hazardous occupations and working hours. While the number of children in the large-scale formal sector may have declined, yet even here child work persists to a significant extent by means of the "Contract System". Under this system children remain employees of a contractor in the informal sector while actually working in larger industries, as a device to avoid the law.[8]

Research on child labour in Pakistan is a recent undertaking, and began with a study (Hussain 1986) based on a survey of working children in Lahore in ten occupations where children below age 15 were the predominant element in the work force.[9] This study examined the economic and social conditions of working children for the first time in Pakistan. The study showed that children were typically working 54 to 72 hours per week for an average monthly income (cash plus benefits in kind) of Rs. 322. The study also provided evidence on the levels of education of working children, their attitude towards education, frequency of play, their ambitions, their contribution to family income and their wages and benefits by age group and industry. The Hussain (1986) study was followed by the UNICEF (1990) Quetta study[10] on Child Labour. Unlike the earlier Lahore survey, the Quetta Survey indicated some of the hazards that child workers in various occupations face. It pointed out, for example, that inhalation of wool dust by children exposed them to risk of respiratory diseases, tuberculosis and prolonged work in a squatting posture resulted in leg and spine deformities. Similarly, child workers in steel and iron workshops were exposed to lead poisoning, tetanus, eye diseases while a total of 35 accidents were reported by the study during the year. A more recent study (1990) of 26 small establishments in Lahore showed that all of them employed one or more child under 15 years of age. These work places posed at least one and often several hazards to the health of the child workers, including respiratory diseases such as pneumonia, tuberculosis and silicosis, ophthalmic disorders, mental retardation, damage to various body organs and cancer.[11]

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[8] "Situation Analysis of Children and Women in Pakistan", UNICEF, 1992, Page 84.

[9] Akmal Hussain: Economic Growth, Poverty and the Child. Paper presented at the Harvard Conference on Who speaks for the Child, Harvard University, Cambridge, Mass, August 1986. Published in Strategic Issues, op. cit.

[10] UNICEF (1990), Manzooruddin Ahmad; "Child Labour, A Time to Reflect".

[11] Study by Nishtar Medical College, Multan, cited in: "Discover the Working Child", 1990, UNICEF, Islamabad.

II. Conditions of Working Children in Construction and Related Industries (Secondary Sources).

There are probably more children working in construction related industries than in construction per se, mainly because work on construction sites (such as carrying bricks, or mixing cement) requires the strength of an adult, or skills (where automatic construction equipment and earth moving equipment is being increasingly used). However, children continue to be employed on building sites and function through an adult contractor in order to avoid the Law. The most important construction related industries where children are employed are brick manufacture (including tiles), cement, steel windows, furnishing (including carpet knotting) and electrification. There is no study so far that examines the question of hazards for working children in the construction and related industries as a whole at the micro level, let alone the national level. However, a few micro level studies some of them based on casual empiricism, others based on small surveys, do exist for individual occupations such as brick kilns and carpet knotting.[12]

UNICEF estimates that at least 250,000 children work on brick kilns. A "guestimate" by the Brick Kiln Owners Federation puts forward a figure of 6,000 brick kilns in Pakistan, with an average of 25 families per site.[13] These families who live on the sites are locked into a dependency relationship with the owner which is akin to bonded labour. The indebtedness occurs through the *Peshgi* system under which the labourer borrows from the owner to fulfil his family's consumption requirements. The loan, which the owner readily gives, functions as a trap, because it persists across generations due to high interest charges, manipulation of books, and low wages. During the period of *Peshgi* repayment (which in many cases is intergenerational) the family are virtual prisoners of the kiln owners and need special permission (not often granted) to leave the premises even for a short period. Physical abuses including rape of women and abduction have been reported. The study on working children in the brick kilns of Sindh notes that the children witness the cruel treatment of their parents by the owners, and grow up in an atmosphere of fear, insecurity and subjugation, which has a long lasting effect on their personality development. Interviews with parents and observation of children provide

[12] See for example: Y. Mitha et. al: "Bonded Labour in the Brick Kiln Industry"; S. Rehmatullah and M. Hassan: "Children at Risk, Children Working in Brick Kilns"; UNICEF (1990) / Institute of Social Research and Development: "Children Working on Brick Kilns in Sindh"; S. A. Awan and Abdil Ali Khan: "Child Labour in Carpet Weaving Industry in Punjab".

[13] UNICEF: "Discover the Working Child", op. cit., page 16.

evidence of malnutrition, skin diseases due to contact with clay, dust and exposure to intense heat, as well as respiratory infections.[14] Another study in NWFP showed that child workers in the brick industry suffered 50 percent more chronic chest infections than their counterparts in neighbouring villages.[15]

A detailed survey based sample study on child workers in the carpet industry in Punjab suggests that over 80 percent of the carpet workers in Punjab are children below age 15 years, including 30 percent under 10 years.[16] The majority of carpets are knotted at home in carpet weaving villages on a sub-contract basis, while some are made in private centres, factories and a small number in government workshops. 70 percent of the families in the survey sample had taken an advance in return for carpet weaving at home. In most cases the families had failed to pay back the loan within a reasonable time period, and found that they had to continue weaving carpets indefinitely into the future through their children's work.

A majority of the children work more than eight hours a day at the loom with no one working less than six hours. 90 percent of the children earned an average salary of between Rs. 200 to Rs. 500 per month.

The children work in poorly lit and poorly ventilated rooms. All the children surveyed had suffered from fingertip injuries. Other health problems include backache, respiratory diseases and low grade fever indicating chronic infection. 70 percent of the children reported being beaten by parents and employers if they tried to avoid work.

The UNICEF Quetta study mentions hazards faced by working children in a qualitative fashion as one element in its wide ranging discussion. The only survey based study hitherto available which attempts to focus on hazards in industrial sectors/establishments employing children, is a 1990 UNICEF Study titled: Preliminary Study and Survey of Health Hazards and Working Children. Although the focus of the study is not on working children in construction and related industries but on industries in Lahore employing children, yet it is useful in that it attempts to assess the incidence of hazardous activities in the sample industries. The study points out that in the absence of protective devices and adequate ventilation, working children handle and/or breathe toxic substances resulting in a range of health dangers. For example, in paint industries the handling of

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[14] "Children Working on Brick Kilns in Sindh", Institute of Social Research and Development, Karachi, 1990.

[15] UNICEF: "Discover the Working Child" ... op. cit., page 16.

[16] Saeed A. Awan and Abid Ali Khan: "Child Labour in Carpet Weaving Industry in Punjab".

chemicals, mixing and dilution of paints, filling, sealing, labeling and storage is done with bare hands and exposed face. Consequently, the children come into frequent skin contact with toxic chemicals such as pigments, dyes, and thinners. Moreover, poor ventilation results in children inhaling toxic fumes from solvents. The disease symptoms resulting from such exposures are coughing, skin dehydration and ophthalmic disorders. Prolonged exposure creates the danger of respiratory diseases, serious ophthalmic disorders, liver, kidney and stomach cancer. In the glass industry, which may be regarded as a construction-related industry (since it also manufactures windowpanes), the child workers are exposed to fine silica sand and high heat from the glass melting furnaces, as well as carbon monoxide. Long exposure to these substances can result in tuberculosis and pneumoconiosis.

In the furniture manufacturing industry the children are exposed to toxic solvents contained in polishing materials. They breathe solvent vapours in poorly ventilated workshops. Prolonged exposure to such chemicals can cause respiratory and ophthalmic diseases as well as persistent brain and body sluggishness.

III. Child Workers in Construction and Related Industries: Evidence from the Field Survey.

Methodology

The survey was designed to investigate two inter-related dimensions of child work in the construction and related industries. First, to discover the nature, extent and impact of occupational health and safety risks; second to specify the pattern of child employment across these industries with respect to age groups of children, wage and education level of the child workers, their family status, and the education level of their employers. In the pursuit of these objectives the survey questionnaire was designed so as to enable identification of the specific hazards in each industry, and the number of casualties (injuries and deaths last year) resulting from each type of hazard in each industry. The wage levels, age and education level of the respondents was recorded together with their family status, family income and education level of their employer.

A total of 200 work places or establishments in seven industries were identified for investigation, with the sample size of respondents being 400 (approximately two respondents were interviewed in each workplace). The number of workplaces (and hence number of respondents) assigned to each industry was based on the Quota Sampling Technique. This is a non-probability equivalent of stratified sampling. This technique was used to

enable control of non-response bias in the survey. The target population was sub-divided into groups of workplaces/individuals likely to have a homogeneous nature of work related hazards in each sub-group. In the sampling procedure the major strata relevant for the study were identified and then quotas assigned to each stratum according to their approximate proportionate representation in the population. (The latter was based on judgement arrived at after initial field visits which were more extensive than the ones at the interview stage). Accordingly, 58 workplaces (approximately 116 respondents) were specified for the construction industry, 48 workplaces (approximately 96 respondents) in steel window manufacture, 35 workplaces (70 respondents) in the white washing industry, 23 workplaces (46 respondents) in electrification, 17 workplaces (34 respondents) in furnishing, 11 workplaces (22 respondents) in tiles and eight workplaces (16 respondents) in the cement industry. To bring out the full range of hazards at the workplaces visited and their precise nature, the respondents' information was supplemented by information provided by the interviewers on the basis of personal investigation and visual check of each workplace.

Analysis of Data

The data shows that there were 16 different kinds of hazards at the workplace with air pollution being by far the hazard most frequently reported by the respondents. See Table 3. Air pollution includes high levels of carbon monoxide, unburnt carbon particles and silica particles in the air (in tiles manufacture), toxic solvent vapours from paints dyes and thinners, sulphur compounds in varnish solvents used in furniture manufacture, corrosive acid fumes and cyanide in the air, and carcinogenic fumes of vinyl chloride gas.

Table 1 presents the full range of hazards reported, and the percentage of respondents reporting each hazard. This table shows that 30 percent of the respondents report air pollution at workplace followed by dangerous building structure of workplace (reported by 11.1 percent of the respondents), and excessive working hours (9 percent). It may be mentioned here that where accidents occur they usually happen near the end of the workday when the child worker has low concentration and poor body coordination due to acute fatigue. So that casualties reported due to hazards such as insufficient light, or proximity of worker to badly insulated electricity wires, may be causally linked with this fatigue factor. Handling toxic chemicals, intensive heat and glare and uncovered manholes in the workplace are also reported by a significant percentage of total respondents interviewed (see Table 1).

Table-1: Percentage of child workers reporting hazards By type of hazard

Hazard	Percentage
Health and Safety Hazards resulting from intrusion of workplace onto the road [1]	8.2
Dangerous Building Structure [2]	11.1
Unsafe Electrical Fittings [3]	3.0
Unsafe Use of Equipment [4]	3.6
Acute Air Pollution [5]	30.1
Handling Toxic Chemicals without protective devices [6]	5.0
Using unsafe Steel Cutting Procedure	0.3
Intense Heat and Glare	7.7
Danger of Falling into furnaces which lack protective devices	1.7
Unhygienic Food at Workplace	8.1
No protection against Welding Sparks	2.6
Excessive Working Hours [7]	9.0
Drain Water spread across Workplace Floor	2.3
Uncovered Manhole on premises, cement, dust and/or Wood Scrap at factory floor where child workers eat food	7.3

Source: Akmal Hussain: Field Survey on Child Workers in Construction and Construction-related Industries, September 1992.

Notes:

1. Includes injuries/deaths caused to child workers by passing vehicles in cases where these workers are employed in open air workshops which intrude onto metalled roads.
2. Includes weak building structure, broken stairs, weak roofs.
3. Includes open switches, electric wires hanging near the workers, naked wires, electric sparks.
4. Includes protruded cutting edges, absence of safety devices on machines.
5. Includes high levels of carbon monoxide, unburnt carbon particles in the air, silica particles in the air (in tiles factories), toxic solvent vapours from paints, dyes and thinners, sulphur compounds in varnish solvents used in furniture manufacture, corrosive acid fumes and cyanide in the air in electroplating units, carcinogenic fumes of vinyl chloride gas (a degraded product of PVC moulding).
6. Toxic dyes, pigments, plasticizers, dryers, acids, mercaptans, acrylic and vinyl resins, used in furniture, paints and plastic moulding units.
7. More than 10 hours of continuous work.

Table 2 presents the number of casualties reported in each industry due to various hazards. It is important to note that casualties are mainly injuries and respondents reported that individual child workers underwent repeated injuries during a year. The number of workplaces investigated in each industry of course varies across industries due to the sampling procedure [see section on Methodology]. Therefore, column (c) in Table 2 has been constructed to show the propensity of each industry to cause injuries and deaths owing to its particular set of circumstances. It appears that steel window manufacturing industry has the highest number of casualties per workplace (15), followed by construction industry (12) and tiles manufacture (11).

Table-2: Number of casualties last year due to any hazard and number of workplaces, by type of Industry

Industry	(a) Reported Number* of Casualties during last year	(b) Number of Workplaces	(c) Number of Casualties per Workplace last year
Construction	677	58	12
Steel Window Manufacture	752	48	15
Electrification	60	23	3
Furnishing	125	17	7
Tiles	111	11	11
Cement	64	8	8
White Washing	160	35	5

Source: Akmal Hussain: Field Survey on Child Workers in Construction and Construction-related Industries, September 1992.

*Note: Respondents reported that an individual child worker experiences repeated injuries during the year, and returns to work after first aid or medical treatment.

In Table 3 we have attempted to synthesise the data on hazards and resultant casualties in each industry by constructing a standardised Lethality Index for each category of hazards. Similarly, a standardised Danger Index for industries has been constructed to show how dangerous each category of hazards is in terms of its weight in that industry.

Table-3: Lethality index of hazards and danger index of Industries

Hazard	(A) Standardised Index of hazards	(B) Standardized Danger Index of Industry						
		Constr-uction	Steel Window	Electrifi-cation	Furnish-ing	Tiles	Cement	White Washing
Insufficient Light at Workplace	5	2.68	3.96	2.70	0.79	4.80	4.25	4.46
Workplace hazards due to incorrect location of Equipment and other Protuberances, Electricity, Wires, Switches, etc.	4	2.65	3.74	-	1.18	2.92	3.6	2.38
Lack of Protective devices while using dangerous Equipment and Material	3	2.46	2.34	1.85	2.52	2.77	-	0.16
Workplace dangers due to Proximity to Road, etc.	2	0.95	1.43	0.62	1	-	-	10.54
Unsafe Machinery without Safety devices	1	0.50	1.23	0.54	0.61	0.38	0.80	0.46
Composite Danger Index	-	9.24	12.7	5.71	6.1	11.33	9.05	8.00

Source: Akmal Hussain: Field Survey on Child Workers in Construction and Construction-related Industries, September 1992.

The method of constructing the Lethality Index is as follows: The number of casualties was specified for each of five categories of hazards (100 percent of the total casualties were covered by these five categories of hazards). These hazard categories were then ranked in descending order in terms of the number of casualties caused by each. For example, rank number five was assigned to "Insufficient light" which has caused the highest number of casualties (616) and rank number one assigned to "Machinery Without Safety Devices" which has caused the lowest number of casualties (142).

The standardised Danger Index of industries was constructed as follows: The ratio of respondents reporting a particular hazard category to the total number of respondents in that industry was calculated for each industry. This ratio which signifies the frequency of occurrence of a hazard in that industry was then multiplied by the Lethality Index of that hazard, to get the Danger Index of each hazard category for each industry. A Composite Danger Index (CDI) for each industry is given at the end, which is the sum of the Danger Indices of each hazard for that industry.

Table 3 shows that Steel Windows manufacturing is the most dangerous industry in terms of the work safety risk followed closely by Tiles. Construction and Cement have close third and fourth positions, followed by White Washing, Cement and finally Furnishing. While the Composite Danger Index (CDI) is useful in that it gives the aggregate "Danger Level" of each industry, yet the relative position of the industries with respect to the CDI must be interpreted with caution. The reason is that the danger index is ultimately based on the number of casualties resulting from various hazards in various workplaces in that industry in one particular year. Now many of the hazards such as handling of toxic chemicals protective devices, or breathing carbon monoxide and silica dust, may impact the physiology of the child worker over a period of time; similarly, hazards such as weak building structure, machines without safety devices may not have actually caused accidents in the particular year being reported, but may do so in the future. Thus, if the same workplaces were investigated a few years into the future, (assuming no improvement in working conditions) then the relative number of casualties owing to various hazards across industries may well be different, and hence the ranking of industries with respect to CDI may change. What is important to note is that there is a significant variation in the number of casualties resulting from various hazard categories. Therefore, the degree to which the composition of hazards present in a particular industry is weighted towards the more lethal hazards would make that industry potentially dangerous.

No significant association was observed between workplace casualties and education level of the employer. However, in the case of three hazards, (inadequate light, proximity to road and dangerous building), the extent of the hazard is much less frequent in cases where the employer has a college education compared to cases where the employer has only school education. (See Table 4).

Table-4: Number of child workers reporting casualties*
Due to selected hazards by education level of employer

Hazards	*All Levels*	*Illiterate*	*Primary*	*Middle*	*Matric*	*F.A.*	*B.A.*
Inadequate light at workplace	173	1	37	37	79	17	2
Proximity to Road	16	0	0	3	8	3	2
Dangerous Building Structure	18	0	4	4	9	1	0

Source: Akmal Hussain: Field Survey on Child Workers in Construction and Construction-related Industries, September 1992.

- Casualties occurred in last year. The numbers refer not to the number of casualties, but the number of respondents in each case reporting one or more casualties.

Table 5 presents the percentage of child workers reporting sex abuse in each industry and in each age group. In the case of tiles, cement, furnishing and construction, between 11 percent to 15 percent of the respondents (in the respective industries) report sex abuse against their person. In the case of electrification, steel windows and white washing the prevalence of sex abuse is at a lower level, ranging from 2 to 4 per cent.

Table-5: Sex abuse at work place
Number of children reporting sex abuse against them as a percentage of respondents in the industry
By age and type of industry

Industry	*All Age Groups Percentage*	*Age Group 8 – 10 Percentage*	*Age Group 11 – 15 Percentage*
Construction	15	6	9
Steel Windows	4	2	2
Electrification	2	-	2
Furnishing	15	6	9
Tiles	11	5	6
Cement	13	-	13
White Washing	4	1	3

Source: Akmal Hussain: Field Survey on Child Workers in Construction and Construction-related Industries, September 1992.

Employer violence like sex abuse is prevalent to a significant extent although it varies (as in the case of sex abuse) considerably between industries. As Table 6 shows the average prevalence of employer violence against respondents is five per cent for industries with the percentage figure being much higher at 15 per cent in furnishing, low in white washing at one percent. The reason could be that the market for furniture is highly quality conscious, so employers in an attempt to force children to achieve perfection in varnishing and smoothening the wood may be beating them excessively. In the case of white washing, however, the task being much simpler and variation in quality due to worker negligence much lower, employers may not find it necessary to "discipline" their workers. There seems to be no distinction between age with respect to employer violence, with the percentage figure (five per cent) being the same for both age groups.

Table-6: Employer Violence
Number of child workers reporting employer violence against them
By industry and age of child

Employer Violence against Child Workers by Industry									*Employer Violence by Age of Child Worker*		
All Industries	*Construction and Wood Work*	*Steel Windows*	*Electrification*	*Furnishing*	*Tiles*	*Cement*	*White Washing*	*Others*	*All Ages*	*8-10*	*11-15*
20	7	7	1.3	5	0	0	1	0	20	7	13
(5)	(4)	(7)	(4)	(15)	(0)	(0)	(1)	(0)	(5)	(5)	(5)

Source: Akmal Hussain: Field Survey on Child Workers in Construction and Construction-related Industries, September 1992.

Note: 1. Figures in brackets refer to the number of child workers reporting employer violence against them as a percentage of the total number of respondents in that category.

2. Violence including punching with fist or use of sticks, chains.

As Table 7 shows by far the largest proportion of child workers have a wage of Rs. 200 per month or less with the pattern being broadly consistent across industries and age groups. However, the exceptions are the electrification industry steel windows and tiles industries where a substantial proportion of child workers fall in the higher wage category of Rs. 401 to Rs. 600. This may be because electrification requires higher skill levels and

tiles and steel windows manufacture is far more hazardous than other industries. This is borne out by the composite danger index of 11.33 and 12.7 in the case of the latter two industries respectively. (See Table 3).

Table-7: Number of child workers in various wage categories By age and type of industry

Industry	*Number of Child Workers in Age Group 8 – 10*				*Number of Child Workers in Age Group 11 – 15*			
	Rupees Per month upto 200	*Rupees Per month 201-400*	*Rupees Per month 401 - 600*	*Rupees Per month 601 & above*	*Rupees Per month upto 200*	*Rupees Per month 201-400*	*Rupees Per month 401–600*	*Rupees Per month 601 & above*
Construc-tion	20	13	2	8	40	20	2	11
Steel Windows	16	7	4	1	22	13	24	9
Electrifi-cation	3	3	1	2	15	10	9	3
Furnishing	10	3	-	-	11	6	2	2
Tiles	4	2	-	1	5	4	6	2
Cement	2	1	-	-	10	1	1	1
White Washing	26	2	-	1	35	2	1	2

Source: Akmal Hussain: Field Survey on Child Workers in Construction and Construction-related Industries, September 1992.

Table 8 compares wage income of the child workers with their family income, by industry. In the case of all industries it turns out that child worker's income constitutes a very substantial proportion of family income. The figure varies between 27 percent for tiles to 50 percent for cement. The proportion of child worker income to family income may be higher in this study when compared to an earlier (1986) micro study which covered a much broader range of occupations.[17] The reason (apart from the fact that current monthly wages have increased over the last six years) is that construction and construction related industries are far more hazardous than other occupations in which children are employed (e.g., roadside hotels, sweepers, etc) and parents are quite aware of this fact. So that parents who

[17] See Akmal Hussain: Economic Growth, Poverty and the Child, op. cit.

send their children to work in the Construction and related industries may be under much greater pressure of poverty, which explains the higher child wage/family income ratios.

Table-8: Comparison of child workers' income with family income

Industry	*Average Wage (Cash) of Child Worker (a)*	*Average Income of Family(Monthly) (b)*	*Percentage (a/b)*
Construction	799	1661	42%
Steel Windows	493	1755	28%
Electrification	697	1860	37%
Furnishing	388	1378	28%
Tiles	481	1740	27%
Cement	799	1580	50%
White Washing	604	1720	35%

Source: Akmal Hussain: Field Survey on Child Workers in Construction and Construction-related Industries, September 1992.

As Table 10 shows, an overwhelming majority of child workers in our survey were living with both parents. (This is consistent with the findings of the UNICEF Quetta Survey). This is true for all industries except cement where 50 percent of the respondents were living with a friend or relative. It is significant that between six percent to 12 percent of child workers in various industries were living alone. Table 9 shows that the average wage of child workers living alone is higher than for those who live with one or both parents.

Table-9: Monthly wage of child workers by family status of child worker

Family Status	*Average Wage (Monthly) Rupees*
Living alone	795
With both Parents	555
With one Parent	461
Other (Friend/Relative)	606

Source: Akmal Hussain: Field Survey on Child Workers in Construction and Construction-related Industries, September 1992.

Table-10: Family status of child workers by type of industry

Industry	*Any Status*	*Living with both Parents*	*Living with one Parents*	*Living with Friend/ Relative*	*Living Alone*
Construction	100	91.0	1.4	1.4	6.2
Steel Windows	100	85.4	7.9	4.5	6.2
Electrification	100	94.0	-	4.0	12.0
Furnishing	100	86.4	4.5	4.5	4.5
Tiles	100	76.9	3.8	19.3	-
Cement	100	50.0	-	50.0	-
White Washing	100	66.7	8.3	16.7	8.3

Source: Akmal Hussain: Field Survey on Child Workers in Construction and Construction-related Industries, September 1992.

Implications of Survey Data for Policy and Action

The data indicates that child workers in the construction and related industries are facing at least 16 different hazards to their health and safety with approximately 12 casualties per work place during the last year. Steel Windows manufacture; Tiles and Construction industries are the most dangerous in terms of risk to health and safety of the child workers. Insufficient light at workplace, badly insulated wires, lack of protective devices for workers using dangerous equipment and materials and poor ventilation are amongst the most lethal hazards in the industries we have surveyed. Clearly, the long term task can be none other than withdrawing these working children from occupations which cause repeated injuries, chronic diseases, physical and mental deformities and in some cases even death. However, the experience of Pakistan and other South Asian countries is that mere legislation is not enough to protect these children. (After all there has been a law against employment of children in precisely such occupations since 1938 and a much more rigorous law since 1991). Action is simultaneously needed on three fronts:

1. An administrative mechanism targeted towards the ending of child labour in hazardous occupations over the next five years needs to be urgently put in place. This mechanism can consist of specifying the number of children, location of hazardous work units, the details of the hazards in each work unit and the names of the employers in the area under the

jurisdiction of each Assistant Commissioner in the country. This data should be available to the Commissioner of each division whose task should be to indicate specific achievement targets for the Assistant Commissioners, (in terms of which their salaries, promotion and benefits should be decided). The achievement targets would consist of the following: (a) Closing down by a target date work units whose location, equipment and production processes are so hazardous as to be beyond redemption. In this case, alternative source of livelihood for the employees would have to be organised with a credit facility to enable the establishment of alternative enterprises by the employers.

(b) Replacing child workers with adults in cases where the workplace can be rendered safe without drastic intervention. Alternative livelihood for the children in non-hazardous occupations together with provision of education should be organised.

(c) To design proposals for the reduction or elimination of hazards at the workplace through the introduction of protective devices for workers, safety and automatic shutdown devices on machines, improving the ventilation of the workplace, improved lighting of the workplace, and insulation of the wiring system of building and strengthening the building structure. The technical support and credit required to achieve this objective should also be organised by the Assistant Commissioners with support from relevant government agencies.

2. Perhaps the most efficacious way of alleviating the condition of child workers in hazardous industries and ultimately withdrawing them from these dangerous occupations, is intervention at the local mohalla level through community organisation. Save the Children Organisations (SCO's) involving the participation of the local community need to be established by means of trained catalysers developed by district level support organisations called District Child Support Centres (DCSC's). The community organisation would have the task of negotiating with the employers to improve workplace safety to replace children working in hazardous occupations with adults, to provide the children withdrawn from such work with education, alternative skills and part time employment opportunities. The task of the DCSC's would be to provide trained cadres to mobilise and organise local communities, provide technical support regarding improvement of workplace safety, organise credit to enable the workplace owners to install new equipment, acquire protective devices, use safer chemicals where substitutes are available and improve the electrical wiring and building structure. Finally, the DCSC's need to be coordinated by an apex organisation such as the Trust for Voluntary Organisations which has recently been established in Islamabad

or alternatively a new National Urban Support Programme along the lines of the National Rural Support Programme (NRSP) instituted earlier this year.

3. A pilot programme for employers in construction and related industries should be initiated in each of the major cities of Pakistan. The purpose of the pilot programme would be to form an employees association for units in the informal sector backed by technical and credit support from the Ministry of Industries. The technical and credit support should be designed to make employers aware of the health and accident risks to the employees, and to develop programmes to achieve work safety at the workplace, to improve technology and replace children with adult workers with special monetary incentives for employers who achieve this objective within a specified time limit.

References

Awan, S. A. and Abdil Ali Khan, 1992. Child Labour in Carpet Weaving Industry in Punjab.

Canfield, Catherine, 1984. "Pesticides Exporting Death", *New Scientist*, August 16, 1984.

Hussain, Akmal, 1986. "Economic Growth, Poverty and the Child". Paper presented at the Harvard Conference on Who Speaks for the Child, Harvard University, Cambridge, Mass, August 1986. Published in Strategic Issues in Pakistan's Economic Policy, Progressive Publishers, Lahore, 1988.

Hussain, Akmal, 1988. Technical Change and Social Polarization in Rural Punjab, in Strategic Issues in Pakistan's Economic Policy, Progressive Publishers, Lahore.

Hussain, Akmal, 1991. "Women, Environment and Development". Paper presented to the Centre for Research and Management, Islamabad, February 12, 1991.

ISRD, 1990. Institute of Social Research and Development: "Children Working on Brick Kilns in Sindh".

Mitha, Y, et. al, 1989. "Bonded Labour in the Brick Kiln Industry", Human Rights Commission of Pakistan.

Planning Commission, Government of Pakistan: "National Programme of Action for the Goals for Children and Development in the 1990's", (Not dated).

Rehmatullah S., and Hassan, M., 1989. "Children at Risk."

UNICEF, 1992. (Punjab Programme Office): Preliminary Study and Survey on Health Hazards and Working Children.

UNICEF, 1992. "Situation Analysis of Children and Women in Pakistan".

UNICEF, 1990. Islamabad: "Discover the Working Child".

UNICEF, 1990. "Child Labour, A Time to Reflect", by Manzooruddin Ahmad.

Mutual Fund Industry in Pakistan

Amjad Waheed*

Pakistan experienced the reverberations starting in 1988 of the changes that swept the Asian emerging markets. To create an investment friendly environment the GoP adopted liberal economic policies of deregulation, privatisation, opening of capital markets to foreigners, liberalisation of foreign exchange regulations and dismantling of investment control - policies that lead to a significant increase in direct and indirect foreign investment in the country.

These changes resulted in a drastic increase in the financial assets of Pakistan with stock market capitalisation rising from Rs.188 bn in 1991 to Rs.547 bn at present, daily trading volume improving from 2 mn shares in 1991 to 50 mn shares at present and number of listed companies rising from 542 in 1991 to 788 at present.

Despite the global trend of a significant increase in financial assets and the surge in domestic market capitalisation, an average Pakistani investor is still skeptical about entering the market. The reasons for this skepticism are:

- lack of information about capital markets.
- inherent risk involved in investing in stocks.

Therefore, it is crucial for an ordinary investor to understand the way in which to overcome these drawbacks. An efficient and a risk averse mode of doing this is by investing in a mutual fund. A mutual fund is simply a group of stocks and other financial assets managed by trained investment professionals. Such a fund offers its shares to the public who in turn, become its owners. Typically, the fund advisor uses investors' money to acquire stocks .and bonds within the legal framework of the Corporate Law Authority. In other words, investors invest in a mutual fund to purchase a single portfolio (a portfolio is a basket of stocks).

Why Invest in a Mutual Fund?

I. Cost Efficiencies

The operating costs of a fund manager are lower due to the economies of scale of managing large portfolios. Mutual fund

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management can save on accounting fees, research costs, and brokerage fees, etc., due to the availability of a relatively large pool of resources. For example, the cost of managing a single Rs.100mn portfolio is less than the cost of managing 500 portfolios of Rs.200,000 each. Not only are costs lower, professional managers are less likely to make bad investment decisions by investing too much in a single security.

2. Expert Management

Due to paucity of knowledge, an average investor does not feel confident enough to decide which securities to invest in, a condition made worse as investment advisory services are not available to most investors nor are they familiar with this concept. Mutual fund managers are trained investment professionals whose knowledge can provide greater risk adjusted returns. Successful timing and selection of stocks by mutual fund managers can maximise shareholder returns which investors may not be able to achieve on their own. The method of stock valuation and selection is a scientific process for which professionals use technical and fundamental analysis to identify stocks that have the best prospect of value appreciation.

Technical analysis entails scrutinising the historical stock price and volume movements that help in identifying price patterns to assist in the forecast of future prices. Fundamental analysis, on the other hand, is based on the study of economic data such as earning prospects, dividends, product risk, return on equity, profit margin, expected growth rate in earnings, financial conditions, market share, patent protection etc., of a company to calculate its intrinsic value. This intrinsic value is then compared with the current market value of the stock to make buy, sell, or hold decisions. Usually, an average investor does not have the time or the expertise, as opposed to fund managers, to keep abreast of all the micro and macro changes affecting stock prices.

3. Risk Diversification

Investors are averse to huge fluctuations in stock prices. A mutual fund can stave off this barrier by providing broad diversification through the pooling of resources, a possibility not available to an individual investor. The portfolio theory suggests that as an investor spreads his/her investment over a large number of stocks, the investment risk goes down. Stock prices of various companies are less then perfectly correlated. Therefore, adding stocks that are not

highly correlated with each other results in a reduction of portfolio risk.

Investment risk arises from two sources - company risk and market risk. Company risk purports that something 'bad' will happen to the company, therefore, its stock price will fall. This may be due to poor management of the company, a natural disaster such as fire or storm, human error, drop in demand of the product, etc. Company risk effects only one particular firm or industry but not all the stocks in the market.

Examples of company risk are Taj Company and Mohib Textiles where companies failed because of poor management resulting in huge losses to investors. Another example is that of Union Carbide, whose plant exploded in India in 1984, leaving thousands of people dead and disabled. Yet another example is the oil spill in Alaska where Exxon ended up paying billions of dollars to clean up the mess. Stock prices did not fall drastically in the case of Union Carbide or Exxon as both companies had huge reserves to safeguard against such accidents.

Company risk can be reduced or even eliminated by owning a large number of stocks in the portfolio. If an investor holds a large number of stocks in the portfolio, and some of these companies do not perform well, it will not affect the overall returns significantly. Financial analysts suggest that company risk can be reduced drastically if an investor holds about 40 stocks in his/her portfolio. Since it is difficult for an average investor with limited resources to own and keep track of so many different stocks, investors can reduce investing in a mutual fund.

Market risk affects the entire range of stocks through such variables as interest rates, inflation, budget deficits, government regulations, taxes, political and economic situation of the country, war, recession etc., but some companies tend to suffer more than others. For example, during a recession companies that deal in consumer goods such as cars get more affected than those that deal in necessities. This is because during a recession people may postpone buying durables like a washing machine or a car but they do not postpone eating food or taking medicine. Mutual fund managers hold stocks that they feel have less market risk when they expect a recession or a downfall in the stork market- for some reason.

4. Development of Capital Markets

Mutual funds also help in the development of capital markets. An average Pakistani investor is afraid of manipulation by either the management of a company or by speculators who may affect the stock price of a particular company through volume buying or selling of stock. However, in the presence of a large number of mutual funds it becomes difficult for speculators who generally hold large blocks of issues to impact stock prices. For example, if the intrinsic value of a stock is Rs50 and speculators start lowering the price by selling off a large quantity of the stock, then mutual fund managers who know the intrinsic value of the stock will start buying the stock, at the same time thereby reducing the effect of selling pressure to some extent.

In conclusion, mutual funds help build the confidence of an average investor to invest in the stock market. Simultaneously, they help keep the stock market efficient as managers continuously identify undervalued and overvalued stocks and therefore carry out a balancing act by transacting in them.

Mutual Fund Industry in Pakistan

The largest mutual fund in Pakistan is government-owned NIT with total market value of the fund estimated at Rs30bn. It is the only open-end fund in Pakistan although recently the government has allowed the private sector to start open-ended funds as well. ICP is the second largest mutual fund with total market capitalisation of all its funds ofRs7.8bn. There are 14 private mutual funds as well with total market capitalisation ofRs1.6bn. The private mutual funds have suffered due to two main reasons:

- Most of them started operations in 1994 and 1995 when the stock market was at a peak and have suffered because of a significant drop in stock prices since then.

- These funds trade at a 50 per cent discount to their NAV that has eroded investor confidence in them (see Table I below). I Table I: Mutual Fund Industry in Pakistan

Table 1: Mutual Fund Industry in Pakistan

as on 30th September 1997

Company Name	*Paid up Capital (Rs. M)*	*NAV Rs./shr.*	*Mkt Price (Rs.)*	*Prem/Dis (% age)*
Al-Meezan Mutual Fund	250.00	10.91	8.22	-25
Asian Stock Fund	100.00	7.38	4.00	-46
BSJS Balanced Fund	150.00	12.42	7.50	-40
Confidence Mutual Fund	100.00	11.59	4.50	-61
Dominion Stock Fund	50.00	8.38	1.35	-84
First Capital Mutual Fund	150.00	7.89	2.00	-75
Golden Arrow	81.50`	4.13	1.95	-53
Growth Mutual Fund	100.00	4.18	1.20	-71
KASB Premier Fund	400.00	8.26	2.50	-70
Prudential Stock Fund	60.00	4.60	1.55	-66
Safeway Mutual Fund	30.00	4.50	4.90	9
Security Stock fund	100.00	10.55	4.65	-56
Tri-Star Mutual Fund	50.00	3.53	1.90	-46
	1,621.50			

Source: Mutual Fund Association of Pakistan.

Net Asset Value of a Mutual Fund

Net asset value is estimated by multiplying the number of shares I each company held in the portfolio by its respective current market price and summing them. Funds expenses are then subtracted from this amour and the net asset value is divided by the total number of units (shares) of the fund.

To illustrate, assume a fund raises Rs.1OO.OOO from investors by offering 10,000 shares at Rs.1O each. It buys 1,000 shares each of Hubco and PTC for the total amount of Rs.1 00,000. After some time the price of Hubco drops from Rs50 per share to Rs.42 per share whereas PTC's share price rises from Rs40 per share to Rs.42 per share. The value of total investment will drop to Rs.92,000 as shown in the table below and the NAV/unit will drop to Rs9.2 from Rs.1O. If this were an open-ended fund and one had initially bought 100 shares at Rs.1O each (for Rs.1000) and if

one decides now to redeem one's investment one will only get Rs.920 back from the mutual fund (100x9.2).

Co. Name	*No. of Investment*	*Purchase Price*	*Total Investment*	*Present Mk Price*	*Investment Amount*
Hubco	1000	60	60,000	50	50,000
PTC	1000	40	40,000	42	42,000
Total Investment	**100,000**				**92,000**
Total units of Fund	10,000				10,000
NAV per unit (shr)	**10.00**				**9.20**

Open-End Vs. Close-End Mutual Fund

Open-End Mutual Funds shares do not trade in the secondary markets. If an investor wants to sell his shares, then he will sell those shares back to the fund at current market price, and the company is obliged to buy those shares from the investors at that price. Current market price of Open-End Mutual Fund is equal to the Fund's Net Assets Value (NAV). Similarly, if anyone wants to buy the shares of Open-End Mutual Fund, he has to purchase the shares from the fund itself.

The shares of Close-End Mutual Funds are traded on stock exchanges, due to which the outstanding number of shares remains constant, unless the fund announces bonus shares or right shares to the existing shareholders. The market price of the share of Close-End Mutual Funds is determined by the demand and supply of the shares, and not by NAV. Throughout the world close-end funds have a tendency to trade at a small discount to their net asset value. However, in Pakistan the discounts are phenomenal, averaging 50 per cent. As the Pakistan stock market matures and fundamentals rather than sentiments become the driving force, we expect the market price of these funds to rise to trade closer to their net asset values

How to be an Asian Tiger

Anis Alam

Abstract

In 1995 the Republic of Korea (ROK) was officially admitted to the Organisation for Economic Cooperation and Development (OECD). This organisation groups together industrially developed countries of the world. Recently, the World Bank has also released a study of China that predicts that China is going to become the second biggest economy in the next fifteen years if its economic growth follows the pattern of the last fifteen years. ROK is the only country from among the developing countries to join the ranks of the developed industrialised countries in the last thirty years. However, it is still a small country compared to China. Hence when China completes its transformation into an industrialised country the whole world will be affected.

How did South Korea achieve such an accelerated transition to prosperity? What measures were adopted by the Chinese leadership that has allowed China to grow so rapidly? There are many factors that have been cited to explain Korea's miracle, and rapid Chinese growth. However, In the following we will highlight the role that education, science and research and development (R&D) have played in their success.

General prosperity with mass consumption has been achieved in the present century only in those countries that have transformed themselves from agrarian to industrial societies. They rely on massive industrialisation, mass production and mass consumption. They build huge power plants, country wide electricity grids, gas and oil pipe lines, refineries, dams, highways, ports, airports, huge mechanical, chemical, and electrical complexes. These industries use enormous amounts of energy and material and are generally based on the exploitation of science and technology (physics, chemistry, civil, mechanical, electrical and chemical engineering) generated over the last hundred and fifty years.

While industrialising, these societies educate all their citizens, banish illiteracy, provide schooling to all their children and youth (up to 18 years) and generally promote education and research. The modern knowledge system, with its public schools, colleges, universities and research institutions is the product of such societies. They generate new knowledge at an exponential rate, thus doubling it every 15 years. This knowledge is generated by scientists whose number also grows exponentially.

For example the number of PhDs per million of population reaches hundred and more in these countries. The number of scientists and engineers per thousand of population reaches 100 or more. The expenditure on scientific research and development (R&D) reaches 1-3 percent or more of gross national product[1]. The productivity and efficiency of the worker increases continuously. Even agriculture gets totally mechanised and science based. It uses massive inputs of chemical fertilisers, pesticides, high yielding varieties of seeds, agricultural machinery, tube wells, sprinklers, canals, head works, bridges and dams.

Developed state of science is reflected in production of large number of books, journals and research papers. In 1993, for example UK, China, ROK and India produced 14003, 15559, 6913 and 1396 new titles respectively dealing with science and technology related subjects. USA produced over fifty thousand. In comparison Pakistan in 1993 produced just 94 new titles[2] on science and technological subject. Most of the three hundred new titles which appear every year in Pakistan relate to either religion or literature, a situation reminiscent of 14th century Europe. All this seems in total contradiction to our claims of achieving world standards in uranium enrichment, rocketry, lasers etc. Unfortunately, the real situation is far from satisfactory. Of the over half a million scientific research papers published annually all over the world, the Pakistani share is only 0.08 percent. India's share in comparison is nearly 30 times bigger[3].

Relation between Education, Science & Development:

It is an empirical observation that the state of development of a country as represented by its Gross Domestic Product (GDP), is directly related to the amount of resources the country devotes to scientific research and development (R&D).

The OECD Experience

Take the case of the OECD countries. These include 17 countries of Western Europe, besides Canada, USA, Australia, New Zealand, and Japan. In 1993 North America, EC and Japan together spent over 382,219.8 million dollars on scientific R&D, They also employed a total of 2,413,372 R&D researchers in the same year[4]. In 1990, these countries also filed patents for over one and quarter million new scientific and technological

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[1] *UNESCO YearBook 1995.*
[2] *UNESCO YearBook 1995.*
[3] Science In Pakistan; Nature, Vol. 376 - 24 August 1995
[4] *Main Science And Technology Indicators, 1995.* Organisation Economic co-operation and Development, Paris, France.

ideas and products. They held among themselves 98.2 percent of all European and 96.3 of all US patents in 1993[5].

OECD countries produced over seventy nine percent of the world gross products and services, notwithstanding the fact that their population is just 15 percent of the world total. Let me emphasise the point even further.

Research and development activities produce new knowledge and new products and services. Let us take a few examples from the last fifty years. The transistor was discovered just after the Second World War in Bell Laboratory owned by the giant, American Telegraph and Telephone (AT&T). Within twenty years it became an indispensable part of every electronic device. Microprocessors were developed in 1971, soon they were at the core of all automated devices and machines. Micro electronic industry in the USA had a sale of over 77 billion dollars in the first six months of 1997. The computer was developed in the mid 40s. Personal computers appeared in 1975. Now these computers are found in every office and household in developed countries. The computer industry in the USA alone had a sale of over 171 billion in the first six months of 1997. The Laser were developed in the mid 50s. Now they are found in every compact disk player. They are extremely useful tools in a surgeon's hand and dentist's drill machine. The USSR launched its first satellite in 1957. Within six years the first communication satellite COMSAT went up. Now satellites help in communication as well as remote sensing in a routine manner. The dish antenna on rooftops every where is a striking example of the wide use of satellite communication. The telecommunication industry in the USA alone had sales exceeding 128 billion dollars in the first six months of 1997. The helical structure of DNA was discovered in 195 6. Now this discovery has led to a multi billion dollar bio-technology industry. Numerous examples from other branches of science can also be given. In the last fifty years the exploitation of new scientific discoveries has given rise to multi-trillion dollar industries. The value of scientific knowledge and research and development (R&D) activities just cannot be overemphasised.

Research and development activities are undertaken by highly educated scientists, engineers and ancillary staff. These are usually the product of a country's education system, schools, colleges and universities. European countries that first adopted the industrial system of production in the late 18th and early 19th centuries understood the importance of education for the maintenance and development of industrial society. They introduced a universal elementary education system that has now been

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[5] *Main Science And Technology Indicators, 1992*. Organisation Economic Co-operation and Development, Paris, France.

extended to all 18 year olds. They created a strong research based university system. This example was also emulated by the USA and other emerging industrial countries such as Japan. All OECD countries now have universal literacy and universal school education. They also provide college and university education to over half of their adults. In Canada all adults and in the USA 81 percent of all adults were enrolled in higher education institutions in 1993. OECD countries spend on the average over 5 percent of their GDP on education. This has allowed them to create a highly skilled workforce and highly qualified teams for scientific research and development work.

In 1995, the USA is estimated to have had over 8 million people with scientific and technical degrees. This number has been reached through exponential growth from around 1,00 in 1800 AD. It grew to 16,000 in 1860 AD and 128,000 in 1905 AD, 1,024,000 in 1950 AD, 2,048,000 in 1965 and 4,096,000 in 1980. US scientists and engineers publish over a quarter million research papers every year. In addition US scientists, social scientists and writers also publish over fifty thousand new titles every year. US scientists and engineers are the product of a highly developed US educational system. The US spends nearly five percent of its GNP on education[6].

Since the Second World War the USA has continuously spent more than any other country on science and technology. As a result the scientific leadership in the world has passed from old established industrial West European countries to the USA, This is reflected in the awards of Nobel prizes to scientists belonging overwhelmingly to the USA year after year. The USA also leads in the development of new scientific and technological inventions. The value which is accorded to science in the USA can be appreciated by the fact that every fifth US citizen is a degree/diploma holder in either science or engineering subjects. The increasing use of science has allowed less than 3 percent of the US labour force to produce all the diverse agricultural products in the USA[7] Similar trends are also visible in industry. Far less manpower is employed in US industry today to produce far more goods then forty years ago. This has been made possible by increasing the use of science in the production processes. On the average the USA spends more than 2.8 percent of her Gross National Product (GNP) on scientific R&D.[8] This has enabled the USA to emerge as the leader in the production of new scientific and technological products. It is the. only country in the world that has a positive balance of payments in technology.

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[6] *UNESCO YearBook l995*
[7] *World Development Report 1997*. World Bank, OUP.
[8] *World Science Report 1993*. UNESCO, Paris, 1995.

It spent a hefty 167010 million dollars on scientific R&D in 1993[9]. There are over half a million PhDs employed in its industries, academic and research institutions[10]. In the year 1995 USA had a GDP in access of 6,9J2,020 million dollars[11]. It was also the largest exporter of goods and services in the world. It also had a surplus of 12,647 million US dollars in technology transaction of 17,935 in the year 1990[12].

Japan, the second largest economy in the world with a GDP of nearly 5,108,540 million dollars in 1995[13], was a poor underdeveloped agrarian country in the last century. It decided in 1869 to catch up with the rest of the developed world. The emperor proclaimed that "Knowledge shall be sought throughout the world so as to strengthen the foundation of imperial rule". Consequently, it has spent lavishly on education to develop its human manpower resources. It recruited foreign teachers and scientists in the first stage. It sent out her own students for training in the universities of Europe and the USA. By the beginning of this century it had developed its own higher education system with colleges and universities with the help of academics trained abroad and within the country. It continued to send students and scientists. Its adoption, cultivation and promotion of science for over a hundred and thirty years has borne fruit. It has spent over 3 percent of its GDP on scientific R&D in recent years.[14] This has given it an undisputed leadership in most manufactures, especially of an electrical/electronic nature. Its citizens now enjoy the highest of living standards in the world. It has become the second largest economy in the world after the USA.

Germany, France and U.K., the third, fourth and sixth largest economies in the world, spend over one hundred billion dollars on scientific research and development every year[15].

Russia which was the least developed country in Europe at the beginning of the 20th century producing only ten percent of the US industrial product, had before its present troubles, advanced to produce

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[9] *Main Science And Technology Indicators, 1995*. Organisation Econornic Co-operation and Development, Paris, France.
[10] *Main Science And Technology Indicators, 1992*. Organisation Economic Co-operation and Development, Paris, France.
[11] *World Development Report 1997*. World Bank, OUP.
[12] *Main Science And Technology Indicators, 1992*. Organisation Economic Co-operation and Development, Paris, France.
[13] *World Development Report 1997*. World Bank, OUP.
[14] *World Science Report* 1993 UNESCO, Paris, 1995.
[15] *Main Science And Technology Indicators, 1992*. Organisation Economic Co-operation and Develoomeni. Paris. France.

almost as much as the USA by the early 80s. It has achieved the status of a superpower by consistently cultivating and promoting science. Russia has the largest stock of scientists and engineers in the world and till recently used to spend the largest percentage of its GNP on science, which was nearly 4 percent in 1986. It accounted for nearly one-fifth of the world industrial output and turned out more steel, cast iron, rolled metal, coal, oil and gas, iron ore, cement and mineral fertilisers than any other country in the world. In addition it was the second largest producer of electricity, engineering products and cotton fibre in the world in 1986. Despite all talk of underdeveloped agricultural production the USSR was still the third largest producer of grains and legumes in the world in the same year. Once Russia is able to sort out its problems related to transition to a free market economy, its well developed science will allow it to leapfrog to prosperity.

The USA, Japan, Germany and other OECD countries have now become post industrial information based societies. Their wealth depends on the generation, dissemination and processing of information.

The group of newly industrialised countries of the Far East comprising the Republic of Korea, Taiwan, Singapore, Hongkong together account for less than one percent of world population. However, their share in global production is nearly two percent[16]. These countries have in the last thirty years increased their share of global production from almost zero to the present impressive figure. One of these countries, the Republic of Korea has even been admitted to the OECD.

Planning for Development:

So far we have just given the examples of the two countries which have achieved the status of superpowers in the world in the last forty years. The USA has followed the capitalist path of development, while the USSR has used central planning for its development. Both countries have however used science for development in a planned manner. The USA launched the largest planned effort during the Second World War to develop the atomic bomb. Thousands and thousands of scientists and engineers were employed at numerous laboratories. Successful explosion of the bomb in 1945 demonstrated to all nations, irrespective of their social and political systems, that science can be used in a planned manner to achieve desired goals. Similar to the Manhattan Atomic bomb project in the USA, other projects were launched in the UK and Germany to develop rockets, radar and a he of other devices.

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[16] *Main Science And Technology Indicators, 1992*. Organisation Economic Co-operation and Development, Paris, France.

After the Second World War almost all governments and industrial concerns have established institutions to use science for development in a planned manner. In the early 60s the USA launched a concerted effort to put an American on the moon. Massive research and development efforts by the National Astronomic Space Agency (NASA) was successful in the effort and an American was successfillly placed on the surface of the moon in 1969. In 1992, Watson, the co-discoverer of DNA structure launched a massive global scientific research and development protect, the Human Genome Protect involving 9000 scientists in 36 countries, to map the entire 6 billion atom sequence of the human genome. The protect is expected to be completed by the year 2002. On completion it will allow the identification of every characteristic of the human body with one gene or the other. It will be analogous to the preparation of a skeletal map that one finds in an anatomical laboratory. This will help in developing processes and drugs through genetic engineering that will fix genetic malfunctions and cure diseases that have remained incurable till recently.

Planning for Development: China and Korea

Most countries have sought to develop a science and technology policy. Using these policies along with other policies in the sphere of education, industry, finance, investment, import/export etc., such countries have achieved accelerated development. Korea and China are representative examples. What Britain achieved in two hundred years, Japan achieved in a hundred years. ROK achieved that in just a generation. China is next in line to achieve that in the next fifteen years for a fifth of the world population.

The Republic of Korea, a war ravaged agrarian economy with a GDP of less than 3 billion US dollars in 1965 and listed with Pakistan among the poorest countries, has now graduated in thirty years to the ranks of high income countries along with other OECD countries. Its GDP in 1995 was a hefty $ 455,476 million[17]. So Korea has already made a transition to an industrial society. Agriculture now constitutes only 7 percent of its GDP, while industry and services contribute the rest.

From the very beginning ROK has invested heavily in developing its human manpower potential through education. Korea was occupied by Japan whose colonial rule ended only in 1945. At that time only two percent of the Korean population over 14 years of age had completed secondary school, and the illiteracy rate stood at 78 percent. Korea was then engulfed in a civil war situation that only ended with the division of the country into two

[17] *World Development Report 1997*. World Bank, OUP.

parts in 1953. The southern part was named the Republic of Korea, while the north was called Democratic Republic of Korea. Since 1953 ROK has achieved remarkable results in educating its population. In primary level schools the enrolment increased five times so that by the year 1970, all the school-going children were being enrolled in schools. Secondary school enrolment increased more than 28.5 times between 1945 - 1986, while enrolment in colleges and universities increased almost 150 times during the same period. ROK was furthest in the direction of more education than would be expected, given her GNP per capita. That is, with a per capita income of $ 90, ROK's educational achievement stood fairly close to the normal pattern of human resource development for a country with a mean per capita GNP of $ 200. When ROK's per capita GNP rose to $ 107, its level of human resource development was equivalent to that of countries with a GNP per capita of $ 380[18].

As a result, ROK surpassed other newly industrialised countries (NICs) by almost all indices of educational attainment. Thus in the late 1970s ROK had the highest number of secondary students as a percentage of the secondary age population; engineering students as a percent of total post secondary age population; scientists and engineers per million of people; and scientists and engineers in research and development per million of people. By the early 1980s over 95 percent children were enrolled in middle level schools. And over 70 percent of boys and girls were attending high schools. By the mid 1970s the illiteracy rate had become insignificant. Between 1975 and 1990, ROK tripled its university enrolments and in 1990, 36 per cent of Korea's youth in the 20-24 year old age group were attending universities. By the early 1990s, 93 per cent of its boys and girls were enrolled in secondary schools. Forty eight percent of its youth was being enrolled in institutions of higher learning by 1995[19]. Korea now boasts of having 1343 scientists and engineers per million of population. Between 1981-91 Korean gross expenditure on research and development (GERD) grew each year by nearly 25 percent[20]. Such foresight in the development of human manpower has paid off handsomely. ROK has multiplied its exports nearly seven times in a fifteen year interval (1980-95), ninety three percent of its exports consisting of manufactures[21]

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[18] Kim Linsu: "Technological Transformation in Korea and its implication for other Developing Countries", Development & South - South Cooperation, Vol. IV, No. 7, Dec. 1988, (Ljiubljiana, former Yugoslavia).

[19] *World Development Report 1997*. World Bank, OUP.

[20] *World Science Report 1993* UNESCO, Paris, 1995.

[21] *World Development Report 1997*. World Bank, OUP.

China had achieved universal primary education for its children by early 1970. By the end of 1993, 51 percent of its girls and 60 percent of its boys were enrolled in high schools[22]. It has also expanded its higher education system greatly. Chinese universities and other institutions of higher learning are the cradle of future scientists and engineers. In 1993 the total enrolment at under-graduate level in Chinese universities and colleges exceeded 2,536000 and that of post graduate students reached 107,000 (including 18000 for doctoral degrees). In the same year 571000 undergraduates and 28000 postgraduates completed their studies. Since 1990 the proportion of students majoring in science and technology have remained at 40 per cent of the total undergraduate enrolments and 63.7 per cent of the postgraduates and the proportion of doctoral students is even higher[23]. The production of a vast number of science and technology graduates has encouraged the cultivation of science in a big way. In 1993 it employed altogether 2,426,300 S&T personnel (not including the support staff in S & T service departments). Of these 1,484,300 were scientists and engineers. In the same year the number of R&D scientists and engineers reached 598,000[24]. The vitality of the S&T system in China has been due to a continuous influx of new talent from its institutions of higher learning as well as scientists and engineers who return after their education and training from abroad. Their number runs into hundreds of thousands. 12,9000 Chinese students were studying abroad in 1992[25].

According to a Chinese commentator, "evidence shows that scientific research has provided knowledge, theories, methodologies, thoughts and talent that have contributed to economic and social development in China"[26].

One consequence of this is that industry in China has grown at the rate of 10 percent between 1965-80 and at 12.4 percent from 1980-88 and at a hefty rate of 18.5 between 1990-95. Its share in the GDP has risen to 48 in 1993[27], while that of agriculture has decreased from 34 percent in 1970 to just 19 percent in 1993[28].Chinese exports have jumped from 18,100 in 1980 to 148,797 million dollars (nearly an eight fold increase in 15 years, 81 per cent of the exports consist of manufactures!). China is thus fast turning into a predominantly industrial society.

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[22] *World Development Report 1997*. World Bank, OUP.
[23] *World Science Report* 1993 UNESCO, Paris, 1995.
[24] *World Science Report* 1993 UNESCO, Paris, 1995.
[25] *World Science Report* 1993 UNESCO, Paris, 1995.
[26] *World Science Report* 1993 UNESCO, Paris, 1995.
[27] *World Development Report 1997*. World Bank, OUP.
[28] *World Development Report 1995*. World Bank, OUP.

Development in Pakistan

What has been Pakistan's performance? How has Pakistan fared the past fifty years? Pakistani society is predominantly agrarian. However, it is being slowly transformed into an industrial society. Industrialisation in Pakistan has proceeded at a steady pace, increasing its share in Gross rational Product from just under two percent in 1950 to 20 percent in 1965 and to 24 percent in 1988. Industry has grown at an average rate of 6.4 percent between 1965 and 1980 and at a rate of 7.2 between 1980 and 1988. This slow but steady growth has raised the share of Industry in the GDP. In 1993 industry contributed 25 percent while services (trade, commerce, banking, insurance etc.), provided half the total Gross National Product. The share of the agriculture sector in Gross Domestic Product has been steadily decreasing from 37 in 1970 to 26 percent in 1995. However, the share of industry in the GDP has remained more or less constant at 25 since 1980. In fact it even declined in 1995 to 24 percent[29]!

Despite impressive progress in the last 50 years, Pakistan's position in the comity of nations is far from impressive. Pakistan is a country of over \25 million people; of which three fourths are unable to read or write; seventy percent of whom do not have access to safe drinking water; half of whom live in one room houses, each room accommodating as many as six people on the average; two thirds of the houses in which Pakistanis live are kutcha built with unbaked mud bricks; eighty seven percent of the houses do not have piped water; two thirds of the houses do not have separate bath rooms; eighty percent of the houses do not have a separate latrine[30,31].

A Pakistani man on the average lives for only 61 years, compared to 74, which is the average for developed countries. Pakistani women have the added "distinction', that on the average their spouses out live them, contrary to the experience of most other countries, developed as well as developing. The child mortality rate in Pakistan is on the average eight times higher then in developed countries. The rate of death among women: it childbirth in Pakistan is almost thirty three times higher than that prevalent in developed countries[32].

The situation concerning educational facilities available to Pakistani children and youth is very grim. The developing countries on the available, provide primary education facilities to over hundred percent children of school going age. In Pakistan however, primary school facilities are available

[29] World Development Report 1997. World Bank, OUP.
[30] Alam. M. Anis, "The First Wave In A New Age" Daily The NEWS, Jan. 3, 1997.
[31] Alam. M. Anis, "A Social Place For Science", Daily The NEWS, Jan.10, 1997.
[32] World Development Report 1997. World Bank, OUP.

to just over fifty percent. These facilities have increased from 40 percent in 1965 to just 44 percent in 1986. In India and China taken together the facilities were already fairly high at 83 percent in 1965. The facility of secondary school education is available to only eighteen percent of our youngsters compared to an average of 39 for the developing countries in general. Tertiary level education (college and university level education) essential for the economic well being and technological uplift of any country benefits barely two percent of our young men and women. In developed countries nearly forty percent of the corresponding age group is admitted to the college and university level educational institutions[33]!

Science & Technology in Pakistan

According to the data available in various government publications, there are over 140 government scientific research establishments in Pakistan. Some of the well known scientific institutions are, Pakistan Atomic Energy Commission (PAEC), Qadeer Khan Research laboratories, Space and Upper Space Atmospheric Research Organisation (SUPARCO), Pakistan Agricultural Research Council (PARC) Pakistan Medical Research Council (PMRC), Pakistan Council of Scientific and Industrial Research (PCSIR). The Pakistan armed forces also have research and development laboratories of their own. The best known among them is Defence Science and Technology Organisation (DESTO). These laboratories have made a modest contribution.

PAEC achievements in nuclear medicine, non destructive material testing and development of new seed variety of cotton have been well publicised. PAEC has also served as a refuge of highly qualified physicists who could not be absorbed elsewhere. The Qadeer Khan Laboratories contribution to uranium enrichment have made Pakistan known the world over. PCSIR development of a pesticide and numerous import substitution processes has also been acknowledged.

Dependence on foreign Science & Technology

However these organisations have not contributed significantly to the scientific and industrial development of the Pakistani nation. .After fifty years of independence, there is hardly any sector in Pakistan's industrial, agricultural, service, social and cultural life which is not dominated by products and services provided by imported science and technology. Even the most traditional sector of the economy, agriculture, has also come to depend heavily on imported pesticides, fertilisers, hybrid high yielding varieties of seeds and agricultural machinery (harvesters, tractors and other

[33] World Development Report 1997. World Bank, OUP.

machinery). This massive input of science in agriculture has allowed a steady increase in the yield of various crops. However, the productivity of our agriculture with some exceptions is still far below world standards.

If we disregard traditional herbal medicine, then our dependence on imported medicines, diagnostic and therapeutic instruments and chemicals is almost total. We have also come to depend for amusement and entertainment almost totally on imported scientific and technological marvels like VCRs, VCPs, tape recorders, players, television and films. Likewise for communication. We import satellite communication technologies, cellular telephones, as well as aeroplanes, cars, trucks and other self propelled machinery.

Our industry is mostly based on imported plants and raw materials. Even for our defence we have to depend on imported jet fighters, submarines, frigates, tanks, rockets, radar and sophisticated ammunition.

Our dependence on imported scientific know-how, equipment and services has increased manifold since 1948. We have to pay heavily for the use of imported technologies and patents,

Reasons for Failure

The reasons for the failure of Pakistani scientific R&D to contribute to the national economy are many. Successive Pakistani governments and Pakistani society in general have not clearly understood the role of scientific R&D in national development. They have therefore never made a serious effort to develop Pakistani science. They have never had a science policy till one was formally announced in 1984. However, there has never been any serious effort to implement that policy. Moreover, the material and human resources invested in science and scientific R&D have always been very insignificant. This is borne out by the following facts.

Of the 137 scientific research establishments for which data was compiled by the Pakistan National Science Council in 1982, 133 institutions together employed only 109 PhDs. 66 of these had no PhDs on their staff, 15 organisations had only one Ph.D., 19 had only 2 PhDs and 8 had three PhDs among their staff. Only PCSIR laboratories had 106 PhDs working in its three laboratories in Karachi, Lahore and Peshawar. PCSIR laboratories have contributed to import substitution in a small way. The situation has deteriorated in most of these institutions due the retirement of senior staff

with little or no efforts to replace them with equally if not better qualified staff[34].

The only research organisation that has been funded adequately is Pakistan Atomic Energy Commission and the laboratories run by Dr. Qadeer Khan. But even they have not contributed any thing to the urgent problems of power shortages. The only functioning atomic power plant in Pakistan is a Canadian supplied nuclear reactor of 137 megawatt capacity. This power plant has worked intermittently since 1972 and almost always operated at lower than its peak capacity.

From the discussion above it may be obvious that Pakistan is an underdeveloped country. Successive governments have failed to develop the enormous potential which Pakistan possesses in its vast land, varied geography, mild climate, fertile soil, largest collection of snow clad mountains and glaciers and industrious teeming millions. She has remained wedded to the old order in which colonial power left it in; producer of cotton, rice, fruits and vegetables for the international market. Although Pakistan has enjoyed a respectable growth rate of 5-6 percent over its entire period of existence, this rate is but the average for most developing countries emerging from colonial domination. Our ranking among the forty two poorest countries in the world has more or less remained static. In fact many countries have left us far behind. How can we extricate ourselves from this state of underdevelopment ? I think by making optimum use of our advantages and breaking out of the impasse with maximum use of science and technology, it is possible.

Possible Course of Action

Successive governments have failed miserably to evolve and implement any policy for the development of science. The question of using science for national development just does not concern Pakistani governments. Pakistan spends less than 0.2 percent of its GNP on science. This is about one third the average for developing countries as a whole and only one fifth of what our biggest adversary India spends on science. However, in a recent article in The British science journal Nature, Ehsan Masood quoting an unpublished 1993 UNESCO World Science Report claimed that Pakistan spends one percent of its GDP on scientific R&D. However, knowing the lamentable situation of the R&D establishment in the country the writer is quick to comment. "The 64-million rupee question

[34] Alam. M. Anis, 1988. Forty Years of Science & Technology in Pakistan and India: Comparative Survey: In Proceedings of PASSP Seminar on "Forty Years Of Science & Technology in Pakistan", Karachi, Nov. 88.

is: who spends the rest of Pakistan's not-insubstantial science budget?" According to the latest World Bank's *World Development Report* 1997, 1 per cent of Pakistan's GDP of 1995 comes to 606.49 million US Dollars[35]!

Pakistani science has therefore not developed as it should have. The only period during which science received any attention by the government was the period when Prof. Abdus Salam was advisor to the President of Pakistan on scientific affairs. During his tenure a large number of scientists were trained and a number of scientific institutions like PAEC and SUPARCO were strengthened. Since his departure many new institutions have been created, but they have lacked a sense of direction and leadership. Institutions have been created for providing jobs to scientists not to accomplish a well defined task. A steady decline in quantity and quality of Pakistani science can be detected through out the 80s. The confusion and loss of direction of that period is now manifesting itself in a totally demoralised scientific community.

After nearly fifty years, the number of qualified scientists in Pakistan is too small to make any significant contribution. Furthermore, scientists are not supported with necessary equipment and other ancillary staff. It is therefore unrealistic to expect that they will make an impact.

Scientific R&D is a must for any country aspiring to be a respectable member of the world comity of nations in the coming century. While we have lost much precious time, a beginning can still be made and desired results achieved in a reasonable time frame if adequate resources are set aside for the purpose. There is that vast experience of other nations to learn from. If other nations can transform themselves into modern industrial ones with the help of science, so can we.

Briefly put, we will first have to develop science and scientific manpower under a well thought out policy for science. Next we ought to plan to use science in a well defined manner for the achievement of certain desirable social goals (full immunisation, frill literacy, safe water and sewage for all, electricity in every home using solar, wind, biomass, geothermal and tidal waves). Finally we ought to integrate science in our national development planning to become a prosperous country[36].

Let us now examine the structure and volume of production in Pakistan from a global and regional perspective. Pakistan's population

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[35] Science In Pakistan; *Nature*, Vol. 376 - 24 August 1995

[36] Alam. M. Anis; 1988. "Status Of Science & Technology policies for SAARC Countries", in Proceedings of the SAARC Workshop on Science Policy, Ministry of Science & Technology, Government of Pakistan, Islamabad.

constitutes slightly over two percent of the world population of nearly five billion. But it produces just one quarter of one percent (0.25 %) of global production. In comparison, less than fifteen percent of world population living in the highly industrialised countries (USA, Canada, Japan, Germany France, UK, Sweden, Holland, Italy, Austria, Switzerland, Australia, New Zealand, Ireland) produce over sixty five percent of world production (industrial, agricultural, mineral, services). There are several developing countries with sizeable gross domestic products in billions of US dollars. In decreasing order of size they are China (697.647), Brazil (688.085), India (324.082), Korea (455.476), Argentina (281.060), Indonesia (198.079) Turkey (164.789), Thailand (167.056), South Africa (136.035), Philippines (74.180), Malaysia (85.311) in 1995. In comparison, Pakistan's Gross Domestic Product in that year stood at 60.649 billion dollars. Now many developing countries with a population much smaller than that of Pakistan have much bigger Gross Domestic Products. Malaysia, Philippines, Thailand, Turkey, Colombia and Argentina. Developed countries such as the USA, Japan, Germany, France, Italy and the UK have Gross Domestic Products of 6952, 5108, 2415, 1536, 1086, and 1105 billion dollars respectively in the year 1995. It is in this world scenario that we are to compete.

Table 1: Gross Domestic Expenditure on research and development (GERD), Gross Domestic Product (GDP) and GERD/GDP ratio for different areas of the world, 1992

	Gerd[1] *(Billion US $s)*	*GDP*[1] *(Billion US $s)*	*Gerd / GDP (%)*
Eurupean Union[2]	117.6	6079	1.9
EFTA[3]	5.47	233	2.3
USA	167.01	5953	2.8
Canada	8.13	537	1.5
Japan	68.31	2437	2.8
Australia & New Zealand	4.12	341	1.2
OECD	*370.64*	*15580*	*2.4*
NICs[4]	10.73	824	1.3
China	22.24	3155	0.7
India	7.1	940	0.8
Pakistan	2.98	298	1.0
Central and Eastern European Countries	2.89	188	1.5
Commonwealth of Independent States[5]	4.13	496	0.9
Israel	2.89	188	1.9
North Africa	0.72	160	0.4
Middle & near East	3.11	598	0.5
Subsaharan Africa	1.09	245	0.4
Other countries in Far East	0.69	982	0.1
World Total	428.58	24295	1.8

1. Calculated in purchasing power parity (PPP)
2. European Union: 15 member countries of the Union as of 1995: Austria Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, Sweden and UK.
3. EFTA: the four member countries as of 1995: Iceland, Lichtenstein, Norway and Switzerland.
4. NICs: Newly Industrialised Countries as of 1995 Korea, Hong Kong, China (Taipe), Singapore.
5. CIS: Republics of former USSR excluding the Baltic states.

Source: World Science Report, 1993 and OECD Indicators.

Table 2: R&D Scientists and Engineers and Population ratios for different areas of the World. 1992

	R&D Scientists & Engineers (SE) ('000)	***Population (Millions)***	***R&D SE Per thousand population***
Eurupean Union	740.9	369.0	2.0
EFTA	32.6	11.9	2.7
USA	949.3	257.5	3.7
Canada	64.6	27.8	2.3
Japan	511.4	124.8	4.1
Australia & New Zealand	48.5	21.2	2.3
OECD	*2347.3*	*812.2*	*2.85*
NICs	136.7	92.5	1.5
China	391.1	1205.0	0.3
India	106.0	887.7	0.1
Pakistan	6.626	~120	0.05
Central and Eastern European Countries	285.5	131	2.2
Commonwealth of Independent States	452.8	283	1.6
Israel	20.1	5.4	3.8
North Africa	81.6	219.7	0.4
Middle & near East	117.4	465.9	0.3
Subsaharan Africa	176.8	482.6	0.4
Other countries in Far East	60.3	513.5	0.1
World Total	4334.1	5563.1	0.8

Source: World Science Report, 1993 and OECD Indicators

Table 3: Scientific Production, measured by publications, 1993

	World share 1993 (%)	*1993 index (base 1982 = 100)*
Eurupean Union	31.5	107
EFTA	1.7	100
USA	35.3	96
Canada	4.5	108
Japan	8.1	119
NICs	1.4	412
China	1.2 (12th position in the world)	347
India	2.1	83
Pakistan	0.08	200
Central and Eastern European Countries	2.3	87
Commonwealth of Independent States[5]	4.8	56
Israel	2.89	90
North Africa	0.4	110
Middle & near East	0.6	186
Subsaharan Africa	0.8	89
Other countries in Far East	0.1	113
Australia & New Zealand	2.7	94
World Total	100	

Source: *World Science Report*, 1993 and OECD Indicators.

Table 4: Technological Production, measured by Patents granted in Europe and the USA, 1993

	European Patents			
	World Share 1993 (%)	***1993 (base 987 = 100)***	***World share 1993 (%)***	***1993 (base 1987 = 100)***
Eurupean Union	45.4	91	18.6	76
EFTA	3.2	86	1.5	73
USA	27.3	103	48.7	105
Canada	0.8	82	2.3	105
Japan	20.9	129	25.0	111
NICs	0.5	241	1.3	189
China	0.0	--	0.1	153
India	0.0	--	0.0	--
Pakistan	--	--	--	--
Central and Eastern European Countries	0.2	58	0.1	41
Commonwealth of Independent States[5]	0.2	174	0.1	54
Israel	0.4	124	0.4	114
Australia & New Zealand	0.6	59	0.5	79
World Total	428.58	24295	1.8	1.8

Source: *World Science Report* and OECD Indicators.

Table 5: Technological Production and its Evolution in the triad, measured by European and US Patenting, 1987 – 1993

	World Share World Share (%)		***US patents World share (%)***	
	1987	***1993***	***1987***	***1993***
Eurupean Union	49.9	45.4	24.4	18.6
USA	26.8	27.3	46.3	48.7
Japan	16.2	20.9	22.5	25.0

Chinese researchers were granted 62000 patents in China.

Source: *World Science Report* and OECD Indicators.

Table 6: Scientific Production per discipline measured by percentage share of publication, 1993

Scientific Disciplines / *Areas*	*Clinical medicine*	*Biomedical research*	*Biology*	*Chemistry*	*Physics*	*Earth Sciences*	*Engineering Sciences*	*Mathematics*	*All disciplines*
Europe	41.0	36.8	31.5	36.9	34.4	32.7	29.6	38.0	36.5
North America	41.4	44.9	43.6	27.9	32.8	45.5	44.0	39.7	39.8
Europe + N. America									76.3
Japan & NICs	8.1	9.5	7.6	14.0	11.7	4.1	12.6	6.3	9.5
Commonwealth of Independent States	1.4	2.9	2.2	9.9	10.7	5.7	4.3	4.8	4.8
Muslim countries	0.9	0.4	1.2	1.7	0.8	1.1	1.6	1.2	1.0
Latin America	1.3	1.3	2.5	1.3	1.9	2.1	0.9	1.6	1.5
Subsaharan Africa	1.2	0.5	2.1	0.5	0.3	1.2	0.4	0.6	0.8
Other countries in Far East	1.6	1.4	3.3	6.1	6.1	3.5	4.8	5.6	3.4
Australia & New Zealand	3.2	2.3	6.0	1.7	1.3	4.1	1.8	2.3	2.7
China	Chinese scientists and engineers published 20178 scientific papers listed in SCI in 1993.								
Pakistan	Pakistani scientists published 2062 scientific papers listed in SCI during 1990-94								

Source: *World Science Report* and OECD Indicators.

References

Alam, M. Anis, 1980. Science & Engineering Education In the Third World: The case of Pakistan; paper presented in the International Institute of Educational Planning HEP), seminar on Education & Progress, held in Paris, July 1979. reprinted in The Varsities, V. No. 3, UGC, Islamabad, Pakistan.

Alam. M. Anis; 1988. "Status Of Science & Technology policies for SAARC Countries", in Proceedings of the SAARC Workshop on Science Policy, Ministry of Science & Technology, Government of Pakistan, Islamabad.

Alam. M. Anis, 1988. Forty Years of Science & Technology in Pakistan and India: A Comparative Survey: In Proceedings of PASSP Seminar on "Forty Years Of Science & Technology In Pakistan", Karachi, Nov 88.

Alam. M. Anis, "The First Wave In A New Age" Daily The NEWS, Jan. 3, 1997.

Alam. M. Anis, "A Social Place For Science", Daily The NEWS, Jan. 10, 1997.

Alam. M. Anis, "Investing in the Future" Daily The NEWS, March 2, 1997.

Alam. M. Anis, "Fifty Years Of Pakistan", Daily DAWN, March 3, 1997.

Jain Ashok and V. P. Kharbanda, 1988. "Status Of Science & Technology In India", 1988 in Proceedings of the SAARC Workshop on Science Policy, Ministry of Science & Technology, Government of Pakistan, Islamabad.

Kim Linsu. "Technological Transformation in Korea and its implication for other" Developing Countries, Development & South – South Cooperation, Vol. IV, No. 7, Dec. 1988, (Ljiubljiana, former Yugoslavia). Yugoslavia).

Main Science And Technology Indicators, 1992. Organisation Economic Co-operation and Development, Paris, France.

Main Science And Technology Indicators, 1995. Organisation Economic co-operation and Development, Paris, France.

Science In Pakistan: Nature. Vol. 376-24 August 1995.

UNESCO YearBook 1995.

World Science Report 1993 UNESCO, Paris, 1995.

World Development Report 1995. World Bank, OUP.

World Development Report 1997. World Bank, OUP

Note:

The Case for Land Reforms

Rashed Rahman

This article will attempt to answer the question why the redistribution of land ownership (i.e. land reform) is important and even necessary for our society's progress and development. Why there remains a crying need to concretely study the question of agrarian land ownership and all it implies in terms of political and economic power distribution and its social fallout in the rural milieu. Let us begin with an examination of how the present land ownership patterns originated and evolved.

A discussion of the pattern of agrarian land ownership must necessarily take as its main focus the areas where agriculture is the mainstay. That inevitably means the provinces of Punjab and Sindh. The other two provinces, NWFP and Balochistan, with the exception of some relatively limited areas where canal fed or ***barani*** cultivation exists, have economies that are mixed pastoral/agricultural, an economic base reflective of their surviving tribal structures.

Punjab and Sindh, being the inheritors of ancient riverine civilisations, did not always have the dominant character of perennially irrigated agricultural areas. The traditional system of drawing the waters of the rivers for irrigation relied on relatively primitive canals or seasonal flood inundation of areas lying along the course of the rivers (***sailaba*** lands). In addition, wells drawing on the aquifer were widespread, especially in Punjab where the ground water level was easier reached. This ancient system, which had not changed radically in its essentials for thousands of years, was uprooted and shaken up on the advent of British colonialism.

Sindh was annexed by the British in 1842, Punjab in 1848 (which at that time included the Sikh Empire-controlled areas later designated the NWFP province). Having consolidated their rule, the British embarked on what was to prove historically the most ambitious reconfiguration of agriculture on the basis of a network of canals to provide perennial irrigation. The colonialists' purpose was not, as they sought to justify it, the ostensible welfare of their recently conquered subjects. A number of strategic political and economic objectives were sought to be achieved by this 'investment' (which was paid for, both directly and indirectly, from the loot of native resources).

The canal colonies, as the *Doabas* and river banks cleared of forest came to be called, apart from whatever locals' came to benefit from colonial policy, were the sites for settlement of large numbers of people brought in from other areas of the same, and even other provinces. This was intended to create a class of yeoman peasantry' and large landowners, rewarded with land grants for loyalty to the British, past and future. In the process, the pastoralist tribes that inhabited these previously 'wild' lands were marginalised and some of them brought to the point of extinction. Riverine communities such as the Mohanas who relied on fishing and the Mirbahars who plied water transport were relegated to economic deprivation and even ruin once the natural ecology of the rivers was disturbed by canals and barrages.

The settlement policy of the British overturned the traditional dominant system of land ownership which rested on property rights being vested in the sovereign, the State. Private property in land was historically the exception rather than the rule. *Jagirdars* and *Zamindars* held sway over their fiefdoms at the pleasure of the Court. No inherited rights devolved to their heirs and successors, except at the pleasure of the King. Starting from Bengal, their first conquest, the British incrementally instituted Permanent Settlements (of ownership rights and rates of revenue payable to the colonial administration) in all the territories they conquered, which made private property in land the dominant mode for the first time in the Subcontinent's long history. The newly created large landowning feudal elite was born out of this transformation. It soon set about overturning the traditional natural rights to common lands such as *shamiloat*.

Increased revenue from the irrigation water supplies *(abiana)* and agricultural production boosted by the perennial irrigation system was another colonial objective. Revenue collection in money terms helped to accelerate the transformation of a largely barter based rural economy to a cash economy. In the process, there occurred an incremental erosion and final demise of traditional village self-sufficiency based on barter exchange between agriculturists, pastoralists and artisans. The emergence of a cash economy and production of surpluses in agricultural goods led to the development of mandi (market) towns. Artisans flocked to these new mandi towns and further abroad to cities, helping to fuel the emergence of urban commercial and artisan classes, whose products and goods now began to filter back into the villages. This process has transformed the face of rural Punjab and Sindh and appears set to continue at an accelerated pace as urbanisation and the spread of communications and infrastructure brings the villages increasingly into the mainstream of economic life.

The irrigation system inherited from British times was constructed The irrigation system inherited from British times was constructed between 18~9 and 1939. The protects involved major engineering works. It is estimated that some 500,000 people participated in this construction in the last two decades of the 19th century alone. Since independence, some more canals were constructed between 1955 and 1962. After independence, a dispute arose between Pakistan and India concerning the division of waters of what had hitherto been commonly shared river waters and the canal network flowing out of them. This was finally resolved through the Indus Basin Water Treaty of 1960, according to which the eastern Indus tributaries, the Ravi, Beas and Sutle) were awarded to India, the westerly rivers, Indus, Jehium, Chenab, to Pakistan. To replace the canals originating from the lost eastern rivers, a system of inter-river link canals and storage reservoirs was to be constructed. The two largest of these reservoirs were the Mangia Dam on the Jehium (1967) and the Tarbela Dam on the Indus (1974). In addition, the Chashma Barrage on the Indus was completed in 1971.

Further major reservoirs have not been built, although the Ghazi Barotha Project under construction utilises sluice technology to provide irrigation water and generate power without the need for a large reservoir of the Mangia or Tarbela type. The planned Kalabagh Dam remains mired in controversy.

Disputes between and within provinces over water rights have been a fact of life for some time. As pressure on land to produce increasing amounts of food and other agricultural products to feed industry and a burgeoning population growing at 3.1 per cent a year increase, these disputes will most likely get uglier. At present, 74 per cent of the water of the Indus is withdrawn along its course to the Arabian Sea. The Indus Basin canal network is considered amongst the most extensive in the world. But it has proved a mixed blessing because seepage from unlined canals over the past 140 years or so has created the twin problems of water-logging and salinity that is destroying more and more acreage of productive farmland every year (one estimate has it this is in the region of 100,000 acres annually). Riverine forests are denuding because of these phenomena, causing erosion along banks and increased silting of river beds, raising them to heights which make frequent floods a near certainty.

As if the depredations produced by man-made irrigation systems are not enough, urbanisation, housing, roads, industries and other infrastructure is eating up farmland. Between 1981 and 1990, Punjab and Sindh lost 3.3 million acres of farmland to these 'encroachments'. Total farm area in these two provinces has shrunk from 49.2 million acres in 1972 to

47.6 million acres in 1990. Decreasing land productivity. loss of farmland to water-logging, salinity and alternative use, all these are raising a neo-Malthusian spectre of our not being able to feed our people. Increasing imports of necessary edibles also has a limit, considering our strained resources (wheat imports this year are of the magnitude of 4 million tonnes, estimated to cost Rs. 40 billion or $ I billion out of the total food imports of Rs. 80 billion or $ 2 billion. The rupee cost of these imports will rise after the recent devaluation of the rupee by at least an equivalent 8.71%).

Self-sufficiency in food is eluding our grasp and becoming more and more a distant dream. One reason why critics of the present agrarian land ownership structure have argued from time to time that we should correct the anomaly of absentee landlordism which is inefficient, and redistribute land in recognition of the inverse relationship between size of farm and productivity, is because they rely on the example of all countries which have made, or are on the verge of making, the transition from pre-industrial to industrialised economies. All such cases either traditionally had small farm size distribution, or carried out land reform before they could emerge into the light of day as modern economies.

There are of course other rationales for land redistribution, such as equity and overcoming the baleful influence of feudalism on our polity and society.

Agrarian reform efforts

Pakistan inherited an agricultural land tenure system which was inherently iniquitous. This was the result of a high degree of concentration of land ownership, absentee landlordism, insecurity of tenure for tenants cultivating on the basis of share-cropping, and the extraction by landlords of excessive surplus through *batai, abwab* and *begar* labour (levies above and beyond customary practice). In today's Pakistan, the large landowning rentier class has, because of its control of one of the most basic and important means of production, agricultural land, exercised a baleful influence not only over the lives of the peasantry, but also over polity and society.

The degree of concentration of land ownership at the time of Partition and the independence of the country can be gauged from the fact that in West Punjab, out of 13.5 lakh landowners, more than 9 lakh owned less than 5 acres, 11.3 lakh owned less than 10 acres, 1.81 lakh owned between 10 to 50 acres, and only 0.656 lakhs owned more than 50 acres. In terms of acreage, of a total 146 lakh acres, these categories enumerated above owned 18, 34, 21.5, and 14.5 lakh acres respectively. In other words,

67 per cent of landowners held 12 per cent of the land at one end of the scale, while 4.86 per cent of landowners held almost 10 per cent of the land at the other end of the scale, with 25 per cent landowners in the middle holding 26 per cent of the total cultivated area. Similar conditions were found in NWFP, where out of a total cultivated area of 25.25 lakh acres, about 47 per cent was owned by large owners, 42 per cent by peasant proprietors *(khudkasht malikan)* and the rest by tenants possessing occupancy rights. Balochistan, or at least its settled districts (Quetta, Pishin, Shahrig, Sinjawi), exhibited a predominant pattern of peasant proprietors. In Sindh, however, the overwhelming cultivable area was leased out to tenants-at-will (i.e. the landlord's will).

Despite the fact that even before independence, the need for a reform of the landownership pattern and tenancy regime had been acutely felt, especially in Sindh, the province most dominated by feudal large estates, and was followed by numerous studies and three land reforms, the situation has not changed essentially from what we inherited in 1947, marginal redistribution of land and tenant protection legislation notwithstanding. The thrust of all reform efforts has been to bring in change from above in a manner calculated to do least damage to feudal hegemony. Ceilings on land holdings and rules to mitigate the abuse by landlords against their weaker tenants have failed to scratch the surface of the feudal order. An economically captive peasantry provides the hereditary' political constituencies for the overwhelming number of feudal members in the Assemblies.

Ayub and Bhuttos land reforms

When Ayub Khan imposed martial law in 1958 with a 'modernising' thrust, land reform was one of the major policy decisions his government took for the merged province of West Pakistan under the One Unit scheme (East Pakistan having already carried out land reform in the early 50s), with the blessings of our Western mentors. However, the 'modernising' tendency in Ayub Khan's regime was necessarily subject to the limitations of its authors' philosophy. A thoroughgoing reform in order to break the back of feudalism was neither the intent nor the end result of the policy. Whatever the military's views regarding the mess the (largely feudal) politicians had led the country into, the regime still had use for this species. The landlord politicians (or some faction from them) would again be useful when the regime civilianised its face. Major concessions and loopholes/lacunae were therefore allowed the large landowners, which had the effect of producing no more than a bare scratching of the surface of land ownership concentration.

Only 2.5 million acres (3 per cent of the total culturable area) were resumed; 2.3 million acres were distributed amongst 183,371 tenants and small owners. Tenancy protection was practiced more in the breach because of the overwhelming influence of the large landowners in the rural milieu.

The 1960s became the decade of the Green Revolution, involving accelerated mechanisation, scientific inputs of improved seed, fertiliser, pesticides etc, to enhance productivity. This 'revolution' was based on an elite farmer strategy, on whom hopes for enhanced production rested. But whereas in East Punjab (India) the formula was applied in a structure in which large landholdings had already become a thing of the past (India carried out its first land reforms in the early 1950s) and the small owner 25 acres or so) took to the new technologies and methods like a duck to water, leading to yields which even today are three times ours, in Pakistan the formula was being applied in unfavourable ground in the presence of large landed estates. Productivity did increase, but its benefits flowed to the large landowners, who now began to evict tenants and resume lands in order to reap the benefits of mechanised self-cultivation that the new technology offered. The tenancy protection laws failed to prevent this eviction for the obvious reasons that the tenants could not combat the influence and power of the landlord. This mass of humanity, thrown off the land they had tilled for generations, began to filter to the towns and cities in search of livelihood. Thus began our era of slum dwellings *(katchi abadis)* in all major cities, which swelled the urban populace at a rate twice that of the national population growth rate. The result today is the collapse of urban services under this burgeoning pressure. A veritable demographic revolution has been set in motion which is likely to see the shift of a majority of the population into urban settlements within a decade.

Under the cover of being the first civilian Chief Martial Law Administrator in the country, Bhutto promulgated Martial Law Regulation 115 on March 1, 1972 to carry out land reforms. MLR 115 specified a ceiling of 150 acres irrigated and 300 acres unirrigated land, or an area equal to 15,000 PIUs. Because of the PIU formula, in practice the actual ceiling for a tractor/tubewell owner worked out to 466 acres in Punjab and 560 acres in Sindh. If transfers in the name of family members were taken advantage of, the actual ceilings reached 932 acres in Punjab, 1,120 acres in Sindh. The excess land was resumed without compensation and distributed to tenants and small owners free of cost. It also (once again) redefined the tenancy conditions and included protection against eviction.

A total of 1.3 million acres were resumed under the 1972 land reforms, of which 0.9 million acres were redistributed to tenants, small owners and the landless peasantry. The beneficiaries numbered 76,000. In

the countryside, militant peasant organisations, carried away on the wave of popular enthusiasm for the radical rhetoric of "land to the tiller" espoused by Bhutto, seized lands and made the very entry of landlords in some areas difficult.

During its tenure, the regime of Z A Bhutto gradually but inexorably betrayed its true class character. It abandoned the peasantry in favour of the landlords, opening the doors of the ruling PPP for its erstwhile 'targets'. By 1976, the landlords had moved back into their areas with a vengeance, evicting by force and the support of the local administration tenants who had seized land or even those who had legally received it under MLR 115. Feudalism, far from being eliminated, was stronger than ever.

In 1977, as a populist sop in anticipation of the coming elections, Bhutto promulgated a Land Reforms Ordinance on January 5, 1977. This Ordinance reduced the ceiling to 100 acres of irrigated land and allowed compensation to landowners through government bonds. Distribution among tenants, small owners and the landless was again to be free of cost. An additional area of 1.8 million acres was resumed under the 1977 Act, of which 0.9 million acres were distributed among 13,143 persons.

Despite the fact that Bhutto's land reforms appear to be more radical than Ayub Khan's in terms of lowered ceilings and fewer exemptions, the net effect of both reforms was marginal at best.

That is where the story of land reforms in Pakistan has stalled. Land ownership concentration has hardly changed despite all the volumes of paper expended on studying agrarian questions and the three land reforms promulgated. This can be gauged from the fact that the latest information at hand indicates that I per cent of the landowners own 26 per cent of the land even today. The power of the landlord over his tenants continues unbroken. Tenancy protection measures provide no succour to the peasantry.

Feudalism is alive, intact and kicking. Further, its educated scions (trained in the best universities the West has to offer) are today engaged in a massive PR exercise to convince the uninformed that no such creature as feudalism exists any longer in this country. The most theoretically advanced ideologues of the feudal lobby, in recognition of the fact that the world has changed and their interests today have to be pursued by different means, are positing new theories concerning what ails agriculture and how to correct it (of course, shudder the thought, without any mention of the dreaded words, land reform).

The unfinished agenda

Let us cast a glance at the skewed land ownership patterns which persist even today in Pakistan and constitute perhaps the greatest obstacle to modernisation of economy and society. According to the Planning Commission, land has become the critical constraint in agricultural productivity and progress. The constraint can only be understood if we recall that a vast body of literature and studies now exists to show that there is an inverse relationship between farm size and productivity. That is to say, economic holdings of a size that can be self-cultivated, logically are more intensively cultivated than large farms which characterise feudal holdings. In our context of course, that may not always demonstrably be the case since the small owner is unable to gain access to credit and timely inputs of water, which are diverted because of their influence to the feudals (and feed the mountain of default of agricultural loans), and the modern technological inputs of chemical fertilizers, pesticides, etc, at affordable prices (subsidies on these items have been progressively reduced if not done away with).

In any case, there are definite indications that a polarisation in the distribution of farm size has been underway over many years. At the two poles of land holding distribution, larger farms and those of a subsistence or even smaller size have been growing in numbers. The middle distribution of small owners and tenants has been shrinking. The data suggests that the process which originated in the green revolution of the 1960s, and saw growing landlessness of the peasantry between 1961-73, driving 794,042 peasants into wage labour (43 per cent of the total agricultural labourers in 1973), has accelerated. Large landowners are resuming lands from tenants (and buying out small owners?) whenever and wherever possible, with a view to self-cultivation through mechanised means. The proletarianisation of the poor peasantry is therefore proceeding apace.

The latest figures available for the distribution of land holdings are provided by the Census of Agriculture, 1990, as tabulated in the Economic Survey for 1996-97 (p 51). They show that 4.11 million farms (81 per cent) of a total of 5.01 million farms were of a size under 5.0 hectares (under the subsistence size of 12.5 acres; I hectare = 2.47 acres). They comprised 7.43 million hectares in area (39 per cent) of a total farm area of 19.14 hectares. The farms of 5-20 hectares sized 2.5-50 acres, 50 acres being the size of an economic unit) comprised 0.86 million farms (17 per cent of the total number), and covered in area 7.16 million hectares (38 per cent). The balance of farms over 20 hectares in size numbered 0.11 million (barely 2 per cent of the total number) and covered 4.55 million hectares in area (24 per cent of the total area). In other words, at one end of the pole, 81 per cent of farmers owned 39 per cent of the land, while at the other pole, 2

per cent of large landlords owned 24 per cent. In the (shrinking) middle, 17 per cent of farmers owned or leased 38 per cent of the total land area.

Past reforms from the top have clearly failed to dent the power c the landlords. The feudals are now preparing to be rescued by the marriage between the industrial and feudal classes on a platform of capitalist style free market ruination of the small owner and tenant by eviction off his parcel of land. What then, is the alternative for the deprived and poor peasantry, which may offer it the only hope?

The need for an agrarian revolution

We have dealt with the historically evolved pre-colonial land tenure system, the colonial encounter and its far-reaching impact as a result of introducing private property in land and a network of canals and irrigation works to provide perennial irrigation, which brought about a veritable revolution in agricultural production and at the same time created the new classes of feudals and yeoman peasantry. We then mentioned the numerous studies of agriculture over many years, traced their commonality of recommendations in terms of restricting land holding and providing protection to tenants and the rural proletariat. The three land reforms, the first under Ayub and then two more under Zulfikar Ali Bhutto, were subsequently examined from the point of view of their marginal effect on land ownership concentration and their inability to break the back of feudalism (an aim not always explicitly stated, sometimes denied, and other times subverted in practice). Last but not least, we had explicated the 'modern', capitalist style solutions now being expounded by the advanced ideologues of the feudal lobby to preserve their dominance in new forms.

The underlying thrust of the much needed, but arrested, agrarian transition in our society is in the direction of the development of capitalist agriculture. However, this is not the feudal-capitalist (an inelegant term but which describes accurately the current trend amongst our advanced feudal lobby) agriculture beloved of our latter-day converts to agri-business', but a complete and thoroughgoing agrarian transformation which eliminates feudalism with its 'absentee' inefficiencies and conspicuous consumption characteristics, root and branch. The present day relations of production in agriculture, i.e. the class relationships which dominate rural life, based on the concentration of land ownership and consequent political, economic and social power of the big landlords in the countryside, have become fetters on the further progress of the sector. Without breaking the back of feudalism by taking away the unearned income from large landholdings of the big feudals, production, productivity, yields, none of these will see radical improvement.

An agrarian transition from below, based on a radical re-distribution of land to the landless, poor and small peasants, would not only ensure intensive cultivation and increased productivity by an enthused peasantry, it would also bring about a breaking of the feudal political and social fetters that bind Pakistani society. A liberation of the peasantry along these lines could not but cause a transformation in the objectives and practice of Pakistani society as a whole. It would be a blow for freedom for the people as a whole.

Note

Child Labour - Facts and Fiction

M.A.K. Chaudhry

Child labour exists throughout the third world including Pakistan. For some unknown reason, the Western Press has chosen to single out Pakistan to decry the system. The May 1997 issue of the Readers' Digest carried a particularly vicious article entitled `No Life for a Child' giving harrowing tales of beatings and other forms of coercion to make little children in Pakistan to work in factories. Advantage is taken of the fact that there has been no census in the country for two decades to bloat the figures of child labour. One estimate going the rounds is 15 million. But the more popular figure is 8 million which both UNICEF and SAARC have adopted. ILO produced a figure of 6.3 million till, in 1996 it sponsored a survey which turned up the figure of 3.3 million. In a country with a population of 132 million, every man, woman and child of which is under a debt burden of about Rs 13,021 per annum the figure of 3.3 million labouring children should not take anyone by surprise. Not that this is any justification for child labour.

What is generally stated and believed to be an incentive for child labour is one particular industry, i.e. carpet weaving in which the nimble fingers of children tie better knots in handmade carpets. A prestigious social sector NGO, namely Friedrick Ebert Stiftung has blown this myth in its April-September 1996 issue of its journal, which, to quote says `Quite often productivity and in particular the quality of carpets are linked with the use of child labour. This is certainly more a myth than a reality and the nimble finger argument has no real base. Factually, the quality of carpets is associated with the expertise a weaver acquires over the years of weaving'. The article goes on to outline the programme of eradication of child labour from the carpet industry in Pakistan in which the government, the manufacturers and the buyers are collaborating with great success. But this aspect of the problem has been conveniently ignored by the author of the article in the Readers' Digest referred to earlier. On the contrary, this article and other media have deliberately tried to foster the impression that authorities and society in Pakistan are entirely apathetic to the problem of child labour.

Child labour exists in Pakistan for a variety of reasons, the chief among them being poverty, insufficient schooling facilities, vast number of drop outs from primary and middle schools, under employment of parents and their abysmally low wages. These factors explain its prevalence,

notwithstanding there is a keen awareness of the evil of child labour in the community, spurred no doubt by writings first in Pakistan and later abroad. Steps are hence underway in both the formal and informal sectors, to contain it as a first step but to work gradually towards its total eradication. In any case, there is no dearth of laws forbidding child labour, implementation of which has to date been lax by design. The Constitution of Pakistan prohibits the employment of children under the age of fourteen years in any factory, mine or other hazardous form of employment. The Mines Act of 1923, the Factories Act of 1924, the Road Transport Workers Ordinance of 1961, the West Pakistan Shops and Establishments Ordinance 1969, all forbid the employment of children under the age of fourteen years in hazardous undertakings. Two new enactments namely the Employment of Children Act 1991 and the Bonded Labour System (Abolition) Act 1992 have been added to the Statute Book to further re-enforce the programme of elimination of child labour. A child labour cell has been created in the Ministry of Labour to watch over the implementation of these laws. Pakistan is a signatory to the International Programme for the Elimination of Child Labour (IPEC) of the ILO and is seriously following it up.

Interestingly, a recent IlO sponsored seminar in Islamabad adopted a pragmatic view of the problem and held, very candidly, total eradication of child labour in pakistan in the short run would not be practicable, but if children could be retrieved from hazardous and exploitative labour it would be a tremendous step forward. For purposes of definition, any occupation which could be harmful to the child's development is hazardous labour. For example, lifting weights beyond the physical capacity of a child, exposure to dangerous work implements, an environment where accidents are frequent, lack of respect for the dignity of the child, abusive language, etc. will all fall in this category. Any forms of labour which exploits the child economically such as less wages for equal work, lack of breaks during work, poor work environment, are all forms of exploitative labour.

In 1995, the Ministry of Social Welfare, Government of Pakistan took the initiative of launching a tentative programme of retrieval of children from hazardous and exploitative labour and selected the Pakistan Bait ul Mal (PBM) for the implementation. I was associated with this programme and would like here to outline it briefly.

Raised under a Statute and funded by the Government of Pakistan, PBM has many programmes of assistance for indigent and needy citizens. Their motto is generous help to the disabled, old, infirm and indigent citizens who are permanently or temporarily incapacitated from earning their livelihood, to make life comfortable for them. To the able-bodied and

unskilled, a skill and seed money to start a trade. To the able bodied, skilled but unemployed, seed money to launch himself/herself. Generous help to needy students. PBM has entered the field of child labour in 1995 by opening a chain of thirty five schools as a pilot project.

The first hurdle in retrieval of children was the employer who was loath to let go cheap labour. Appeal was made to his sense of duty towards the flower of the nation.

At the end of the discourse, a veiled threat of enforcement of law was added. It worked. The second hurdle was the parents who had misgivings about the project including the apprehension that the whole drama was for kidnapping the children to be sold abroad. They also dreaded the loss of wages of their children were they to be taken off the labour market. Their fears were allayed with the involvement of the local community. The third hurdle was the children themselves for they felt their independence was being denied to them. Hand-picked and specially trained teachers managed to `tame' them in no time.

As a policy it was decided not to confine the effort to a halfway measure such as providing a few study hours to a working child, but to aim at his total withdrawal from labour. Children, both boys and girls, working in hazardous and exploitative labour such as brick kilns, chemical factories, textiles, sports goods manufacture, surgical instruments manufacture, carpet weaving and boys working in restaurants from the crack of dawn till late at night, were to be withdrawn. The age cohort of eight to fourteen years was selected. Education, it was decided, should not be confined to mere literacy or even primary level but taken to the middle level, i.e. eighth class Board examination. It was also decided to add to scholastic education a modicum of technical training. Allama Iqbal Open university gave generous assistance in devising a syllabus which telescoped eight years of ordinary scholarship into four years by cutting out long and short vacations and other unnecessary holidays, having a full school day from 9 am to 4 pm and above all, by carefully selecting qualified and motivated teachers. The long day at school also eliminated the temptation of doing a quick shift in a factory for extra wages. This does not mean, however, that the children were force-fed the syllabus. On the contrary, there are extra-curricula activities such as public speaking contests, dramatics, indoor and outdoor games and educational exercises. Guest speakers are invited from time to time.

Many children were found to be stunted, underweight and ill without the employer or even parents knowing about it. So complete health cover was provided. Children eat a wholesome midday meal which includes

a pint carton of milk and multi-vitamins. Teachers eat with them to teach them good eating manners. The School maintains two files on every student, one for his academic record and the other on his health. The School expects them to show positive improvement in both.

Children wear distinctive uniforms and teachers wear gowns in classrooms which makes for a sober academic atmosphere. Teachers are expected to groom the children into little ladies and gentlemen. Children receive Rs 150 per month for the upkeep of uniforms and transport. Parents receive Rs 250 per month as compensation for loss of wages of the children.

To begin with each school has sixty children in two classes of thirty each. Every year thirty students will be added to each school. Simultaneously, PBM is ready to multiply the number of schools. On certification of four years in school, students will go to a technical training facility for six months training in a marketable skill. It is hoped that with middle level education and technical training, a boy or a girl at age fourteen and above (legally permissible age to work) will have better value in the labour market. Children who show promise will continue with their education under another PBM scheme.

There is a parent-teacher meeting once a month. The occasion is used to create awareness in them. These schools are thus acting as agents of change in the families and the response is remarkable. So is the progress of children in their studies and health in addition to learning good manners and gaining confidence in expressing themselves.

All this has happened in a span of two and a half years but it has given PBM valuable experience in enabling it to undertake expansion of the project. The local communities which are involved in the management of the schools are growing fond of their tasks and giving it more and more time and attention. As at present, a turn out of five thousand students every is small change, in the context of a backlog of 3.3 million labouring children. But as trail blazers, PBM has set a pattern and many Ngos are entering into this field now. Public sector initiatives of this kind start with much fanfare but soon fall into the clutches of the bureaucratic routine, showing indifferent results. Some are simply still born. But the PBM effort is consistent as is evident from the interest shown by several international agencies such as the ILO, UNICEF and others. Members of the diplomatic corps have asked to be invited to visit these schools and those who did go to see them came back thoroughly impressed.

Note:

Public Policy: The Implementation Gap

Viqar Ahmed

Policy formulation and implementation are the chief, though not the only, business of a modern government, implying exercise of its power. In a democracy the people themselves grant permission to the government to exercise power in their name. Thus through the democratic process power is transformed into legitimate authority. However, there is a feeling that a policy, formulated through due procedures at the highest echelons of the government, is sometimes not implemented in the same spirit or in the same way as was originally intended by the policy makers. Thus there If need to locate and identify the points where such lapses take place.

A policy implies a systemised attack on a certain specific problem or a methodical way of dealing with a certain sector. Usually all government action is taken, or is supposed to be taken, under the directions of a certain overall policy. Thus there are policies relating to sectors e.g. agriculture, industry, trade, social sectors etc., implying a framework of continuous government action. But sometimes it is felt that in a certain area, routine measures have failed and government departments in their ordinary day-to-day functioning arc unable to cope with the entire magnitude of a particular problem. Such cases relate to crisis management or making a frontal attack on a long festering problem e.g. disaster management, law and order breakdown, urgent need for export promotion, attracting foreign investment, shortages of essential goods, etc. Here a number of departments are involved in meeting a certain situation and coordination is needed between them so that the role of each department is defined and functions clearly spelt out. A policy is needed in such situations as an extraordinary way to meet that situation. A policy contains the following steps: (i) identification of a problem or a problem area; (ii) objectives to be achieved within a certain time frame, (iii) specific measures to achieve the objectives; (iv) suitable adjustments in other policies to make the new measures more effective and to remove anomalies and contradictions; (v) defining responsibility for implementation, (vi) designating staff and materials; (vii) publicity campaign to convince government personnel and the general public about justification for such policy action.

The orthodox assumption that policy making within a government is done by the political sector while implementation is the function of the bureaucracy is hardly relevant in this country. Policy making may now be described as a joint exercise conducted by the political and administrative

leadership. A problem may be identified and its relative priority may be determined by the political leadership while preparing a set of alternatives to deal with the problem. This may be the function of the administrator. Politicians representing the people may choose an alternative which in their opinion people would prefer and for which people would be willing to pay the cost. It is for the political leadership to ensure that the cost-benefit ratio of a certain policy alternative is in line with the desires of the people. For example, in the situation concerning the scarcity of sugar in 1996-97, there were obviously only three alternatives: to raise the production of sugar or import sugar from abroad or cut down its consumption through rationing. Only representatives of the people could be in a position to judge as to which of the three alternatives would be acceptable to the public, and for which the public would be willing to pay the price since each alternative carried its own price tag. The administration has to work out the ways and means to give the policy concrete shape before the field staff or the concerned departments are called upon to implement the policy.

Thus policy formulation and implementation are separate functions. Each task needs a certain degree of specialised knowledge and experience. By the very nature of the tasks, the policy formulation body must have supreme control and authority over policy implementing agencies.

Successful implementation of policy thus requires a well-defined formal relationship between the policy making and policy implementing agencies. There is need for institutional arrangements for consultation with the field and operative staff while the mechanism of a certain policy is being formulated in order that problems in the field are kept in view. Similarly, the policy makers must have a built-in system of progress and evaluation of policy implementation at each stage so that if there are any bottlenecks, these can be removed before the next phase is undertaken.

Advance planning is most essential. Sometimes governments are impatient and regard the time spent on advance planning as wastage. But in fact this is essential in order to reduce greater wastage, which may take place if the policy turns out to be misconceived or mistaken. Past experience and the lessons learnt in earlier attempts, if any, would provide the right setting to frame a policy for the future and guarantee a certain amount of continuity. Advance planning includes data collection, processing and checking the authority of the collected data, as well as feasibility testing.

A sound policy can be formulated if it is based largely on inductive analysis. Induction means proceeding from the particular to the general. This is also akin to the historical method in which conclusions are based on facts and figures collected over a certain period of time covering various

aspects of the problem. However, the tendency in developing societies is to base policy formulation on a deductive approach i.e. proceeding from the general to the particular. Certain assumptions are made which may or may not be supported by facts and figures. These assumptions may be based on the impressions and prejudices of the policy makers. In an inductive approach the process no doubt is more complicated and difficult but it minimises the risk of mistakes and wrong conclusions drawn from incorrect assumptions.

There are examples where governments have been deceived by their own anxiety and enthusiasm which has led to the collection of incorrect or inflated data. Sometimes, for example, the government is extremely enthusiastic about increasing wheat production. Anticipating this, local officials responsible for the collection of data may be tempted to inflate the figures of wheat output. An anxious government may gratefully accept these figures and act as if these were correct. Thus objectivity is essential not only for officers and staff responsible for data collection but also for those who give them directions.

A policy operates within a socio-economic and political context and therefore, the government has to see whether the social climate in the country is suitable for that particular policy. If such a climate does not exist, the government must asses its own capability of creating this climate. In case this is also not found to be possible, the policy must be given up as being premature.

There is a general impression that open discussion and diversity of opinion about a certain problem leads to "confused thinking". This is a by-product of the deductive approach since diversity of opinions may cast doubts on certain basic presumptions. It is time to do away with this cliche. A policy, before it is finalised, must be thoroughly discussed both within and outside the government . If it is based on sound logic and reliable data, discussion would only contribute to greater clarity of thinking.

As regards physical arrangements for policy implementation, the policy makers may sometimes in their enthusiasm, set unrealistic targets and objectives to be achieved by those who are responsible for implementation. This leads to greater tension between policy makers and those responsible for implementation. Many policies fail because values of the formulators of the policy differ from the values of the operative staff. Thus the policy suffers from lack of understanding. Communication between the high ups and those at the lower level may also break down. As such, one of the fundamental requirements of successful policy implementation is motivating the people and convincing them about the ends of the policy. The staff

must be convinced that the government is sincere and the objectives of the policy are genuine and desirable and that it is not trying only to score certain propaganda points in the short-run. Here the example of the Basic Democracy system may be mentioned. While the objectives officially forwarded were to bring the people closer to the government and to give broader based representation to the people at large, the policy failed to convince the nation. The impression lingered on that it was a device for perpetuating the regime. This happened inspite of the massive publicity campaign launched in its favour by the powerful mass-communication media.

In many cases there is a provision in principle for associating the operative staff in policy formulation. But it is not actually practised. This creates distance, jealousy and contempt between the formulators of the policy. Each policy is bound to produce certain conflicts of interest and as such it is bound to be resisted by those who are adversely affected. Moreover, certain resistances exist within each society on the basis of beliefs and prejudices. Thus before a policy is to be implemented such resistances should be taken into consideration. In order to break these resistance, responsibility has to be ascertained. Sometimes a government may carry out a policy without having to face resistance. The burden in such cases is shifted to the field staff who may not be fully equipped to deal with such resistance and in many cases they themselves may be influenced by the same resistance or prejudices. For example, in the family planning programme the field staff has at times proved to be incapable of removing centuries-old prejudices against it. It is for the political sector to deal with such basic cultural prejudices with the help of its resources and influence in the minds of the people. Finally, one basic flaw in our policy making process is the extreme degree of inflexibility of the policy structure. Once a policy is made, it becomes a matter of prestige for the policy makers to carry it out even though subsequent experience in the field or changing socio-economic conditions may necessitate certain modifications or alterations. The policy maker must by nature be flexible, open-minded and willing to correct himself if circumstances prove certain of his assumptions to be faulty or conclusions to be inaccurate. A policy by itself must be flexible so that it is subject to constant modifications and re-modifications. The policy maker must also know when the policy has become outdated or has lost its validity. There are examples in Pakistan of policies which have been continued even after outliving their utility, e.g. the Export Bonus Scheme introduced in 1959. The scheme should have been abolished in the mid-sixties, as it had become a major factor in creating tensions between East Pakistan and West Pakistan. But many powerful interest groups, earning

large unearned incomes under its auspices, persuaded the Ayub regime that its withdrawal would hurt the prestige of the government.

Flaws in policy formulation, monitoring and coordination are an everyday occurrance. Policies affect the social, political and economic structure in innumerable ways. Policies are, in the final analysis, the products of compromises arrived at between different power centres. Policies, in the span of their life cycles, must contend with pressures from various social and economic groups, and also different trends of thought and opinion. Such interaction has as much of a chance of distorting the policy profile as that of enrichment of its intellectual content.

Quite often, interest groups find it more convenient to apply pressure not during the formulation phase but during its implementation. But in addition to such pressures, there are many other and more objective factors, which may necessitate changes in the basic thrust and complexion of the policy. A changing economic and political situation, necessitating adjustments in objectives and priorities, shortfall in resources, the inefficiency of the implementing agencies, corruption and a changing national and international environment may in great part be responsible for the creation of implementation gaps.

Thus, within reasonable limits, implementation hiatuses should be accepted as a part of life. But if such gaps widen across the board and become typical of all major policy initiatives, it indicates loss of government control over the affairs of state, extremely high levels of inefficiency and corruption, and the predominance of interest groups in policy making and implementation in lieu of objective decision-making in the overall national interest.

References

Callahan, Daniel & Bruce Jennings, 1983, Ethics, the Social Sciences and Policy Analysis Plenum Press, New York.

Dunn, William N. 1994, Public Policy Analysis: An Introduction, Prentice Hall, New Jersey.

Habib, Hasan, 1974, *Public Policy Analysis and Development: Country Paper on Pakistan,* Two Volumes, ACDA, Kuala Lumpur.

Hogwood, Brian W.& B. Guy Peters, 1983, Policy Dynamics, St. Martin's Press, New York..

Wadhwa, Sharan D. 1977, Some Problems of India's Economic Policy, Tata McGraw Hill. New Delhi.

Note:

How Does Environmental Economics Function?

Shamyla Chaudry

In economics we study how and why "people" whether they are consumers, firms, non-profit organisations or government agencies make decisions about the use of valuable limited resources. When studying the environment from an economics perspective we are in fact primarily focusing on how and why "people" make decisions that have environmental consequences. Secondly, we focus on how we can manage institutions to bring these environmental impacts more into balance with changing human demands and the demands of the ecosystem itself.

If we follow this economic approach several answers emerge to the basic question asked in environmental economics, that is "Why do people behave in ways that cause environmental degradation?"

Some believe that environmental degradation is a result of human behaviour that is unethical or immoral. Therefore, people pollute the environment because they lack the moral and ethical strength to refrain from behaviour that leads to environmental destruction. But this approach is too general as it is not moral underdevelopment that leads to environmental destruction, rather, it is the way economic systems within which people earn a living are ordered. This is simply saying that people pollute for it is the "cheapest" way to solve a practical problem.

People make decisions on production, consumption and disposal within a certain set of economic and social institutions. These institutions structure incentives that lead people to make decisions in one direction and not in the other. An "incentive-type" statement would say "pollution is a result of the profit motive" but this would only apply for a private firm. Examples for this can clearly be seen by certain studies done at the Lahore School of Economics. Firstly, Kasur the leather tanneries environmental analysis clearly outlines this phenomena where the individuals are not willing to spend to clear the waste that is produced simply because there is no check and they can easily get away with it[1]. These firms are not willing to spend their human resources simply because of the "cost" that is attached to health insurance . Another showed how hospitals were reacting to the high rates of pollution in Lahore. Private hospitals such as Hameed Latif are spending on a clean and hygienic environment within the hospitals but they

[1] Lahore School of Economics, Case Study, 1997. "Environmental Analysis of Kasur Leather Tanneries".

dump their wastes outside in the MCL containers and are not willing to pay the additional cost of an incinerator[2]. These are all examples of pollution caused by private entities.

We know for a fact that individuals and public or government agencies are not profit oriented still some have been serious polluters, e.g., the USSR and Eastern Europe[3]. Studies done in Lahore's *Katchi Abadis* proves the point that pollution is not necessarily a result of the clear profit motive but in fact environmental problems are problems of poverty[4].

A more convincing and permissive argument against the view is that "search for profit" causes pollution. The profit motive, in itself, is not the main cause of environmental destruction. Therefore any system will produce destructive environmental impacts if the incentives within that system are not structured to avoid them.

So in seeing the economic approach we have in fact deduced that environmental degradation is mainly caused by how people act or react within a given system. Therefore, we see that Environmental Economics draws from two sides - firstly, the study of water management flows and secondly, the impact of human activity on environmental resources.

Inferring from the last statement, how can we ensure environmental quality in a country? The friture is not independent of the choices we make today, that is, if we degrade the environment today our future generations are likely to suffer more. Therefore, to clearly understand this we have to see the short run and long run choices available to us.

Using Production Possibilities Curve for our analysis we can explain the choices available to us.

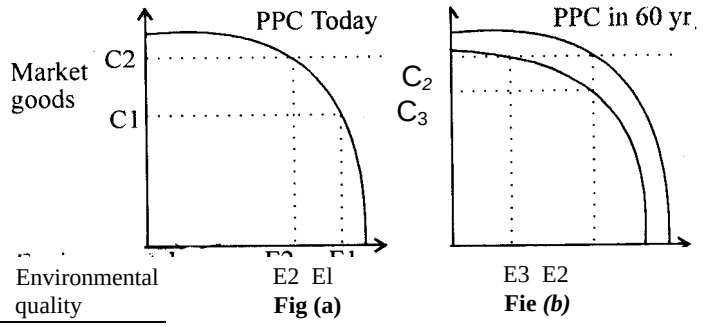

Fig (a) **Fie *(b)***

[2] Lahore School of Economics, Case Study, 1997. Hospitals Polluting or Being Polluted.
[3] Field, Barry E. Environmental Economics: An Introduction.
[4] Lahore School of Economics, Case Study, 1997. "Environmental Problems in the *Katchi Abadis*".

In figure (a) we have PPC today showing that if the production of marketed goods increases from C_1 to C_2 then this happens at a cost, being a decrease in environmental quality from e_1 to e_2 In figure (a) we have PPC in 60 years. This shows that the future finds itself on the inner PPC where we have the same output C_2, as we had in the previous analysis but now it will be a lower level of environmental quality, e_3. OR we have a choice to have the same level of environmental quality as in our previous analysis, at e_2 but we have lesser output at C_3.

Therefore, we can conclude that if we limit production today we can have a better tomorrow in terms of environmental quality OR if we limit profits today we can have a more profitable future.

References

Field, Barry C., 1994. Environmental Economics: An Introduction. McGraw Hill International Edition, New York.

Goodstein, Eban, 1995. Economics and the Environment. Prentice Hall, New Jersey.

Lahore School of Economics, 1997. "Environmental Problems in *Katchi Abadis* Case Study".

Lahore School of Economics, 1997, "Hospitals Being Polluting or Being Polluted - Case Study".

Lahore School of Economics, 1997. "Environmental Analysis of Kasur Leather Tanneries - Case Study".

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