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Lahore School of Economics

Muhammad Aslam Khan

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Strategy

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Contents

Vol. 6, 2001

Poverty Reduction and Human Development: Issues and Strategy <i>Muhammad Aslam Khan</i>	1
Contemporary Neoclassicism and its Methodology <i>Jawwad Noor</i>	33
A Measure of the Elasticity of Substitution in the Manufacturing Sector of Pakistan <i>Rukhsana Kalim</i>	43
A Study on Saving Functions for Pakistan: The Use and Limitations of Econometric Methods <i>Aqdas Ali Kazmi</i>	57
Forecasting Dual-Gap for Pakistan <i>Salman Ahmad</i>	103
Import Functions for Pakistan – A Simultaneous Equation Approach <i>Mohammad Afzal</i>	109
Concepts, Strategies and Proposals for the development of Urban Communities <i>Anjuman Mimarani</i>	117
Comment:	
Interest and the Modern Economy: A Reply <i>Ali Ataullah & Minh Hang Le</i>	131
Note:	
Pakistan's Debt Position and the Question of Debt Retirement <i>Qais Aslam</i>	137
Book Reviews:	
The Quality of Growth Sumble Sharif Butt	163
Migration, Common Property Resources and Environmental Degradation: Interlinkages in India's Arid and Semi-arid Regions Shamyla Chaudry	167
Towards Good Governance <i>Nina Gera</i>	169

Poverty Reduction and Human Development: Issues and Strategy

Muhammad Aslam Khan¹

“Growth is vital to reducing all aspects of poverty... But growth unaccompanied by other measures may neither boost the income of the poor much, nor lead to much progress on the non-income aspects of poverty. On both counts, human development progress has a part to play.”(Poverty and Human Development, World Bank, 1980, p. 63)

Abstract

The paper assesses trends in poverty and improvements in the material conditions of life of millions of people living in poverty and human deprivation. It discusses the growth and poverty dimensions and associated structural problems. Determinants of poverty in Pakistan are discussed with a view to identify areas of intervention and public policies. Poverty reduction and human development programmes are discussed to show that pumping financial resources to address the issue of poverty is not a correct strategy for poverty reduction and human resource development. The paper discusses the poverty reduction strategy to assess government commitment to poverty reduction and human resource development in a sustainable manner. It concludes that poverty reduction and human development in Pakistan is dependent on many factors particularly the strengthening of institutional capacity and availability of human and financial resources.

Introduction

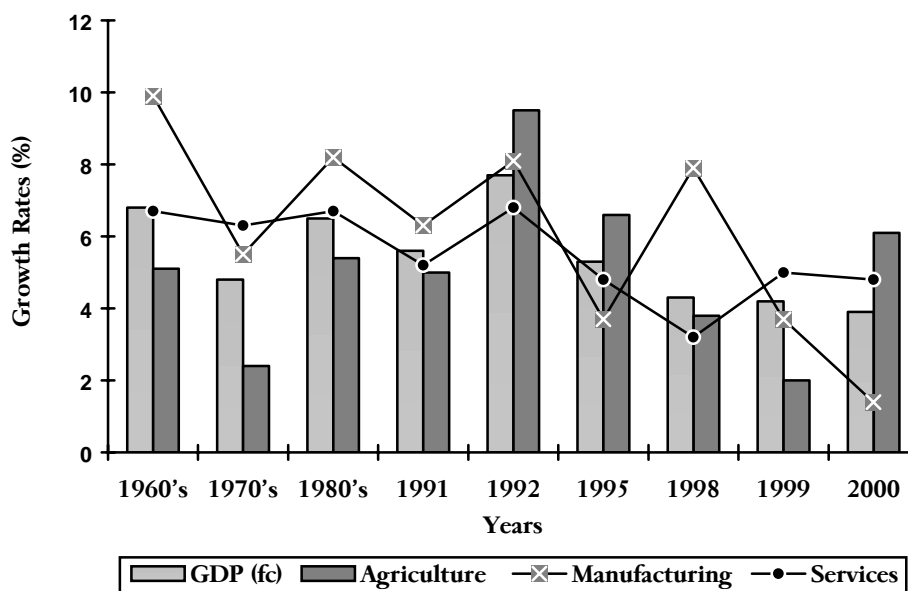
Reducing poverty, in its income and human development manifestations, is the over-arching objective of development. Development has its core transformations in economic activity, living conditions and values (Lewin, 2000a). Food security, basic education, freedom from disease and adequate nutrition are basic human needs that should be met for improvements in the material conditions of life (Lewin, 2000b). Poverty has many faces. Its magnitude, however, varies with its definition. Widespread literature on the issue has provided various explanations of poverty. For

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example, poverty is viewed as deprivation in well-being (World Bank, 2000); lack of resources to obtain the minimum necessities of life (Kakwani, 2001); a person is poor if his/her welfare or utility level falls below a certain level (Barr, 1993; Goedhart, T., Halberstadt, V., and van Praag, 1977); capability deprivation (Sen, 1987); lack of real opportunity of access to food (Sen, 1998), access to adequate source of nutrition (Reutlinger and Selowsky, 1976; Sukhate, 1977; and Srinivasan, 1981). According to the voices of the poor, poverty is much more than a simple explanation (Narayan, 2000). It is vulnerability of a person or a group of people to adverse events outside their control (World Bank, 2001).

Pakistan has achieved remarkable economic progress in terms of both growth in gross domestic product (GDP) and structural changes in the composition of output. Real GDP has grown at an annual average rate of above 5.5 per cent since the 1960s. Performance in the key sectors during this period has generally been satisfactory (Figure 1). Manufacturing value-added has grown at more than 7 per cent per annum. The service sector has achieved an annual average growth rate of 6.1 per cent, while the growth of agricultural value-added averaged 4.2 per cent per annum (Government of Pakistan, 2001). Per capita income has increased from less than US\$100 in 1956 to US\$470 in 1999 (World Bank, 2000).

Figure 1: Growth rates of GDP and key sectors



Source: Government of Pakistan, 2001. *Pakistan Economic Survey 2000-01*, Ministry of Finance, Economic Adviser's Wing, Islamabad: Government of Pakistan.

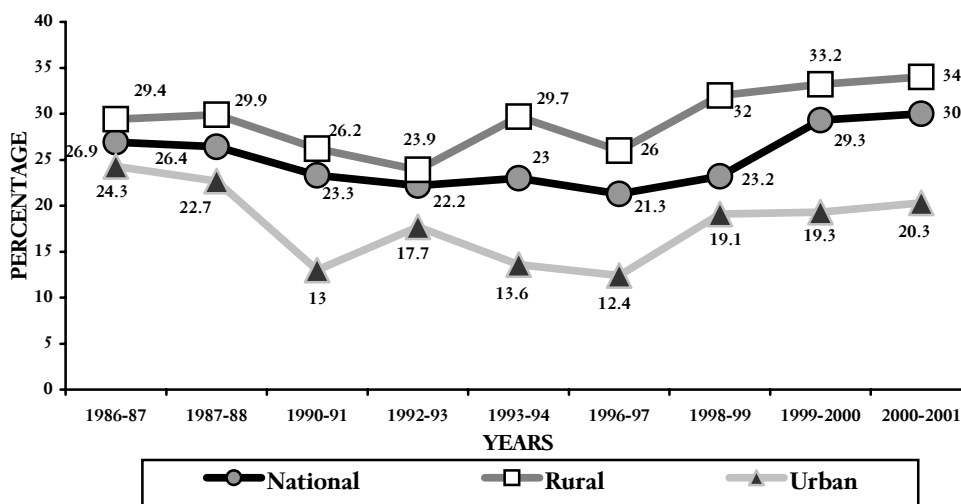
Notwithstanding this generally good performance, the economy has not done as well as it could have. Growth has not been uniform. It failed to 'trickle down' to the poor and as a result social inequalities widened (Haque and Montiel, 1992). Evidence from various sources suggests that poverty in Pakistan since the early 1990s is rising. The prime reason of increase in poverty in the 1990s is attributable to the relatively low rate of economic growth (implying a slow increase in per capita income) coupled with rising unemployment and level of cost of living (Planning Commission, 2001); pressure of population growth on goods and services and social deprivation, which include access to physical and social assets such as certain quantity of food, land, health care, education, drinking water, and sanitary facilities. Low investment in human resource development also intensifies the poverty problem (ADB, 1997).

After 52 years into the life of Pakistan, the country is still faced with the problem of weak social indicators. Even now almost every indicator of well-being such as literacy, education, health, nutrition, safe drinking water and sanitation, access to family planning services compares poorly with countries at the same level of per capita income (Appendix-I). Pakistan has a low level of adult literacy with some 52 per cent of the population over 10 years being literate. Illiteracy is particularly high for the poor and especially women and girls. This comprises 20.6 million males and 29.4 million females (HDC, 1999). The country, in terms of the human development index (HDI) is ranked 138 out of 174 countries (UNDP, 1999). Pakistan also fares worse on all the six dimensions of governance (less government effectiveness, more graft, political instability, more regulatory burden, less rule of law and less accountability) measured by Kaufmann et al. 1999b.

A number of studies have measured and defined poverty in Pakistan. Most of these studies measured poverty in absolute terms based on income or consumption as the assessment basis. The calorie-based approach used widely to determine poverty, however, differ significantly for methodologies and assumptions used (Appendix-II). These studies suggest that poverty in Pakistan increased rapidly in the 1960s, then declined sharply in the 1970s up to mid-1980s and began to increase again from the late 1980s (Naeem, 1973, Irfan and Amjad, 1984; Amjad and Kemal, 1997; Jafri, 2000, Qureshi and Arif, 2000). Using the same approach and consistent time series data and 2150-calorie average per adult equivalence calories requirements, it has

been observed that between 1986-87 and 1999-2000 poverty has increased rapidly from 21.3 per cent in 1996-97 to 30.0 per cent in 2000-01 (Figure 2). The incidence of poverty is higher in rural areas compared to urban areas.

Figure 2: Poverty incidence – headcount (%)



Source: Appendix III.

Determinants of Poverty

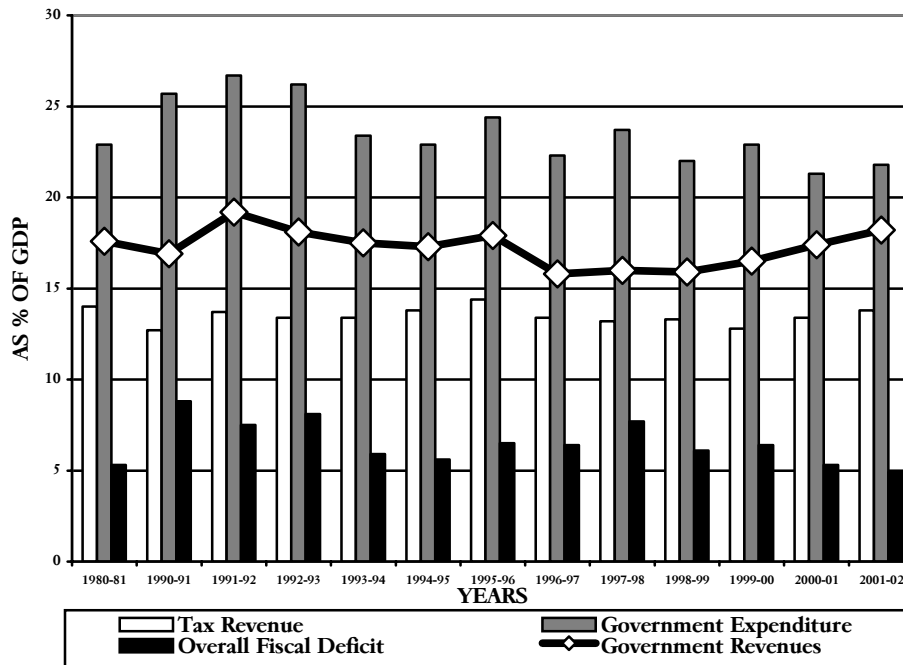
- a) **Economic growth:** The country has experienced a continuous decline in the overall growth rate of GDP of about 6 per cent before the 1990s to 2.6 per cent in 2000-01. This means that the growth in per capita income has been declining sharply reaching around 0.5 per cent in 2000-01.
- b) **Population pressure:** The pressure of high population growth translates into millions without formal employment and large numbers of new entrants into the job market each year. A large population has created numerous difficulties in the fight against poverty, in realising the objectives of improved human welfare, in enhancing the severely depressed levels of national savings and in protecting the already vulnerable environment.
- c) **Rising rate of unemployment:** An associated fundamental issue is the phenomenon of unemployment in the country. The situation in

this respect is simply grim. Overall unemployment is over 10 per cent. Almost 40 per cent of the new entrants to the labour force every year, or about 500,000 persons are being added to the pool of the unemployed every year. The unemployment rate is higher in educated (above matriculation) youth.

- d) **Low level of national savings:** The country has not been generating adequate national savings to finance growing investment levels. National savings lingering around 12-13 per cent of GDP are low for the financing of required investment levels.

- e) **Fiscal imbalances:** The country has also to grapple with fundamental fiscal imbalances, ranging from 5 per cent of GDP on the low side to 8-9 per cent on the high side, over the last many years. The public sector has been a dis-saver over a long period of time. Analysis of government's finances indicate that in the past two decades government revenue remained around 17 per cent of the GDP and tax to GDP ratio languished around 13-14 per cent. Government expenditure, in the same period initially increased from 22.9 per cent in 1980-81 to 26.7 per cent in 1991-92 and subsequently has been reduced to 23.4 per cent in 1999-2000. All the increase in government expenditure has been in non-development expenditure for increased debt servicing liability payments. The burden of fiscal adjustment, therefore, fell heavily on public sector development expenditure, which as a proportion of GDP reduced from around 8 per cent in 1987-88 to less than 3.0 per cent in 1999-2000. The sharp decline in public sector development expenditure has severely influenced the creation of physical and social infrastructure and its maintenance. Since 1987-88 at no point of time was the government able to meet the fiscal deficit targets agreed with the international development institutions. The fiscal deficit stayed put at around 5-9 per cent in the past 20 years. Figure 3 indicates the trend in government finances.

Figure 3: Trends in government finances



Source: Appendix-IV.

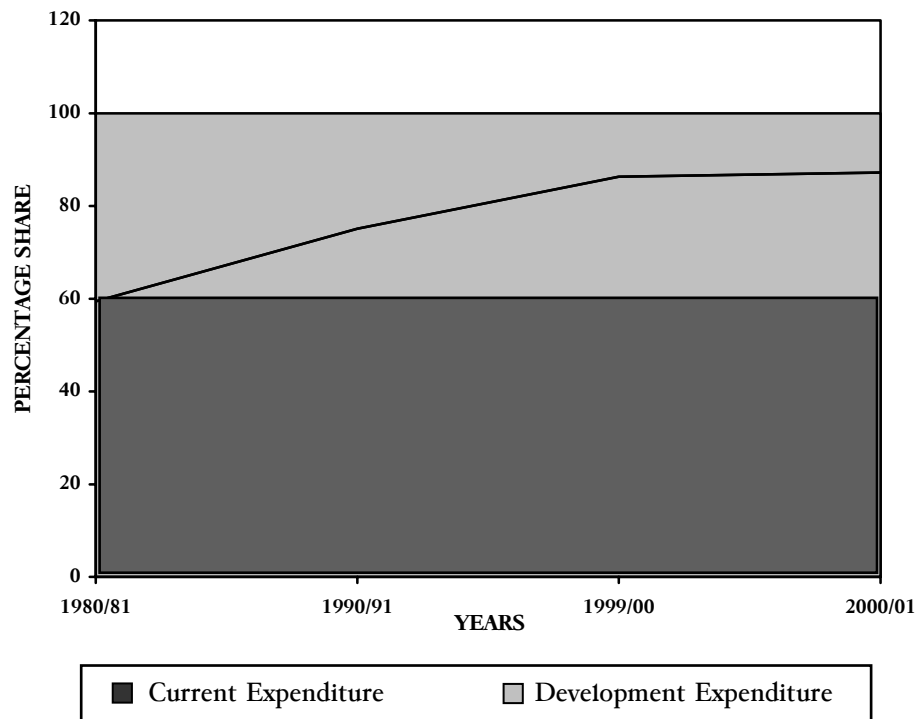
- f) **Debt burden:** Large public sector deficits and low national savings have resulted in the rapid growth of domestic and foreign debt, which has now swelled to about 97 per cent of GDP and 600 per cent of the country’s annual revenues—one of the highest in the world. The debt hangover has become one of the most formidable problems in recent years, and has acted as a major constraint on economic growth, social development, and poverty reduction.

- g) **Pro-poor public expenditure:** The extent to which a country’s public expenditure is directed towards the goal of poverty alleviation is of central importance. Public expenditure has the potential to reduce poverty in at least three major ways: i) primary education, basic health care, safe water and sanitation; ii) the basic infrastructure needed by poor farmers, micro entrepreneurs, and labour-intensive manufacturers to provide livelihoods, and iii) cash and food transfers to reduce the vulnerability of the marginalised segments of society.

Nevertheless, continuously declining share of development expenditure in total government expenditure from about 41 per cent in 1980-81

to about 13 per cent in 2000-01 (Figure-4) has badly influenced the provision of public goods and services and maintenance of social and community services – education, health, safe water and sanitation and civic participation of the bulk of the population of the country. The public expenditure (development and recurring) on the provision of social services which increased from 5.9 per cent of the GDP in 1977-78 to 6.7 per cent in 1992-93, due to fiscal consolidation under the structural adjustment programme declined to 5.1 per cent of the GDP in 2000-01. Development expenditure on basic infrastructure of transport (roads, bridges and farm to market roads), communication (telecommunication and postal services) and rural electricity declined sharply from 1.2 per cent of the GDP in 1977-78 to less than one per cent by 2000-01.

Figure 4: Trend in government expenditure (% share)



Source: Appendix-V

- h) **Trade and balance of payments policies:** A general failure of the trade and balance of payments policies has resulted in high trade and current account deficits, giving rise to repeated balance of payments

crises in recent years. Pakistan exports have been rising very slowly, workers remittances have shrunk to less than \$ one billion, the debt repayments burden is increasing and import is somewhat uncompressible. These have impacted on the growth and economic prospects of the country as well as on its capacity to substantially reduce poverty, especially in the short run.

- i) **Agriculture sector's growth potential not fully exploited:** The real sectors such as agriculture were neglected. In fact ineffective, misdirected and misplaced agricultural policies, including water use, resulted in enormous imports of wheat, edible oil, tea and other food items. While urban poverty is quite high, poverty in rural areas is worsening even more and cannot be seriously tackled without a renewed and re-invigorated agricultural sector. Also, the prices of food items have a direct impact on the poverty conditions in Pakistan.
- j) **Manufacturing sector policies:** The past policies of developing the capital-intensive industrial sector under heavy protection gave rise to a manufacturing sector, which is saddled with many negative value-adding activities. It is not diversified and is generally not able to compete either at home, without heavy protection, or in the competitive international market place. New investment in the sector is minimal, skill developments are negligible and induction of modern technology rather infrequent and weak. The development of Small and Medium Enterprises was not encouraged and as a result small industries that employ about 70 per cent of the labour force never got the attention and support they deserved. Consequently both the large and small-scale segments of the industrial sector remain vulnerable especially under the new, globalising environment.
- k) **Lack of technical know-how:** Skill and knowledge levels which require integrating in modern sectors is often beyond the reach of the poor. This makes it difficult for them to participate in economic growth and globalisation.
- l) **Indigent infrastructure:** The economic infrastructure related to the transportation network of roads, railways, ports, irrigation, energy etc. is either missing or weak.
- m) **Poor human resource development (HRD):** HRD has also suffered enormously because the quality of the educational system from the primary to the highest level, the sufficient availability of skills development and training arrangements; the health sector's

efficiency and effectiveness, the adequacy of safe water supply and even a minimum level of sanitary facilities have been badly lacking for want of (a) priority attention and (b) allocation of finances.

Impact of Poverty Reduction Programmes

The government, since the mid-eighties has shown a strong commitment to poverty reduction and human resource development. Additional investment of Rs. 450 billion has been made by the government for specialised programmes for poverty reduction and physical and social infrastructure development (Table 1). The emphasis of these programmes was on the creation of physical infrastructure (farm to market roads, village electrification, etc.) and delivery of basic social services – primary education, primary health care, safe drinking water and sanitation, rural development, rural electrification and family welfare services.

Table-1: Special programmes for poverty reduction (Billion Rupees)

Programmes	Period	Expenditure
Prime Minister's Five Point Programme	1985-88	3.3
People's Programme	1988-91 and 1994-97	16.2
<i>Tameer-e-Watan</i> Programme	1991-93 and 1998-2000	9.7
Social Action Programme	1993-2002	419.6
Total:	1985-2002	448.8

Source: Planning Commission, Public Sector Development Programme (various issues)

Realising that long-term economic growth and poverty alleviation could not be achieved without raising the level of human development, the Social Action Programme (Phase-I) was launched by the government in 1993-94 for three years with an investment of Rs. 127 billion. SAP addressed four important sectors, namely primary education, basic health care, family planning and rural water supply and sanitation. It strived specifically to reach out to rural women, children and people at large at the grass root levels. At the conclusion of Phase- I of SAP the government has launched Phase-II of SAP for a period over 5 years from January 1, 1997 to June 30, 2002 at a cost of about Rs. 500 billion. The scope of SAP-II was expanded to cover middle schools and non-formal education in the education sector, Tehsil level referral

hospitals, tuberculosis and nutrition in the health sector and water supply and sanitation in urban slums. The government commitment to the programme was highest. Despite a severe resource problem, SAP expenditures were protected as core expenditure. As shown in Table-1 by end June 2001 about Rs. 420 billion have been spent on the programme.

In the absence of proper evaluation and impact analysis of these programmes, it is difficult to assess the impact on improvements in the material condition of life, a sustainable livelihood and equitable access to public services for the poor. It, however, transpires from the available data from various sources that in the past 15 years very little improvement has been witnessed in social indicators. Particularly, SAP failed to achieve desired improvements in social indicators. The Pakistan Integrated Household Survey (PIHS) data indicate that in recent years despite special attention to the development of social indicators primary school gross enrolment and net enrolment has dropped from 73 per cent and 46 per cent in 1990-91 to 71 per cent and 42 per cent in 1998-99 respectively. Similarly, indicators on sources of drinking water and sanitation have shown declining trends. The population welfare and health indicators have shown slight improvement over the same period (Appendix-VI).

Pre-Conditions for Poverty Reduction and Human Development

It has been recognised that without sustainable growth, the country would be embarking upon a road that leads to the redistribution of poverty. The poverty reduction strategy, therefore, aims to broaden and deepen the development process in ways that enlarge the basis of achieving a high rate of economic growth with a combination of mutually reinforcing factors. These include a high rate of economic growth, which have translated directly or indirectly into increase in disposable incomes and strong commitment to investments for human resource development, particularly education and health.

Research shows that the rate of growth of an economy depends on the increase in the quantity and quality of the capital stock and on the quality of the labour force. Education increases the quality of the labour force. The rate of return for education is higher than for any other kind of investment (Action Aid Pakistan, 1999). It is considered as a social instrument for developing human resources and forming human capital and increasing national productivity (UNESCO, 1997). Development of human capital, especially education, is one of the keys to reduce poverty (World Bank, 1990). No country has experienced a substantial degree of economic

development without first achieving a level of basic literacy in a substantial proportion of the population (Barr, 1993).

Many countries, which have combined pro-growth development policies with investments in health and education, have witnessed rapid economic growth, improvement in living standards and speedy reduction of poverty. For example, Japan, the East Asian Industrialising Countries (the Republic of Korea, former Hong Kong, Singapore, Taiwan, Malaysia, and Thailand); and China have achieved rapid socio-economic progress through heavy investment in basic education and technical skills (HDC, 1998; Annan, 2000). Research also supports the fact that investment in girls' education translate directly and quickly into better nutrition for the whole family, better health care, declining fertility, poverty reduction and better overall economic performance. An equitable access to education is a powerful tool to reduce poverty (Hossain, 1993).

The poverty reduction strategy recognises that in the absence of a healthy and literate population it would be difficult for Pakistan to bring about a real increase in productivity and desired changes in society. The strategy recommends priority actions to create an enabling environment for human resource development. Education and health are the key target sectors through which human development of the poor can be achieved. In practical terms for education, this means more well trained teachers, reformed curricula in schools, colleges and universities, emphasis on science, engineering and information technology. For health, it means more doctors, nurses, paramedical staff and more primary and secondary health care centers distributed all over the country to ensure affordable access to the poor.

Strategy for Poverty Reduction and Human Resource Development

Pakistan's poverty reduction strategy subscribes strongly to the belief that economic development to be really meaningful and sustained must take into account the economic, social, and governance dimensions (Planning Commission, 2001a). It emphasises that the benefit of development must accrue proportionately to all citizens, including the poor, unemployed, marginalised groups and disadvantaged. It should ensure equitable distribution of wealth from expanding and new sources of wealth, while promoting human resource development. Economic development should create a productive and disciplined labour force and develop necessary skills to meet the challenges in agricultural and industrial development. It recommends the empowerment of communities through greater involvement of the poor in the formulation of policies for economic and social development and in the management of their affairs. The focus of the poverty reduction strategy is on:

- Directing public policy debate on the needs of the poor.
- Bringing about an effective transformation of society, by forging partnerships and alliances with civil society and the private sector.
- Understanding the nature of poverty, and using that as a guide for all public actions.
- Empowering the people, especially the most deprived, by increasing access to factors of production, particularly land and credit.

The strategy is based on five major elements.

- I. **Economic Reforms:** Promotion of economic growth and creation of employment opportunities.
- II. **Physical Asset Creation:** Education will create human capital. In addition, programmes of land allocation, credit, *Zakat* and *Ushr* for capital formulation will also be used to create physical assets for the poor. Both human and physical capital will enhance the income-earning capacities of the poor.
- III. **Social Asset Creation:** Creation of social assets by ensuring cost-effective provisions (public or private) of basic needs of the poor i.e. access to education, health; nutrition; water supply and sanitation. This is for human and social capital formation for the poor through a participative process involving the poor and civil society.
- IV. **Social Safety Net:** For the chronic or transitionally vulnerable groups this will provide adequate supplementary transfers to ensure the satisfaction of basic needs i.e. food, shelter, etc.
- V. **Governance:** Improved efficiency in the Public and Corporate sectors to provide Rule of Law and, *inter alia*, improve the efficiency of service delivery.

The main elements of poverty reduction relating to human resource development and improvements in civic service are discussed briefly below:

a. Education

The education sector strategy and goals, targets and policy matrix (Table-2) have been finalised after exhaustive consultations with key stakeholders. A holistic approach for the planning of human resource

development has been adopted. The strategy is based on Education Sector Reforms (ERS) Action Plan. The ESR is based on a long-term framework 2001-2011 with a three-year action programme 2001-2004. The main features of the reform agenda include macro level reforms in planning, procedures, resource mobilisation and utilisation; sector wide approaches for reinforcement of linkages between sub-sectors (i.e. primary/elementary/non-formal literacy, secondary/technical, higher education and quality assurance structures); strategies and milestones for implementation; integration with the Social Action Programme (SAP); Education For All (EFA); institutional reforms at all tiers of government; delivery of quality education; and a technical and vocational education bias at the secondary education levels.

To meet the human resource needs of the country a shift to Science and Technology is being made at the Secondary and Higher Education levels (Planning Commission, 2001) thereby creating employment options for educated youth.

An innovative element of ESRs is the emphasis on the inculcation of employable skills alongside education. This will be achieved through the introduction of a technical education stream at the secondary school level. This plan aims at introducing a skill development group in the ninth and tenth grade, parallel to the existing science and arts group, in 1200 existing secondary schools with adequate workshop space and in 60 model technical high schools that will be established under this programme. Training will be imparted in trades that are selected with the consultation of local industry, thereby creating employment linkages with industry. The programme will be supplemented through the provision of micro-credit to encourage self-employment.

b. Health

The health sector strategy places greater focus on a continuous shift from curative services to the promotive and preventive health services through improving the primary health care system, especially in the area of communicable and infectious diseases, reproductive health, child health, and nutrient deficiencies. The strategy is based on "Health Care for All" which is accessible, acceptable and affordable. The implementation of the strategy is expected to reduce the prevailing burden of diseases, especially preventable disease. The emphasis will be on improving the service delivery mechanism, which will be efficient, equable and effective. During the course of the implementation of the strategy preventive and promotive aspects will get top priority (Planning Commission, 2001b).

c. *Population Programmes*

The population welfare strategy proposes the implementation of a Comprehensive Reproductive Health Package with an improved coordination of reproductive health programmes. A National Reproductive Health Policy has been formulated to improve the reproductive health status of women. The service delivery infrastructure of the population programme operates through 1,658 Family Welfare Centers, 131 Mobile Service Units, and 106 Reproductive Health Centers and 12,000 Village Based Family Planning Workers (VBFPWs) providing reproductive health and family planning services to both the urban and rural population in the country. The FWCs are proposed to be upgraded as MCH Centers after the provision of necessary inputs of training and equipment. These Centers will deliver a whole range of PHC services (including reproductive health) with a clear focus on contraceptive services. The 12,000 VBFPWs of Ministry of Population Welfare (MoPW) and 43,000 Lady Health Workers (LHWs) of the Ministry of Health have been unified as one cadre of 55,000 Family Health Workers (FHWs) and will be brought together technically at par with each other for the provision of PHC/ RH service at the grassroots level. These workers will be trained further in a phased manner to provide midwifery services at the community level. The entire Programme will be backed by an independent media and advocacy campaign, for high social marketing and NGOs involvement.

Restructuring of the PHC programme at the federal, provincial, and the district levels will transform the system into a people-centered and output-oriented initiative. Also, good governance reforms underway in the population and health sectors are based in the ICPD holistic approach that prescribes integration of family planning and reproductive health with the primary health care framework. These will be decentralised at the provinces, which will involve transfer of fiscal and administrative control over finances, planning, and decision-making, to local levels. Similarly, transfer of power to districts under the new devolution structure would improve efficiency at the grassroots outreach services.

d. *Water Supply and Sanitation*

At present 63 per cent of the country's population has access to safe drinking water (83 per cent in urban areas while 53 per cent in rural areas), whereas planned sanitation facilities are available to about 39 per cent of the total population (59 per cent in urban areas while 27 per cent in rural areas). Water supply facilities will be increased from 63 per cent (in 2000-01) to 66 per cent in 2003-2004- 86 per cent in urban areas and 56 per cent in rural areas. The planned sanitation facilities will be increased from 39 per cent in 2000-01 to 43 per cent in 2003-04.

Poverty Reduction and Human Development – Targets

The poverty reduction strategy will result in not only containing poverty; it will bring definite changes required to systematically empower the poor to move towards self-sustenance. Table 2 below give details of medium to long-term goals, targets and instrument matrix for poverty reduction and human resource development.

Table 2: Poverty Reduction & Human Development - Goals, Targets and Instrument Matrix

Goal 2025	Instruments to Accomplish Goal, (Policy, Sectoral Focus, Reform)	Targets			Variable
		2001	2004	2011	
d) Rapid Income Growth	Investment rate of 22% of GDP, open economy; Human Development through Education; Health; Nutrition; higher Science & Technology Capacity (S&T); deeper Information Technology (IT) capacity and infrastructure (connectivity); Implement Energy Policy primarily based on natural gas and clean coal technology.	24	30	54	<ul style="list-style-type: none"> Per capita income in thousand Rs. Population growth rate per annum.
e) Eliminate Food Poverty	Agriculture; water; salt/water drainage, shared growth to reduce income inequality; Education; Research (i.e. S&T: and IT); Energy adequacy.	30	25	15	Per cent of population unable to meet basic food requirement 2150 calories/day
f) Significantly Reduce Human Poverty (Basic Needs; opportunity Capability)	Education; Health; nutrition; S&T: IT: Rural infrastructure: shared growth to reduce income inequality; social safety net: old age pensions.	44	35	25	<ul style="list-style-type: none"> Human Poverty Index (%) Life expectancy at birth (years) Population without access to health services (%)
g) 100% Adult	Education: IT (Distance	52	61	78	<ul style="list-style-type: none"> Adult literacy rate

	Literacy	Education): Expansion	39	47	67	•	Female literacy rate
	Universal Pre- College Education	of teachers, schools, and teacher training.	83	94	104	•	Primary
			55	64	80	•	Elementary
			38	49	70	•	Secondary
h)	Eliminating Malnourish- ment for under 5 Children	Targeted food distribution programme with deep involvement of communities: NGOs Using teacher – parent links to expand awareness.	39	35	20	•	Malnutrition of children under 5 (%)
			111	77	46	•	Child Mortality Rate (per 1000 live births)
			400	300	250	•	Maternal Mortality Rate (per 100,000 live births).
			25	12	7	•	Incidence of Low Birth weight babies (%).
i)	Clean water for all Citizens	Investments in Water Supply System: strict enforcement of emission control laws: Enhancing institutional capacity to monitor compliance and enforce.	63	68	84	•	Population with Access to Safe Water (%).
j)	Clean Air for all Citizens	Ten Year Crash Programme of Legislation and enforcement to control emissions of SO ₂ , NO _x , PM ₁₀ , in hot spots. Natural gas and clean coal energy policy.	50	40	20	•	Population without Access to clean air (%)
k)	Rule of Law	Civil service Reform, Judicial Reform: Police Reform: Implementing Local Government devolution: Education.	20%	75%	100%	•	Significantly mainstream the Reforms i.e. implement current programme.
l)	Enhance Pakistan's Scientific Capability	Crash Programme to develop S&T	116	295	1200	•	Number of scientists and engineers per million population
		Concurrently, increased allocation to R&D	0.2	0.5	1.2	•	Proportion of GDP allocated to Research & Development.
m)	Human Development Index	All of the above implemented effectively and as a package.	135	120	90	•	Rank on Human Development in the United Nations

Source: Planning Commission, 2001b.

Resources for Poverty Reduction Strategy

Availability of adequate resources is necessary to achieve the target set for poverty reduction and human development. The poverty reduction strategy envisages a reasonable increase in financial resources so that the main targets of the plan are accomplished. The resources required to implement the proposed poverty reduction strategy are given in Table 3 with details:

Table 3: Public and Private Sector Expenditure for Poverty Reduction (2001-2011)

	2000-01		2003-04		2010-11	
	(Bill. Rs)	% GDP	(Bill. Rs)	% GDP	(Bill. Rs)	% GDP
I. PUBLIC SECTOR						
A. Budgetary Expenditure						
a) Development Expenditure	37.5	1.1	62.3	1.4	128.1	1.5
b) Current Expenditure	79.5	2.3	136.4	2.5	267.4	3.0
• Social Services	75.0	2.2	129.9	2.3	247.1	2.7
• Community Services	3.4	0.1	4.7	0.1	18.3	0.2
• Others	1.0	0.0	1.8	0.1	2.0	0.1
Total A:	117.0	3.4	198.7	3.9	395.5	4.5
B. Targeted Transfers						
a) Zakat	6.8	0.2	14.4	0.3	45.8	0.4
b) Food Support Programme	2.3	0.1	2.3	0.0	0.0	0.0
c) Social Security (EOBI)	1.5	0.0	2.2	0.0	9.2	0.1
d) Health Insurance, and Workers Welfare Fund	2.5	0.1	4.0	0.1	18.3	0.2
e) Housing Finance	0.3	0.0	0.6	0.0	9.2	0.1
Total B:	13.4	0.4	23.5	0.4	82.5	0.8
Total Public Sector (A+B)	130.4	3.8	222.2	4.3	478.0	5.3
II. PRIVATE SECTOR						
(Indicative)						
I. Zakat	13.6	0.4	18.6	0.5	54.9	0.6
II Non-Zakat Money (Gifts, Assistance etc)	17.1	0.5	23.9	0.5	54.9	0.6
a) Volunteering	30.7	0.9	41.1	0.9	109.8	1.2

b) Workers Remittances from abroad	30.7	0.9	41.1	0.9	109.8	1.2
Total II:	92.1	2.7	124.7	2.8	329.4	3.6
TOTAL I+II	225.5	6.5	346.9	7.1	807.43	8.9

Bill=Billion

Source: Planning Commission, 2001b.

Conclusions

At present, the magnitude and complexity of the problem of poverty is staggering. Sound macroeconomic policies, growth enhancing structural reforms, and good social policies are the conditions for sustainable growth that generate higher levels of employment and real income. Growth with unequal benefits inhibit widespread social improvement and is, therefore, not satisfactory. The empirical evidence suggests that economic growth reduces poverty and increased expenditure in human development. Pakistan, with a high rate of economic growth above 5 per cent in the past 30 years and increased expenditure on social sector development failed to achieve the desired improvements in the life of the poor.

The approach of the poverty reduction strategy to address all the issues causing poverty and human deprivation holistically is a welcome development, but this is not enough. To reduce poverty and human deprivation substantial collective efforts are needed.

The success of poverty reduction efforts is dependent on the development of human capacities through education and training and the empowerment of communities. The communities should be encouraged to come forward with their demands. This will make a significant contribution to poverty reduction and efficient use of resources. This will create a sense of ownership among the poor over goods and services provided by the public sector.

Appendix-I

Comparison of selected social indicators (Countries in the region)

INDICATORS	PAKISTAN	CHINA	MALAYSIA	BANGLA DESH	SRI- LANKA	INDIA	NEPAL
Human Development Index (HDI) ¹	138	98	56	150	90	132	144
Gender-related Development Index (GDI) ¹	111	79	52	123	76	112	121
Gender Empowerment measure ¹	101	40	52	83	80	95	..
Human Poverty Index ¹	71	30	18	73	33	59	85
GNP per Capita (US\$) 1997	500	860	4530	360	800	370	220
Real GDP per capita (PPP) ² (1997 US\$)	1560	3130	8140	1050	2490	1670	1090
Female	701	2485	5115	767	1452	902	763
Male	2363	3738	11081	1320	3545	2389	1409
Population below income poverty line (% living \$ 1 a day- 1989-94)	11.6	29.4	7.4	28.5	4.0	52.5	53.1
Life expectancy at birth (years) (1997)							
Female	63.7	72.0	74.3	58.2	75.4	62.9	57.1
Male	63.8	67.9	69.9	58.1	70.9	62.3	57.6
Infant Mortality rate (per 1000 live births)	90	38	10	81	17	71	75
Adult Literacy (%) (1997)	45.0	82.9	85.7	38.9	90.7	53.5	38.1

Female	32.6	74.5	81.0	27.4	87.6	39.4	20.7
Male	56.5	90.8	90.2	49.9	94.0	66.7	55.7
Public expenditure (% of GNP) +							
Education 1993-96	3.0	2.3	5.2	2.9	3.4	3.4	3.1
Health 1995	0.8	..	1.3	1.2	1.4	0.7	1.2
Population without access to (%)							
- Health services (1981-92)	45	..	12	26	10	25	90
- Safe water (1990-97)	52	33	22	5	43	19	29
- Sanitation (1990-97)	75	76	6		37	71	84

¹ Ranks of 174 countries.

..Information not available.

- Source:**
1. UNDP 1999, **Human Development Report 1999**, Oxford University Press, New York.
 2. Finance Division, *Economic Survey 1998-99*, Government of Pakistan, Islamabad.

Appendix-II
Consumption/Income Poverty Measurement in Pakistan: A Survey of Recent Literature

Author	Data	Defn of HH	Def of Consp	HH or IND	ES	Regional Decom-position	Calories		Method	Adjustments
							Study uses	Poverty line is		
Ludovico Carrier and Simon Hunt alongwith FBS Team - PHS: Poverty in 1990s (Draft)	HIES data 1992-93, 1993-94, 1996-97 and PHS data 1998-99	Definition of HH is same as in HIES and PHS. However, due to different filed methodology between HIES/PHS, there is difference between HH size for the two Surveys	Actual and imputed expenditure on: i) Food items ii) Fuel and utilities iii) Housing iv) Cleaning, personal care, product & services v) Non food expenses; clothes, footwear, education and health	on individual basis and data about characteristics of the poor on HH basis	0.8 for Younger than 18 years and 1 for all other HH members	Rural/Urban and Provincial basis	Study uses 2550 calories for estimating poverty line. However, poverty indices have also been reported on 2150 calories basis in Appendix - D of the report.	Poverty line is estimated from regression of per equivalent consumption expenditure against estimated daily per capita calorie intake	Price and HH size adjustments made. But expenses on marriage and funerals have been excluded. Since expenses on these occasions are generally very high therefore some allowance must be given for non food expenses in estimating Poverty Line	
Jafri (1999)	HIES 1986/87, 1987/88, 1990/91, 1992/93, 1993/94	HIES defn	HIES def'n	IND	FBS scales	Rural/Urban 4 Provinces	Rural: 2250; Urban: 2150	1. Recommended calorie intake is converted into the food poverty line by regressing a Calorie Consumption Function (CCF) 2. Per capita non-food expenditure of HH on food poverty line is added on	Separate nominal PLs, no regional/Provincial price & cost of living differences	

Author	Data	Def'n of HH	Def of HH or Consp	IND	ES	Regional Decomposition	Calories	Method	Adjustments
Jafr (1999)	HIES 1986/87 1987/88 1990/91 1992/93 1993/94	HIES def'n	HIES def'n	IND	FBS scales	Rural/ Urban 4 Provinces	Rural: 2250; Urban:2150	1. Recommended calorie intake is converted into the food poverty line by regressing a Calorie Consumption Function (CCF) 2. Per capita non-food expenditure of HH on food poverty line is added on	Separate nominal PLs, no adjustment for regional/Provincial price & cost of living differences
Qureshi & Arif (1999)	HIES 1993/94 PSES 1998/99	HIES def'n	HIES def'n	IND	GOP scales	Rural/ Urban 4 Provinces 9 agro-climatic zones	Rural: 2550; Urban:2295	1. CCF regressions for the food PL 2. Three methods to determine the basic needs bundle: a. Add average non-food exp. of HH on food PL b. +/-5% average non-food exp. of HH on food PL c. +/- 10% average non-food exp. of HH on food PL	Separate nominal PLs, no adjustment for regional/Provincial , agro-climatic zone price & cost of living differences Probably none
Ahmad (1998)	HIES 1992/93 1993/94 PIHS 1995/96	Un-defined	Un-defined	HH	Un-defined	Pakistan and Provinces	Rural:2550 Urban:2230	Not clearly defined	
Jafr (1997) GOP Working Group	HIES 1992/93	HIES	HIES	HH	Unclear, most likely FBS scales	Pakistan, Rural/ Urban and Provinces	Rural:2550, Urban:2230	5. Recommended calorie intake is converted into food PL by regressing a CCF. 6.Exp of corresponding income group satisfying minimum caloric requirements is added on	Not explicit
Amjad & Kemal (1997)	HIES 1984/85	Not explicit	HIES	Unclear	Unclear	Rural/ Urban	2250	Based on Malik's (1988) calorie-based PL for the period 1963/64 to 1984/85	1984/85 estimates are adjusted upward using the CPI

Author	Data	Def'n of HH	Def of HH or IND	ES	Regional Decom-position	Calories	Method	Adjustments
Jafri and Khattak (1995)	HIES 1979 1984/85 1985/86 1986/87 1987/88 1990/91	HIES	HIES	Unclear	Rural/ Urban	2550	1. Food PL based on estimated cost of minimum required calorie intake. 2. Exp of corresponding income group satisfying minimum caloric requirements is added on	None
Malik, S.J. (1984)	HIES 1984/85 1987/88 1990/91	Ercelawn	Ercelawn	GOP	Rural/ Urban Provinces	2550	CCF regressed	None
GHZ (1994)	HIES 1984/85 1987/88 PHS 1991	Ercelawn	Modified Ercelawn	Ahmad (1993)	Rural/ Urban Provinces	N/A	1. Modified BN PL suggested by Ahmad (1993) for a family of 2 adults and 4 children	Rural 1991/92 line is adjusted for cost of living differences in urban areas/ provinces and over time

Notes: HIES = Household Integrated/Income Expenditure Survey, PHIS = Pakistan Integrated Household Survey, PSES = Pakistan Social and Economic Survey carried out for the MIMAP study. **Def'n of Household:** HIES definition of household includes a person or a group who normally live and eat together. This includes family members, boarders, lodgers and servants. Ercelawn's and PHIS's definitions exclude lodgers and servants. **Def'n of Consumption:** HIES definition of consumption includes taxes, expenditure on durables purchased with a year (textile and personal effects, crockery/cutlery and kitchen equipment, furniture and fixture, household electronic goods and transport and traveling equipment). Ercelawn's definition excludes taxes and expenditure on all durable goods. **ES =** Equivalent scales: The GOP scales are a menu of adult equivalent scales differentiated by age and gender (for children above 10 years). The adult equivalent scales of 2550 for males and 2160 for females correspond to the age group 20 -39. FBS scales are based only on age groups: the weight is 1 for persons above 16 years, 0.85 for children between 10-15 years, 0.75 for children between 6-9 years and 0.45 for children below 6 years. **HH/IND** implies households (HH) or individuals (IND) below the poverty line. **BN =** Basic Needs, **PL =** Poverty Line, **Exp =** Expenditure.

Appendix III

Poverty Under Calorie Based Approach: Head Count Ratio

Years	National	Rural	Urban	Poverty Line (Rs)
1986-87	26.9	29.4	24.3	
1987-88	26.4	29.9	22.7	
1990-91	23.3	26.2	13.0	
1992-93	22.2	23.9	17.7	359
1993-94	23.0	29.7	13.6	399
1996-97	21.3	26.0	12.4	559
1998-99	23.2	32.0	19.1	650
1999-2000 ²	29.3	33.2	19.3	672
2000-2001 ²	30.0	34.0	20.3	684

¹ Estimated on the basis of average 2150-calorie intake/day basis by using HIES/PIHS data.

² Estimated on the basis of consumption plan.

Source: Federal Bureau of Statistics, 2001. Poverty in 1990s, (Draft).

Appendix-IV

Consolidated Budgetary Position (As % of GDP)

	Government Revenues	Tax Revenue	Government Expenditure	Overall Fiscal Deficit
1980-81	17.6	14.0	22.9	5.3
1990-91	16.9	12.7	25.7	8.8
1991-92	19.2	13.7	26.7	7.5
1992-93	18.1	13.4	26.2	8.1
1993-94	17.5	13.4	23.4	5.9
1994-95	17.3	13.8	22.9	5.6
1995-96	17.9	14.4	24.4	6.5
1996-97	15.8	13.4	22.3	6.4
1997-98	16.0	13.2	23.7	7.7
1998-99	15.9	13.3	22.0	6.1
1999-00	16.5	12.8	22.9	6.4
2000-01	17.4	13.4	21.3	5.3
2001-02	18.2	13.8	21.8	4.9

Appendix-V

Consolidated Budgetary Position (Billion Rupees)

	Government Revenue	Government Expenditure	Overall Fiscal Deficit
1980-81	49.0	63.6	14.6
1990-91	171.8	261.0	89.2
1991-92	231.5	321.5	90.0
1992-93	241.1	348.7	107.5
1993-94	272.7	364.9	92.2
1994-95	322.9	428.3	105.4
1995-96	380.3	518.1	137.8
1996-97	384.3	540.9	156.6
1997-98	429.4	634.0	205.0
1998-99	468.6	647.8	179.2
1999-00	524.4	728.7	204.3
2000-01	557.9	741.2	183.2
2001-02	643.3	829.8	186.5

Appendix- VI
Trend in Key Social Indicators

	1990-91			1995-96			1996-97			1998-99		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Primary GER (1-5) (%)												
Over all	86	59	73	85	64	75	80	64	72	80	61	71
Urban	97	87	92	95	90	92	95	91	93	95	92	94
Rural	82	48	66	81	54	68	74	53	64	75	50	63
Primary NER (1-5)												
Over all	53	39	46	49	38	44	46	37	42	47	37	42
Urban	61	57	59	56	55	55	56	55	55	58	56	57
Rural	50	31	41	47	31	39	43	30	37	43	30	37
Literacy Rates (10 >)												
Over all	48	21	35	52	26	39	51	28	39	59	31	45
Urban	61	49	51	66	49	57	65	50	58	73	56	65
Rural	43	12	28	45	16	31	44	17	31	52	20	36
Full Immunization												
Over all	29	22	25	46	45	45	49	49	49	52	47	49
Urban	43	37	40	48	52	50	56	51	53	64	63	64
Rural	24	17	20	45	42	44	46	49	47	47	42	45
Infant Mortality (1991-93)												
Over all	105	97	101				101	108	105	93	85	89
Urban	77	85	81				82	85	83	77	68	73
Rural	115	101	108				108	117	112	99	91	95
TFR (15-49 years) (91-93)												
Over all			6.13						5.38			4.46

	1990-91			1995-96			1996-97			1998-99		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Urban			5,17						4,54			3,98
Rural			6.6						5.79			4.68
CPR (15-49 years)												
Overall			14									17
Urban			14									29
Rural			14									12
Water (main source)												
TAP in House			25			25			24			22
Urban					56	56			56			50
Rural					11	11			9			9
TAP out-side House			2		3	3			3			4
Urban					4	4			4			5
Rural					2	2			2			3
Hand/Motor Pump			55			56			52			57
Urban					33	33			29			38
Rural					66	66			62			65
Type of Toilet												
No Toilet					43	43			44			46
Urban					9	9			7			6
Rural					66	66			61			63
Sanitation System (%hh)												
No System					34	34			45			50
Urban					7	7			10			10
Rural					46	46			61			68

Source: Federal Bureau of Statistics; Pakistan Integrated Household Survey 1995-96 and 1998-99, Islamabad.

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Contemporary Neoclassicism and its Methodology

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Abstract

The last 10 to 20 years have seen a rapid rise of a new school in Macroeconomics. One of the most interesting characteristics of this school is its use of non-econometric methods for predicting and calculating various variables of the economy. If traditional econometrics has lost some of the force it has had for decades, it is of interest to analyse the merits of the new system replacing it. Most importantly, it is of interest to study the methodological justification of this new system and the paradigm it rests on. The latter is the main purpose of this paper.

Today, the world of macroeconomics is characterised by two schools of thought, namely the Fresh Water Schools and the Salt Water Schools. The FW schools are those that follow Lucas-style neoclassical growth theory, downplay the use of econometrics in favour of what is known as calibration and numerical methods, and are proponents of the ideas of frictionless markets and rational expectations. These include schools like the University of Chicago, Minnesota, Pennsylvania and Rochester. The SW schools are relatively Keynesian in their approach towards the market and depend heavily on econometrics. Such schools include Harvard, MIT, UCLA, Princeton, etc. The purpose of this essay is to introduce to the reader the idea of calibration used by the FW schools, and to analyse its methodology.

The Paradigm

It is not possible to begin talking about calibration without first introducing the paradigm employed by the FW school. What shall be presented in this section is a simple exposition of the neoclassical growth model, as developed in the revolutionary work "Recursive Methods in Economic Dynamics" by Stokey, Lucas and Prescott (Harvard University Press, 1989), the bible of the FW schools.

The assumptions are:

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1. The economy is inhabited by a single representative agent, who is infinitely-lived, and has a time additive utility function. For simplicity assume that he does not value leisure. Hence his utility function is given by $\underline{U} = \sum_{t \in [0, \infty]} (\beta^t) U(c(t))$, where \underline{U} is the lifetime utility, the summation is from $t=0$ to $t=\infty$, β is the discount factor such that $0 < \beta < 1$, U is a temporal utility function $U: \mathbb{R}^+ \rightarrow \mathbb{R}^+$, and $c(t)$ is consumption at time t . It is assumed that U is increasing in its argument, concave, bounded, $U(0)=0$, $\partial U / \partial c = \infty$ when $c=0$.
2. There is a representative firm doing all the production in the economy: $Y(t) = z(t) \cdot F(K(t), L(t))$, such that $Y(t)$ is the output at time t (we assume a one-sector economy), $z(t)$ is the technology coefficient at time t , F is a function $F: \mathbb{R}^+ \times \mathbb{R}^+ \rightarrow \mathbb{R}^+$, and $K(t)$, $L(t)$ are capital and labour inputs at time t , respectively. It is assumed that the production function exhibits constant returns to scale, is concave, $F(0, \cdot) = 0$, and $\partial F / \partial K = \infty$ when $K=0$. For simplicity we will assume a non-stochastic economy, i.e., $z(t) = z \forall t$. Let $0 < L < 1$.
3. The law of motion of capital is given by the expression: $K(t+1) = i(t) + (1-d)K(t)$, where $i(t)$ is investment at time t , and d is the (time invariant) depreciation rate such that $0 \leq d \leq 1$.
4. The economy's resource constraint is $c(t) + i(t) \leq Y(t)$

The above assumptions paint a picture of an economy that has a single consumer, who owns the factors of production, and must decide (today) how to allocate resources between consumption and investment in each period. This formulation is called the Planner's problem, for obvious reasons. Since the representative consumer is understood to be a utility maximiser, he will solve the following Sequential Problem:

Maximize \underline{U} subject to the resource constraint and the law of motion of capital

$$\Rightarrow \text{Max } X = \sum_{t \in [0, \infty]} [(\beta^t) U(c(t)) - \lambda(t) (c(t) + i(t) - ZF(K(t), L(t))) - \mu(t) (K(t+1) - i(t) - (1-d)K(t)) - \gamma(t) (1 - L(t))], \text{ where } \lambda(t), \mu(t) \text{ and } \gamma(t) \text{ are the kuhn-tucker multipliers.}$$

$$\Rightarrow \text{Max } X = \sum_{t \in [0, \infty]} [(\beta^t) U(c(t)) - \lambda(t) (c(t) + K(t+1) - (1-d)K(t) - ZF(K(t), L(t))) - \gamma(t) (1 - L(t))]$$

$\partial X/\partial L(t) = 0$ will yield us the result that $L(t)=1 \forall t$: since leisure is not valued, and more the leisure more the output, it follows that the consumer must give his maximum labor, ie $L(t)=1$. So we can re-write the problem as follows:

$$\text{Max } X = \sum_{t \in [0, \infty]} [(\beta^t)U(c(t)) - \lambda(t) (c(t) + K(t+1) - (1-d)K(t) - ZF(K(t),1))] , \text{ where the only choice variables are } c(t) \text{ and } K(t+1).$$

$$\partial X/\partial c(t) = (\beta^t)U'(c(t)) - \lambda(t) = 0$$

$$\Rightarrow \lambda(t) = (\beta^t)U'(c(t)) \quad (1)$$

$$\partial X/\partial K(t+1) = -\lambda(t) + \lambda(t+1) ((1-d) + ZF'(K(t+1),1)) = 0$$

$$\Rightarrow \lambda(t) = \lambda(t+1) ((1-d) + ZF'(K(t+1),1))$$

from (1) we get

$$\Rightarrow (\beta^t)U'(c(t)) = (\beta^{t+1})U'(c(t+1)) ((1-d) + ZF'(K(t+1),1))$$

$$\Rightarrow U'(c(t)) = \beta \cdot U'(c(t+1)) ((1-d) + ZF'(K(t+1),1)) \quad (2)$$

Equation (2) gives us a very important condition required to determine the optimal consumption in each time period. It is called the Euler equation. Intuitively it is telling us that the marginal benefit of a unit of consumption (given by the LHS of the equation) must be equal to the marginal cost (give by the RHS). But (almost) more importantly it is giving us a relationship that governs the dynamics of the economy. The Euler equation links each time period with each other. At any point in time, the representative consumer has effectively decided how much to consume and save today, tomorrow, the day after, *ad infinitum*.

The above was a simple demonstration of what the growth model is all about. It was an introduction to the framework used by macroeconomists of the school to model a large number of macro-phenomenon, e.g. growth, business cycles, inequality, distorted economies, unemployment, asset pricing, international finance, etc. Using the basic concepts, the macroeconomist has at his disposal well defined relationships between various variables in the economy. These relationships fully characterise the model economy, and it is this fact that is exploited in order to come up with an alternative to prediction via econometrics.

Dynamic Programming

One of the main contributions of Stokey, Lucas and Prescott was to show how such models as the one outlined in the previous section can be

solved using dynamic programming methods. One of the advantages of employing dynamic programming is that it brings out yet more relationships characterising the economy. A discussion of this point is called for.

Stokey, Lucas and Prescott showed that to any sequential problem (such as the one outlined above) there corresponds a dynamic programming problem, if we make an extra (but innocuous) assumption. But what is a dynamic programming problem?

Observe that:

$$\begin{aligned}
 \underline{U}(0) &= \sum_{t \in [0, \infty]} (\beta^t) U(c(t)) \\
 &= U(c(0)) + \beta U(c(1)) + \beta^2 .U(c(2)) + \beta^3 .U(c(3)) + \dots \\
 &= U(c(0)) + \beta [U(c(1)) + \beta .U(c(2)) + \beta^2 .U(c(3)) + \dots] \\
 &= U(c(0)) + \beta \sum_{t \in [1, \infty]} (\beta^t) U(c(t)) \\
 &= U(c(0)) + \beta .\underline{U}(1) \tag{3}
 \end{aligned}$$

where, by similar argument, $\underline{U}(1) = U(c(1)) + \beta .\underline{U}(2)$, so on and so forth.

That is, the lifetime utility function is broken down into two components: today's utility, and the utility for the remainder of my life, where the latter can be broken in a similar way. What this does is that it allows us to transform the problem from one in which we solve my lifetime problem in one go (the sequential problem) into one in which we separate today's problem from tomorrow's. This latter form (which is the dynamic programming problem) is extremely powerful: the assumption of an infinite life implies that today's problem is identical in structure to tomorrow's problem. So if we can establish a rule that will determine how today's problem can be solved, we have in effect established a rule that will determine how tomorrow's problem can be solved as well. In fact, this 'decision rule' arrived at can be used to solve *any* period's problem.

In order to elucidate the importance of this, let us first deviate a bit with some new terminology. A 'state' variable is a variable that cannot be changed (i.e. it is not a choice variable), and which *determines* one's choices. So, in the model outlined above, the state variable is the present capital stock $K(t)$. Today's capital stock was chosen yesterday when the consumer decided how much to invest. The consumer cannot affect today's capital stock. Also, his present stock of capital is instrumental for deciding how much to consume today, and how much to save/invest: his total output $Y(t)$ is determined by the value of $K(t)$ (and also $L(t)$, but recall that $L(t)=1$

for all t), and it is this total output which he is going to divide into consumption and saving. Hence $K(t)$ affects his choice of how much he should consume today $c(t)$, and how much he must invest $i(t)$. Once he has decided how much to invest, he has in effect determined the value of $K(t+1)$, ie the value of the state variable tomorrow.

To emphasise the relevance of the state variable in decision-making we can write equation (3) as follows:

$$U(K(0)) = U(c(0)) + \beta U(K(1)), \text{ where } U(K(1)) = U(c(1)) + \beta U(K(2)), \text{ so on and so forth.}$$

Or more generally and compactly

$$U(K(t)) = U(c(t)) + \beta U(K(t+1)) \quad (4)$$

Now, maximising (4) subject to the resource constraint and the law of motion of capital will yield a certain optimal solution for the value of $c(t)$ (and $K(t+1)$ of course). For any given value of $K(t)$, there will be an optimal $c(t)$. In fact, it can be shown that under fairly general assumptions, there actually exists a *function* $\Gamma: R^+ \rightarrow R^+$ which captures the relationship $c(t) = \Gamma(K(t))$. Moreover, as before, the assumption of an infinite time horizon can be used to prove that *this same function holds for any time period*. That is to say, the function Γ holds for time $t+1$, $t+2$, *ad infinitum*. We have what is called a decision rule; a rule that tells us that if the state variable takes so and so value, then the optimal consumption decision will be so and so value, regardless of what period we are in.

Why is this important? Simply because the macroeconomist has at his disposal yet one more relationship characterising the economy (actually he has a well-defined function). This function is important also because it will help the economist to predict how any economy will decide its consumption level when its capital stock changes, or how the economy would have acted if the capital stock had been any different. Note that the consumption decision rule is just one possible decision rule. If we expand the model to include more choice variables, we have a separate decision rule for each choice variable.

Calibration

We can now begin to talk about what calibration is. The discussion in the above two sections brought out the fact that the neoclassical growth model helps give rise to a handful of economic relationships that fully characterise the model economy. These equations will have variables and

parameters. For instance, the Euler equation has $c(t)$, $c(t+1)$, $K(t+1)$ as its variables and β and d as its parameters. If estimates of the parameters are found, then we have a set of equations that is all set to make predictions about the model economy. All that is needed is to plug in values of variables that we do know, and out come values of variables that we may not know. For instance, if we have figures for $K(t+1)$ (i.e. if we know $K(t)$ and $i(t)$), then we can predict next year's consumption $c(t+1)$ by using the consumption decision rule.

This is calibration. There is no regression line required to predict next years GNP or employment levels. The predictions are non-econometric in nature.

I do not wish to make it look as though econometrics is a redundant subject, or that statistical data is any less important. Indeed it is not. Estimating the parameters of the model is an econometric exercise. Time series data is needed in order to work out the functional forms of the relationships. Econometrics remains a backbone of the applied fields.

There are a lot more things that one can do using calibration than one could with econometrics. Calibration is not useful only in studying the future. Rather it has a tremendous amount of utility in studying and analysing the past. A classic example of this is "The Role of Investment-Specific Technological Change in the Business Cycle" by Krusell, Greenwood, and Hercowitz (*European Economic Review*, 2000) who construct a model of the US economy for the purpose of assessing how much the growth of investment-specific capital goods have contributed to over all US growth in the past. Such an exercise would not have been reliably possible without calibration. How would one separate the effect of different kinds of capital goods on US growth? How can one account for changes in the quality and variety of such goods over the decades when no reliable indices exist? With calibration the important relationships can be identified, and by plugging in the relevant figures, the desired figures can be obtained (for details see the paper).

The neoclassical growth model has had a great deal of success, which is the obvious reason why it has gained a tremendous amount of support over the years. But as is the case with all models in economics, it is not perfect. In some cases it may not find empirical support, or its implications may contradict data: blatant contradictions are embodied in the 'equity premium' puzzle and the 'risk free rate' puzzle. But these inconsistencies with the data are understood to ask for improvements in the standard model (like finding new functional forms for the utility

function) rather than to be complete falsifiers of the neoclassical paradigm.

Methodology

It is the foundations of any subject that is always less solid than its contents, except, perhaps, mathematics. Controversy over methodology is common in the social sciences. The methodology of the FW schools is no exception: calibration has some discomfoting aspects.

Firstly, the results are extremely sensitive to the specification of the model. It is possible to reach a different conclusion about the value of a certain variable solely because it is the economist's discretion as to how he wants to specify the economy. For instance, does one want to use a CRRA utility function or an Epstein-Zin utility function, does one want to assume that government expenditure is completely unproductive, does one use a Cobb-Douglas production function, how many sectors must the economy have, etc, etc. Each specification will lead to a different result, and there is no *a priori* reason for believing that one specification will *necessarily* be superior to another.

Secondly, the method of computation will affect results. There are many computational techniques one can use to, for instance, work out an economy's decision rule for savings. There is value function iteration, policy function iteration, parametrisation of the value function, Coleman's algorithm, discrete state space method, etc.

Thirdly, how 'literally' is a model to be interpreted before it is calibrated? For instance, Lucas's asset pricing model ("Asset Prices in an Exchange Economy", *Econometrica*, 1978) assumes an endowment economy with no opportunities to save/invest or borrow/lend. Therefore the income is necessarily the same as consumption (assuming rationality). Now, when this model is calibrated to calculate the risk free interest rate of the US economy, do we use consumption figures for $c(t)$ in the model or do we use national income? In the original model it does not matter since they are both equal. But in real life there is a significant difference between the two. One can argue that on principle one should use income, since it is only in place of income that $c(t)$ enters the asset price equation. But then on the other hand one can argue that the model dictates that asset price function has consumption as its argument and not income. Do we take the model literally or do we adjust it for the non-realism of its assumptions?

These objections cannot be regarded as extremely serious for the simple reason that the existing alternatives to calibration have equally

objectionable demerits. There is no clear superior, and hence one cannot afford to reject a system on the basis of its demerits. After all, econometric modeling also suffers from the first and third criticism outlined above, and the second criticism cannot be taken too seriously since numerical methods do not systematically yield divergent results.

More criticism of calibration arises out of the criticism of the neoclassical growth model itself. These include an attack on the assumptions of the neoclassical growth model. Specifically, it is argued that a model based on the utility maximisation of an imaginary representative consumer is too far-fetched to be taken seriously. The representative agent does not capture the complex workings of a society consisting of many agents, each with his own agenda often conflicting with that of others.

Such objections are raised all the time, but this seems to reflect a basic lack of understanding of economic and scientific methodology more than anything else. If the main aim of any science (and social science) is to predict, then what is of primary importance is the predictive power of any model, even if the model rests on unrealistic assumptions. This is the point made in "The Methodology of Positive Economics" by Friedman (Essays in Positive Economics, University of Chicago Press, 1953). Another way to reach this same result is through Karl Popper's theory of demarcation, a theory generally accepted in the natural sciences. According to Popper, any theory that has testable implications (i.e. it is falsifiable) is considered scientific. On testing these implications, either one falsifies the theory, or fails to falsify it (one can never verify a theory), and in the case of the latter one accepts the theory until some further evidence comes to falsify it. Note that the assumptions of the theory are not the issue at all. The neoclassical growth model is a falsifiable theory, one that has been seen to fare favorably with the data (the standards of social sciences are relatively lower than that of the physical sciences, and hence a theory in social sciences is deemed as being supported by the data even if there are numerous instances of its being rejected by the data). Since it has fared well empirically the model is accepted, along with its unrealistic assumptions.

Realism of the model is just subordinated to the more pragmatic need of predictive power. It is not unimportant. In fact, of two theories, each equally powerful as predictors, the more realistic is regarded as superior. One can see this very clearly in choice theory, where the homo-economicus is relieved of his requirement of being able to measure utility (classical marginal utility theory) and to merely be able to rank choices (revealed preference theory). The movement is governed by the need for more acceptable and descriptively accurate axioms. One can interpret the birth of the representative agent assumption in neoclassical growth theory in

the same way. The neoclassical growth paradigm gave formal microeconomic foundations to a macroeconomics that had no such foundations (the Keynesian IS-LM-AD-AS model is an example). It is better to have a bad model capturing the fact that hoards of individuals make choices in the economy rather than have none at all.

I would like to conclude the discussion with a comment. *The legitimacy of calibration is critically dependent on the truth of the neoclassical growth paradigm.* It is crucial that the economy behave (at least approximately) as if it were inhabited by a single consumer who chose all the macroeconomic variables in a way so as to maximise his utility. If this model is a good approximation, then one is justified to stretch calibration in to areas where traditional estimation techniques would become unreliable. Data speaks nothing more than what it is. Yet through calibration one can make the data speak more than what it is, since this data can be used to construct equations that govern the relationships between all variables, and then these equations help us make more statements than what the data itself is making. All these extra statements rest solely on the basic paradigm.

In a word, rendering the paradigm false is to render calibration baseless.

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A Measure of the Elasticity of Substitution in the Manufacturing Sector of Pakistan*

Rukhsana Kalim*

Abstract

From a technological perspective, the paper is mainly concerned with finding the employment potential in different groups of industries of Pakistan. The role of factor prices in determining techniques of production in the industrial sector through elasticity of substitution has been analysed. Besides taking the large-scale manufacturing sector as a whole, three broad categories of industries viz., consumer goods, intermediate goods and capital goods industries has been selected in particular for the empirical analysis. By utilising the OLS technique, the cross-section analysis for the year 1995-96 has been made. Our results indicate the there is great potential for employment in the intermediate and capital goods industries provided there are no factor price distortions in the economy.

Introduction

Employment generation in different sectors of the economy has been a fervent dream of Pakistan's policy makers. At present, the problem of ensuring productive employment opportunities to an ever growing labour force has emerged as a major challenge to the economy. According to the *Pakistan Economic Survey*, 2000-2001, the total labour force is 39.4 million, of which 2.4 million remained unemployed in 1998-99. The average rate of open unemployment is 6.1 per cent in 1999-2000 as quoted in the *Pakistan Economic Survey*, 2000-2001. The figures on open unemployment are underestimated and may not reflect the true picture of the employment problem because of the existence of disguised unemployment in the informal and non-wage sector.

As far as the industrial sector of Pakistan is concerned, it was developed rapidly and showed spectacular growth rates particularly during the 1960s and 1980s. However, its contribution towards employment generation was not very encouraging. For instance, the share of manufacturing in Gross Domestic Product (GDP) escalated from around 14 per cent in 1960 to 17 per cent in 2000. The annual average growth rate of the manufacturing sector was 10 per cent and 6.2 per cent during 1980-85 and 1997-98 respectively

* The article is part of the author's Ph.D. thesis. Some of the data has been updated and minor changes incorporated.

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(*Pakistan Economic Survey*, 1998-99). Employment in the manufacturing sector declined from 14.7 per cent in 1960 to 11.2 per cent in 2000. It grew at an annual average rate of 1.1 per cent per annum during 1980-85 but remained stagnant in 1997-98. Output and employment figures in the manufacturing sector represent the strong capital intensive bias of this sector.

Earlier, one of the major factors considered responsible for capital intensity was factor price distortions and was taken as a root cause of low employment in the large-scale manufacturing sector of Pakistan (see Hussain, 1974; Kemal, 1981).

Despite government claims of ensuring a free interplay of market forces after the 1980s, the continuity of a host of investment incentives such as tax holidays, low interest rates to domestic as well as foreign investors keep distorting the rental cost of capital. It could be argued that the role of factor prices in determining factor combinations in the production process has not faded in Pakistan. Higher cost of labour relative to cost of capital may induce entrepreneurs to use more capital than labour thus enhancing capital intensity in the sector and affecting employment.

The paper is essentially designed to explore the impact of relative factor prices on industrial employment and to examine the scope and potential of labour absorption in different groups of industries. For such an analysis one needs to estimate the elasticity of substitution between capital and labour in the sector. Positive and high elasticity of substitution indicates the potential of employment in the sector.

Earlier, some attempts have been made to estimate the elasticity of substitution between capital and labour in Pakistan. For instance, Hussain (1974) by using cross section data for the periods 1959-60 to 1970 estimated the elasticity of substitution. The elasticity estimates (0.76) were statistically significant at the 5 per cent level. The weakness of the study is that the statistical analysis was on a highly aggregated basis. Kazi, *et al* (1976), used the constant elasticity of production function and estimated the production relationship in Pakistan's manufacturing sector at the inter-industry level by fitting both cross-section and time-series data. The study recognised the limitations of fitting production functions for time-series data such as multicollinearity, misspecification of adjustment of lags and cyclical conditions. The data was related to only two provinces of Pakistan and may not be an unbiased estimate for the whole of Pakistan.

Kemal (1981) estimated the elasticity of substitution between capital and labour by fitting both the CES and VES production functions to 16 different industries and to the large-scale manufacturing sector as a whole. Time series data was used for the period 1959-60 to 1969-70. The substitution

elasticities were found to be low in most of the industries. Apart from the customary weakness of time series analysis Kemal (1981) was severely criticised by Ahmed (1982) for using his own adjusted data to allow for under coverage.

Malik *et al* (1989) used cross-section data for six different years to estimate the elasticity of substitution in the textile industry of Pakistan and found the magnitude of the elasticity to be greater than one. As the study estimates were confined to only one industry no clue can be made about the technological features of other industries.

This paper hopefully contributes to the earlier studies on many accounts. First, no effort has yet been made to take into account the structure of industries in the estimation of the elasticity of substitution. In this study, the elasticity of substitution for consumer, intermediate and capital goods industries is estimated separately. Second, earlier studies are mainly related to the era of the 1960s that was characterised by the dominance of consumer goods industries using imported machinery at that time. After the 1970s, there was a structural shift towards the development of intermediate and capital goods industries. Employment potential in these groups of industries has not been explored in depth. Third, our data cover the whole manufacturing sector of Pakistan and are not confined to only some of the provinces. In order to avoid difficulties in time-series data, cross-section analysis is made. Subject to the availability of data, the period selected for the analysis is 1995-96.

Model and Assumptions

Various classes of production functions exist in the economic literature (for details see Walter, 1963, 1968; Hildebrand and Liu, 1965; Nerlove, 1967; and Ferguson, 1969) but for empirical estimates of the elasticity of substitution the most widely used production functions are the Cobb-Douglas (CD), and the Constant Elasticity of Substitution (CES). It is well known that under the assumption of competitive conditions and constant returns to scale the CD production function invariably results in unitary elasticity of substitution (see Thirlwall, 1983 for mathematical proof). Arrow, Chenery, Minhas and Solow (1961) developed the CES production function in which the elasticity of substitution can take any value from zero to infinity.

To measure the degree of substitution between capital and labour, the more general CES production function introduced by Arrow, Chenery, Minhas and Solow (1961) is used. First, the model is used in its restrictive form where constant returns to scale are assumed. Later, the restriction is relaxed by allowing variable returns to scale. Other assumptions of the model are:

- Firms are profit maximisers.

- A range of alternative techniques of production is available.
- There is no cost involved in the transfer of technology.
- Firms are on their production frontier.

The above mentioned assumptions are very restrictive and have been criticised by many economists (see Clark, 1985). By assuming two factors of production, capital (K) and labour (L), the CES production function in its general form may be written as:

$$Y = g [dK^{-r} + (1-d)L^{-r}]^{-v/r} \quad V=1 \quad (1)$$

Where:

Y represents the total value of output.

K is the actual inputs of capital services measured in money terms at constant prices.

L is the actual inputs of labour measured in man-per year.

g is the efficiency parameter.

d is the distribution parameter.

r is the substitution parameter.

v is the degree of homogeneity.

The technology embodied in the production function of the form (1) is depicted in three different parameters i.e. g, d, and r and are assumed to be constant. g, “the efficiency parameter” measures the volume of output obtained from given quantities of inputs. d “the distribution parameter” is a measure of capital intensity of the technology and it also indicates the distribution of income between capital and labour. v is “the degree of homogeneity” of the function. v will be 1 in the case of constant returns to scale, less than 1 for decreasing returns to scale and greater than 1 for increasing returns to scale. The elasticity of substitution (s), is a simple function of r, the substitution parameter, and is written as:

$$s = \frac{1}{1 + r}$$

Since the CES production function is highly non-linear, it cannot be estimated directly by Ordinary Least Squares (OLS) unless linearised. There

are many ways to linearise the function but these require the measurement of the value of capital stock (see Intriligator, 1978 for details and references) which incorporates both conceptual and empirical problems. This can be avoided by using the indirect estimation procedure suggested by Arrow, Chenery, Minhas and Solow (1961). The indirect estimation of the CES production function however, is very restrictive. It is assumed that perfect competition and profit maximisation conditions prevail and factors receive shares equal to their marginal product. Such conditions also require the assumption of constant returns to scale (see Intriligator, 1978). Hence, V is set equal to 1 in equation 1. The assumption of perfect competition in both factor and product market is very restrictive and may not be very realistic in the case of Pakistan. However, the element of imperfection in product and factor markets cannot be introduced in our model because of lack of data and thus our results may be biased upwards to some extent.

The mathematical procedure of obtaining the estimation form of the CES production function is based on the marginal productivity of labour relation derived from the equation. The estimated form of the function is:

$$\text{Log } Y/L = a + b \log w + u \quad (2)$$

The above indirect specification of the CES production function has been widely used in empirical studies for the estimation of the elasticity of substitution in developing countries. The advantage of this formulation, despite its restrictive assumption is that it does not require capital stock data, the estimation of which involves many problems especially in developing countries.

Relaxation of Assumptions and Returns to Scale

Equation (2) is very restrictive and assumes constant returns to scale. In the presence of economies of scale, output increases more than proportionately to the increase in inputs and the escalation in labour productivity may also reflect the existence of economies of scale. In this case employment will be reduced by the degree of economies of scale through their effect on labour productivity.

By relaxing the assumptions of constant returns to scale, Brown and Cani (1962) generalised the CES production function by allowing the parameter v to vary. The less restrictive form of the model, however, violates the principle of marginal productivity theory and the assumption of perfect product and factor market no longer remains valid. The general version of the CES production function takes the following form for estimation purposes:

$$\text{Log } Y/L = a + b \log w + c \log V + u \quad (3)$$

Where a and b have the same properties as in equation (2) and V is real value added while c measures the economies of scale and is equal to:

$$c = (1-b)(v-1)/v \quad (4)$$

Knowing the value of this expression and the value of b permits the estimation of v , the degree of returns to scale in each industry. According to equation (4) for any given value of v greater than unity (increasing returns to scale), c is a linearly decreasing function of the elasticity of substitution.

Equation 3 relates labour productivity to real wages and output. In this model the coefficient on log wages measures the elasticity of labour displacement by capital due to increase in real wages. Similarly, holding wages constant, any increase in output will increase productivity through returns to scale. Increasing returns to scale at a point of time may reflect the scale and size of firms.

Methodology, Data and Variables

We estimate the elasticity of substitution between capital and labour for the large-scale manufacturing sector as a whole and then at different group of industries level by using two specifications of the model given below:

$$\log Y/L = a + b \log w + u \quad (\text{equation 2}) \quad \text{Model 1}$$

$$\log Y/L = a + b \log w + c \log V + u \quad (\text{equation 3}) \quad \text{Model 2}$$

We have fitted the above-mentioned two different specifications of the CES function (equation 2 and 3) to the data on 144 five-digit industries according to the Pakistan Industrial Standard Classification (PISC) and estimated the elasticity of substitution. Later, we have grouped industries into three broad categories according to the end use viz: consumer goods, intermediate goods and capital goods industries and estimated the elasticity of substitution among them.

The cross-section data has been used for the period 1995-96. In the perspective of numerous problems in time-series estimates (see Bhalla, 1975; Wynn and Holden, 1974) we have confined our analysis to the cross-section estimates.

The main source of data is the Census of Manufacturing Industries (CMI), which is the comprehensive and systematic record for the manufacturing sector. Data in Pakistan like other developing countries suffer from many shortcomings, which require caution in deriving any conclusion based on these results. The following are the definitions of the variables used in the study:-

Value-Added: Value-added is at constant factor cost of 1975-76. It is deflated by the wholesale price index. A true value-added deflator could not be used because of the non-availability of detailed information on intermediate inputs and their prices.

Employment: Employment is measured as the total number of production and non-production workers engaged in each industry. Since the CMI does not provide any information on man-hours, the age/sex composition of the labour force and skills, no adjustments are possible in the employment variable for these factors. Failure to adjust for these factors may bias our estimates of the elasticity of substitution downwards because a high ratio of skilled labour in some industries will be associated with high productivity. Nevertheless, it is generally recognised that a large proportion of the labour force in developing countries is unskilled and Pakistan is no exception to this.

Wage Rate: This is the average wage obtained by dividing total wages (including cash and non cash benefits) by the number of workers. To ensure that real wages reflect employer's cost, these are deflated by the wholesale price index.

Productivity: This is simply the ratio of total value added to total number of workers.

Hypothesis

We test a number of hypotheses in our estimates. Our null hypothesis is that the elasticity of substitution is equal to zero against the alternative hypothesis that the elasticity is different from zero and substitution possibilities between capital and labour with respect to relative factor prices exist in the large-scale manufacturing sector of Pakistan. It is hypothesised that different groups of industries have specific technological features and reflect different magnitudes of elasticity.

As a rule of thumb in the interpretation of results, we assume in this study that if the magnitude of the elasticity of substitution is equal to or greater than 0.5 and statistically significant, a substantial effect of factor prices on labour productivity and employment will take place, but if it is less than 0.5, it would indicate the fixed factor proportion and rigid technology.

Results

We began by running OLS regression using model 1 (equation 2) and model 2 (equation 3) and then checking for the presence of heteroscedasticity in our models by applying different tests. The Glejser test

(see Johnston,1987), where the absolute values of the residuals are regressed on the independent variable to which the variance of the disturbance term is thought to be related confirms the presence of heteroscedasticity in the second model for all industries at the 5 per cent level of significance.

The form, which has been used to correct for heteroscedasticity in the first model is the “dependent variable heteroscedasticity” and has been applied to cross-section studies of household expenditure by Prais and Houthakkar (1955) and Theil (1971). After correcting for heteroscedasticity in the second model (equation 3) the final result rejects its presence at the 5 per cent level.

Our first model (equation 2) gives highly significant results (Table 1). For the whole manufacturing sector, the elasticity of substitution with respect to the wage rate is significantly different from zero at the 1 percent level of significance. The sign of the coefficient coincides with our expectations. The elasticity is about unity which indicates a proportional relationship between real wage rate changes and labour productivity changes. The R^2 shows that labour productivity changes are also explained by other unmeasured factors, which cannot be considered in this specification of model.

Table-1: Cross-Section Estimates of the Elasticity of Substitution for Pakistan’s Manufacturing Sector (1995-96)
Model 1: $\log Y/L = a + b \log w + u$

Source	a	b	t-ratio	R^2	No. of Observations
All Industries	1.46	0.96	7.79 *	0.23	144
Consumer Goods	5.79	0.35	2.18 **	0.02	66
Intermediate Goods	-2.54	1.62	724 *	0.60	39
Capital Goods	2.36	0.85	3.51 *	0.24	39

* Significant at the 1% level.

** Significant at the 5% level.

From the structural point of view the elasticity of substitution in consumer goods industries is significant at the 5 per cent level but the overall fit is not good in terms of low R^2 . The low elasticity of substitution implies that technology in consumer goods industries is not flexible and changes in real wages may not have any significant effect on employment through substitution of capital for labour. Consumer goods industries may not be responding to market signals due to the imperfections in product and factor markets. It seems that some other factors may be affecting labour productivity in consumer goods industries than wage increases alone.

Intermediate goods industries however, give highly significant results. The elasticity of substitution is greater than unity (1.62) indicating a very strong effect of real wages on labour productivity. The R^2 shows that 60 per cent of the changes of the dependent variable are explained by the independent variables (Table 1).

The size of the elasticity of substitution (0.85) in capital goods is close to unity. The effect of changes in real wages on labour productivity is significant and again shows substitutability between capital and labour.

The results of the second specification of the model (equation 3) are shown in Table 2. The fit of the model has improved to a large extent which is shown by the rise in R^2 in all cases indicating that the alternative specification of the model has more explanatory power. The results show that both real wage rate changes and output changes affect labour productivity. The magnitude of the elasticity of substitution is low (0.61) in the second model as compared to (0.96) in the first model. As the output variable (V) is included in the second model and a part of the increase in labour productivity is now explained by the changes in output through the scale effect, so the elasticity of substitution parameter has fallen.

Value-added changes have also a significant effect on labour productivity. An increase in value-added of 1 percent, wages being constant will raise labour productivity by 17 percent. The t ratios show that both of these explanatory variables (wages and value added) are significant at the 1 per cent level of significance.

Table-2: Cross-Section Estimates of the elasticity of substitution for Pakistan's Manufacturing Sector (1995-96)
Model 2: $\log Y/L = a + b \log w + c \log V + u$

Source	a	b	t-ratio	c	t-ratio	R^2
All Industries	4.85	0.61	3.15*	0.17	4.56*	0.44
Consumer Goods	7.57	0.26	1.33	0.14	3.82*	0.24
Intermediate Goods	1.79	0.89	3.32*	0.15	2.63**	0.67
Capital Goods	6.30	0.36	1.04	0.25	2.75**	0.37

* 1% level of significance.

** 5% level of significance

Note: number of observations is the same as shown in Table-1.

The R^2 indicates that 44 per cent of the variation of the dependent variable is explained by the independent variables. To test the overall significance of the model the F test has been calculated. The value of $F(3, 144) = 51.58$ is significantly higher than the critical value of $F(3, 144) = 3.91$ at the 99 per cent level of confidence. This leads us to reject decisively the joint hypothesis of no effect from wages and value added on the productivity of labour. On the basis of these results we may tentatively conclude that for the whole manufacturing sector both wages and value-added have a strong effect on employment through changes in labour productivity. However, the coefficient of wages is larger than the coefficient of value added and implies a stronger effect on productivity than does value added.

The estimates of the second model show that the elasticity of substitution in different industries is less than unity (Table 2). The elasticity of substitution is significant in the intermediate goods industries. The insignificant elasticity parameter in consumer and capital goods industries may be reflecting multicollinearity between real wages and value added. The test for multicollinearity however, rejected its presence in the consumer goods industries. We may say that on average the scale effect is dominant in the consumer goods industries and factor prices may not have any effect on labour productivity via substitution of capital for labour. In the capital goods industries the correlation coefficient between real wages and value added is 0.72, which may have influenced the effect of real wage rate changes on labour productivity. The output-induced effect on labour productivity is significant in all three categories of industries.

Returns to Scale

As earlier mentioned the coefficient of V is defined as:

$$c = \frac{(1-s)(v-1)}{v}$$

Once the value of s and c are known through the estimation of model 2, one can easily derive the returns to scale (v) parameter.

Table-3: Returns to Scale in Different Groups of Industries

Industries	V
All Industries	1.52
Consumer Goods	1.26
Intermediate Goods	3.20
Capital Goods	1.42

Our estimates of returns to scale show that the manufacturing sector of Pakistan has increasing returns to scale. All three groups of industries show the presence of increasing returns to scale. The industries may have internal and external economies of scale. We think that the increasing returns to scale in the manufacturing sector of Pakistan may not be reflecting the true scale effect. The more plausible reason may be the existence of underutilised capacity. As Guade (1975) pointed out, the existence of idle capacity tends to give results of increasing returns to scale in cross-section estimates. In this context any increase in output is obtained by utilising the existing capacity.

Conclusion and Policy Implications

Our statistical analysis is limited by a number of factors related to the theory and estimation problems of the production function. Certain problems related to data also place a limitation on the analysis. Hence the results necessitate qualification.

Our statistical results show that two factors, the wage rate and value added play an important role in determining techniques of production. Employment potential exists in the manufacturing sector. Different groups of industries, particularly intermediate and capital goods industries, show a great potential in increasing output and employment through changing factor prices. The magnitude of the elasticity is less than unity in all industry estimates but inter-industry variations do exist. The elasticity magnitude is very high in intermediate and capital goods industries which shows high flexibility in these categories of industries with respect to relative factor prices.

These statistical results help in giving a crude idea about the features of the ruling technology and employment potential in the manufacturing sector of Pakistan. From our final results (Model 2) we may reject the null hypothesis that factor prices do not play an important role in determining the choice of techniques. In the light of our analyses we may suggest that if the government of Pakistan continues to distort the capital price by providing a host of incentives to investors, it will further hamper employment opportunities in the manufacturing sector. Similarly, by maintaining a check on the rise in real wages one could expect a higher level of employment in the manufacturing sector of Pakistan. Intermediate and capital goods industries are more prone to such policy measures. The presence of increasing returns to scale in all industrial groups may reflect the existence of idle stock of capital. If it is the case then utilising the idle stock of capital in the industrial sector will not only increase output but also employment in the sector.

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A Study on Saving Functions for Pakistan: The Use and Limitations of Econometric Methods

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The econometric estimates of saving functions for Pakistan covering the period 1960-88 are presented and examined in this study. The choice of this period for analytical purposes was necessitated by the availability of consistent time series data on numerous microeconomic and macroeconomic variables required for estimating a wide range of econometric models of saving behaviour. The study is divided into nine sections. The introduction and the basic issues for estimating saving functions are outlined in Section 1. Section 2 delineates Sectoral Accounting Framework for defining the inter-relationship between the main components of savings, investment and national income. Section 3 outlines the econometric methods, the nature of variables used and the basic saving functions for Pakistan. Section 4 deals with the important hypotheses about private sector saving behaviour and estimates of the related saving functions. The basic rationale and estimation of public saving functions have been taken up in Section 5, while the results of foreign savings functions are presented in Section 6. The model specification and estimation of domestic saving functions and national saving functions are covered in Section 7 and Section 8 respectively. The conclusions and limitations of the study are briefly discussed in Section 9.

Section 1: Saving Functions: The Basic Issues

The phenomenon of low rate of savings in Pakistan against the background of persistently rising rates in many developing (especially Asian) countries such as India, Indonesia, Malaysia, etc. has been a challenge demanding a serious inquiry. The issue of low savings is much more complex than is generally perceived because it is an outcome of interaction of a large number of causal factors; economic, demographic, political, social, cultural and religious. Whereas some of these factors may be quantifiable, many are not, which renders the analysis of saving behaviour a difficult, if not altogether an insurmountable task.

Under many circumstances, the role of socio-political and cultural factors which are basically qualitative in nature can outweigh and counterbalance the role played by the quantifiable factors of economic and demographic origin. The econometric model-building techniques do not appear to be adequately developed to fully account for the non-measurable

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determinants of saving behaviour, as they interact with the observable and quantifiable factors. Moreover, the data problems for a developing country like Pakistan are perennial even in case of economic and demographic variables which are generally considered measurable.

In the absence of independent estimates of savings, a residual approach is employed to derive them. Under this approach, the total output is split between consumption and investment according to end use and then the investment-saving identity is used to derive the estimates of savings inclusive of foreign savings. The private savings is then derived as a residual after deducting the sum of foreign and public savings from national savings. The manner in which public saving is estimated is of crucial importance.

The measurement of macroeconomic macro variables like national income and investment is beset with numerous theoretical and empirical problems which cause income and as a consequence the aggregate savings to be underestimated despite the recent improvements in compilation and estimation techniques of national income accounts. The ubiquitous existence of the “underground economy”, the widespread practice of the “underinvoicing” imports and “overinvoicing” exports and the prevalence of tax-evasion and the associated illegal activities when combined together, lead to substantial under-estimation of measured income and savings. Furthermore, Pakistan like many other developing countries suffers from large scale outflows of private capital which is unreported and thus adds to the measurement problems of private and national savings.

Notwithstanding these theoretical and empirical problems which are relevant to Pakistan and other developing countries, numerous estimates of saving functions for Pakistan are discussed below under the following categories:

- i) Private saving functions
- ii) Government or public saving functions
- iii) Foreign saving functions
- iv) Domestic saving functions
- v) National saving functions

The basic objective in estimating these functions is to identify the most important factors and determinants which influence the saving behaviour in each sector and thus test some of the well-known hypotheses of saving behaviour.

Considering the number of variables used in estimating the saving functions presented in this study, it is not possible to provide any comprehensive review of literature on consumption-saving behaviour, which is the most researched subject both in the developed and developing countries. A reference, however, must be made about some of the important studies which serves as the “surveys” of relevant issues and these include Abe (1977), Abraham (1964), Aghevli (1990), Ahmed (1990), Aslam (1987), Barro (1978), Boskin (1978), Feldstein (1976), Graham (1987), Goldsmith (1966), Giovannini (1985), Gupta (1970, 1987), Hubbard (1984), Kazmi (1991, 1993), Kotlikoff (1989), Qureshi (1980, 1983), United Nations (1981, 1984 and 1986), etc. Other references would be covered in the text of this study.

Section 2: The Sectoral Accounting Framework and Topology of Savings

The sectoral-accounting framework, defines the fundamental relationships of the macro-economy embodied in the national investment and sectoral saving identities. Whereas, an elaborate version of the sectoral accounting framework may be seen in Nam Sang-Woo (1990), a brief outline of the framework is presented in this section.

$$\text{i) } \quad \text{NI} = \text{NS} + \text{FS}$$

This identity shows that gross fixed capital formation (i.e. NI) can be financed by national savings and the gap is filled by foreign savings (FS).

$$\text{ii a) } \quad \text{NS} = \text{HS} + \text{CS} + \text{GS}$$

$$\text{ii b) } \quad \text{NS} = \text{PS} + \text{GS}$$

The identities in (ii) show that national savings can be decomposed into household saving (HS), corporate private saving (CS) and public sector saving (GS), while the sum of the first two components equals the private savings (PS).

$$\text{iii) } \quad \text{DS} = \text{NS} - \text{NFI}$$

$$\text{or } \quad \text{NS} = \text{DS} + \text{NFI}$$

The relationship in (iii) indicates that domestic savings (DS) can be derived as the difference between national savings (NS) and net factor income from abroad (NFI). An important implication of (iii) is that if the level of national savings remains constant, rising NFI would be associated with lower domestic savings. Due to the predominance of the NFI factor, the domestic savings and the national savings show divergent response to

various determinants of saving behaviours and that justifies the estimation of both the domestic saving functions and the national savings functions.

$$\text{iv) } (NFI) = (NFI)_h + (NFI)_c + (NFI)_g$$

According to (iv) the gross factor income from abroad is the sum of sectoral income flows from abroad accruing to household, corporate and government sectors.

$$\text{va) } FS = \{MG - XG + (MNFS - XNFS)\} - (NFI)$$

$$\text{vb) } FS = \{(MG + MNFS) - (XG + XNFS)\} - (NFI)$$

The above identities define foreign savings in terms of trade balance, non-factor services balance and net factor income from abroad. Here MG and XG indicate the imports and exports of goods while MNFS and XNFS indicate the imports and exports of non-factor services respectively.

If we combine (i) to (v), we can redefine domestic savings (DS) as

$$\text{vi) } DS = NI - [(MG - XG) + (MNFS - XNFS)]$$

This identity shows that if we deduct the sum of deficit on trade balance and the deficit on non-factor services from the gross fixed capital formation, we can get the value of domestic savings.

Another important identity defines the relationship between the gross domestic product (GDP) and gross national product (GNP) as:

$$\text{viiia) } GNP = GDP + NFI$$

$$\text{viiib) } GNP = [(GDP)_h + (GDP)_c + (GDP)_g] + [(NFI)_h + (NFI)_c + (NFI)_g]$$

$$\text{viiic) } GNP = [(GDP)_h + (NFI)_h] + [(GDP)_c + (NFI)_c] + [(GDP)_g + (NFI)_g]$$

The most critical aspect of the macro-economic accounting system of any country for which the net factor income from abroad (NFI) is large, would be that even if the domestic savings or GDP of such an economy are relatively low, the large inflows of NFI can make a big difference by raising both the national savings and GNP.

Since private savings (PS) indicate the sum of household savings (HS) and corporate savings (CS), we can analyse the behaviour of these components of savings in the following equations:

$$\text{ix) } HS = [(Yd)_h + (NFI)_h] \cdot s^*h + D_h$$

$$\text{x) } (Yd)_h = Y_h (1-t^*h) + (TR)_h$$

where:

$(Yd)_h$ = ratio of household disposable income to GNP

s^*h = household saving/disposable income ratio which is average propensity to save the disposable income

$(NFI)_h$ = net factor income from abroad accruing to household sector as a ratio to GNP

D_h = depreciation allowance in the household sector

Y_h = ratio of household (before-tax) income to GNP

t^*h = ratio of personal direct taxes to household income

$(TR)_h$ = total net current transfers to households as share of GNP

Now the corporate savings in an economy would depend upon the corporate income after corporate transfer payments, corporate income tax and dividend payments, and the corporate capital depreciation allowance and their relationship can be expressed as

$$\text{xi) } CS = [Y_c + (TR)_c] (1-t^*c) (1-div^*) + D_c$$

Where:

Y_c = corporate income before transfer payments and taxes as share of GNP

t^*c = ratio of corporate income tax to corporate income after transfer payments

div^* = ratio of corporate dividends (to the household sector) to corporate income after transfer payments and taxes

D_c = corporate capital depreciation allowances as share of GNP

TR = transfer made to the corporate sector

If data about the components of private savings (PS) i.e. HS and CS are not available, then the private savings could be specified as following:

$$\text{xii) } PS = (Yd)_p \cdot s^*_p + (NFI)_p \cdot s^*_p + D_p$$

$$\text{xiii) } (Yd)_p = Y_p (1-t^*_p) + (TR)_p$$

where:

$(Yd)_p$ = ratio of private disposable income to GNP

s^*_p = average propensity to save of the private sector

$(NFI)_p$ = net factor income abroad of the private sector as a ratio of GNP

D_p = depreciation allowance of the private sector

t^*_p = ratio of taxes to private sector income

$(TR)_p$ = total net current transfers (i.e. pensions, subsidies etc.) to private sector as share of GNP

The last component of national savings (NS) is public savings (GS) which is the sum of surplus in the revenue budget plus the surplus of the public sector enterprises. However, we include net factor income from abroad of the public sector i.e. $(NFI)_g$ into government savings, so that we finally get.

$$\text{xiv) } GS = R_g (1-c^*_g) + (NFI)_g + D_g$$

$$\text{xv) } R_g = Y_h \cdot t^*_h + t^*_c [Y_c - (TR)_c] + T_i Y_g + (NFI)_g + (TR)_g$$

Where:

R_g = government current revenues as share of GNP

c^*_g = ratio of government consumption to current revenues

(TR)_g = transfers from the household and the corporate sector to the government sector

D_g = Capital depreciation allowance of the government sector as ratio of GNP

T_i = Ratio of indirect taxes to GNP

Y_g = Government income from property and enterprises as share of GNP

An understanding of these identifies within the sectoral-accounting framework is a *sine qua non* for developing and estimating the econometric models of saving functions (private, public, foreign, domestic and national) which is the subject matter of this study.

Section 3: Econometric Methods and Basic Saving Functions

The saving functions presented in this paper have been estimated by applying OLS (Ordinary Least Squares) because OLS gave unbiased, consistent and efficient estimates. The application of 2SLS (Two Stage Least Squares) to some of the saving functions gave results which were quite close to the OLS results as such and have been reported only in selected cases. For most of the regression equations on private, public, domestic, foreign and national saving, which have been presented in this study, the fit is good in terms of basic econometric criteria namely the value of R², the D.W. statistics and F-statistics.

The variables included in the functions have been expressed either in real per capita terms (i.e. at the constant prices of 1959-60) or in ratio terms (i.e. the nominal value of variables divided by nominal value of GNP (market prices)). Whereas both these forms are commonly used in econometric research, the ratio form is sometimes given preference because this dilutes somewhat the effect of multicollinearity, autocorrelation and heteroskedasticity which generally plague the estimation of saving and consumption functions.

The range of macro and microeconomic factors affecting consumption-saving behaviour is wide and diverse. This may be seen from Table-1, which provides a profile of important factors: income and wealth-related, demographic, fiscal, monetary, external and others which are microeconomic in nature. These factors can affect savings and consumption either directly or indirectly but what makes the problem of estimation complex is that these factors affect each other and above all most of them

affect the level of income which is one of the primary determinants of savings in an economy. The Appendix to Table-1 lists the symbols of various variables used in regression equations.

The Basic Saving Functions

In Table-2, basic functions for Pakistan are presented which use absolute level of income as the explanatory variable. This table provides information about marginal propensity to save (MPS), income elasticity of saving and trend growth rate in each category of private, public, domestic and national savings. According to these estimates, MPS of private sector for the period 1960-88 is about 0.12, income elasticity of saving is 1.27 and trend growth rate of real per capita is 3.9 per cent. The 2SLS estimates are close to OLS estimates. For the public sector MPS is 0.022 and trend growth rate is 3.1 per cent.

Section 4: Estimation of Private Saving Functions and Hypothesis Testing

The private saving functions for Pakistan estimated for the period 1960-88, with variables expressed either in ratio form or in real per capita terms, are presented in Table-3. The equations which involve variables in real per capita form carry an asterisk (*) to distinguish it from the equations with variables expressed in ratio form i.e. variables as ratio of GNP.

The following are the basic specifications of the private saving functions:

- i) $PS = a_0 + a_1 \log(Y) + a_2 g + a_3 LFPR + a_5 M + a_6 P + a_7 EXAID + a_8 T + a_9 G + a_{10} TOT + e_1$
- ii) $PS = b_0 + b_1 Y + b_2 g + b_3 LFPR + b_4 X + b_5 M + b_6 R1 + b_7 EXAID + b_8 G + b_9 TOT + e_2$
- iii) $PS = c_0 + c_1 Y + c_2 g + c_3 LFPR + c_4 X + c_5 P + c_6 EXAID + c_7 NFI + c_8 CARS + c_9 GS + e_3$

In model (i), the objective is to assess the impact on private savings (PS) of the variables such as income per capita (Y), growth in real income (g), labour force participation rate (LFPR), exports (X), imports (M), inflation rate (P), external aid inflows (EXAID), taxes (T), government expenditure and commodity terms of trade (TOT).

In specification (ii), the variable inflation rate (P) is replaced by real interest rate (R1) with a view of determining the interest rate effects on savings.

The model (iii), incorporates variables like net factor income from abroad (NFI), luxury consumption proxied by the number of cars registered in a year (CARS) and the government savings (GS). The last variable of government saving is included to measure the extent by which private saving is substituted by public savings.

The other models which have been estimated represent different combinations of basic explanatory variables and help in determining the robustness of key regression co-efficients.

Testable Hypotheses on Saving Behaviour

Since private savings constitute the most important component of the stock of national saving, it has been the focus of theoretical and empirical research both in developing and developed countries. Within the economic domain, a large number of demographic and economic factors determine the level of private saving as outlined in Table 1, and a fairly wide range of hypotheses have been developed which are associated with these factors. Data constraints and limitations of econometric modeling do not permit inclusion of all these variables in the functional form, nor testing of the multifarious hypotheses which are being rapidly added to economic theory of saving behaviour. The fundamental logic and linkages underlying these hypotheses have been discussed in detail in the extensive and growing literature on consumption and savings and has been summarily presented in Kazmi (1991). The objective of the present study is to concentrate on the following important hypotheses of private saving behaviour:

- i) The absolute level of income is the most important determinant of private saving. (The Keynesian Hypothesis)
- ii) The growth rate of real income (GNP) is positively related with the private saving. (The Modigliani-Duesenberry-Friedman-Houthakker Hypothesis)
- iii) Just as a rise in the dependency ratio adversely affects the savings ratio of a country, the increase in the labour force participation rate (LFPR) is expected to have a positive effect.
- iv) Whereas exports raise the level of savings in a country, imports generally have the opposite effect.
- v) The inflow of external capital would have a substitutive, complementary or neutral effect on the saving behaviour of a country depending upon its stage of economic development as well as the quantum and the terms of external capital inflows.

- vi) A deterioration in the barter terms of trade would lead to lower private savings: the Laursen – Metzler – Harberberger effect.
- vii) Inflationary tendencies are negatively correlated with savings in a developing country.
- viii) Government spending generally raises private savings while taxes have the opposite effect.
- ix) Savings are interest elastic.
- x) The consumption of luxury goods, generally proxied by the number of cars registered in a country, is expected to depress the level of savings in a country.

Results and Interpretation of Private Saving Functions

The private saving functions for Pakistan estimated for the period 1960-88 as given in Table 3 help in testing some of the fundamental hypotheses of saving behaviour of the private sector in Pakistan. Since the rationale for the model specification and the choice of variables for testing the associated hypotheses has been outlined above, the discussion and the interpretation of the estimated regressions that follow would be succinct and suggestive rather than elaborate.

The estimated co-efficients of income variables (i.e. per capita income, or the growth rate of income) confirm the relevance of both the Absolute Income Hypothesis associated with Keynes as well as the MDFH (Modigliani-Duesenberry-Friedman-Houthakker) theory of consumption-savings which integrates the lifecycle hypothesis of Modigliani, relative income hypothesis of Duesenberry, permanent income hypothesis of Friedman and dynamic saving hypothesis of Houthakker (1965). The MDFH theory yields the rate of growth of income as the common explanatory variable as shown by Swamy (1968). The co-efficients of income variable are positive and significant at 5 per cent level in equations 3.1, 3.4, 3.5, 3.6 and 3.7. However in equations 3.2 and 3.3 which employ variables in ratio form, the co-efficient of income variables are positive but their level of significance is drastically reduced. This partly reflects the collinearity of the two variables and partly the sensitivity of results to model specifications.

Among the demographic factors, the labour force participation (LFPR) is positively correlated with private savings in Pakistan. The co-efficient of LFPR is positive and large and significant at 10 per cent level in

equation 3.1, 3.2, 3.3 and 3.6 but significant at 5 per cent level in other equations of Table-3.

The rising share of exports in the gross national income is associated with higher savings, private as well as the aggregate. The main reason for a positive link between exports and savings is that exports are generally undertaken by a select group of exporters in a country, which is assumed to have higher MPS (marginal propensity to save) as compared to MPS of the non-exporting non-capitalistic class. This is in line with the logic of Lewis model according to which capitalists belong to the saver class and wage-earners to the consumer class. Further Papanek (1973) has argued that exports produce highly concentrated incomes which bring about higher savings. These conclusions are confirmed by the estimated co-efficient of export variable which is consistently positive and significant in all the equations of Table-4.

Juxtaposed to exports, rising imports lower the level of private savings. The flow of imports leads to higher income for the residents of foreign countries but lower income and lower savings to the home country residents. Furthermore, in the national income identity $S - I = X - M$, given the level of investment (I) and exports (X), higher imports (M) are directly related with lower savings (S). The inverse relationship between imports and savings is also accounted for by the degree of openness of the economy. On *a priori* basis, an open economy with higher imports/GNP ratio, may be more amenable to external sector fluctuations and shocks. The large open economy of Pakistan has been subjected to numerous external shocks such as oil price hike, steep decline in terms of trade and exchange rate variations, which have adversely affected the flows of savings in the country. The essence of the argument is that in a more open economy, the impact of external developments on domestic savings and investments is magnified as compared to that of a closed economy.

The negative co-efficients of M in numerous equations of Table-3 which are significant either at 5 per cent level or 10 per cent establish the inverse relationship between the level of imports and the savings for a developing country like Pakistan.

The inflation rate (P) as an explanatory variable has been included in equation 3.5 to 3.7 and has come up with negative and significant co-efficients thus confirming the hypothesis that private savings are adversely affected by inflation rate.

The controversy over the impact of external capital inflows on savings remains unsettled. The impact of external capital can vary over time and among countries, depending upon the quantum and terms of capital

flows and the level of development of the recipient countries. The impact of external capital inflows on savings could be substitutive reflected in the negative co-efficient, complementary, showing positive co-efficient or additive implying the parameter will not be significantly different from zero. The composition of external resources, the mode of their utilisation, their distribution between grants and loans, tied or untied, project or non-project etc. – all these elements determine the effectiveness of capital flows in domestic savings.

During, the period 1960-88, Pakistan has been a major recipient of external resources – mostly public loans and grants contracted to finance its development expenditure on an annual basis. The impact of these resources on private savings and subsequently the national savings was modeled by including EXAID i.e. the actual disbursements of foreign assistance (and loans) as an exogenous variable in the saving function. In others, the current account deficit (CAD) was chosen to represent external capital inflows. In specifications which include EXAID as the right hand variable, the co-efficient turned out to be positive and significant at 5 per cent level as in equation 3.1, 3.5, 3.6, 3.7 and in case when CAD was deployed, the co-efficient was positive, was relatively smaller in magnitude and insignificant as in equation 3.2 and 3.3. The over-all evidence, however, supports the view that external capital has been complementary to the domestic saving efforts in Pakistan and has helped in removing the foreign exchange constraint which could have been binding in the absence of external resources.

The above conclusion of the study is in line with the main findings of studies such as Rosenstien-Rodan (1961), Chenery and Strout (1966) and Chenery and Eckstein (1970). However, there are numerous studies that have come up with a negative sign for foreign capital inflows in the regression equations on savings. The important studies in this context are those of Griffin and Enos (1970), Wasow (1979), Mosley (1980), Gupta and Islam (1983), Morisset (1989), Ahmed (1990), Papanek (1973), Park (1987), Khan (1992), Mahmood (1992), Shabbir (1992) Chishti and Hasan (1992), Khan and Rahim (1993), Fry (1991) and Panchamukhi, Mehta and Tadas (1987). Obviously the issue remains controversial and needs more research to settle the controversy. A summary view of the arguments associated with this controversy may be seen in Bilquees (1993).

Interest Elasticity of Private Savings

Real rate of interest is one of the most important monetary factors affecting the stock of saving in an economy. For Pakistan, positive interest elasticity of savings has been estimated by Qureshi (1981) and Khan (1989). However, Niazi (1984) using the time series data for Pakistan, Bangladesh

and India has established negative correlation between interest rate and savings in all of his estimated equations. Based on different specifications of saving function and longer time series data for Pakistan, the results of Table 3 unequivocally support the hypothesis of positive effect of real interest rates on savings. In equation 3.1 to 3.3, the co-efficient of the real rate of interest (RI) is positive and statistically significant.

To provide additional evidence of interest elasticity of consumption for Pakistan, two models of private saving and consumption in logarithmic form have been estimated and the results are reported in Table 4 (private consumption) and Table 5 (private savings).

The basic model which is fairly close to the one developed by Boskin (1978) to measure interest elasticity of saving in the U.S. is specified as following:

$$\ln C_p = c_0 + c_1 \ln Y_{d-1} + c_2 \ln W_{-1} + c_3 \ln u + R + e$$

Where:

C_p = Real per capita consumption

Y_d = Disposable income lagged by one year

W = Wealth per capita lagged by one year

U = Rate of unemployment

R = Real interest rate

This model was estimated using different definitions of real interest rates and as the results of Table 4 clearly show, private consumption in Pakistan is negatively related with real interest rates. The same model when estimated with $\ln S_p$ i.e. (log of private savings) verified the positive interest elasticity of savings as is clear from the results given in Table-5.

To examine the effect of fiscal policies on private saving, variables such as, taxes (T), government spending (G) and government saving (GS) were included in different specifications of the saving function. It may be observed that in all equations the co-efficient of taxes (T) is negative but insignificant, G (government spending) has a positive and significant co-efficient, while GS (government saving) consistently has negative and significant co-efficient. The last result is extremely relevant for testing the validity of debt neutrality hypothesis for a developing country like Pakistan.

Other factors which are likely to affect saving behaviour in a developing country like Pakistan are: net factor income from abroad (NFI), consumption of luxury goods proxied with the number of cars registered in a year (CARS) and the commodity terms of trade (TOT). The flow of NFI may increase, decrease or leave unchanged the level of private saving in a country depending upon the recipients' marginal propensity to consume the income from abroad. The estimated co-efficients of NFI in the private saving function for Pakistan are either positive or negative but none is significant at 5 per cent level. Therefore no definite conclusion can be drawn about the link between inflows of remittances and the private saving behaviour. It is interesting to note, however, that in the domestic saving functions which have been estimated for Pakistan and reported in Table 8, the co-efficient of NFI is consistently negative and significant, implying a clear inverse correlation between foreign remittances and domestic savings. This apparently paradoxical result can be explained when we focus on the identities of national savings and domestic savings within the sectoral accounting framework discussed earlier and the residual approach adopted in Pakistan to measure sectoral savings.

The effect of consumption of luxury goods which was proxied by the number of cars (CARS) registered on an annual basis was estimated by including CARS as one of the regressors in numerous specifications of private saving functions. Mostly the co-efficient of CARS turned out to be insignificant either with a positive or a negative sign. Only in one equation i.e. 3.8 it turned out to be negative and significant at 10 per cent level. This equation has a relatively low R^2 , and the value of the F-statistic is quite small. The results of equation 3.8 are not very robust, and it is difficult to verify that in case of Pakistan, the consumption of luxury goods has been a factor of reduced private savings.

Finally we analyse the effect of barter terms of trade (TOT) on private savings in Pakistan. The co-efficient of TOT is negative in most of the regressions, but it is not significant in any of the equations. One of the conclusions of the well-known Laursen-Metzler-Harberger Hypothesis is that savings are reduced on account of deterioration in barter terms of trade. The other is that this deterioration also leads to higher current account deficits in the balance of payments. The first conclusion of the Laursen-Metzler-Harberger Hypothesis is not verified from the Pakistan experience. However the second conclusion finds adequate support as will be discussed in the section dealing with foreign savings in Pakistan.

Section 5: Estimation of Public Saving Functions

The share of public savings in total (national) savings of Pakistan has been quite low, only 13 per cent for the period 1960-65 and 1976-80, -1.0 per cent during 1971-75 and around 10 per cent for the period 1986-88. The ratio of public savings to GNP has not only been low, it has shown significant fluctuations during the last three decades. Due to lower public sector savings but rising public sector investment, the public sector has continuously suffered a negative resource balance which as a ratio of GNP rose from 7.4 per cent during 1960-65 to 9.9 per cent during 1976-80 but declined to 8 per cent for the period 1986-88.

The need to empirically analyse the public sector saving behaviour cannot be over-emphasized. However, very limited work has been done to study government saving both in developing and developed countries, because the focus of theoretical and empirical work has mostly been private saving behaviour which is often considered as the primary determinant of aggregate (national) saving behaviour in a country. In case of Pakistan, the subject of government saving by and large has remained neglected. Therefore, estimation of public saving functions for Pakistan to identify the main determinants of government saving behaviour deserves a prominent place in the research agenda of those concerned with the abysmally low saving rate of the country.

Developing and innovating in the earlier models of government saving by Singh (1975), Jayasundera (1986) and Levy (1984), the following basic regression model was employed for estimating the public sector saving functions for Pakistan:

$$S_g = a_0 + a_1 g + a_2 X + a_3 M + a_4 P + a_5 EXAID + a_6 T + a_7 Sp + a_8 (TOT) + U$$

According to this formulation of the government saving function, growth rate of real income (g), exports (X), imports (M), external resources inflows ($EXAID$) and taxes (T) are expected on *a priori* basis to exert positive effect on the public sector saving while inflation rate (P), private sector saving (SP) and deterioration in terms of trade (TOT) would have the opposite effect. This hypothesisation is, however, quite tentative. There are wide variations in the spending, taxing and saving propensities of the government all over the world. The theory of public sector saving behaviour remains underdeveloped and there is a universal paucity of precise hypotheses which could be tested empirically.

The co-efficient of income growth is positive in all equations but it is significant at the 10 per cent level in equation 6.4 and at 5 per cent level in equation 6.6, while the level of significance in other equations is much lower. Income growth thus appears to positively affect the saving ratio of the public sector in case of Pakistan, but this correlation is sensitive to the specification of public saving function.

Given the above caveats, the basic model of public savings given above along with some of its variants have been estimated and the results are given in Table 6. It may be seen that the co-efficient of export variable (X) is negative in equation 6.1 but positive in equation 6.3 and 6.6. However, since all co-efficients are insignificant, exports in Pakistan appear to exert no influence on the public saving rate. This conclusion has validity when it is realised that the private sector predominates export trade, with the result that the effect of exports on private sector saving in Pakistan is consistently positive, as shown earlier.

That imports (M) are positively correlated with public sector saving is verified from the co-efficient of M which is positive and significant at the 5 per cent level in all equations except equation 6.4. The positive linkage between imports and public sector saving stems from the heavy dependence of the government to raise its revenues from indirect taxes. The share of indirect taxes in total tax revenue in Pakistan has gone up from 54.0 per cent in 1959-60 to 86.7 per cent in 1987-88 while the share of trade taxes (about 90-95 per cent of which are import duties) in total tax revenues has risen from about 50 per cent in 1959-60 to some 41 per cent in 1987-88. Some of the authorities on public finance have contended that as economic development and industrialisation proceed, income rises, the number of households entering the taxable brackets increases and the range of tax bases widens with the result that fiscal dependence of the public authorities on direct taxes increases while dependence on trade tax declines. Numerous studies using cross-country data have empirically tested and found support for the inverse relationship between fiscal dependence on indirect (trade) taxes and economic development. The most important studies which have thoroughly examined this issue are those of Lewis (1963), Musgrave (1969), Due (1970), Hinrichs (1965) and Greenway (1980, 1984).

Contrary to the findings of these empirical studies, Pakistan's reliance on trade taxes and especially import taxes to generate public revenue continued to increase during the period 1960-88 and the only justification for this dependence is the administrative ease with which trade taxes can be imposed and collected.

The increase in inflationary pressures in an economy reduces the purchasing power of its agents both private and public, which forces them to increase their spending level and lower their saving to command the same level of real goods and services. Inflation is thus a depressant of private and public savings. This is verified from all the equations of Table-6, which have negative and significant co-efficients of inflation rate (P). The value of the estimated parameters is in a narrow range indicating that a 10 percentage points increase in inflation would decrease the public saving rate between 1.1 to 1.5 percentage points.

The response of public sector saving to external capital inflows varies over time and across countries. Utility maximisation in the public sector in each country allows room for an enormous variety of behaviour in the utilisation of aid funds which are allocated according to the preferences which public-sector decision-makers demonstrate between tax reduction, expansion of 'productive' expenditures, expansion of current non-development expenditure and other competing objectives of government policy. Therefore, examples can be found for countries where the public sector has relaxed its saving effort as the external assistance from abroad has picked up. One such case is that of Egypt for which Levy (1984) has found that for the period 1960-78, an increase of 10 per cent in external assistance led to reduced public sector savings by 1.6 per cent. In a similar vein, Mosley, Hudson and Horrell (1987) derive some interesting conclusions on the effectiveness of foreign aid as they analyse empirically the issue of "fungibility" of aid money for the large number of aid-receiving developing countries over various sample periods of 1960-83. One of their findings refers to a group of six countries namely Senegal, Sri Lanka, Zaire, Upper Volta, Burundi, and Togo, which show consistently declining tax efforts and thus lower public sector saving primarily attributable to inflow of external aid.

In the case of Pakistan, the positive but significant co-efficients of EXAID in equations 6.2, 6.3, 6.4 and 6.6 and negative but insignificant co-efficients in 6.1, clearly indicate the absence of any depressing role of external capital on public sector saving of Pakistan for the period 1960-88. The effect of external aid on the private sector of Pakistan has been positive as was observed in the discussion on private saving functions. The effect of aid on national saving could be expected to be positive- an issue which would be examined subsequently.

Taxes (T) both direct and indirect are the main source of revenues and saving of the public sector in any economy. The co-efficients of tax variable in three of the equations i.e. 6.1, 6.5 and 6.6 are positive and significant at 5 per cent level. The range of estimated parameter i.e. 0.440

to 0.567 indicates that on the average, an increase of 10 per cent points in the tax/GNP ratio would raise the savings ratio by about 5 per cent points.

The issue of substitutability between private and public sector saving is a source of an important contemporary controversy relating to potency of fiscal policies. This justifies the inclusion of private saving ratio (PS) in various formulations of the public sector saving functions. The negative and consistently significant co-efficient of this variable indicates that private sector saving substitutes the public sector saving in a substantial way. However, it is important to observe that in the interaction of the two sectors, the private sector in response to higher public sector saving lowers its saving in a much larger proportion as compared to the reduction of public sector saving in response to higher private sector saving.

Even though the public sector in case of Pakistan has relatively a smaller share in the trading sector of the country, deterioration of TOT is expected to lower the public sector saving. In equations 6.4 and 6.6, the co-efficients of terms of trade (TOT) are negative and significant at 10 per cent and 5 per cent level respectively. The depressing effect of (deteriorating) terms of trade on public saving is not confirmed in equation 6.5 for which the co-efficient is very small, positive and insignificant. Therefore, any generalisation about the effect of barter terms of trade on public saving would depend upon the model specification for analysing the saving behaviour of the public sector.

Section 6: Estimation of Foreign Savings

There are different approaches for analysing foreign savings (current account deficit), however, the econometric studies on foreign savings are rather limited, especially in the case of developing countries. The two classical contributions on current account analysis are by Sachs (1981, 1983) which focus on the determination of the 'structural' factors leading to balance of payments disequilibria of various OECD countries especially during the seventies. Through simple regression models and correlation analysis Sachs studies the relationship between current account balance and its various determinants such as income per capita, aggregate investment expenditures, change in exchange rates and oil imports in the OECD countries. After modifying Sachs' formulation of current account balance by including other relevant variables specific to Pakistan, the following models of current account deficit have been estimated for Pakistan for the period 1960-88:

- i) $CAD/GNP = a_0 + a_1 YN + a_2 g + a_3 (INV/GNP) + a_4 (MOIL/GNP) + a_5 (TOT) + a_6 (DEF/GNP) + e_1$
- ii) $CAD/GNO = b_0 + a_1 g + a_3 (MOIL/GNP) + a_4 P + a_5 (NFI/GNP) + a_6 E + a_7 (DEF/GNP) + e_2$

Where CAD is current account deficit, YN is nominal per capita income, g is growth rate of real GNP, MOIL is import of oil in nominal rupees, P is the inflation rate, TOT is barter terms of trade, E is the nominal exchange rate, NFI is net factor income from abroad and DEF is the total budget deficit over a year, e1 and e2 are regression error terms. The regression results in Table-7 represent different versions of the basic models specified above.

The two income variables i.e. YN (nominal per capita income) and g (growth rate of real GNP) were included in the regression model to determine the validity of “stages of balance of payments” theory according to which as the per capita income grows, the current account deficit declines. The co-efficient of YN is negative but insignificant in two equations 7.1 and 7.6, while the co-efficient of g is negative in equations 7.1 to 7.4 but positive in equation 7.6. None of these co-efficients is significant at the traditional 5 per cent level. However, in equation 7.3, the co-efficient of Y is significant at 10 per cent level. These results show that the relationship between current account deficit and the income level or income growth is rather tenuous in the case of Pakistan and does not inspire much confidence in the theory of “stages of balance of payments”. This finding supports the conclusion reached by Halevi (1971), Bazdarich (1978) and Sachs (1983).

The significant, positive and large co-efficient of INV/GNP indicates that investment expenditure happens to be the most important single factor causing current account deficits in Pakistan. The predominant weight of investment expenditures in determining the size of current account deficits in Pakistan can be judged from the fact that on the average, a 10 per cent increase in investment spending brings about 5 per cent increase in the current account deficit of the country. This result is again consistent with Sachs’ empirical deduction about the current account behaviour of the OECD and other developed countries. The co-efficient of energy imports i.e. MOIL/GNP assumes both negative and positive signs but remains insignificant even at 10 per cent level implying therefore, that current account balance of Pakistan has by and large remained immune from the oil price shocks. This appears contrary to expectations, but surprisingly the current account balance of major oil importers have shown sufficient resilience against energy price hike as is

econometrically established by Sachs (1983) in numerous current account regressions estimated for OECD countries.

One of the implications of Laursen-Metzler-Harberger Hypothesis is that terms of trade and current account balance are inversely related. This implication is confirmed by the negative and insignificant co-efficient of TOT which is an index of barter terms of trade of Pakistan.

The sensitivity of Pakistan's current account balance to foreign remittances the major component of NFI is evident from the significant and negative co-efficient of NFI/GNP which shows that on an average basis 10 per cent point increase in the remittances of GNP ratio decreases the current account deficit ratio by about 5 per cent points. In fact the declining ratio of CAD/GNP is largely attributable to the rising NFI/GNP ratio especially during the Fifth Five Year Plan (1978-83) and the early years of the Sixth Plan (1983-88).

The repercussions of inflationary tendencies the on domestic economy and the external sector are generally unfavourable. The adverse effects of inflation on the private and public sector saving of Pakistan have been statistically measured and examined earlier. In case of a small open economy, the effects of inflation on its external sector can be drastic in the sense that even a small increase in domestic price could result in higher prices of exportables causing a substantive loss in international competitiveness. So there is at least one direct channel through which inflation can raise the current account deficit i.e. through reduction in exports. In the estimated foreign saving function for Pakistan, we find that the co-efficient of inflation rate (P) is positive and significant in all the equations. A 10 per cent point increase in the inflation rate is associated with an increase in the current account deficit in the range of 1.1 per cent to 1.7 per cent points. Considering the large value of 't' statistics for the co-efficients of P which varies from a low of 2.201 in equation 7.1 to high of 4.794 in equation 7.3, the beta-co-efficient of this variable in each regression equation is expected to be comparatively higher and thus variable (P) explains a major part of variations in the current account deficit in Pakistan. The discovery of a strong positive correlation between inflation and current account suggests the paramount need of price stabilisation to avoid external imbalances of unmanageable proportions.

The exchange rate is considered to be one of the fundamental determinants of current account balance. A depreciating exchange rate is associated with lower deficits in the current account which results from cheaper exports raising their demand and costlier imports lowering their

demand. The reverse is true for the appreciating exchange rate. This hypothesised relationship is empirically verified from the experience of Pakistan's declining (depreciating) exchange especially during the last seven to eight years and the falling ratio of current account deficits to GNP. The co-efficient of exchange rate (E) is negative and significant at the 5 per cent level in equations 7.2, 7.3, 7.4 and 7.6 but significant at 10 per cent level in equation 7.5. These results unequivocally confirm the theoretical framework so frequently advanced in economic literature regarding the exchange rate variations and the current account deficits. However, the counter view that in the long term, devaluation can have adverse implications for the country and the balance of payments is presented in Kazmi (1975).

According to the conventional theory of fiscal policy, deficits of the public sector are transmitted to the external sector of the economy through larger current deficits. The debt neutrality hypothesis emphasises that fiscal policy in general and budgetary deficits in particular have no real effects such that current accounts deficits are not correlated with budget deficits. To test the diametrically opposed stances of the conventional theorists and debt neutrality proponents, the variable DEF/GNP i.e. ratios of budget deficits to GNP has been included in the foreign saving functions estimated for Pakistan. The co-efficient is positive and significant in equations 7.1, 7.4 and 7.6, which clearly supports the conventional view of fiscal policy. The positive but insignificant co-efficients of DEF/GNP in equations 7.2 and 7.3 is due to the inclusion of INV/GNP i.e. investment to GNP ratio, which because of its high correlation with the budget deficits picks up the impact of the budget deficit as well. Taken all these results together, the debt neutrality proposition fails to find any support especially regarding the theoretical nexus between budget deficits and current account deficits. This result supports the findings of Zaidi (1985) in which the pooled cross-section time series data for a sample of 20 developing countries for the period 1972-80 is used and the current account balance (CA/GNP) is regressed on the budget deficit (FB/GNP) and the following equation is estimated:

$$(CA/GNP) = 0.66 (FB / GNP) \\ (5.94)$$

$$R^2 = 0.5, \text{ SEE} = 0.038$$

The regression equation for the developing countries thus clearly supports the proposition that there exists a positive relationship between the budget deficits and the current account deficits. This relationship is further

confirmed by the estimates of the foreign saving function for Pakistan for the period 1960-88.

Section 7: Domestic Saving Functions

Domestic savings represent the stock of savings which residents of a country and its public institutions accumulate without taking into account the net factor incomes flowing from abroad. As an annual average ratio of GNP, domestic savings in Pakistan have continued to decline from a peak of 10.9 per cent during 1966-70 to 6.8 per cent during 1976-80, and 4.1 per cent during 1980-85, but slightly rose upward to a level of 5.7 per cent during 1986-88. Does this imply that the inflow of remittances has been a major factor in depressing the rate of domestic savings in the case of Pakistan? This, *inter alia*, would be the focal point of our enquiry while analysing the domestic saving functions given in Table 8.

Since domestic savings are the sum of private sector and government sector savings, the effect of a given factor or a variable on the domestic savings must reflect the "net effect" that the given variable has separately on private savings and public savings. The brief discussion that follows attempts to verify this line of reasoning described as the "net effect channels" on domestic savings.

The effect of absolute level of income and real income growth is positive and significant. This is consistent with the expectations because the income effect on domestic saving summarises the dual effect of income on private sector which is positive and significant and on public sector saving, which is somewhat positive. Hence the private sector effect dominates, resulting in positive effect in the case of domestic saving. The positive effect of labour participation rate (LFPR) and exports (X) on domestic saving rate represents the net impact of these factors on the two components of the saving: private and public. The effect of imports (M) on domestic rate is negligible in equation 8.1 to 8.3 but negative and insignificant at the 5 per cent level in equation 8.4. It appears that the negative effect of imports on private sector saving is almost counter-balanced by the positive effects on the public sector.

The effect of external capital flows (EXAID) is positive and insignificant at 5 per cent in equation 8.1, positive and significant in equation 8.3, positive but insignificant in equation 8.5. In a nutshell, this reflects the positive effects of external aid on private saving but zero effect on public savings.

Inflation rate (P) as an explanatory variable has been included only in equation 8.5, and has a negative and significant co-efficient which

corroborates *a priori* expectations i.e. the net negative effect both on private sector and public sector savings.

Taxes have had no effect on private savings in Pakistan but have a positive effect on public saving, thus the net effect on domestic savings has been positive.

Similarly the interest elasticity of domestic savings is confirmed in case of equations 8.1 to 8.4, a monotonic reflection of private sector responsiveness to real interest rate variations.

An increase in government expenditures (G) has a positive effect on domestic savings, again an indicator of predominance of positive effect in the private sector over a negative effect in the public sector.

The consumption of cars reduces domestic savings which is reflected in the negative co-efficient of CARS, which is significant at the 10 per cent level.

Finally the substitutive role played by net factor incomes from abroad is reflected in negative and consistently significant co-efficients of NFI. This is a direct proof of the fact that the domestic saving efforts has been greatly relaxed on account of inflow of remittances from abroad. The regression co-efficients indicate that on the average, a 10 per cent point increase in NFI/GNP ratio has resulted in 10 to 12 per cent decline in the domestic saving ratio. Alternately, an explanation of this inverse relationship could be sought by a reference to the sectoral accounting framework discussed earlier. The saving identities clearly show that if national savings remain constant intertemporarily, the higher NFIs would imply lower levels of domestic savings.

Section 8: National Saving Functions

The national saving functions for Pakistan are given in Table 9. A brief discussion on the estimated co-efficients follows. In case of Pakistan, the share of private saving in national saving on the annual average basis has risen from 77 per cent during 1960-65 to 95 per cent during the five year period of 1966-70, almost 100 per cent during 1971-75, 87 per cent for 1976-80, 84 per cent for 1981-85 and 90 per cent for 1986-88. The predominance of private sector savings in national savings is also reflected in the estimation of national saving functions. This generalisation is unambiguously upheld in case of variables like income level ($\log Y$), income growth (g), labour force participation rate (LFPR), and exports (X), real interest rates (R1) and government expenditure (G) all showing positive correlation with the national saving rate. However, imports (M) and inflation

rate (P) show a negative correlation with the national saving rate even though the negative effect of imports is insignificant at 5 per cent level in some of the specifications.

The effect of external resources is positive in equation 9.1 and 9.4, significant at 5 per cent in the former and at 10 per cent in the latter. This is quite in line with the hypothesis that private sector dominates the national saving behaviour. However the hypothesis is not supported in case of equation 9.6 for which EXAID has a negative co-efficient but it is not significant at the 5 per cent level.

The effect of (deteriorating) terms of trade (TOT) and car consumption (CARS) is negative but the effect is not stable as the co-efficients of these variables turn out to be insignificant in most of the cases.

Section 9: Conclusions and Limitations of Study

The preceding analysis of saving functions based on economic data for 1960-88 and multivariate specifications provide some insightful guidance about the most significant factors influencing private, public, foreign and national savings in Pakistan. The choice of a fairly wide spectrum of estimated models has been motivated by the objective of identifying some of the robust and stable parameters in which a reasonable degree of confidence could be placed. The estimation of these parameters in turn has helped in testing some of the fundamental hypotheses of saving behaviour. The following discussion summarises the empirical results.

Private sector saving behaviour in Pakistan indicates positive responsiveness not only to income (absolute level and its growth rate) but also numerous other demographic, fiscal and monetary factors such as labour force participation rate, exports, inflow of external capital, real interest rates and government spending. On the other hand, imports, rate of inflation and government saving consistently show a negative correlation with private saving. The factors such as terms of trade, consumption of luxuries (such as cars), net factor income from abroad and taxes show a negative association with private savings but this association is too weak to command a sufficient degree of confidence.

Public sector savings are positively correlated with growth of real income but this correlation is relatively weak. The positive and consistently significant co-efficient of imports reflects the heavy dependence of the government on import duties to raise its revenues. Inflation rate and private savings are negatively correlated with public savings. The terms of trade also

have a negative correlation but this correlation is sensitive to the choice of other regressors in the model. The effect of exports and external aid inflows on public saving is ambiguous.

Foreign savings or the current account deficits are positively correlated with investment expenditures, inflation rate and budget deficits but negatively correlated with barter terms of trade and exchange rate depreciation. The effect of income growth and oil imports on foreign saving is somewhat indeterminate.

The pattern of domestic savings in Pakistan depicts a positive correlation with income level and labour force participation rate, exports, gross aid disbursements, real interest rates, and government spending, but a negative correlation with inflation rate and net factor income from abroad. The large inflow of income from abroad in the form of remittances has gone entirely to raise private consumption with adverse effects on domestic savings.

Luxury consumption proxied by the number of registered cars shows a weak but negative correlation with domestic saving. However, the correlation between imports and domestic saving remains more or less indeterminate.

Finally, national savings in Pakistan show a positive correlation with income level, growth rate of income, labour force participation rate, exports, external aid inflows, real interest rate, government spending and taxes. Imports and inflation rate are negatively correlated with national savings while the consumption of cars and net factor income from abroad fail to show any determinate and stable relationship with the national saving rates. The co-efficient of terms of trade is negative but is not significant to validate the well-known Laursen-Metzler-Harberger Hypothesis. The positive correlation between taxes and national saving precludes the plausibility of the well-known "Pleasant Effect" in the case of Pakistan.

The above conclusions of the study are based on the analysis of the saving behaviour of Pakistan for the 29 years period of 1960-88 using various specifications of regression models which serve as the principal vehicle of econometric techniques. The study, however, suffers from numerous limitations which generally characterise studies based on econometric methods. It is almost a truism that the results of regression equations are extremely sensitive to some of critical factors such as the choice of variables and the manner in which these variables are defined, the structure and specifications of the estimated models, the quality of data

inputs and the period covered for analysis. With a change in these factors, the estimated regression equations are likely to give different results.

In the case of Pakistan, there are serious conceptual and measurement problems in estimating sectoral savings. In the residual approach of estimating national savings, which is in vogue in Pakistan, the measurement of public sector savings is of fundamental significance. Paradoxically, however, the estimation of public savings in Pakistan is based on outdated methodology and the measurement of public savings with reasonable degree of precision remains a serious constraint. This in turn casts doubts about the reliability of time series data of private savings which is the key variable in studying the saving behaviour of a developing country like Pakistan.

The regression equations which have been estimated and included in this study to depict the private, public and national saving behaviour broadly meet the parametric tests popularly used in applied econometrics. However scope does exist to improve the results such that the perennial econometric problems of multicollinearity and heteroskedasticity are minimised. For the time-series analysis, developing and examining the correlation-matrix, and applying the stationarity and cointegration tests can be instrumental in getting better results

A common inference about econometric methods suggests that the regression co-efficients serve as a general measure of "correlation of variables and do not help in determining "causality". Because of "correlation" factor in the regression equations, some results in the study would appear counterintuitive and paradoxical. Therefore, the mechanics of regression equations need to be supplemented by heuristic reasoning and detailed diagnostics to analyse the interlinkages and cause-effect relationship between economic variables.

Given the limitations which are germane to studies based on econometric methods, the saving functions developed in this study are of critical importance in identifying the main determinants of savings in the private and public sectors and thus serve as a useful tool for policy formulation both for the short-run and the long-run.

Table-1: A Profile of Factors Affecting Saving Behaviour

Income Related:	Monetary:
Absolute Income (Keynes).	Inflation Rate.
Relative Income(Duesenberry).	Real Interest Rate.
Permanent Income (Friedman).	Money Supply.
Rate of Growth of Income	Banking and Monetary
(Modigliani -Duesenbery -	Institutions.
Friedman - Houthakker).	Development of Insurance and
	Credit Markets.
Wealth Related:	External Sector:
Capital Stock.	Exports (especially the share of
Liquid Assets.	primary/manufactured exports in
Public Debt plus Capital Stock	the total exports).
plus Liquid Assets.	Imports
	Exchange Rate
Demographic:	Net Factor Income from Abroad.
Population Growth Rate.	Terms of trade.
Dependency Ratio	External Shocks (e.g. Oil Price
Labour Force Participation	Hike).
Rate.	
Urban vs. Rural Population	General:
Labour Force.	External Economic Assistance.
Industrial vs. Agricultural	Pattern of Luxury Consumption
Population Labour Force.	(proxied by the number of cars
	registered in a year).
Fiscal:	Liquidity Constraints.
Taxes.	Differences in Family Structure.
Government Expenditures	Level of Rainfall.
(Consumption and Investment).	Wage Structure.
Budget Deficits.	Development of Stock Markets.
Mode of Deficit Financing.	Provident Funds and Social
Public Debt.	Security Schemes.
Division of Public	Nationalisation/Denationalisation
Expenditures on Defence,	of Industries and Financial
Health, Education and	Institutions..
Nutrition.	Literacy Rate.

Appendix to Table 1

Symbols for Regression Equations

The following symbols are used for the variables included in the estimated regression:

(*): on a number (or a variable) indicates that the particular equation or the variable is in real per capita terms

Y: Real per capita income

PS: Private Savings

Ln: Natural log

GS: Government savings

GNP: Gross national product

DS: Domestic savings

NS: National savings

g: Growth rate of real GNP

LFPR: Labour force participation rate

X: Exports

M: Imports

EXAID: External capital inflow

TOT: Commodity terms of trade

DDEBT: Domestic debt

P: Rate of inflation (based on Consumer Price Index)

G: Total government expenditure on consumption and investment goods

W: Wealth

- U: Unemployment rate
- Yd: Disposable personal income
- R1: Real interest rate on 6 month to one year deposits
- R2: Real interest rate on one year to 3 year fixed deposits
- R3: Real interest rate on deposits of three years and above
- RE: Expected inflation rate
- PU: Unexpected inflation rate
- T: Taxes (direct plus indirect)
- CAD: Current account deficit in the balance of payments
- CARS: Number of cars registered in a year per thousand of population
- NFI: Net factor income from abroad
- Time: Time trend
- MA: Monetary assets
- DEF: Budget deficit
- OLS: Ordinary Least Squares
- 2SLS: Two Stage Least Squares
- AR1: First Order Autoregression Correction

**Table-2: The Basic Saving Functions for Pakistan:
The Absolute Income Model**

Private Savings							
OLS	PS =	1697.015	+	0.116 GNP	0.969	2.0467	88.946
		(-1.526)		(29.7864)			
OLS	PS =	-18.249	+	0.129 GNP	0.770	1.593	94.550
		(-2.047)		(9.724)			
OLS	LNps =	-4.064	+	1.270 LnGNP	0.724	1.305	81.325
		(-4.4789)		(9.018)			
2OLS (AR1)	PS =	-1758.325	+	0.116 GNP	0.970	2.007	-
		(-1.566)		(7.752)			
2SLS (AR1)	PS =	17.637	+	0.129 GNP	0.669	1.938	-
		(-1.566)		(7.752)			
Government Savings							
OLS	GS =	56.417	+	0.014 GNP	0.547	1.736	34.811
		(0.85)		(5.900)			
OLS	GS =	-6.417	+	0.222 GNP	0.158	1.417	6.242
		(-1.082)		(2.498)			
OLS	LnGS =	1.631	+	0.031 TIME	0.149	-	5.039
		(6.575)		(2.245)			
2SLS (AR1)	GS =	40.528	+	0.014 GNP	0.491	2.007	-
2SLS (AR1)	GS =	-6.468	+	0.022	0.077	2.020	-
		(0.806)		(1.856)			
Domestic Savings							
OLS	DS =	342.032	+	0.061 GNP	0.791	0.583	106.3803
		(0.204)		(10.335)			
OLS	DS =	49.913	-	0.001 GNP	-0.047	0.655	0.003
		(4.642)		(-0.57)			
OLS	LnDS =	3.909	-	0.003 TIME	-0.026	0.772	0.279
		(34.525)		(-0.529)			
National Savings							
OLS	NS =	-16.598	+	0.130 GNP	0.983	1.616	1656.83
		(-1.805)		(40.704)			
OLS	NS =	-28.838	+	0.160 GNP	0.815	1.059	124.007
		(-3.049)		(11.136)			
OLS	LnNS =	-2.965	+	1.065 LnGNP	0.977	0.963	1195.26
		(-8.318)		(34.572)			
OLS	LnNS =	3.620	+	0.040 TIME	0.719	0.880	72.616
		(44.867)		(8.521)			
2SLS	NS =	1718.123	+	0.130 GNP	0.977	1.817	-
		(-1.526)		(34.114)			

**Table-3: Private Saving Functions for Pakistan: 1960-88
(OLS Estimation)**

	(1)*	(2)	(3)	(4)
C	-242.900 (-1.557)	-0.720 (-1.548)	-0.673 (-1.186)	-1.025 (-2.147)
LOG(Y)	0.179(Y) (2.899)	0.052 (1.282)	0.047 (0.913)	0.083 (1.748)
G	- -	0.174 (1.277)	0.185 (1.185)	0.306 (1.919)
LFPR	661.659 (1.551)	1.224 (1.652)	1.242 (1.617)	2.018 (2.959)
X	0.503 (2.516)	0.855 (3.236)	0.876 (2.901)	0.560 (2.275)
M	-0.243 (-1.450)	-0.324 (-1.775)	-0.353 (-1.333)	-0.579 (-2.872)
P	- -	- -	- -	- -
EXAID	0.503 (1.843)	0.280(a) (1.230)	0.282(a) (1.207)	0.481 (2.113)
T	0.335 (-0.912)	- -	- -	- -
R1	105.876 (2.148)	0.217 (2.148)	0.210 (2.338)	- -
G	- -	09.306 (2.410)	0.313 (2.257)	- -
TOT	- -	- -	-0.006 (-0.156)	-0.0006 (-1.066)
\bar{R}^2	0.850	0.491	0.464	0.3278
D.W	1.726	1.755	1.746	1.234
F	23.705	4.370	3.698	2.940
SSR	2018.850	0.004	0.004	0.006

Notes: (*) The starred equation is in real per capita terms.

(a) The co-efficient is for current account deficit.

**Table-3 (Contd.): Private Saving Functions for Pakistan: 1960-88
(OLS Estimations)**

	(5)	(6)*	(7)*	(8)
C	-0.781 (-1.813)	-171.514 (-1.485)	-118.384 (-2.292)	-0.909 (-1.114)
LOG(Y)	0.076 (1.829)	- -	- -	0.109 (1.173)
Y	- -	0.121 (2.687)	0.122 (2.442)	- -
G	- -	- -	119.678 (1.681)	- -
LFPR	1.238 (2.122)	487.425 (1.590)	504.953 (2.184)	0.734 (0.786)
X	0.301 (2.067)	0.3178 (2.258)	0.303 (1.997)	0.850 (3.146)
M	-	-	-	-
P	-0.204 (-4.252)	-130.707 (-4.406)	-119.507 (-4.119)	-0.263 (4.184)
EXAID	0.314 (2.085)	0.305 (1.795)	0.290 (1.787)	-0.263 (-1.184)
GS	-0.896 (-4.157)	-0.849 (-4.168)	-0.829 (-4.85)	- -
NFI	-0.328 (-0.164)	-0.073 (-0.475)	- -	-0.075 (-0.208)
TOT	- -	- -	- -	-0.001 (-0.238)
CARS	- -	- -	1.957 (-0.234)	-0.002 (-1.720)
T	- -	- -	- -	-0.001 (-0.238)
\bar{R}^2	0.64	0.913	0.920	0.496
D.W.	1.660	1.878	1.970	2.105
F	8.388	43.118	41.421	3.42
SSR	0.003	1169.010	1022.900	0.004

Table-4: Interest Elasticity of Private Savings in Pakistan
Dependent Variable:
Log PC (Private Consumption)

	OLS	2SLS(ARI)
	(1)	(2)
C	0.388 (0.576)	0.411 (0.499)
Ln Yd	0.489 (2.875)	0.522 (3.72)
Ln Yd(-1)	0.344 (2.014)	0.331 (2.262)
ln W(-1)	0.103 (0.906)	0.080 (0.575)
Ln U	0.063 (2.703)	0.080 (0.575)
R1	-0.151 (-2.083)	-0.163 (-2.108)
R2	-	-
R3	-	-
\bar{R}^2	0.990	0.995
D.W.	1.300	1.764
F	529.493	-
SSR	0.011	0.001

Table-5: Interest Rate Elasticity of Private Savings in Pakistan: 1960-88
Dep: Var: Log (PS)

	ARI	ARI	ARI	2SLS (ARI)	ARI
	(1)	(2)	(3)	(4)	(5)
C	-2.662 (-5.705)	-2.590 (-5.692)	-6.783 (-1.250)	-6.020 (-1.122)	-6.889 (-1.115)
LnYd	1.031 (25.778)	1.022 (26.119)	2.810 (2.500)	2.819 (2.497)	2.818 (2.407)
LnYD-1	-	-	-1.455 (-1.338)	-1.426 (-1.300)	-1.467 (-1.267)
LnW-1	-	-	0.224 (0.224)	0.086 (0.095)	0.239 (0.235)
LnU	-	-	-0.169 (-0.886)	-0.177 (-0.937)	-0.172 (0.836)
R1	-	-	2.027 (3.754)	1.995 (3.711)	2.046 (23.773)
R2	-	-	-	-	-
R3	-	1.995 (3.701)	-	-	-
PE1	-	-	-	-	0.038 (0.039)
\bar{R}^2	0.595	0.961	0.678	0.679	0.661
D.W.	.1806	1.813	1.799	1.777	1.799
F	300.356	316.865	10.800	-	8.573
SSR	0.614	0.619	0.499	0.501	0.499

1:PE: Expected Inflation Rate.

**Table-6: Public Saving Functions for Pakistan: 1960-88
(OLS Estimation)**

	(1)	(2)	(3)	(4)	(5)	(6)
C	-0.021 (-1.097)	0.032 (2.464)	0.033 (2.475)	0.055 (2.672)	-0.017 (-0.619)	0.020 (0.741)
g	0.073 (0.960)	0.93 (1.067)	0.107 (1.164)	0.138 (1.513)	0.076 (0.997)	0.152 (1.798)
X	-0.020 (-0.199)	-	0.066 (0.573)	-	-	0.024 (0.221)
M	0.188 (3.284)	0.216 (3.596)	0.197 (2.841)	0.133 (1.211)	0.187 (2.416)	-
P	-0.148 (-3.878)	-0.139 (-3.693)	-0.154 (-3.340)	-0.125 (-3.267)	-0.147 (-4.394)	-0.144 (-2.656)
EXAID	-0.029 (-0.303)	0.009 (0.086)	0.034 (0.299)	0.098 (0.819)	-	0.688 (0.575)
T	0.567 (3.284)	-	-	-	0.545 (3.112)	0.440 (2.160)
Sp	-0.491 (-4.613)	-0.446 (-4.062)	-0.483 (-3.750)	-0.482 (-4.376)	-0.514 (-5.567)	-0.501 (-4.142)
TOT	-	-	-	-0.0002 (-1.422)	0.00003 (0.211)	-0.0002 (-2.185)
CAD	-	-	-	-	-0.078 (-0.986)	-
\bar{R}^2	0.585	0.410	0.393	0.435	0.603	0.468
D.W.	2.487	2.060	2.119	2.240	2.418	2.030
F	6.648	4.898	4.017	4.600	7.064	4.080
SSR	0.001	0.002	0.002	0.002	0.002	0.002

Table-7: Foreign Saving Functions for Pakistan: 1960-88
DEP: VAR: Current Account Deficit/GNP
(OLS Estimation)

	(1)	(2)	(3)	(4)	(5)	(6)
C	0.027 (1.413)	-0.021 (0.519)	-0.031 (-1.599)	0.125 (-3.193)	0.017 (0.342)	0.127 (3.406)
YN	-0.00001 (-0.2771)	-	-	-	-0.000001 (-0.267)	-
G	-0.033 (-0.222)	-0.150 (-1.296)	-0.162 (-1.524)	-0.120 (-0.824)	-	0.119 (0.840)
INV/GNP	-	0.588 (4.314)	0.606 (5.128)	-	0.539 (5.053)	-
MOIL/ GNP	-	-0.286 (-0.933)	-0.224 (-1.066)	0.89 (0.170)	0.142 (0.362)	-
TOT	-	-	-	-0.011 (-2.599)	-0.0004 (-1.442)	-0.001 (-2.737)
NFI/GNP	-	-	-	-0.552 (-1.797)	-0.447 (-2.034)	-0.517 (-2.333)
P	0.108 (2.201)	0.175 (4.401)	0.170 (4.794)	0.145 (2.636)	0.151 (3.719)	0.150 (3.438)
E	-	-0.002 (-1.973)	-0.002 (-2.764)	-0.004 (-3.011)	-0.002 (-1.285)	-0.004 (-3.233)
DEF/NGP	0.355 (2.354)	0.072 (0.555)	0.060 (0.501)	0.300 (2.095)	-	0.302 (2.167)
LOG(TOT)	-	-0.0001 (-2.284)	-	-	-	-
\bar{R}^2	0.464	0.741	0.752	0.576	0.765	0.595
D.W.	1.898	1.021	1.045	1.877	1.928	1.859
F	7.052	12.426	15.115	6.435	14.012	7.849
SSR	0.007	0.003	0.003	0.004	0.003	0.005

Table-8: Domestic Saving Functions for Pakistan: 1960-88
(OLS Estimation)

	(1)	(2)	(3)	(4)	(5)
C	-0.898 (-1.96)	-0.780 (-1.835)	-1.020 (-2.357)	-33.5802 (-2.999)	-0.997 (-1.699)
Log(Y)	0.949 (2.127)	0.62 (1.499)	0.091 (2.210)	0.136(Y) (3.113)	0.108 (1.615)
G	- -	- -	- -	131.994 (2.025)	- -
LFPR	1.274 (2.044)	1.315 (2.237)	1.702 (2.746)	924.399 (3.048)	1.107 (1.751)
X	- -	0.249 (1.541)	0.338 (2.034)	0.332 (2.246)	- -
M	0.073 (0.487)	0.27 (0.186)	-0.101 (-0.616)	-0.240 (-1.559)	- -
P	- -	- -	- -	- -	-9,249 (-4.214)
EXAID	0.260 (1.500)	- -	0.341 (2.043)	- -0	0.055(a) (0.352)
T	- -	0.532 (a2.035)	- -	0.439 (1.883)	- -
R1	0.0186 (2.045)	0.210 (3.535)	0.195 (3.238)	81.092 (2.131)	- -
NFI	-1.205 (-5.009)	1.196 (-5.442)	-1.112 (-4.844)	-0.966 (-5.457)	-0.927 (-4.088)
G	- -	- -	- -	- -	0.272 (2.587)
CARS	- -	- -	- -	- -	-0.015 (-1.581)
\bar{R}^2	0.822	0.844	0.845	0.765	0.867
D.W.	1.766	1.433	1.686	1475	2.231
F	22.541	22.633	22.667	22.369	23.903
SSR	0.003	0.030	0.003	984.043	0.002

**Table-9: National Saving Functions for Pakistan: 1960-88
(OLS Estimation)**

	(1)	(2)	(3)	(4)	(5)
C	-0.922 (-2.612)	-0.745 (-2.160)	-341.022 (-3.215)	-365.978 (-3.231)	-319.542 (-2.680)
Log Y	0.080 (2.565)	0.057 (1.905)	-	-	-
Y	-	-	0.139 (3.589)	0.167 (3.722)	0.1390 (2.564)
G	0.205 (2.024)	0.169 (1.675)	132.635 (2.086)	-	153.256 (2.092)
LFPR	1.577 (2.863)	1.294 (2.355)	934.477 (3.203)	1013.749 (3.272)	941.453 (2.763)
X	0.374 (2.489)	0.530 (2.704)	0.323 (2.349)	0.347 (2.389)	0.367 (2.230)
M	-0.180 (-1.44&)	-0.125 (-0.925)	-0.222 (-0.873)	-0.201 (-1.653)	-0.276 (-1.588)
P	-	-	-	-	-72.113 (-1.741)
EXAID	0.374 (2.576)	-	-	0.312 (1.576)	-
CAD	-	0.070 (0.417)	-	-	0.455 (2.030)
T	-	-	0.432 (1.920)	0.164 (0.614)	-
R1	0.166 (3.070)	0.210 (3.690)	83.3267 (2.355)	104.192 (2.911)	-
G	-	0.257 (2.729)	-	-	-
CARS	-	-	-	-	1.947 (-0.251)
\bar{R}^2	0.723	0.734	0.943	0.938	0.941
D.W.	1.696	1.974	1.525	1.773	1.590
F	11.418	10.668	66.826	61.687	50.390
SSR	0.003	0.002	985.846	1064.170	922.673

Notes: *= The starred equations are in the real per capita terms, rather than in ratio form.

**Table-9 (Contd.): National Saving Function for Pakistan: 1960-88
(OLS Estimation)**

	(6)	(7)
C	-0.926 (-1.594)	-306.911 (-2.569)
LOG(Y)	-/02 (1.388)	- -
Y	- -	0.136 (2.490)
LFPR	1.126 (1.694)	832.912 (2.533)
X	0.566 (3.194)	0.302 (1.949)
M	- -	-0.316 (-1.135)
P	-0.244 (-5.545)	-88.102 (-2.251)
EXAID	-0.181 (-0.760)	- -
T	0.293 (1.081)	0.491 (2.197)
G	0.361 (2.002)	- -
CARS	-0.0001 (-1.692)	-1.552* (-0.199)
TOT	-0.0001 (-0.499)	- -
NFI	0.394 (0.152)	- -
\bar{R}^2	0.745	0.940
D.W.	2,241	1,539
F	9.169	55.812
SSR	0.022	983.757

(*) Cars variable here is entered as cars per head (i.e. CARS/POP).

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Forecasting Dual-Gap for Pakistan

Salman Ahmad*

Introduction

Economic growth requires investment goods that may either be provided domestically or be purchased from abroad. Domestic provision requires saving; the foreign provision requires foreign exchange. If some investment goods for growth can only be provided from abroad, there is always a minimum amount of foreign exchange required to sustain the growth process. The distinctive contribution of the dual-gap analysis to development theory is that if foreign exchange is the dominant constraint it points to the dual role of foreign borrowing in supplementing not only deficient domestic saving but also foreign exchange. The Dual-gap theory thus performs the valuable service of emphasising the role of imports and foreign exchange in the development process. It synthesises traditional and more modern views concerning aid, trade and development. On the one hand, it embraces the traditional view of foreign assistance as merely a boost to domestic saving; on the other hand, it takes a more modern view that many goods necessary for growth cannot be produced by the developing countries themselves and must therefore be imported with the aid of foreign assistance. Indeed, if foreign exchange is the dominant constraint, it can be argued that dual-gap analysis also presents a more relevant theory of trade for developing countries which justifies protection and import substitution. If growth is constrained by a lack of foreign exchange, free trade cannot guarantee simultaneous internal and external equilibrium, and the gains from trade may be offset by the underutilisation of domestic resources.

The Theoretical Framework

In the Harrod model of growth, the relation between growth and saving is given by the incremental capital -output ratio (c), i.e. $g = s/c$, where g is the growth rate and s is the saving ratio. Likewise, the growth rate can be expressed as the product of the incremental output-import ratio ($\Delta Y/M = m'$) and the ratio of investment goods imports to income ($M/Y = i$), i.e. $g = im'$.

If there is a lack of substitutability between domestic and foreign resources, growth will be constrained by whichever factor is the most limiting— domestic savings or foreign exchange. Suppose, for example, that

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the growth rate permitted by domestic saving is less than the growth rate permitted by the availability of foreign exchange, growth would be “savings-limited” and if the constraint is not lifted, a proportion of foreign exchange will go unused. Contrawise, growth will be “foreign-exchange limited”. In both cases, there will be resource waste as long as one resource constraint is dominant. If foreign exchange is the dominant constraint ways must be found of using unused domestic resources to earn more foreign exchange. If domestic saving is the dominant constraint ways must be found of using foreign exchange to augment domestic saving.

Suppose, a country sets a target rate of growth, r . The required savings ratio s^* to achieve the target is $s^* = r/c$, and the required import ratio $i^* = r/m'$. If domestic saving is calculated to be less than the level required to achieve the target rate of growth, there is said to exist an investment -saving gap equal at time t , to

$$I - S = s^* Y = (r/c) Y - sY \text{ ----- (1)}$$

Similarly, if minimum import requirements to achieve the growth target are calculated to be greater than the maximum level of export earnings available for investment purposes, there is said to exist an import-export gap equal at time t , to

$$M - X = I^* Y - iY = (r/m') Y - iY \text{ ----- (2)}$$

where i is the ratio of imports to output which is permitted by export earnings. If the target growth rate is to be achieved, foreign capital flows must fill the largest of the two gaps. The two gaps are not additive. If the import-export gap is the larger, then foreign borrowing to fill it will also fill the investment-saving gap. If the investment-saving gap is the larger, foreign borrowing to fill it will obviously cover the smaller foreign exchange gap.

To start with, we assume that the $I - S$ gap is the larger of the two gaps, so that foreign borrowing must be sufficient to meet the shortfall of domestic saving below the level necessary to achieve the target rate of growth. We want to consider the size of the initial gap that must be filled by foreign borrowing and the determinants of the size of the gap to be filled in future years by foreign assistance. If the gap is to narrow, and foreign borrowing is to be terminated, the presumption must be that additional increments to saving out of the increases in national income generated are greater than the increments of investment. For any target rate of growth, r , the required foreign assistance in the base year (F_0) is:

$$F_0 = I_0 - S_0 = Y_0 cr - Y_0 s$$

$$= Y_0 (cr - s)$$

where I_0 is investment in the base period, S_0 is the savings in the base period, Y_0 is income in the base period, s is the average savings ratio.

If the $M - X$ gap is the larger of the two gaps, the foreign assistance required to cover the foreign exchange gap in the base year is:

$$\begin{aligned} F_0 &= M_0 - X_0 = Y_0 m - Y_0 - Y_0 x \\ &= Y_0 (m - x) \end{aligned}$$

where M_0 is imports in the base period, X_0 is exports in the base period, Y_0 is income in the base period, m is the average import coefficient, and x is the average export coefficient.

Estimation and Empirical Findings

a) Investment requirements

The calculation of investment requirements for growth first requires an estimate of the incremental capital-output ratio. Empirical evidence shows the COR has a sort of parabolic relationship with the growth of the economy. As development proceeds, the COR first tends to rise but when development gains momentum, it starts to decline and finally becomes stationary. V.V. Bhatt (1954) made a comparative study of industries in both developed and underdeveloped countries in the early fifties and did not find any marked difference in their respective COR. With respect to the probable size of the COR in underdeveloped countries like Pakistan, the consensus is at 3.5 as used by us. We have taken the average of Pakistan's growth rates of the decade of 90s as the target GDP growth rate which comes to 4.92 per cent. So the investment requirement at time t is given by

$$\begin{aligned} I &= \text{COR} \cdot G \cdot Y_t \\ I &= (3.5) (0.049) Y_t. \end{aligned}$$

b) Savings

Adopting the simple Keynesian savings function, and regressing the level of domestic savings on gross national product over the period 1990-91 to 2000-01 gave the following result (standard error in brackets):

$$S = 7105 + 0.076 Y \quad (R^2 = 0.36)$$

(.033)

where the units of measurement are in millions of rupees. The correlation coefficient is not so high, and a high intercept shows that average and marginal propensities to save are not equal over the period. We employ this function to forecast savings for the period 2001-02 to 2006-07. Thus, given the target level of income, Y_t ($t = 1$ to 5), from applying the target rate of growth to the base year level of income Y_0 , the $1 - S$ gap can be estimated for each year in the future. The results are shown in the Table. All values are in rupees at constant factor cost (1980-81) prices.

c) Import Requirement

Adopting the simple linear import function, and regressing the level of imports on gross national product over the period 1990-91 to 2000-01 gave the following result (standard error in brackets):

$$M = - 501946 + 1.54 Y \quad (R^2 = 0.89)$$

(.018)

where the units of measurement are in millions of rupees. The correlation coefficient is extremely high, and a high intercept shows that average and marginal propensities of imports are not equal over the period. We employ this function to forecast imports for the period 2001-02 to 2006-2007. Thus, given the target level of income, Y_t ($t = 1$ to 5), from applying the target rate of growth to the base year level of income Y_0 , the $M - X$ gap can be estimated for each year in the future. The results are shown in the Table. All values are in rupees at constant factor cost (1980-81) prices.

d) Exports

A simple exponential trend rate of growth of exports is assumed. The function is

$$X = X_0 e^{bt}$$

The estimated trend equation is

$$\log X = 4.333 + .068 t, (R^2 = 0.98)$$

(0.057)

In estimating the export-import gap, therefore, an export growth rate of 6.8 per cent is assumed. The calculated import-export gap is also shown in the Table.

**Table: Estimates of the Savings-Investment and Export-Import gaps,
2001-02 – 2005-06 (Rs. Million) (Base Year)**

	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
GDP	666115.0	698887.9	723273.1	769350.2	807202.2	846916.9
Savings	57729.7	60220.5	62833.8	65575.6	68452.4	71470.7
Investment	114705.0	120348.5	126269.6	132482.1	139000.2	145839.0
I – S gap	56975.3	60128.0	63435.8	66906.5	70547.8	74368.3
Exports	382818.2	408849.8	436651.6	466343.9	498055.3	531922.7
Imports	523871.1	574341.3	627294.6	682853.3	741145.4	802305.5
M – X gap	141052.9	165491.5	190643.0	216509.4	243090.1	270382.8

The results show that the import-export gap is dominant. So for the target rate of growth to be achieved, there would have to be foreign borrowing each year to fill the bigger of the two gaps.

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Import Functions for Pakistan – A Simultaneous Equation Approach

Mohammad Afzal*

Introduction¹

It is highly desirable that the behaviour of imports is studied in both demand and supply scenarios. Many studies in international trade have estimated the price elasticities of demand but very few studies have been used to study supply behaviour in international trade. However, Khan (1974), Haynes and Stone (1983 a) and Arize (1986), using Simultaneous Equations estimation have reported estimates of import supply in international trade. To study the true behaviour of imports, the choice of the functional form is important. Different researchers have used different forms according to their objectives and inclinations. Leamer and Stern [(1970), pp.8-19] have discussed at length the functional form of the import demand but they have not said anything about import supply. Leamer and Stern (1970) noted that the linear and log-linear forms of the import demand are:

$$M = a + b Y/P_y + c P_m/P_y + \mu \quad (1)$$

$$\log M = \log a + b_1 \log(Y/P_y) + c_1 \log(P_m/P_y) + \log \mu \quad (2)$$

Where

a=constant term in the regression

b=Marginal propensity to import

c=import coefficient of relative prices

μ =Error term reflecting other minor influences

In the linear form, income and price elasticities of the import demand will depend upon the level of these variables, while in the log-linear form b_1 and c_1 are income and price elasticities. There are no clear-cut criteria for choosing a functional form. The choice depends on the preferences and objectives of the researcher. The limitation of the linear-form is that price elasticity will diminish as income grows. Under such

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circumstances, the log-linear form might be preferred. Both forms assume that the basic demand relationship is linear. The use of linear or log-linear form may be looked at as testing the significance of a particular functional form rather than the significance of the particular explanatory variables.

Khan and Ross (1977) have demonstrated that log-linear specification was better than a linear one for import demand for three major industrial countries [USA, Japan and Canada]. Sarmad (1989) has reported that based on the experience of a vast number of countries the log-linear form is the preferred choice for the aggregate import demand equation.

The PIDE Macro-econometric model of Pakistan's Economy [Naqvi *et al* (1983)] has specified 13 equations for the foreign trade sector. There are three categories, each of exports and imports. Import equations are demand oriented while export equations are supply-oriented. Of the five equations for imports, three equations are behavioural and two are definitional identities. This model has studied the demand for consumer, intermediate and capital goods imports, while the demand for services has been treated as exogenous. The model covers the period 1959-60 to 1978-89. This study needs to be updated. Moreover, it is desirable to study both the demand and supply of imports. Sarmad and Mahmood (1985) have estimated import elasticities at a disaggregated level for the period 1969-80. They also obtained price and income elasticities for aggregate imports. They have reported mixed results for price and income elasticities. It is difficult to draw valid policy implications.

Though the assumption of infinite supply price elasticity is acceptable for the supply of imports to a single country [Goldstein and Khan (1978)]. It is, however, desirable to use a simultaneous equations model of import demand and supply, as it will help in policy formulation.

This study is different from the few studies [Khan (1974), Naqvi *et al* (1983), and Sarmad and Mahmood (1985)] on import behaviour of Pakistan in the following aspects. (a) To the best of our knowledge no other study except Khan (1974) has examined the demand and supply of imports in a simultaneous equation framework. The period of the Khan (1974) study was 1951-69. The Khan (1974) study needs to be updated because much has changed (geography as well as policies) after 1969 (b) This study uses a dummy variable, not done by other studies on the import behaviour of Pakistan, to see the impact of liberalisation efforts on imports since the beginning of the 1990s.

The purpose of the paper is to investigate the stated aspects regarding the import behaviour of Pakistan for the period 1960—1999. Section II gives the description of the model and data sources. Results and discussion are given in Section III and the conclusions are given in the final section.

Model and Data Sources

The imports are a function of the real domestic income and the real price of imports. Similarly, supply of imports depends on world income, price of imports and the general price level. Therefore, in log-linear form, the following equations for import demand and supply are specified.

Import Demand Equations

$$\text{LnMd} = \beta_0 + \beta_1 \text{LnPi} + \beta_2 \text{LnYpak} \quad (1)$$

$$\text{LnMd} = \beta_0 + \beta_1 \text{LnPi} + \beta_2 \text{LnYpak} + \beta_3 \text{Do} \quad (2)$$

Where

Ln = natural logarithm

Md = Real value of imports demand

Ypak = real GDP of Pakistan

PM = unit value of imports of Pakistan

Pd = Wholesale Price index (WPI) of Pakistan

Pi = (PM/Pd) = ratio of the unit value of imports (PM) of Pakistan to WPI of Pakistan

Do = 0 for 1959-60 to 1988-89 (Pre-liberalisation)

= 1 for 1989-90 to 1999 (Post-liberalisation)

'Do' is the liberalisation dummy as Pakistan embarked on its trade liberalisation programme in the early 1990s. During the 1950s and 1960s most developing countries including Pakistan opted for vigorous industrialisation through Import Substitution (IS). In the following decades (1970s, 1980) a policy mix of export-promotion and import-substitution was pursued in Pakistan. During the 1990s import-liberalisation and export-promotion policies have been followed in Pakistan [*Pakistan Economic Survey* (1991-92), p.xxxii]. Therefore, a study of the impact of liberalisation efforts on imports is desirable.

The expected signs of the coefficients in equations 1 and 2 are: $\beta_1 < 0$, $\beta_2 > 0$ and the sign of β_3 the coefficient of 'Do' is uncertain as it is difficult to say something with certainty about the positive or negative effects of liberalisation.

Import Supply Equations

$$\text{LnMs} = \gamma_0 + \gamma_1 \text{LnPM} + \gamma_2 \text{LNPW} + \gamma_3 \text{LnZW} \quad (3)$$

$$\text{LNMs} = \gamma_0 + \gamma_1 \text{LnPM} + \gamma_2 \text{LNPW} + \gamma_3 \text{LnZW} + \gamma_4 \text{Do} \quad (4)$$

Where

Ms = Real value of imports supply

ZW = World real income

PW = Wholesale Price index of the world

Do = as explained above in the import demand equation 2.

The signs of coefficients in equation 3 and 4 are expected to be: $\gamma_1 < 0$, $\gamma_2 > 0$ and $\gamma_3 > 0$. The sign of γ_4 the coefficient of 'Do' is uncertain.

All the data on imports have been taken from the *Pakistan Economic Survey* (various issues). Real World Income data have been taken from World Tables. The data regarding world wholesale price Index (WPI) and unit value of imports in domestic currency have been taken from *International Financial Statistics* (IFS) yearbooks (various years). All the variables are in natural logarithm and are in constant 1989-90 = 100 prices.

Results and discussions

Tables 1 and 2 give OLS and TSLS results about import demand and supply. The instruments list is lagged [GDP, imports, import prices, domestic prices, world wholesale prices, and world income]. Consumer and wholesale price indices of Pakistan, growth of world income, dummy, and world wholesale prices.

Traditional as well as dummy included forms of the import functions [Equations 1 and 2] show those variables have expected signs. The price coefficient is negative but not significant and the domestic income coefficient is positive and is significant in both equations. The liberalisation dummy coefficient is negative but not significant implying that trade liberalisation does not have a healthy impact on demand for imports, though it is not crucial.

Economic theory says that like consumption and saving, imports are also an increasing function of domestic income. Therefore, estimation results are in agreement with economic theory and so is the relative price variable. But the less significant nature of the price variable shows that the demand for imports is inelastic because of the immense need of the diverse

imports. Khan's (1974) study covering 15 countries including Pakistan for the period 1951-69 reported a significant price coefficient (-0.779). Three factors are likely to have influenced Khan's estimate. First, his study covered a period when Pakistan's exchange rate was overvalued. Second, foreign aid financed imports. Third, a low inflation rate may be a very potential factor in making the price coefficient significant. During the 1970s and 1990s Pakistan had a very high inflation rate. Since in the import demand the import price is deflated by the domestic price index, a high index can make the ratio less significant thus domestic inflationary pressure appears to be the most potential factor in turning out a less significant price coefficient.

Sarmad and Mahmood [1985] got mixed results for certain sub-groups of imports for the period 1960-80. For many sub-groups, the price elasticities were significant, while they also had insignificant as well as positive values for some cases. The results of this study cannot be compared with those of Sarmad and Mahmood [1985] as their imports were disaggregated.

Table-1: Imports Demand

Variables	Equation-1		Equation-2	
	OLS	TOLS	OLS	TOLS
Constant	1.38 (0.65)	1.41 (0.49)	1.13 (0.46)	1.12 (0.45)
Pi	-0.09 (-0.68)	-0.35 (-1.19)	-0.08 (-0.59)	-0.08 (-0.60)
Ypak	0.53 (3.21)*	0.52 (2.41)*	0.54 (2.85)*	0.55 (2.34)*
Do	-	-	-0.04 (-0.65)	-0.04 (-0.65)
R ²	0.87	0.86	0.86	0.86
D.W.	1.66	1.60	1.65	1.54

Note: The number in parentheses in Tables 1 and 2 are t-statistics where * stands for 5% and ** for 10% levels of significance respectively in both Tables.

However, current domestic income is significant in both estimations. Equations 3 and 4 show inferior estimates for import supply in both OLS and TOLS. This finding indicates that the assumption of a very large or infinite import supply to an individual country appears to be acceptable. World income turns out to be the major determinant of import supply implying that good economic conditions in the world ensure greater supply of imports, and prices are less important.

Table-2: Imports Supply

Variables	Equation-3		Equation-4	
	OLS	TOLS	OLS	TOLS
Constant	-7.61 (-0.65)	-8.89 (-0.35)	-7.39 (-0.58)	-10.83 (-0.63)
PM	-0.05 (-0.58)	-0.29 (-0.68)	-0.05 (-0.57)	-0.28 (-0.91)
PW	0.07 (0.38)	0.25 (0.87)	0.09 (0.41)	0.19 (0.62)
ZW	0.96 (1.31)	1.05 (0.66)	0.94 (1.27)	1.18 (1.08)
Do	-	-	-0.03 (-0.42)	0.11 (0.64)
R ²	0.87	0.86	0.87	0.85
D.W.	1.61	1.60	1.60	1.55

Conclusions

Traditional as well as dummy included forms of the import functions show that variables have expected signs. The price coefficient is negative and not significant but the domestic income coefficient is positive and significant in both equations. Liberalisation does not have a positive impact on demand for imports, though it is not significant. Maintenance of real effective exchange rate under a liberal trade regime has increased the value of imports but not the volume of imports (*Pakistan Economic Survey, 1999-2000*).

Estimation results are in agreement with economic theory. But the nature of the price variable shows that the demand for imports is inelastic because of the huge need of diverse imports. The domestic inflationary pressure appears to be the most potential factor in turning out a less significant price coefficient.

On the basis of inferior estimates for import supply in both estimations, this study concludes that the assumption of a very large or infinite import supply to an individual country appears to be acceptable or as suggested by Haynes and Stone (1983 b) supply-price instead of imports quantity or value may be used as the dependent variable.

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Concepts, Strategies and Proposals for the development of Urban Communities*

The Anjuman Mimiran Urban Project

A recent discussion conducted by the Anjuman Mimiran¹ has generated a concept for urban development that has immediate relevance to Pakistan. It is based on high-density, low-rise, low-tech development that integrates housing employment and social infrastructure, with a balanced mix of income and occupational groups. This concept includes a location strategy that results in

- Affordable housing for all income levels;
- Release of pressure on existing urban centers
- Injection of economic activity into rural areas; and
- Sustainable “green” urban communities;

The following extract from the discussion describes the central argument, supported by a physical layout and analysis of the proposed model.

We would welcome any initiatives to take these proposals further towards practical implementation.

Concept

There is a huge and growing demand for housing in Pakistan. The natural population increase alone adds more than three million persons a year. Add to this the attrition of existing housing stock, and you have a demand for three good sized cities a year to be accommodated.

The supply side is abysmally low, particularly in the public sector. The performance of the Lahore Development Authority, for instance, over the last decade or so has practically been at a standstill. The gap has been

* The paper is a summary of discussions of a seminar on the subject held at The Lahore School of Economics in March, 2000.

¹ Discussants: Arif Hassan, Karachi; Ayyub Qutub, Lahore; Tariq Banuri, USA; Dr. Akmal Hussain, Lahore; Babar Khan Mumtaz, London; Tasneem Siddiqui, Karachi; Shahid Khan, Karachi; Raza Ali, Lahore; Nadeem Omar, Lahore; Kamil Khan Mumtaz, Lahore; Masood Ahmad Khan, Lahore; Ayyub Malik, UK.

met by private sector development: authorised schemes in the case of upper and middle-income groups; and mostly un-authorised informal sector development in the case of lower income groups.

Thus in purely market terms, the project is certainly “do-able” and “sellable” as a private venture. As a government policy the model could be adopted at the regional (provincial or national) level as a strategy for the development of new towns, and adapted to the expansion or renewal of existing urban centers.

We contend that the modern city, characterised by function specific land-use zones, segregation of income and occupational groups, high-rise, high tech buildings, dependent on motorised transportation, and sprawling low density suburbs is economically, culturally and environmentally unsustainable. The traditional city, on the other hand, characterised by an integrated community, low-rise, low-tech, high density structures, a network of pedestrian streets, and bounded by a green girdle, provides a more sustainable and appropriate urban model.

Integrated community

- Not a “dormitory” housing scheme but a complete community
- Integrates the whole range of land uses including residential, industry, commerce, services, public administration, social infrastructure, recreation etc.
- Integrates the whole range of income and occupational groups;

Low-rise, low-tech, high density results in

- Smaller urban footprint on the landscape
- Energy conservation and reduced costs of transport and heating/cooling
- Lower construction costs
- Lower cost of infrastructure
- Human scale built environment
- More green/public open spaces

Walkable city provides

- Safer pedestrian circulation
- Less noise and air pollution
- Encourages social inter-action
- Cul-de-sacs provide more privacy

Green girdle

- Urban gardens producing fresh fruits and vegetables, dairy and poultry
- Recreational parks for sports and leisure

Strategy

A. Physical Planning

The walking city should be limited to not more than one kilometer² across.

A community to which an individual can relate should not be more than 25,000 persons; i.e. the number you can collect in one place and recognise every face³.

One advantage of a complete, integrated community, as opposed to the usual “housing” scheme, is that it does not have to be located within the direct catchment area of an existing city. Thus the difference between the cost price of raw agricultural land and marketable price of residential plots can be as high as 1,000 per cent or more. This margin can be used (a) to cover management and professional costs and other overheads; (b) to secure a large green girdle around the proposed urban area; (c) to subsidise utility services and social infrastructure development; or (d) to rake in huge profits.

Physical infrastructure development will be “incremental”, keeping pace with the sales of plots and occupation in stages, of *kootchas*, *galis*, *mohallas* and bazaar.

² May be extended to two kilometers in the case of larger metropolitan centers.

³ May be extended to 25,000 households in the case of larger metropolis, considering that on average one person per household may be the maximum expected to attend a public gathering. Thus the maximum population may be extended to about 200,000 persons.

B. Building

Buildings may be constructed by the owners themselves or by the project entity or by other developers, for their own use, for rent or for sale.

Questions of building design, materials and technologies have not yet been addressed by the present discussion. However, it may be presumed that the group will favour strategies based on traditional design typologies, that are appropriate to the local climate and culture, and use indigenous materials and technologies.

C. Economic Activity

The key to our whole concept is employment. The following programme should be initiated immediately, and should run as a parallel project to the physical planning and development.

A finance and trade group should be formed to include a bank or other financing institution, and a team of marketing professionals, designers and materials technologies.

Small liaison offices or centers should be established in three or four existing urban centers.

Data should be collected on skills available, and the market demand for products in each existing urban center. This information should be fed into a common data bank accessible to all the centers.

The centers should provide design inputs, technical advice, quality control, marketing services and credit facilities to the individual artisans and small-scale producers.

As and when the physical development of our new community comes on stream, the centers should become our marketing points to “sell” the new town to prospective residents, workers and employers etc.

The new town will offer opportunities for a range of economic activities: (a) urban farming, dairy, poultry, orchards, forestry, country club and sports activities in the green girdle. (b) Small scale, manufacturing and home based industries and workshops. (c) Retail and wholesale commercial activities. (d) Urban management and utility services. (e) Construction. (f) Transport. (g) Service industries. (h) Social infrastructure services. (i) Performing and visual arts. (j) Professional services etc.

The green girdle land will be owned by the “project” and leased or rented to urban farmers and other users.

Finance to manufacturing and business enterprises and building finance will be provided by the centers in some form of equity participation.

Proposal

In the following iteration of our urban project, with a rough working sketch-plan (*see attached*), we have used the Govt. of Pakistan, Ministry of Housing’s “National Reference Manual on Planning and Infrastructure Standards” (NRM) as our reference for plot sizes, occupancy, land use, density and affordability. The tabulated analysis is attached.

Composition of Plots

Our largest plots, 312 to 500 sq. meters, form 3 per cent of the total number of plots compared with 5 per cent in the NRM. Our medium sized plots, 160 to 250 sq. meters, form 8 per cent of the total compared with 20 per cent in NRM. Our smallest plots, 72 to 105 sq. meters, form 89 per cent of the total compared with 75 per cent in NRM.

Dwelling Units

NRM gives average household sizes ranging from 5 to 8 persons in upper income communities and 6 to 10 in low-income communities. We have taken household sizes of 8 and occupancy of 1.5 households per dwelling unit. Thus for an ultimate population of 25,000 the number of dwelling units would be about 2,083.

Land Use

Our allocation for residential land use, 65.48 per cent, is much higher than the NRM standard of 45 to 52 per cent. This is a direct consequence of our use of narrow pedestrian streets, which take up less than 12 per cent of the land compared with 25 to 30 per cent in NRM.

Our allocation for open public spaces within the built up area, 1.91 per cent, appears less than the NRM standards of 5 to 7.5 per cent. But this is more than compensated for by the provision of the very large green girdle which will include public open spaces in addition to urban gardens and other green uses.

We have a larger percentage of land allocated for “other” uses, 8.73 per cent, compared with 2 to 5 per cent in NRM. This may be used for a variety of possible employment generating activities.

Density

NRM gives a range of residential densities in which the highest is 690 persons per hectare in zones comprising “mainly small plots”. With our ultimate population of 25,000 and our built-up urban area of 33.5 hectares we will have a density of 746.27 persons per hectare.

Financial Analysis

On the expenditures side we have allowed for a basic cost of land at Rs. 125,000 per acre⁴, Professional services at Rs. 100,000 per acre; infrastructure development at Rs. 500,000 per acre; Administrative overheads at 10 per cent of project cost; and money cost at 15 per cent of capital investments. Thus the total project cost would be Rs. 93.46 million, or less than two million dollars.

On the revenue side we have taken sale of plots and development charges based on the current prices of the lowest cost housing schemes available in the peripheral areas of Lahore. At these prices we should be able to recover all our costs and end up with an asset in terms of some 60 hectares of agricultural land and a fully developed infrastructure of utility services. These can yield continuing annual revenue for the city in terms of land rents, leases and utility charges.

Affordability

We have checked the affordability of each category of residential plot against the household incomes, using the NRM standard of 3.5 times

⁴ One community based organisation has recently provided residential plots of 62.7 sq. m (3 marlas), in a peripheral area near Lahore, at the rate of Rs. 18,000 per plot. To this is to be added another Rs. 7,000 for physical infrastructure services and other costs. At this rate the basic cost of the average plot of 105.6 sq.m. in our project would be Rs. 30,316 without infrastructure development, and Rs. 42,105 for a serviced plot. In another subsidised government scheme for low income housing comparable plots are being sold (illegally) for Rs. 100,000 and more. In private sector developments similar plots can fetch up to Rs. 500,00.

At the lowest price quoted above, the cost of land works out at Rs. 2,323,680 per hectare, or Rs. 801,269 per acre. This is within the range of agricultural land prices in some peripheral areas around Lahore, e.g. off Bedian Road. Beyond the sphere of influence of the major cities agricultural land prices are naturally much lower, Rs. 100,000 per acre in Kallar Kahar, and even less in the border areas towards Kasur.

the annual income of the household. We have assumed a building area equal to the NRM recommended maximum ground coverage for various plot sizes, and minimum building costs compatible with each income group. Thus a house of 573 sq. feet (53 sq. meters) on a plot of 3.4 marlas (72 sq. meters) in our scheme would cost Rs. 210,000 (\$4286) and would be affordable by a family with an income of Rs. 5,000 (\$102) per month⁵. Similarly, a house of 2,183 sq. feet (203 sq. meters) on a plot of 15 marlas (313 sq. meters) would cost Rs. 1,211,499 (\$24724) and would be affordable by a family earning Rs. 30,000 (\$612) per month.

Analysis Tables

Sheet-1:	Composition of Plots Dwelling Units Land Use Density
Sheet-2:	Financial Analysis
Sheet-3:	Affordability

⁵ A serviced plot with a very basic shelter will be affordable by still lower income groups – see Category “F” (1).

Sheet-1

Composition of Plots

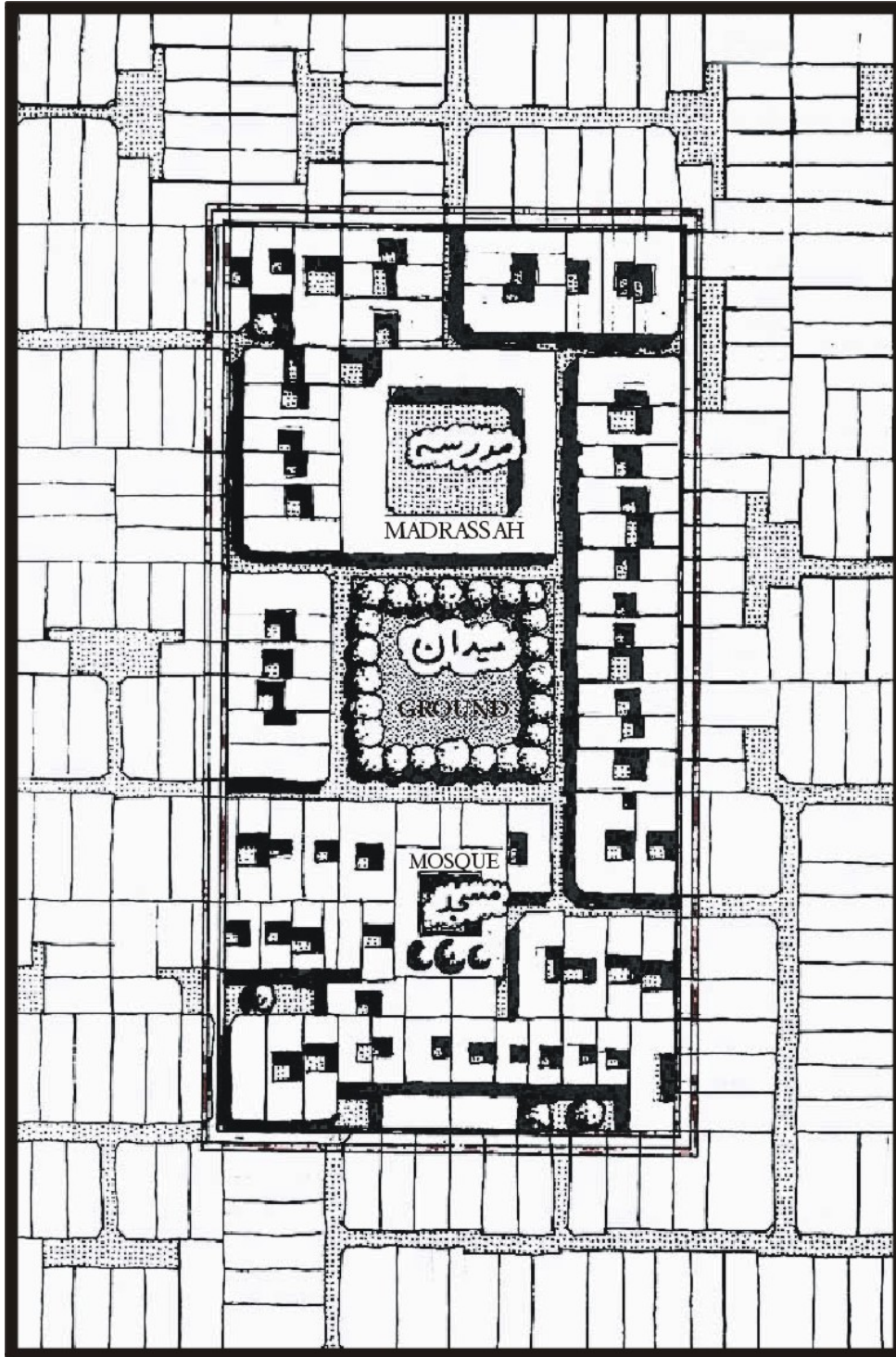
Category	Plot Area Sq. M	Allocation Percentage	Total Area Sq. M	NRM Percentage
A	500.00	0.00	0.00	5.00
A1	420.00	1.00	420.00	
B	312.00	2.00	624.00	
C	250.00	2.00	500.00	20.00
D	160.00	6.00	960.00	
E	105.00	49.00	5145.00	75.00
F	72.00	40.00	2880.00	
Total		100.00	10529.00	
Average	105.29			
Dwelling Units				
Population	25000.00			
Occupancy	12.00	persons per DU		
Number of DUs	2083.33			
Res. Area	21.94	Hectares		
Land Use				
Category	Area Hectars	Allocation Percent	NRM Percentage	
Residential	21.94	65.48	45 - 52	
Commerce	1.00	2.99	2 - 3	
Edu. & Com.	3.00	8.96	7.5 - 10	
Streets	4.00	11.94	25 - 30	
Open	0.64	1.91	5 - 7.5	
Others	2.92	8.73	2 - 5	
Total	33.50	100.00		
Density	746.27	Persons per hectare		

Financial Analysis

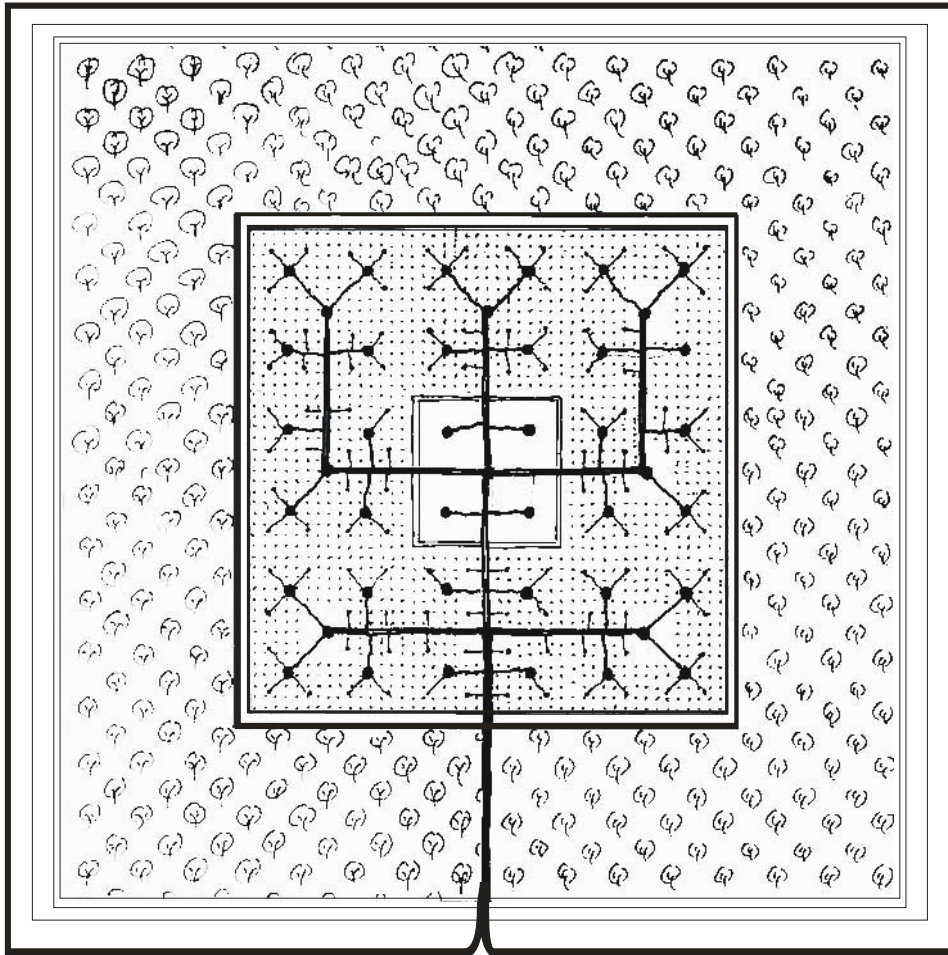
Expenditures	Quantity	Unit	Rate Pak. Rs.	Amount Mil. Rs.	US\$ @ 49.00 Pak. Rs.
Land for urban dev.	30	Hectares	362500	10.88	221938.78
Land for green belt	60	Hectares	362500	21.75	443877.55
Professional services	30	Hectares	290000	8.70	177551.02
Infrastructure development	30	Hectares	1450000	43.50	887755.10
Admin. Overheads	84825000	Rupees	10%	8.48	173112.24
Money cost	1015000	Rupees	15%	0.15	3107.14
Total Cost				93.46	1907341.84
Number of Plots	30	Hectares	75	2250.00	
Cost/plot marla (20.89sq.m)			8034	0.00	
Revenue					
Sale of plots	2250	Plots	31020	69.80	1424387.76
Development charge	2250	Plots	12063	27.14	553913.27
Total				96.94	1978301.02
Annual Revenue					
Green belt	70	Hectares	34800	2.44	49714.29
Utility Services	2472	Plots	1000.00	2.47	50448.98
Total				4.91	100163.27

Affordability

Category "F"	Quantity	Unit	Rate Pak. Rs.	Amount Pak. Rs.
Income	12	Months	5000	60000.00
Building	573.75	sft.	325	186468.80
Land & development	3.4	Marlas(~21s.m.)	8034	27316.84
Total				210000.00
Affordable @ NRM Std.	60000	Rs./year	3.5	210000
Category "F"(1)				
Income	12	Months	2000	24000.00
Building	250	sft.	225	56250.00
Land & development	3.4	Marlas(~21s.m.)	8034	27316.84
Total				83566.00
Affordable @ NRM Std.	24000	Rs./year	3.5	84000.00
Category "E"				
Income	12	Months	8000	96000.00
Building	872.4375	sft.	340	296628.80
Land & development	5.17	Marlas(~21s.m.)	8034	41537.67
Total				338166.40
Affordable @ NRM Std.	96000	Rs./year	3.5	336000.00
Category "D"				
Income	12	Months	11000	132000.00
Building	1206.45	sft.	340	410193.00
Land & development	7.66	Marlas(~21s.m.)	8034	61543.24
Total				471736.20
Affordable @ NRM Std.	132000	Rs./year	3.5	462000.00
Category "C"				
Income	12	Months	19000	228000.00
Building	1749.306	sft.	400	699722.50
Land & development	11.96107	Marlas(~21s.m.)	8034	96099.58
Total				795822
Affordable @ NRM Std.	228000	Rs./year	3.5	798000.00
Category "B"				
Income	12	Months	30000	360000.00
Building	2183.134	sft.	500	1091567.00
Land & development	14.92741	Marlas(~21s.m.)	8034	119932.30
Total				1211499.00
Affordable @ NRM Std.	360000	Rs./year	3.5	1260000.00

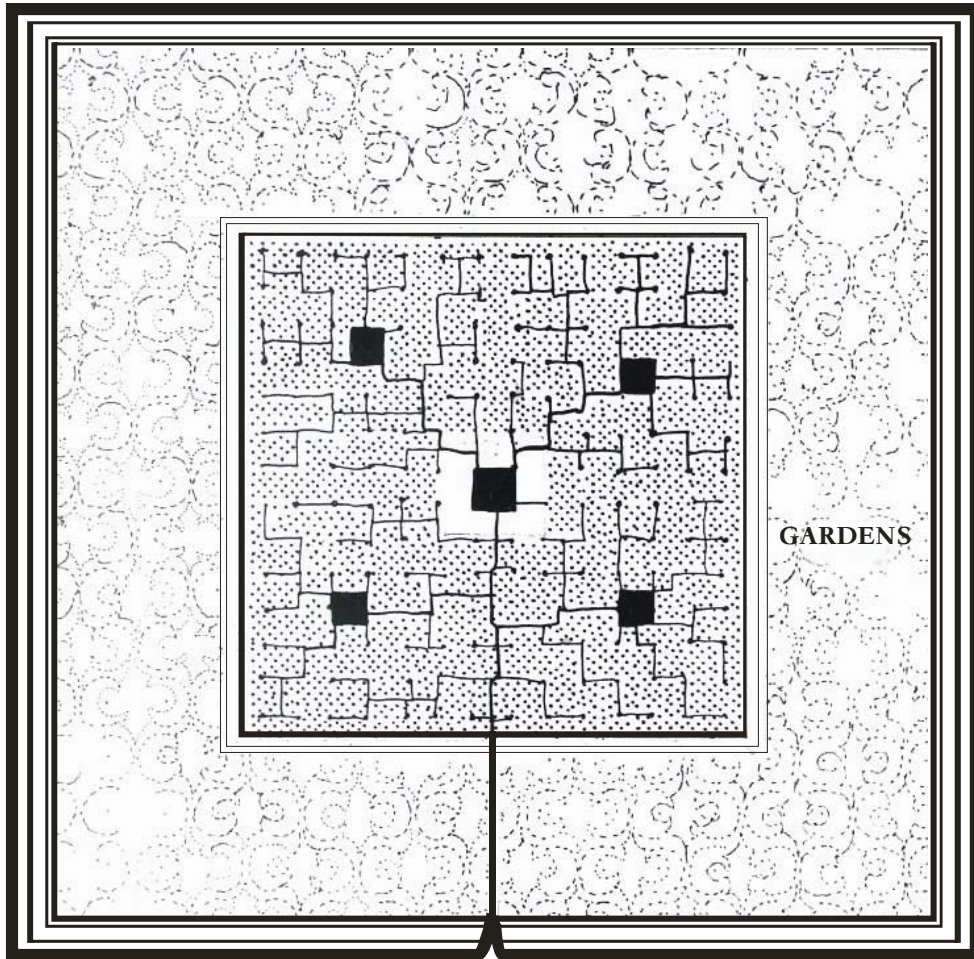


Scale: 1cm = 7.82 m



Scale: 1cm=290 m

City Population: 2 Lakh



Scale: 1 cm = 144 m

Town Population: 2000

Comment:

Interest and the Modern Economy: A Reply

Ali Ataulah & Minh Hang Le*

“No single human being, human agency or group has a right to impose its view, in matters of the faith, on others. That must be left to every individual conscience to decide for him or her ... Religious leaders and jurists, with their literalist training, often lack knowledge of societies and economies to have insights that may illuminate the fresh significance of old formulae”¹.

In the previous issue of this journal, Zaman & Zaman (2001), by criticising Hamza Alavi, imply that the implementation of the so-called Islamic Banking is in the best interest of economy and only by following this system can we be *serious Muslims*. According to them, this implementation could be justified on the basis of modern economic and financial theories, and also by evaluating the financial system of developed countries. This paper only briefly discusses some acute theoretical and practical shortcomings in their article and suggests that the non-interest based system² is not appropriate for the Pakistani economy, at least in the conceivable future.

Islamic Banking and Islamisation of Zia

As Hamza Alavi (*op cit.*) has rightly mentioned that Islam prohibited interest or *riba*, in the pre-capitalist Bedouin community under some particular circumstances modern society, however, is not facing a similar situation. Therefore, taking Qur’an only according to its literal meanings and not recognising the settings or *asbab al-nuzul* behind it, will lead to a static form of Islam. As far as the introduction of Islamic Banking in Pakistan is concerned, there is a general consensus that this was only an element of Zia’s Islamisation process to somehow legitimise his autocratic rule by playing with people’s religious sentiments (see, for example, Husain, 1999, or Zaidi, 1999)

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¹ Humza Alvi, *Significance of Riba & Interest*, Dawn, Feb. 09-10,2000.

² The non-interest based system in this article refers to the so-called Islamic Banking system because the authors, like Hamza Alavi, believe that this system does not portray Islam dynamically.

Bank Loans in US and Japan

Zaman & Zaman argue “*from a purely practical point of view, equity based finance is typically more common than interest-based finance in US and Japan* (pp.116)”. However, the phenomenon is not that simple. For example, Japan’s rapid economic growth is based on the guided industrialisation in which the Ministry of Finance trivialised the role of equity markets and used interest-based banks as a channel to inject capital in industries that were considered to be an engine of economic growth (Lincoln, 1999). During the 1970s, bank loans represented 95 per cent of Japanese corporate borrowing and 67 per cent of American corporate debt³. Therefore, it is inaccurate to say that equity is a more popular way of financing in Japan and the US. Of course now the US is moving towards more equity-based financing, but that is due to the colossal development of the American equity markets as well as American industries during the last five decades⁴. In a developed country like the US, high education level, coupled with well-structured institutional framework and availability of better information regarding firms’ activities, motivate people to invest in the equity market and there are more chances of a direct interaction between lenders and borrowers through such markets. On the other hand, in developing countries, like Pakistan, neither are the sources of information reliable nor the majority of people capable enough to evaluate the information. This, therefore, leads to an underdeveloped stock market where firms and the public (mostly middle-class) cannot rely on such markets to adjust their financial needs. In a situation where the stock market is highly underdeveloped, the introduction of the non-interest based system can lead to further deterioration of the economy.

Equity Financing and Asymmetric Information

Referring to Modigliani and Miller (1958, 1964), Zaman & Zaman state “... taking these complexities into account actually favours equity based financing over debt based financing for many reasons (pp.117)”. The issue of optimal capital structure is still controversial. Therefore, it is highly inappropriate to conclude that equity financing is a better way of financing⁵. Also the modern theories on “Optimal Contracting” suggest that an optimal

³ Bank of Japan (1977, pp.23-24) and *Statistical Abstract of the United States* (1976, pp.477) quoted in Lincoln (1999).

⁴ This development was partly due to well-organised debt markets during the early stages of development in the US.

⁵ See Harris and Raviv (1991) for a comprehensive review of costs and benefits of debt and equity financing.

contract that reduces the agency problems between lenders and borrowers of funds is more like a debt contract⁶.

Inappropriate use of Arrow-Debreu Framework

To defend the non-interest based system, Zaman and Zaman quote: “the ban on ... interest ... would not interfere with the efficiency of the economy” (Obstfeld and Rogoff, 1996, pp.273, footnote 5). They, however, hopefully unintentionally, neglected a key assumption behind such efficiency. We would hereby full cite the reference:

“Scholars of Islamic banking have long emphasised that the ban in the Qur’an (holy book) on *riba* or interest, does not rule out profit-sharing or other arrangements where the lender takes on risk. **When there are complete markets for Arrow-Debreu securities**, a ban on non-contingent debt contracts alone would not interfere with the efficiency of the economy.” (Obstfeld and Rogoff, 1996, page 273, footnote 5)

The assumption on complete markets for Arrow-Debreu securities in fact was initiated in the classic model of Arrow (1964) and Debreu (1959). This is an extreme assumption about a market for insuring any type of risk. In this hypothesised and perfectionised market (no risk and no uncertainty), debt simply brings no more trading opportunities *as people already have a full set of Arrow-Debreu claims that can be traded*. Therefore, the proponents of the non-interest based system should evaluate the possibility of existence of such markets, particularly in Pakistan.

Government Financing and Interest

According to Zaman & Zaman, due to interest-based loans the Government of Pakistan is misusing the public’s funds. They, however, do not recognise that it is not the interest-based system but the very nature of our corrupt governments that is responsible for huge unutilised public debts. The interest-based system, on the other hand, has helped the rapid development of England, Germany, and France in the seventeenth and eighteenth century. Particularly in the case of England, the Bank of England utilised huge public borrowing to restore the kingdom from destruction due to nine years of war with France (North and Weingast, 1989). Even the industrialisation of Pakistan during its early periods, when the country had no capital at all, was carried out through the interest-based system (see, for example, Zaidi, 1999). The eradication of corruption

⁶ *Ibid.*

in the government of Pakistan cannot be carried out by abolishing the interest-based economy. More concrete steps, like nationwide education, are required for this task.

Future Research on Islamic Banking

As compared to other economic and financial issues, there has been relatively modest research on Islamic Banking. It can be argued that most of the proponents of this system are so-called Islamic bankers, who will find it very beneficial to market the idea of Islamic Banking that would lead to relatively low competition from foreign banks that have sophisticated interest-based products. Literature on the non-interest based system does not incorporate human capital⁷ as a factor of production. For example, the non-interest based system cannot accommodate models like the overlapping-generation model (Jappelli and Pagano, 1994). Let us discuss a simple case here. A young student needs funds (say £20,000) to finance her professional degree at a high-ranking university. The student, after finishing her degree, gets a high paid job and repays her debts. Her degree will not only help her but also help accelerate economic growth. But, in the absence of the interest-based system, will there be anyone who is willing to finance her studies by some kind of profit-loss sharing agreement? The non-interest based system, therefore, only considers physical capital as a factor of production and not the other important factor i.e. human capital.

Implementation of Islamic Banking in Pakistan

Currently some banks are providing so-called Islamic products to firms and public. But a closer look at these products shows that they are not different from conventional interest-based instruments⁸. If the government of Pakistan implemented so-called Islamic banking, then it might lead to a further deterioration in this already weak economy. Given the current institutional set-up in Pakistan, the implementation of Islamic Banking, would lead to scarcity of available funds because savers, due to asymmetric information, would not trust the profit-loss sharing system of banks. And if in this case, the government provides explicit or implicit guarantee to the savers, then again it will be “un-Islamic” because the savers now have a guarantee that they will not face any kind of loss. Also due to the new financial system, foreign investors will be more cautious to enter the Pakistani market.

⁷ The new growth theories suggest that Human Capital is as important as (or even more than) physical capital in economic growth of developed and developing countries (see, for example, Romer, 1987).

⁸ The Islamic products like *Murabaha* and *Ijarah* are effectively the same as conventional interest-based instruments.

Conclusion

This paper briefly discusses the theoretical and practical shortcomings in Zaman and Zaman (2001). The paper strongly opposes the idea that equity financing is a superior method of raising funds. It, however, does not imply that debt or other interest-based methods are better. There are costs and benefits attached to both. If the financial system has to play a significant role in the process of economic development, then it requires both of these instruments i.e. equity and interest based instruments. The paper also shares the view with Hamza Alavi that interest was banned due to the exploitive nature of society in the pre-capitalist community, and the circumstances are quite different in the modern world. Interest is bad only and only if it is exploitive in nature and if there are no benefits attached to it. We, however, provided some evidence that the interest-based system helped in the early development of today's developed countries. This paper, therefore, calls for further research on the nature and operation of the non-interest based system not only by religious [scholars] but also by modern financial and economic theorists. And in designing any such system, these scholars should consider the fact that we are not living in Utopia.

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Note:

Pakistan's Debt Position and the Question of Debt Retirement

Qais Aslam*

Introduction

There can not be any doubt in the minds of economists, sociologists, political scientists or the general public that external debt has become a burden for poor nations rather than the much-advertised source of financial help to these countries. In the words of the late Cardinal Hume, Archbishop of Westminster, "Whatever the detailed history of today's debt ridden countries, nearly all have one key fact in common: that those who could be blamed the least, the poorest people in the poorest countries, have suffered the most". The British Chancellor of the Exchequer Gordon Brown said, "The debt of poor countries is a great moral issue of our day and this decade. It is the greatest single cause of poverty and injustice across the earth and potentially one of the greatest threats to peace". He added, "We must cut the debt and do so now". In the words of Mikhail Gorbachev, "Nothing is more important than the debt question. It is absolutely necessary to resolve the problem as soon as possible. We cannot keep waiting". The great African leader Julius Nyerere said, "Is it right that we starve in order to pay our debts?"

Human deprivation in South Asia is massive. It is the poorest region of the world, where five hundred million people live in absolute poverty. Pakistan, India & Bangladesh are the biggest borrowers from the World Bank in 1997-1998 fiscal year. These countries in South Asia contain over one-fifth of humanity, consisting of 1.2 billion people. However these South Asian countries spend less than five percent of their combined GNP on its people, due to which growing population has become a liability rather than a precious human resource. The UNDP Human Development Report 1996 shows that nearly two-thirds of the population in South Asia is deprived of basic human capabilities. Widespread human deprivation in South Asia contrasts sharply with the militarisation in the region, as two of the biggest armies in the world (India & Pakistan) are being maintained in South Asia. It is the only region where the defense budget is continuously growing mainly due to the nuclear arms race. South Asian states are far below the global twenty percent targets

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with public spending. In Pakistan, it is only 3.2 per cent. In India - 6.8 per cent, in Sri Lanka - 8.1 per cent, in Bangladesh it is only 10 per cent.¹

The World Bank has been lending to Pakistan since 1952. During this span of 47 years it has sanctioned about 93 loans and 136 credits, totaling US\$10 billion² The World Bank's highest borrowers are also the most corrupt, according to the Transparency International Index. Pakistan is a favourite debtor country of the World Bank (among the top 12). Pakistan's experience shows that even with the best planning, most of development aid is misguided or badly implemented. Yet the loud demand for more aid continues, ignoring the important factor that development depends on the effective use of existing aid. Squandering of money on projects was in the interest of the ruling elite, as the interested parties used or deposited a large portion of these funds in their personal accounts. It becomes the responsibility of the World Bank to ensure (which it did not) that this money was spent for the specific purpose. This money was meant to be invested in the uplift of the poor people and the economy, but instead has been embezzled and misappropriated by different governments in the country. Quoting Mr. James Wolfensohn the President of IBRD, "to end poverty we must fight corruption. It is central to our mission. Corruption is a cancer in the body politic, a tax on the poor".

Pakistan's ever increasing debt burden and the cost of servicing this debt is perhaps the single most important economic issue in the country today. Economic policies of the governments have failed completely to fill the gap in the trade balance, balance of payments, budget deficit, or resource gap over the many decades. Poverty has grown in the country during the last ten years. Pakistan is among the most illiterate countries of the world. General health conditions of the population are very poor, so is the income generating capacity of a large number of the population. Under this back drop, high population growth rate, low economic growth rate and ever-increasing national debt are a recipe of disaster for the country's future which seems unsustainable under the circumstances. According to the *World Development Report 2000-2001*, Pakistan is among the Highly Indebted Countries & Low Income Nations of the World.³ The yearly growth rate of the country during the last decade has been estimated to be around 4.8 per cent per annum only to be nullified by a population growth of an average of 3.1 per cent per annum.⁴ The population in 1999-2000 was 137,5 million people⁵. Pakistan is a

¹ Huda, Huma, *World Bank & Borrowers, Southasia*, September 30, 1999, p. 25.

² Huda, Huma, *op-cit.* p. 39.

³ *Attacking Poverty. World Bank Report 2000-2001*, Oxford University Press, NY 2000, pp.334.

⁴ Hussain, Ishrat Dr. *The Daily News* Lahore, April 16, 2000.

⁵ *Pakistan Economic Survey*, Finance Division, Government of Pakistan 1999-2000, p. 121.

nation that spends only 2.2 percent of its budget on education, 0.5 per cent on its health. And where 80 per cent of its villages are without clean drinking water, sewerage, hygiene facilities, and 60 per cent are without electricity. Where one child under the age of 5 dies every 40 seconds and one child is born every 10 seconds. Where one mother dies in child birth every 90 seconds because of lack of health facilities, where the per capita income is US\$450 per annum which is less than the US\$ 500 World Bank poverty line. Despite numerous IMF agreements since the early 1980's there was little fiscal adjustment over the last two decades. The average fiscal deficit during the last five years has been close to 7 per cent of the GDP with no clear downward trend. According to the *South Asian Development Report 1999* the Human Governance Index, of 58 countries mentioned in the index, Pakistan ranks 52 in economic governance, 48 in political governance, 47 in civic governance, 52 in humane governance and 54 in human governance.⁶

Debt & Economic Situation of Pakistan

The debt position and the statistical data of debt servicing and their influence on Pakistan's economy can be seen from the following tables and statistics. Table-1 shows the exports, imports & trade balance of Pakistan during 1998-1999 and 1999-2000.

Table-1: Exports, Imports & Trade Balance of Pakistan (in Million US\$)

	Exports	Imports	Balance
1998-1999	6,308	7,516	-1,208
1999-2000	6,927	8,337	-1,410

Source: *Pakistan Economic Survey*, Government of Pakistan, Islamabad 1999-2000, pp. 84

Balance of trade of Pakistan shown in Table-1 points to a deficit of above US\$ 1.2 billion in 1998-1999, rising up to above US\$ 1.4 billion in 1999-2000 (July March). Exports of the country are at US\$ 6.3 billion in 1998-1999, rising to approximately US\$ 7.0 billion in 1999-2000 (July-March) and imports swelling to above US\$ 7.5 billion in 1998-1999, reaching up to approximately US\$ 8.4 billion in 1999-2000 (July-March).⁷ Table-2 shows Pakistan's total external obligations and liabilities as on 1st March 2000.

⁶ Human Development in South Asia 1999, *The Crisis of Governance*, Oxford University Press, NY 1999, pp 39-30.

⁷ *Pakistan Economic Survey*, op-cit. p. 84.

**Table-2: Pakistan Total External Obligations and Liabilities
1-3-2000 In Million Dollars**

Items	June 1999	Dec 1999
A. External Debt		
Medium long term EAD	2,4115	24,547
IMF	1,853	1,724
Short & Commercial Borrowing + IDB	1,306	1,381
FRN & Bonds	610	610
Defence Saving Certificates	764	683
Pvt. Loans/s.Credit/SBP Deposits	4,705	4,400
(of which SBP/BOC deposits)	(1,270)	(1,390)
Total A	33,353.2	33,345
B. Debt Obligation to Residents in Foreign Exchange		
Bearers Certificates	196	175
US\$ Bonds	1,164	1,288
Total B	1,360	1,463
Total A + B	34,713.2	34,808
C. Other Foreign Obligations		
FCA's (Institutionals)	1,380	1,310
FE-25 Deposits	616	806
Total C	1,996	2,116
Total A + B + C	36,709.2	36,924

Note: Frozen Foreign Currency Accounts of Residents & Non-residents of US\$ 2350 Million end December 1999 are not included in the table.

US\$ bonds and bearer certificates are at presently shown as domestic debt also.

Source: Hassan, Pervaiz, Dr. A Strategy for Debt Reduction And Management, Government of Pakistan, Finance Division, 2001.

From Table-2 it can be seen that Pakistan's total external obligations in December 1999 was about US\$ 37 billion. US\$ 33.3 billion external public and publicly guaranteed debt; US\$ 1.5 billion debt obligation to residents in foreign exchange; and US\$ 2 billion other foreign obligations.

Pakistan's total obligations to foreigners and locals in foreign currency at the end of June 1999 were US\$ 36,7 billion, and on 31st December 1999 was approximately US\$ 37 billion, amounting to US\$ 37.5 billion by the end of 2000 – an increase of approximately US\$ 1 billion yearly. Table-3 shows Pakistan's total internal debt outstanding on 31st June 2000.

Table-3: Internal Debt Outstanding on 31st June 2000 (In Million Dollars)

Types of Debt	1998-1999	1999-2000
Permanent	6,343.92	6,126.94
Floating	11,231.8	12,931.80
Unfunded	11,478.9	13,389.68
Total Internal Debt	29,054.62	32,448.42
Total Internal Debt as % of GDP	49.9%	51.1%

Source: *Pakistan Economic Survey*, Government of Pakistan, Islamabad 1999-2000, pp. 46

While from Table-3 it can be seen that during 1999-2000 the internal debt of Pakistan was approximately US\$ 32.5 billion (US\$ 6 billion permanent debt; US\$ 13 billion Floating debt and US\$ 13.4 billion unfunded debt). Total internal debt as percentage of the GDP was above 51 per cent in 1999-2000. External indebtedness and internal indebtedness together shows a total of US\$ 69.5 billion (total debt) which is more than 100 per cent of the country's GDP. Table-4 shows Pakistan's public debt on June 1999 and then on December 1999.

Table-4: Public Debt in Foreign Exchange (US\$ Million)

Items	June 1999	Dec 1999
A. Public Debt owed to Non-Residents		
Mideun Long Term EAD	24,115	24,547
IMF	1,853	1,724
Short & Commercial Borrowing + IDE	1,306	1,381
FRN & Bonds	610	610
Defence Saving Certificates	764	683
Foreign Central Bank Deposits With SBP	1,270	1,390
Total A	29,918.2	30,335

B. Public Debt owed to Residents		
Bearer Certificates	196	175
US\$ Bonds	1,164	1,288
Total B	1,360	1,463
Total A + B	31,278.2	31,798

Source: Hassan, Pervaiz, Dr. A Strategy for Debt Reduction And Management, Government of Pakistan, Finance Division, 2001,

From Table-4 it can be seen that the total public debt of Pakistan owed to non-residents in December 1999 was US\$30.3 billion, compared to US\$ 30 billion in June 1999. Public debt owed to residents in December 1999 was approximately US\$ 1.5 billion, while in June 1999 it was approximately US\$ 1.4 billion. Total Public debt of the country in December 1999 was US\$ 31.8 billion compared to US\$ 31.3 billion in June 1999 – an increase of approximately US\$ 0.5 billion in 6 months. Table-5 shows the public and publicly guaranteed external debt disbursed and outstanding from all sources as on 30th June 2000.

Table-5: Public and Publicly Guaranteed External Debt Disbursed and Outstanding as on 30th June 2000

(Estimated) in Million US\$)

Particulars	Disbursed & Outstanding	Undisbursed	Total Debt
A. Consortium	10,374.2	2,150.0	12,524.2
Belgium	55.8	41.5	97.3
Canada	348.6	0.0	348.6
France	828.6	138.2	966.8
Germany	1,268.4	272.3	1,540.7
Italy	211.9	0.0	211.9
Japan	4,590.9	1,375.9	5,966.8
Netherlands	110.6	9.9	120.5
Norway	32.4	22.3	54.7
Nordic	45.2	6.6	51.8

Sweden	115.1	5.5	120.6
UK	94.9	48.9	143.8
USA	2,671.8	228.9	2,900.7
B. Financial Institutions	13,191.2	2,925.9	16,117.1
ADB	5,397.7	1,361.7	6,759.4
IBRD	3,772.6	527.7	4,300.3
IDA	3,852.7	913.1	4,765.8
IFDA	132.6	75.8	208.4
IFC	0.0	0.0	0.0
Bank of Indosueaz Singapore	1.3	0.0	1.3
NBP Bahrain	28.3	0.0	28.3
E. I. Bank	6.0	47.6	53.6
C. Non Consortium	1,567.1	149.1	1,716.2
Spain	26.3	4.7	31.0
China	357.8	32.0	389.8
Denmark	19.9	0.0	19.9
Czechoslovakia	14.4	0.0	14.4
Romania	0.0	0.0	0.0
Austria	27.8	0.0	27.8
Russia	202.2	95.0	297.2
Switzerland	67.9	0.4	68.3
Finland	6.1	0.0	6.1
Australia (Wheat Board)	96.4	17.0	113.4
Korea	748.3	0.0	748.3
D. Islamic Countries	360.6	324.2	684.8
Kuwait	65.2	116.0	181.2
Libya	17.4	0.0	17.4
UAE	59.2	0.0	59.2
S. Arabia	79.6	34.8	114.4
OPEC Fund	29.4	34.2	63.6

IDB	54.6	87.5	142.1
Oman	6.9	0.0	6.9
Turkey	48.3	51.7	100.0
Total	25,493.1	5,549.2	31,042.3

Source: *Pakistan Economic Survey*, Government of Pakistan, Islamabad 1999-2000, pp. 105

It can be seen from Table-5 the consortium for debt to Pakistan was owed US\$ 12.5 billion, International financial institutions were owed more than US\$ 16.1 billion. Non-consortium countries were owed US\$ 1.7 billion, and Islamic countries were owed approximately 0.7 billion. (See Table-12) The debt burden will consume 86.54 per cent of the government's revenue for paying back the principal loans as well as interest on these loans. The *State Bank of Pakistan Report 1999-2000* states, besides external liabilities, of US\$37.30 billion under different categories, Pakistan is committed to pay in rupee liabilities 1.72 billion dollars on account of frozen foreign currency accounts and on various foreign currency certificates. The per capita indebtedness of the country is US\$ 509 (US\$ 236 internal debt per person, plus US\$ 273 external liabilities per person), when the per capita income of the country is only US\$ 450. Table-6 gives a detailed break down of the debt servicing of Pakistan in year 1999-2000 and also calculates the increase of future debt servicing payments of the country each year from 2000 till 2003. Table-6 also shows the total break down of heads of debt servicing of three years in the future, i.e. 2000-2003.

Table-6: Debt Servicing Payments due Including Rollover of Central Bank Deposits (8-3-2000 in US\$ Million)

	1999-2000			2000-2001			2001-2002			2002-2003			2001-2003 Total		
	P	I	T	P	I	T	P	I	T	P	I	T	P	I	T
Medium & Long term debt EAD	1752	832	2584	1474	713	2187	1414	664	2078	1371	597	1968	4259	1974	6233
Short Term/Medium Term (Rescheduled MOF)	59	149	208	345	86	431	583	69	652	57	16	73	985	171	1156
IBD Short Term	146	8	154	NA	20	20	NA	NA	0	NA	NA	0	0	20	20
IMF (MOF)	296	49	345	252	38	290	201	66	267	349	57	406	802	161	963
Defense (Saving Certificates)	128	44	172	89	36	125	84	30	114	97	24	121	270	90	360
Euro Bonds	0	50	50	0	59	59	0	59	59	146	51	197	146	169	315
Special US\$ bonds	0	60	60	0	105	105	774	97	871	218	35	253	1097	237	1229
Private Loans (SBP)	623	241	864	582	214	796	523	166	689	466	127	593	1571	507	2078
Govt. Deposits *	800	44	844	900	56	958	1200	60	1260	1200	60	1260	3300	178	3478
Institutional Deposits	272	52	324	1103	36	1141	0	0	0	0	0	0	1103	38	1141
Others	56	10	66	41	6	47	121	NA	121	0	0	0	162	6	168
Total	4132	1539	5671	4786	1373	6159	4900	1211	6111	3904	967	4871	13590	3551	17141

P = Principal Loan; I = Interest; T = Total = Principal + Interest

* Gross Repayments before assumed rollover.

Source: IMF International Financial Statistics, April 2000.

It can be seen from Table-6 that Pakistan's total debt servicing in 1999-2000 was US\$ 5,671 million (US\$ 4,132 million as Principal loan and US\$ 1,539 million as interest on loans). In 2000-2001 Pakistan's debt servicing will be US\$ 6,159 million (US\$ 4,786 million as principal and US\$ 1,373 million as interest), or US\$ 488 million more than 1999-2000. The total debt servicing from 2001 till 2003 will be US\$ 17,141 million (US\$ 13,590 million as principal and US\$ 3,551 million as interest). Table-7 also looks into the Total external debt burden of four South Asian countries (India, Pakistan, Bangladesh, Sri Lanka and Bangladesh) in 1998

**Table-7: Public Debt of India, Bangladesh, Sri Lanka & Pakistan 1998
(for Pakistan 1999)**

South Asia	Total Debt As % of		Internal Debt As % of		Net Value of External Debt As % of		Total Debt servicing As % of	
	GDP	Revenue	GDP	Revenue	GNP	Exports	GNP	Exports
India	47.2	384.9	44.0	358.4	20.0	143.0	2.8	20.6
Bangladesh	-	-	-		23.0	135.0	1.5	9.1
Sri Lanka	91.1	528.3	45.7	264.8	41.0	92.0	2.9	6.6
Pakistan	99.3	629.0	45.6	289.1	44.0	230.0	4.5	23.6

Source: IMF International Financial Statistics, April 2000.

Table-7 shows Pakistan's net value of debt, as percentage of GDP was the highest in South Asia. Pakistan's net value of its debt was 99.3 percent of its GDP and 629 percent of its revenue receipts, compared to Sri Lanka (91.1 per cent, and 528.3 per cent respectively in 1998) and India (47.2 per cent, & 384.9 per cent respectively in 1998). Internal debt of Pakistan in 1999 was 45.6 per cent of GDP, and 289.1 per cent of its revenue receipts, as compared to Sri Lanka (45.7 per cent, & 264.8 per cent respectively in 1998) and India (44.0 per cent, & 358.4 per cent respectively in 1998). Pakistan's net value of external debt in 1998 as percentage of GNP was 44.0 per cent, Sri Lanka - 41 per cent; Bangladesh - 23 per cent, and India 20 per cent. As percentage of their respective exports - Pakistan, 230 per cent; Sri Lanka, 92 per cent; Bangladesh, 135 per cent and India, 143 per cent. The total debt servicing as percentage of Pakistan's GNP was 7.5 per cent, of Sri Lanka - 2.9 per cent, of Bangladesh 1.5 per cent, and of India - 2.8 per cent. Total debt servicing as percentage of the country's respective exports - Pakistan 39.0 per cent, Sri Lanka, 6.6 per cent; Bangladesh, 9.1 per cent,

and India 20.6 per cent. Net value of debt as percentage of GNP, Pakistan was highest in South Asia (44.0 per cent), as percentage of exports in Pakistan was also highest in South Asia (230.0 per cent). Total debt servicing of Pakistan for the same year was also highest in South Asia, both as percentage of GNP (7.5 per cent) and as percentage of exports (39.0 per cent). Table-7 points out that net value of Pakistan's external debt is 44 per cent of its GNP and 230 per cent of its total exports in 1999. Table-7 also shows that Pakistan's debt servicing is 7.5 per cent of its GNP and 39 per cent of its total exports in 1999. Table-8 shows the breakup of interest and debt servicing of Pakistan as percentage of the country's GDP during the years 1998-1999 and 1999-2000.

Table-8: Debt Servicing as Percentage of GDP

Items	1998-1999	1999-2000
Interest on Domestic Debt (Federal)	6.2	5.8
Interest on Foreign Debt	1.3	1.6
Repayment of Foreign Debt	4.2	3.0
Total Debt Servicing	11.9	10.8

Source: *Pakistan Economic Survey*, Government of Pakistan, Islamabad 1999-2000, pp. 46

From Table-8 it can be seen that in 1999-2000 Pakistan's interest on domestic Federal debt was 5.8 per cent of the GDP as compared to 6.2 per cent of the GDP in 1998-1999. The interest on foreign debt was 1.6 per cent of the GDP in 1999-2000 as compared to 1.3 per cent of the GDP in 1998-1999. Repayments on foreign debt were 3 per cent of the GDP in 1999-2000 as compared to 4.2 per cent of the GDP in 1998-1999. The Table-shows that total debt servicing of Pakistan in 1999-2000 was 10.8 per cent of the GDP as compared to 11.9 per cent of the GDP in 1998-1999, i.e. 1.1 per cent less than the previous year. Table-9 shows the debt servicing payments on foreign loans 1998-1999 & 1999-2000 from all foreign sources.

Table-9: Debt Servicing Payments on Foreign Loans 1998-1999 & 1999-2000 (in Million US\$)

Particulars	Principal	Interest	Total Debt Servicing 1998- 1999	Principal	Interest	Total Debt Servicing 1999- 2000
A. Consortium	359.147	77.581	436.728	138.300	74.640	212.94
Belgium	-	0.782		-	-	
Canada	15.947	2.360		15.947	2.360	
France	11.227	5.090		-	4.120	
Germany	42.514	12.242		4.329	5.088	
Italy	1.580	0.569		2.358	0.620	
Japan	14.796	27.521		-	44.649	
Netherlands	1.576	0.562		0.934	0.527	
Norway	0.401	0.287		1.875	1.620	
Sweden	0.591	1.689		-	2.081	
UK	-	1.424		2.644	0.801	
USA	270.515	24.455		110.841	13.554	
B. Financial Institutions	492.946	368.193	798.139	520.921	370.726	891.647
ADB	215.193	151.019		220.567	142.919	
IBRD	215.147	184.880		229.140	196.089	
IDA	53.737	28.138		61.339	27.573	
IFAD	6.300	2.457		8.122	2.345	
IFC	1.685	0.105		-	-	
Nordic	0.914	1.594		1.753	1.800	
Bank of Indosuez	-	-		-	-	
C. Non Consortium	167.619	7.623	175.242	150.860	19.097	169.957
Australia	147.880	5.431		148.300	6.721	
Austria	2.991	0.991		-	0.224	

China	0.958	-	-	-	5.068	
Korea	11.000	-	-	-	0.017	
Spain	-	0.041	-	-	-	
Singapore	-	-	-	2.101	0.215	
Nissowai	-	-	-	0.459	1.079	
European Investment Bank	-	-	-	-	0.244	
Switzerland	4.790	1.160	-	-	-	
D. Islamic Countries	45.324	11.211	56.535	34.006	11.283	45.289
IDB	29.403	7.233	-	23.311	4.817	
Kuwait	0.262	0.058	-	-	-	
Libya	1.156	0.185	-	-	-	
Oman	1.250	0.037	-	2.500	0.781	
OPEC Fund	8.417	0.919	-	8.195	0.798	
S. Arabia	1.230	0.037	-	-	-	
Turkey	-	-	-	-	4.887	
UAE	3.606	2.297	-	-	-	
E. Rescheduled Debt	-	-	-	-	80.000	80.000
Grand Total	1065.036	464.608	1529.644	844.087	555.746	1399.833

Source: *Pakistan Economic Survey*, Government of Pakistan, Islamabad 1999-2000, pp. 112

Table-9 shows that in 1999-2000 Pakistan serviced its debt to consortium countries approximately to the tune of US\$ 213 million; to International financial institutions more than US\$ 891.6 million; to non-consortium countries – approximately US\$ 170 million, and to Islamic countries – approximately US\$ 45.3 million. Table-10 shows the Government of Pakistan's budgetary position in fiscal years 1998-1999 and 1999-2000.

**Table-10: Federal Government's overall Budgetary Position
(in Million Rupees)**

Items	1998-1999 (Actual)	1999-2000 (Estimates)
<i>I. Receipts</i>		
Direct Taxes	110,402	123,000
Indirect Taxes	198,128	239,000
Total Tax Revenue	308,530	362,000
Total Revenue Receipts	465,271	510,915
Capital Receipts	63,632	80,716
External Resources	270,000	104,374
Total Resources	680,909	553,867
<i>II. Expenditure</i>		
Current Expenditure	516,272	563,060
Defence	143,471	143,377
Debt Servicing	290,695	313,273
Civil Administration	44,468	47,874
Development Expenditure	98,761	101,200
Total Expenditure	615,033	664,260
GAP	-73,811	91,393

Source: *Pakistan Economic Survey*, Government of Pakistan, Islamabad 1999-2000, pp. 41.

From Table-10 it can be seen that the debt servicing as allocated in the fiscal budget of Pakistan 1999-2000 was 47.3 per cent of the current budgetary expenditure; 56.6 per cent of the total budgetary resources; 300 per cent of the budgetary external resources; 61.3 per cent of the total revenue resources. 86.54 per cent of the total tax receipts; and 90.45 per cent of the total export receipts of the country during the year 1999-2000 Table-11 shows the sources and use of foreign exchange in Pakistan during the fiscal year 1999-2000.

**Table-11: Sources and uses of Foreign Exchange 2000 (July-June)
in US\$ Million**

Sources	US\$ Mill.	Uses	US\$ Mill.
Non-Interest Current Account balance of payments surplus	-	Debt Service Payments (including rollovers)	6,200
Disbursements from Medium and longer term Loans	1,600	Increase in Foreign Exchange Reserves	500
Foreign Investment Inflows	400		
Possible Privatization Proceeds	500		
Agreed Re-scheduling July- December, 2000	600		
Additional Re-scheduling from Paris Club	400		
Debt Relief from Non- Consortium Countries	200		
Exceptional quick disbursing Assistance from IMF/World Bank/ ADB	1,000		
Rollover of Government Deposits	900		
Additions to F. E. - 25 Deposits	500		
Gap (Rollover of Institutional F.C.D.)	600		
Total	6,700	Total	6,700

Source: Hassan, Pervaiz, Dr. A Strategy for Debt Reduction and Management, Government of Pakistan, Finance Division, 2001,

From Table-11 it can be seen that Pakistan is in a situation of a classical debt trap, where new loans are being taken in order to service old loans. The total amount from all sources of foreign debt to Pakistan in year 2000-2001 alone were US\$ 6.7 billion but the same amount is spent on debt

service repayment including roll over to the tune of US\$6.2 billion and foreign exchange reserves to the tune of US\$ 0.5 billion. The per capita external debt in Pakistan 1999-2000 was US\$ 231, which in rupee terms was Rs. 13,500⁸ – an amount which is equivalent to a month's pay for a grade 19 Gazetted Officer in the Government of Pakistan. Debt servicing alone for the year 2000-2001 will be US\$ 5,671 million (Rs. 3,29,000 million) which is per capita US\$ 41.18 or in rupee terms equal to Rs. 2,400.

Pakistan's external debt is 53.8 per cent of the GDP; Total external liabilities of 37.30 billion dollars are 61.3 per cent of the GDP. Of the total amount falling due in the year 2000, - US\$ 3.7 billion were actually paid out of the country's foreign exchange earnings and by drawing down on the country's liquid reserves. Debt servicing on account of these liabilities during the last fiscal year amounted to 7.8 billion dollars or 95.9 per cent of the earned export proceeds. The State Bank Report points out that the amount eligible for rescheduling and roll over in the current fiscal year is 2.2 billion dollars. In 1999-2000 this amount was 3.9 billion dollars.

The main thrust of the revenue collection of the federal government is on indirect taxation in the country followed by direct taxation from the salaried classes. The entire revenue collection for the fiscal years 1999-2000, 2000-2001 is not enough to pay back the interest and principal on the foreign and internal debt that has been accumulated in the country. Total federal budget of 1999-2000 was Rs. 664,260 million, (US\$ 11,453 million)⁹ out of which Rs. 563,060 (US\$ 9,708 million) was the current budget and the rest – Rs. 101,200 million (US\$ 1,74 million) capital budget. Total resources for the current budget were envisaged at Rs. 553,060 million (US\$ 9,535.5 million). Total revenue receipts were Rs. 510,915 million (US\$ 8,809 million). The share of debt servicing in the 1999-2000 budget was Rs. 313,273 million (US\$ 5,400 million), which was 7.8 per cent higher than the previous budget; 61.31 per cent of the total revenue receipts; and 56.56 per cent of the total resources of the federal budget for the year 1999-2000.¹⁰ Debt servicing as percentage of GDP was 7.2 per cent in 1990-1991, 8.8 per cent in 1994-1995 and has increased to 10.8 per cent in 1999-2000. In rupee terms it was Rs. 73,532 million in 1990-1991, was Rs. 1,64,469 million in 1994-1995 and rose to Rs. 3,44,423 million in 1999-2000.¹¹ Expenditure on education as percentage of GDP in 1999-2000 is 2.2 per cent, and on health – 0.5 per cent of GDP.¹² One of the major sources of government expenditure is debt servicing followed by defense

⁸ (US\$ 31798 million / 137.5 million population).

⁹ Calculated at an exchange rate of Rs 58 to US\$ 1.

¹⁰ *Pakistan Economic Survey*, op-cit., p. 41.

¹¹ *Ibid.*, p. 45.

¹² *Ibid.*, p. 6-7.

expenditure, and the expenditure on civil administration. Development expenditure on economic sectors, social sectors, health and education are at a very low priority.

Social and Economic Effects of Mounting Debt In Pakistan

A weak economy means that the country cannot generate enough resources for investment purposes or in order to increase the standard of living of its people. And interestingly enough, a weak economy, low investments, employment and income also mean that the country cannot even start sustaining itself sufficiently, nor pay back already taken and misused loans from external and internal sources.

In 1994-1995 the over all foreign investment in Pakistan was US\$ 1,532.3 million (US\$ 442.4 as direct foreign investments and US\$ 1,089.9 million as portfolio investment). While in 1999 - 2000 the over all Foreign Investment in Pakistan was US\$ 392.8 million (US\$ 360.5 as direct foreign investments and US\$ 3 2.3 million as portfolio investment). This shows that between 1994-1995 and 1999-2000 a decrease in direct foreign investment by US\$ 81.9 million, and a substantial decrease in portfolio investment by US\$ 1,057.6 million, which means an overall decrease in foreign investments to the tune of US\$ 1,139.4 million.¹³

The Asian Development Bank (ADB) in its regional economic outlook stated that the ratio/percentage of people in Pakistan living below the poverty line in 1990 was 25.2 per cent. Now this has increased to 34 per cent. The number of people living under the poverty line or a dollar a day increased from 17.6 million to 44 million according to the *Economic Survey of Pakistan* 1999-2000. The incidences of calorie-based poverty in Pakistan increased from 17.3 per cent in 1987-1988 to 22.4 per cent in 1992-1993 and to 32.6 per cent in 1998-1999.¹⁴ The *World Bank Report "Partnership and Development"* states that "Pakistan's low growth rate through the 1990's made poverty worse". In the statement of John Wall, the Director of World Bank for Pakistan, "In Pakistan poverty increased during the 1990's compared to the 1950's and 1970's". Development expenditure has dropped from 8 per cent in the 80's to 6 per cent in the early 90's and now to 3 per cent of the GDP in 2000. Almost all the increase in the share of interest payments has come at the cost of development. That explains the poor economic growth rate of Pakistan.¹⁵

¹³ *Ibid.*, p. 40.

¹⁴ *Ibid.*, 1999-2000.

¹⁵ Ahmad Sultan, *Attacking Poverty*, The Daily Dawn, op-cit. 2000.

The share for development in total government spending which was 40 per cent in 1980 and 25 per cent in 1990 has gone down to 13 per cent in 2000, while interest payments increased from about 18 per cent in 1980 to 30 per cent in the 1990 and 32.7 per cent in 2000. The cut back in development spending at a time when the overall public investment rate was declining had very adverse effects on the economy, depressing growth rates and limiting progress to meet social goals. The growing public and external debt burden has caused a sharp slow down of Pakistan's economic goals from over 6 per cent per annum in the 1980's to less than 4 per cent in the late 1990's. This automatically leads to an increase in poverty. Foreign savings accounted for only 10 per cent of our investment in 1999-2000 because of rising debt service payments. This is a very high decline. It is ironic that while the country has been borrowing in the name of economic development and prosperity of the people, the real result of debt is growing poverty in the country. This has many lessons for both the government of Pakistan as well as the donors to Pakistan.

World Bank Criteria for Heavily Indebted Poor Countries (HIPC)

In order to tackle the problem of debt retirement, we must also look into the World Bank's own criteria of retiring or writing off debt of countries that are heavily indebted as quoted by IMF in its report. The criteria is as follows:

- If the external debt exceeds the export earnings by 220-250 per cent the World Bank considers the debt unsustainable. Foreign debt of Pakistan in 1999 was US\$ 37 billion according to the *State Bank of Pakistan Report 1999*, rose to US\$ 37.5 in year 2000, which was 230 per cent of its total exports in 1999. External Debt of Pakistan stood at 463.7 per cent of balance of payments receipts from exports plus remittances of overseas Pakistanis. During the 1990's it was an average of 250-300 per cent.¹⁶
- If the total debt servicing transcends 20 percent of export earning, the World Bank considers the debt unsustainable (i.e. the debt servicing/export ratio is greater than 20 per cent). Pakistan's foreign debt servicing absorbs 39 per cent of its total export earnings in 1999 and 35 per cent of all foreign exchange assets.¹⁷ The debt servicing payments are projected at US\$ 6,265 million, which was 16.5 per cent of the GDP of Pakistan and was 7.5 per cent of its GNP.

¹⁶ The Daily *News* op-cit. 1999.

¹⁷ Kardar, Shahid, The Daily *Dawn* op-cit. 2000.

- If the debt GNP ratio is 80 per cent or more, the World Bank considers the debt unsustainable. The total disbursed and outstanding debt (internal and external; medium and long term) has been estimated at US\$ 74.5 billion at the end of December 2000. Total debt of the country is more than 100 per cent of its GDP.

From the above statistics it is seen that Pakistan qualifies for the World Bank debt retirement criteria. The only reason according to the *IMF Report* is that Pakistan receives aid from the World Bank, which excludes Pakistan from those HIPC countries whose debt will be retired in the near future. Quoting the IMF report, “With a stock of public and publicly guaranteed debt amounting to US\$ 28.8 billion at the end of 1996-1997, (which has increased to US\$ 37 billion by the end of 1999) Pakistan may be regarded as a highly indebted developing country”... “Pakistan has always been current in its debt obligations, and has not benefited from any sort of debt rescheduling since 1981. The major agencies of Credit Rating rate Pakistan’s sovereign risk at non-investment grades. However, following the 1996-exchange crisis, they have downgraded Pakistan within this grade (to B2 for Moody’s and B+ for Standard and Poors). The average annual interest rate on public external debt has been stable at 3.6 per cent. (Although Pakistan meets the debt and debt service criteria used to define highly indebted poor countries, it is not classified by the World Bank as a HIPC case because of its eligibility for IBRD resources)”.¹⁸

How to go about Debt Retirement

Kofi Annan, Secretary General United Nations has called for “a fair and transparent process for debt cancellation – an objective and comprehensive assessment by an independent panel of experts not unduly influenced by creditor interests. Such an assessment should not be restricted to HIPC countries. But should also encompass other debt-distressed low income and middle income countries. There should also be a commitment on the part of creditors to implement fully and swiftly any recommendation of this panel regarding the writing off of unpayable debt”.

The vicious circle of poverty has ensured that the much-needed resources for human resource development as well as for the increase in investment levels in Pakistan do not materialise. Against this backdrop, repayments and heavy interest on the already taken loans and credits of the country are becoming an added burden. The policy makers are seeking new loans just to pay back the old ones and to keep the country solvent.

¹⁸ *IMF Report* 1996-1997, pp. 55-56.

Something, somewhere will have to break under this burden. The already poverty stricken people will go towards added burden of poverty, famine and disease. The ultimate responsibility of this looming disaster will lie on the shoulders of both the government of Pakistan and the international donors. The financial crunch will have to come from the rich nations. It is better to reduce the debt burden of Pakistan now, rather than to pay more to keep the people alive in the future.

There are three approaches to solving the debt problem of Pakistan, when the government has not spent this amount of US\$ 35 billion on the development of its people. The first option is that the total debt of the Third World should not be paid back. The thinking behind this option is that because these nations have already paid back the donors much more than the principal amounts in the shape of interest on these loans over the years, therefore the loan should automatically be liquidated or "nationalised". The president of Cuba, Fidel Castro is a strong advocate of this approach to liquidating debt of the developing nations. The theme was also echoed in the meeting of the Group of 77 in Havana at the end of the year 2000. The second approach is of moratorium on debt. In other words having agreements between the donors and the recipient nations to freeze the debt for a minimum of 20 years, and this amount should be spent on the uplift of economic growth in the recipient nation. When required growth rates are achieved, the debt and interest should be paid back. The third approach, or the middle path, which is being taken by most of the developed nations today in respect of the international debt crisis of HIPC's is to write off a bigger part or all of the debt of these nations through mutually decided criteria and norms. This is called debt retirement. For Pakistan's debt problem the option of debt retirement through a mutually agreed formula and approach between the government and its donors is the only option. An agreement should be reached that the amount of financial resources saved from debt retirement should be spent on the uplift of the poor and other deprived sections of society through community participation and under strict monitoring of the donor agencies and organisations.

The debt to international organisations and consortium countries with a total interest of above US\$ 5 billion poses the immediate problem for Pakistan. These nations and organisations have already agreed in principle to write off debts to the HICP for low-income nations in the world. The problem situation of Pakistan is seen as more acute than even the very criteria set down by the World Bank itself, and therefore Pakistan qualifies as a nation whose debt liabilities should be written off and retired.

If in the HIPC nations self-sufficiency is not achieved, the debt burden is not reduced and investment on human resource development is not increased, Pakistan will not be able to stand together in the comity of nations and sustain economic growth levels. Pakistan will not be able to protect her environment and advance the development in scientific research and technology because she is spending a major portion of badly needed financial resources servicing the old debts. Both human resource development and sustainable economic growth need heavy investments, and the money has either been embezzled by their rulers or paid back to the donors as debt servicing.

By looking into the list of debt defaulters (government functionaries, and politicians) who have embezzled public money and have defaulted on their bank loans, one gets a glimpse of the extent to which the people of Pakistan have been robbed of their share of the nation's wealth. "Borrowers, mostly from the country's elite, are estimated to have defaulted on about 211 billion rupees¹⁹ or US\$ 3,638 million.²⁰ Another news item states, "Loans worth Rs. 40 billion (US\$ 690 million) have been rescheduled, and many among the big defaulters have either got their loans rescheduled/written off or escaped."²¹

The argument being made here is that when US\$ 1 billion a year minimum was being spent on defense from foreign sources as announced by the *State Bank Report* 2000 and as more that US\$ 4 billion has been embezzled in the previous government, and an equally obnoxious amount in the previous government subsequent to the last one, most of the money coming from abroad has not been spent on the people's social and economic uplift. Therefore is it just and fair that the people of the country should not be held liable for the fraud of its powerful elite and rulers? The responsibility of the donor nations (to ensure that the money is spent for the purpose that it has been borrowed) is as much as of the government of Pakistan. Because the donors also knew of the plunder and misuse of the funds which were coming from their sources for specific development and uplift purposes and were subsequently not spent on these projects. The control and accountability network put down by the donors for every penny of theirs spent in Pakistan as well as their respective media were conscious of the fact that the money was not being spent on the right target. Even then the donors close their eyes to the plunder and kept financing all subsequent regimes and politicians of the country. In the words of the Nigerian President Obasanjo, "The people who gave these loans knew that

¹⁹ *The Daily News*, op-cit. 1999.

²⁰ Calculated at an exchange rate of Rs 58 to US\$ 1.

²¹ *Ibid.*

the money wasn't being used wisely. Perhaps they even took their cut. Yet the ordinary people have to pay back these loans. This is the injustice of it all. The burden of our debt is immoral". The donors are at fault as much as the ruling elite of Pakistan. The time has come that both these sections should take the responsibility away from the poverty-stricken people who should not be made responsible twice over for the mistakes and misconduct of others.

On the one hand, finances meant for their uplift and economic development were misused and misdirected away from the people to the foreign bank accounts of the rich and powerful (ironically, in the very banks of the donor nations). And on the other hand, by paying back the principal as well as the interest on the debt that they did not spend. The Government of Pakistan should take it as priority number one to retire all the debt of Pakistan in order to generate enough resources to spend on the social and economic uplift of the country through human development, economic growth and investment in research and technological development. The donor nations should also fulfil their commitments to the people of Pakistan by retiring their part of the debt, so that the burden of the people would be eased and an era of sustainability and social prosperity in Pakistan might commence with their economic and scientific help. Those who have misused the funds should be taken to task, in what ever nation they may reside for the time being in accordance with local and international laws, so that the plundered wealth of the country can be returned to their rightful owners – the people of Pakistan. The entire process needs negotiations and agreements on principal between the government of Pakistan and the donors under a mutually agreed formula.

What Debt Relief Would Bring To Pakistan

Rs. 3,13,273 or US\$ 6,265.46 as debt servicing if spent on human development in Pakistan and the alleviation of poverty in the country will constitute an average income of US\$ 500 per year for 12.5 million households which is the World Bank's poverty line criteria income. Total external debt of US\$ 32 billion will constitute an average income of US\$ 500 for 64 million households if the entire debt of the country is written off.

Pakistan's Ambassador and permanent representative to the UN, Mr. Shamshad Ahmad (while addressing the 55th session of the UN General Assembly on November 18, 2000) said that, "In the Highly Indebted Poor Countries (HIPC's), children were ten times less likely to live up to the age of five than those in rich countries". He continued, " Without alleviation of the debt burden, there was little likelihood that national policies could be

fully implemented and the goals of WSC (World Summit of Children) achieved anytime in the future".²²

Debt relief in the form of debt retirement if negotiated, should save for the country a total of US\$32.0 billion (the amount of external public debt of Pakistan) or an average of US\$ 6.3 billion yearly as debt servicing. Financial resources if spent on human development can put through school the large number of school-age children that are out of school; training of teachers both for primary and secondary schools, as well as for higher educational levels; ensure clean drinking water for most of the villages in Pakistan; provide basic health facilities in the rural areas and ensure that children below the age of five and mothers during pregnancy do not die in the country. These financial resources can be used for building infrastructure in Pakistan in order to expand market structures so that investment opportunities and employment levels can be enhanced. Resources saved from debt retirement can be used to develop an energy resource base in the country that can ensure cost effectiveness in attracting foreign investment so that the country can embark upon a more self-reliant economic growth model with enhanced human resources, developed infrastructure and cheap energy sector. It can go a long way in ensuring higher incomes, consumption and saving patterns in the country and bigger and comprehensive economic growth levels.

²² *The Daily Dawn*, op-cit. 2000 p. 19.

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Book Review

Vinod Thomas, Mansoor Dailami, Ashok Dhareshwar, Daniel Kaufmann, Nalin Kishor, Roman Lopez & Yan Wang - - - The Quality of Growth - Oxford University Press. 2000, pp. 231. Price not mentioned.

“The Quality of Growth” is a combined effort of economists at the World Bank to give a broader perspective of development and the means of measuring it at the end of the 20th century.

The 1st chapter focuses on the development scene over the last four decades from 1960 to 2000, in terms of natural and environmental growth factors besides the conventional GDP measures. It highlights the importance of sustainable development and the factors that need to be emphasised for growth in development in real terms, accounting for elements such as; life expectancy, education, air and water pollution, reduced mortality rate, higher literacy rates besides increased income levels.

In the second chapter, the authors emphasise Growth, Assets and Welfare. In this section case studies and references are given of countries such as Brazil, Chile and Korea where different patterns of growth were being enforced by the government to maintain sustained development. Pattern 1 emphasises unsustainable growth with abrupt growth in certain sectors of the economy eventually following a declining trend. In pattern 2, however, distorted growth is attained at the expense of deteriorating natural capital and investing in physical capital. In the 3rd pattern, sustained growth is attained by means of investment in human and natural resources, by raising the quality of education, etc.

The author explains how the whole concept of welfare in development can be brought about by the desired induction of investment in these resources (physical capital, natural capital and human capital), that change the entire dynamics of an economy.

The authors' views, however, supported by cases are biased towards induction of resources in human and natural capital, hence ignoring the significance of economies with different industrial and economic advantages. Not all countries can invest in human capital at the cost of ignoring physical capital (subsidies, tax benefits and tariff exemptions). If this course is followed some regions might end up having a larger literate economy with no industries to employ them. The authors completely ignore the concept behind the “Trickle Down Effect”, where wealth flows from the industrial or agricultural (whichever may be the predominant) sectors to others in the economy.

The third chapter highlights the importance of distribution of opportunities and assets throughout the economy. It demonstrates the significance of providing education through different segments (rich to poor) in society as well as gender based equality in education and equal distribution of land and other assets in the economy.

In this section, the author with the help of econometric tools such as Gini co-efficient and Lorenz curve highlight the disparities in opportunities for the provision of equal education throughout the economy.

In a case the author has, however, shown that a very weak correlation exists between increased Government spending on education and improved or better education outcomes over time (when adjusted for prices). The reasons explained for this are poor quality of education and less emphasis laid on education for the poor. However, the author conveniently ignores the presence of other factors such as; varied family preferences, bleak employment opportunities, opportunity cost of providing education to children to other necessities or birthrates in the economy.

On the whole the economists at WB have jotted down extremely relevant data from around the globe, showing growth trends in NI, education spending, sectoral growths, environmental and natural capital growth / deterioration etc. However, their stance has been more in view of Welfare than Development. Inclusion of these elements is desirable for all economies but provisions of natural and environmental capital for some developing countries in stages of debt traps and high financial costs may not be feasible.

The fourth, fifth and sixth chapters of “The Quality of Growth” cover issues such as; sustaining natural capital, dealing with global financial risks and governance and anti-corruption. The authors have highlighted facts and figures showing that preservation of resources such as air, water, land and mineral resources are key to the welfare of any country. Growth at the cost of environmental degradation shall have hazardous effects for the community as a whole. The author has also cited examples of an Indian city, New Delhi where the air pollution level is twice the safe standard established by WHO (World Health Organization).

Corruption is also sighted as a major deterrent to growth, such that Foreign Direct Investment tends to be less in countries where corruption is high. Corruption acts as a corporate tax on foreign investment, hence having a negative effect on growth.

The authors emphasise the benefits and risks associated with open markets and volatility of flows. The Financial Market size which, in this context refers to the size of world stock market capitalisation as well as stock of international bonds and loans outstanding has been shown in comparison with World Trade volume which, is less than one-fifth of financial market size over the last 16 years (1980-1996).

Most of the capital came from FDI and international capital markets that increased the net flow of capital to developing countries from **US\$ 43.9 billion in 1990 to US\$229 billion in 1997**. The abrupt capital inflow, however, leads to increase in interest rates and distortionary policies that provide incentives for short-term capital inflow that could lead to heightened financial vulnerability.

Lastly, the analysts rest the case saying that the concept of quality in growth should not be expected to be brought about by government intervention alone, it should more so be an effort made by the private sector, NGOs and by civil society. They emphasise more on raising a voice for better distribution of opportunities and the safe guard of natural and human capital, so that development can rise above the literal measures of growth into a broader spectrum of welfare.

In my opinion, the suggestion made by this text for expanding the scope of growth beyond GDP levels to human and natural capital growth and equal distribution of opportunities is very appealing. What it lacks largely is to show that the rise in certain growth factors could be subject to more than one factor, than the one the authors have regressed it against. To reach more appropriate analysis, multiple regression should be run on variables that could be affecting growth (increase or decrease) in any particular region.

Besides that, another very important factor that is an elementary part of developing economies is that most of them are indebted because of external loans and aid, the eligibility criteria for which is not just high interest payments but regulatory instructions of international lending agencies that this book completely overlooks.

These regulatory instructions bind the governments to raise and lower interest rates upto defined brackets and remove tariffs and taxes that generally damage the domestic industry of developing economies. In such circumstances, keeping GDP growth above a certain minimum becomes the primary concern for governments, over natural assets preservation and equality in asset distribution. Developing economies such as Pakistan require structural readjustment strategies instead of welfare preaching.

All said and done, "The Quality of Growth" is a fine piece of analytical writing supported by facts gathered from the world's most trusted sources such as the World Bank, ADB, UNDP and government agencies around the world. The economists have supported the facts well by citing examples from real cases of developing countries and shown growth trends over the past four decades. The book is very well edited and would act as a useful source of information for development analysts and government agencies in policy matters.

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Book Review

Kanchan Chopra & S. C. Gulati, Migration, Common Property Resources and Environmental Degradation: Interlinkages in India's Arid and Semi-arid Regions; SAGE Publications, New Delhi, 2000. pps 164. Price Rs. (Indian) 350/-.

This book tries to develop linkages between poverty, environmental degradation, and migration. The premise is that poverty leads to environmental degradation, and degradation of natural resources in rural areas, which results in 'degradation' pushed 'migration' to urban areas and this also happens to be the major cause of the degradation. The book uses a complex set of hypotheses, which have been tested with primary data inputs from field-based surveys in Rajasthan, India.

One hypothesis, which was put to test, was that the State of the Commons play an important role in determining the inter-linkages between environmental degradation, poverty and distress-out migration in the arid and semi-arid regions of India. The first chapter "Rural-Urban Migration and Property Rights Structure" provides the introduction to this book and highlights the "degradation-pushed migration" and "distress-migration" with the link to the lack of a well defined property rights structure. The chapter concludes on a note that infact then lays down the only possible solution to tide off both distress-out migration and environmental degradation.

The second chapter "Common Property Resources in India: Magnitude and Distribution" attempts to classify property right arrangements with respect to existing data on land use classifications and sets up a methodology for estimating common property land resources at the state level. Data provided helps the writers to conclude that land on which common property rights exist is of considerable magnitude in India, that being mainly non-profit land ranging from 40-45 million hectares and forest land which permits access of different kinds which can be classified as common.

The third chapter "Population Movements, Environmental Degradation and Property Rights: A District Level Analysis" studies the linkages between population movements, environmental degradation which is normally viewed as deforestation and land degradation and the role of property rights or institutional structures ensuring such rights in arid and semi-arid agricultural zones of India. The authors conclude that the distress-out migration in arid and semi-arid zones over central and western India are because of environmental degradation processes and shrinkages of common property resources. But what is interesting is that employment opportunities

do not, or cannot be attributed to rural out-migration. The conclusion clearly shows that distress-out migration can only be contained by regeneration of forests, and land improving irrigational potential and bringing more land under the common property regime.

The fourth chapter “Micro-level Initiatives in Semi-arid Zones: Emergence, Evolution and Impact” deals with the matter of organisational structure and institutions creation, and the impact and effectiveness of the newly created institutions. The collection of data from the micro-level studies suggest that once property rights are well defined, inputs of labour for environmental protection start coming in, and the distress-out migration process starts to decelerate.

The fifth chapter “Non-governmental Initiatives in Natural Resource Management: A Profile of Study Villages” takes the ‘*panchayat* system’ of the village and studies it with respect to the impact of changing modes of natural resource management. Therefore the village is treated as the focus in analysing the emergence and respect of natural managing institutions to a disaggregated level. This chapter basically sets the foundation for the sixth chapter, which tries to determine whether the creation of rights emerging from the existence of Non-Government Organisations (NGO) intervention can be linked to the differences observed in the migration and environmental related variables. The study reveals that the creation of common property rights in natural resource management significantly stalls rural to urban migration in the long run.

The seventh chapter which incidentally is the last chapter, provides a summary and policy recommendation. But it also sends out a very clear message that in developing nations, “development” has to be seen in a wider framework, suggesting that rural development and environmental up-gradation are not only desirable objectives for their own sake but these would also prevent the continuous degradation of the urban environment.

The book provides valid information, both to students and amateurs. It is well structured with seven close-knit chapters. It is one of the few original books that has primary data for the developing world in the context of the environment. In all it is a very readable book with a good focus on environmental issues emerging in the developing world.

Book Review

Tasneem Ahmad Siddiqui, *Towards Good Governance*, Oxford University Press, Karachi, 2001, Price: Pak Rs. 495/-.

Tasneem Ahmad Siddiqui is a bureaucrat turned author and that in itself speaks volumes about the book under discussion. It is an absorbing and refreshing publication, but somewhat lacking in expression. It is amply apparent that the author has his heart in the right place and the ideas are sound and convincing. In essence, though replete with insights and jarring home truths, it is an exhaustive litany of laments and then, eureka, the author has simple, easy to follow solutions to all the ills plaguing Pakistani society. The saving grace of course is that unlike the majority of Cassandra-like intellectuals of whom there is no dearth, Siddiqui hopes against hope and sees a plausible way out of the morass.

The book commences with a section on an insider's view of the bureaucracy. The author makes many a pertinent comment, that the basic shortcoming of our planning is lack of innovation, and that community participation is the only mechanism by which the government can reach out to the under privileged. Discussing the present ordeal of city life, the writer categorically states that the crisis of governance lies in the fact that it does not reflect the reality on the ground. There is a lack of understanding on the part of the ruling elites of the country's predicament, ad hocism being their watchword at the best of times.

Not that all is despair. The author outlines certain remedies such as the need for small and lean government, autonomy being adopted as the *modus operandi* of governance, elected local government, the imperative of transparency and the need for a bottom-up, pro-people approach in planning and development processes. These are but some of the host of concrete, hard core solutions the author offers. And this in fact makes the book truly worthwhile. It isn't a spiel of criticism for criticism's sake, the ramblings of an armchair socialist. The solutions are well thought out, practical and feasible.

There follows a chapter on the mindset of the ruling elite. He talks about the system of governance being 'cabalistic', whereby all major decisions are taken by a handful of people, the reactive rather than proactive nature of the system. All told, there are incisive insights with an abundance of information tightly packed into crisp sections.

Siddiqui then hits the nail on the head by asking what one would like to query from the economic pundits of today: "Why are a majority of our people poor when the economy has made such rapid progress?" What went wrong? If pragmatic policies had been adopted, the country would have become another Japan or Singapore according to the author. A facile answer no doubt, but a home truth too.

The author also in the chapters that follow discusses the cynicism of the educated classes, the macro economic scene and various other aspects of the socio economic canvas. He is not over emphasising the point when, to quote, he says 'We simply have to follow principles of good economic management, tighten our belts, and avoid ostentatious and vulgar consumerism'.

Discussing the moral crisis that pervades Pakistani society, the author has scathing criticism of the acquisitive instincts, the greed, selfishness and opportunism of the privileged. 'It appears all of us have sold our souls to Mephistopheles. This is what our dilemma is today', he states. I, for one, couldn't agree with him more.

His chapter on 'Why do people come to the cities' is relatively disappointing, says nothing new as such, old wine in new bottles. Then 'Breaking through the poverty trap' is again a chapter without much in depth analysis and seems to skirt the issue. There are far too many generalisations in this and the following chapter on managing our cities.

The writer talks about conflict in civil society and indicates a remarkable understanding and empathy of the poor in our society. He quite rightly lauds the fact that the poor are not pessimistic, are hard working, enterprising and have a couldn't care less attitude about who rules the country because of the absence of delivery. Further that in place of the dependency syndrome that once existed, the poor realise that the government will not come to their rescue and they are attempting to discover their own ways to solve problems. Succinctly summing up the situation as it currently exists, he says that at present there are two economies. One is the formal sector with their particular stamp of doing things and the other is the informal, reflecting the people's own initiative, unrecognised furthermore in official statistics.

Siddiqui talks of mechanisms by which people can initiate their development as alternative systems, but fails to consider bottlenecks and barriers such as inhibitions and lack of motivation. These are factors that quite obviously impede the development process.

In a somewhat pedantic tone he adds that government and professionals ought to start participating in people's activities and that it is well nigh time we shed our bias and prejudice against the poor.

The punch line of the book is apparently that governance is the source and root cause of the current crisis. Concluding on an optimistic note, fortunately, the writer states that a turn around is possible given that certain reforms in governance are inducted.

Making for an excellent read, the book could have done with more careful proof reading since there are a considerable number of typographical errors. Not high brow or esoteric, it is scholarly in its own fashion and can be appreciated by the ordinary concerned citizen of today's Pakistan.

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