THE LAHORE JOURNAL
OF
ECONOMICS

Lahore School of Economics

Papers presented at
The Eighth Annual Conference on
Management of the Pakistan Economy
Towards Accelerated Economic Growth in Pakistan: Its Need and Feasibility
16th to 17th May, 2012
Lahore School of Economics, Lahore, Pakistan

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Management of the Pakistan Economy
Financial Sector Development and Management
4th to 6th May, 2011
Lahore School of Economics, Lahore, Pakistan.

Volume 16, SE   **September, 2011**

THE LAHORE JOURNAL OF ECONOMICS
Vol. 16 - SE, 2011

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16: Special Edition 2011

THE LAHORE JOURNAL OF ECONOMICS

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Pakistan 2011: Policy Measures for the Economic Challenges Ahead

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Abstract

Pakistan faces economic challenges in the summer of 2011 with regard to its balance of payments and its public finances, resulting primarily from the suspension of an ongoing International Monetary Fund (IMF) program, the associated cessation of program lending by other multilateral financial institutions, and the termination of the US's cash logistics support. This paper argues that these challenges can be met without resorting to a new program with the IMF. The policy measures recommended with regard to the balance of payments are: (i) to allow the orderly depreciation of the exchange rate in the foreign exchange interbank market by about 5–15 percent or to PKR90–100/US dollar, (ii) to impose import surcharges of 10–20 percent on nonessential imports, and (iii) to re-impose measures originally imposed to increase the cost of import letters of credit. Public finance-related policy measures recommended on the expenditure side are: (i) to gradually reduce the State Bank of Pakistan's policy rate by 300 basis points in the fiscal year (FY) 2012 from its present level of 13.5 percent, thereby reducing the interest burden on public debt; and (ii) to utilize these savings to restart the stalled public sector infrastructure development program. These measures will also stimulate economic activity. On tax policy, the paper recommends that: (i) the sales tax rate be increased from its present 16 percent to 18 percent, (ii) custom duties be increased by 10–20 percent on nonessential imports (as also recommended for the balance of payments, and (iii) regulatory and excise duties be increased and their original (FY2011) coverage restored.

Keywords: Economic Policy, Balance of Payments, Public Finance, Pakistan.

JEL Classification: H29, G18.

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1. Introduction

Pakistan entered into an International Monetary Fund (IMF) program in late 2008 as its foreign exchange reserves depleted as a result of economic adventurism during 2004–08 by its economic managers. The IMF program was generally implemented during 2009 and 2010 but finally suspended in the summer of 2011, which was also notable in that the US cut off its cash logistics support program (roughly USD1 billion per annum) to Pakistan. These twin events followed in the wake of exceptional floods in the summer of 2010, which displaced about 20 million people, and caused a loss in infrastructure estimated at about USD10 billion and an income loss estimated at about 2–3 percent of gross domestic product (GDP). As a result, Pakistanis are generally concerned about the future direction of the economy and particularly the policy options available to them. This paper aims to address some of these issues.

2. Economic Fundamentals

Pakistan, with an area of 877,365 square kilometers; a population of 175 million; more than a dozen urban centers of more than 1 million people (Karachi, 12 million; Lahore, 7 million); large agricultural areas (in excess of 50 million acres); and possessing a sophisticated industrial, scientific, and financial infrastructure is easily a significant political, economic, and social entity on the world scene.

As Table 1 below indicates, the country's current GDP is about USD235 billion at current market prices (probably about USD500 billion at purchasing power parity [PPP] prices) and its per capita income about USD1,400 (USD3,000 at PPP prices). It is also a large and flourishing democracy with a fiercely independent media and judiciary. An economy and society of this size and sophistication should be able to manage its current economic problems, which essentially stem from a low growth rate/high interest rate syndrome imposed by the IMF, and an apparent financial squeeze imposed by other multilateral financial institutions (the World Bank and Asian Development Bank) after the breakdown of the agreement with the IMF.

Table 1: Pakistan's Economic Fundamentals
(At current market prices)

	2009/10	**2010/11 Estimates**	**2011/12 Projected**
GDP (PKR billion)	14,836	18,063	21,173
GDP (USD billion)	177	211	235
GNP (PKR billion)	15,402	18,847	21,973
GNP (USD billion)	184	220	244
Population (million)	170	173	177
Exchange rate (USD1 = PKR)	83.6	85.6	90.0
GNP/capita (PKR)	90,600	108,940	124,140
GNP/capita (USD)	1,083	1,272	1,380
GDP growth rate at current prices (%)	15.1	21.7	17.2
GDP growth rate at constant prices (%)	4.4	2.4	4.2
CPI (%)	12.7	13.1	11–12
State Bank of Pakistan's policy rate (%)	12.5	14.0	13.5

CPI = consumer price index, GDP = gross domestic product, GNP = gross national product.

Sources: GDP and GNP data and projections from the Planning Commission's *Annual Plan, 2011–12* (pp. 11–12). Exchange rates for 2009/10 and 2010/11 from the Finance Division's *Pakistan Economic Survey 2010–11* (p. 86). Exchange rate for 2011/12 is author's own estimate. CPI and SBP reverse repo rate (policy rate) from the State Bank of Pakistan's *Monetary Policy Statement, July 2011* (pp. 1–24).

3. Balance of Payments

Consequent to the boom-and-bust policies followed by Pakistan in the 1980s and early 1990s, essentially involving in each case a balance of payments crisis and subsequent recourse to the IMF, Pakistan moved to institute an orderly market-determined exchange rate. Instead of a fixed exchange rate managed by the State Bank of Pakistan (SBP), an interbank foreign exchange market was created in the late 1990s by the SBP whereby all exporters (including banks and foreign currency exchange houses with foreign exchange from workers' remittances or currency exchange) were required to sell their foreign exchange within 30 days in the interbank market to importers of goods and services. This market (supervised by and intervened in by the SBP) ensured that the exchange rate would adjust according to market realities and Pakistan could consequently hold any desired level of foreign exchange reserves.

This automatic mechanism served Pakistan well until November 2004 when the SBP decided to remove all oil payments from the interbank market and provide it with foreign exchange directly, using its own

reserves or its own purchases from the interbank market. This fateful decision, largely stemming from a desire to maintain the exchange rate at current levels—then approximately USD1 = PKR60—had severe consequences. The exchange rate appreciated dramatically in real terms over the next four years, resulting in unrestrained imports and consumption of imported goods, and with consequent adverse effects for the balance of payments. As oil prices rose from an average of USD41/barrel in the fiscal year (FY) 2005 to USD92/barrel in FY2008 (SBP, 2010a, p. 60), the SBP oil support amounted to USD6.7 billion in FY2006, USD7.3 billion in FY2007, and USD11.5 billion in FY2008 (Table 2). As a result, Pakistan's gross foreign exchange reserves fell from USD11.3 billion in end-June 2008 to USD6.8 billion by October 2008, of which about USD2.5 billion were reserves of commercial banks' private depositors. This necessitated immediate recourse to an IMF program.

Table 2: Pakistan's Balance of Payments
(In USD billion, current prices)

	FY2007	FY2008	FY2009	FY2010	FY2011 Estimates
SBP gross reserves	16.8	11.3	12.1	16.9	NA
SBP net reserves	13.3	8.6	9.5	13.1	14.8
IMF support			3.9	3.5	
Balance of payments/overall balance	3.7	-5.5	-3.1	1.3	2.5
Capital account balance	10.4	8.3	6.1	5.2	1.8
Direct investment	5.1	5.4	3.7	2.2	1.5
Portfolio investment	3.3	0.0	-1.1	0.0	0.7
Foreign loans (net)	2.0	2.8	2.1	2.0	0.2
Current account balance	-6.9	-13.8	-9.3	-3.5	0.5
Trade balance	-9.7	-15.0	-12.6	-11.4	-10.2
Exports	17.3	20.4	19.1	19.6	25.5
Imports	27.0	35.4	31.7	31.0	35.7
(Petroleum and crude oil)	(7.3)	(11.5)	(9.5)	(10.1)	(11.1)
Services and current transfers balance	2.8	1.2	3.3	7.9	10.7
Workers' remittances	5.5	6.4	7.8	8.9	11.2
US cash logistics support (CSF) and budgetary support	1.2	0.7	0.9	1.3	0.5

FY = fiscal year, IMF = International Monetary Fund, SBP = State Bank of Pakistan.
Sources: SBP's *Annual Reports* for 2007/08, 2008/09, and 2009/10 (excluding commercial bank reserves of private foreign exchange deposits). SBP's *Monetary Policy Statement, July 2011* (p. 21) for FY2010/11.

The IMF program provided Pakistan with about USD3.9 billion in FY2009 and USD3.5 billion in FY2010 before being suspended in FY2011 when the country failed to adopt a revised general sales tax (RGST) or value-added tax (VAT) as envisaged in the FY2011 (July 2010–June 2011) budget. Besides its importance in providing the economy with the necessary liquidity, a major feature of the IMF program was that it had shifted petroleum imports back to the foreign exchange interbank market starting in February 2009 and completing this process in December 2009. For FY2009, the SBP provided USD9.2 billion in foreign exchange against this head against USD999 million provided by the banks. In FY2010, the SBP provided only USD2.1 billion in foreign exchange (till December 2009), while the banks provided USD8.6 billion. This foreign exchange interbank market process for petroleum imports (and indeed for all import payments) is now firmly back in place, eliminating an important source of instability in the foreign exchange reserve accounts. As a result, the SBP's intervention in the foreign exchange interbank market is now very limited.

However, a negative consequence of the now almost defunct IMF program has been that other multilateral financial institutions (the World Bank and Asian Development Bank) have cut off their program lending to Pakistan in order to pressure it to adopt another IMF program, while their own project lending has been substantially reduced due to the lack of counterpart funding in Pakistan's Federal Public Sector Development Program, which was cut back drastically to meet IMF budget deficit targets (discussed later). As a result, capital inflows from multilateral and other institutions in FY2011 are down from an expected USD4.8 billion to approximately USD2.4 billion (SBP, 2011, p. 22)—an amount just about equal to the amortization due to these institutions, resulting in a net inflow of only USD0.2 billion under this head. While this data is very preliminary and may well change as additional data becomes available, the situation on the capital and financial accounts is a source of considerable concern.

This dismal picture of the capital account is, however, at least temporarily offset by the spectacular growth in workers' remittances to USD11.2 billion in FY2011 compared to USD8.9 billion in FY2010, and the equally impressive growth in merchandise exports—USD25.5 billion in FY2011 compared to USD19.6 billion in FY2010. The increase in workers' remittances is expected to be sustained while merchandise exports—which benefitted from higher unit prices as a result of a commodity boom—are likely to consolidate and increase at a more modest level in the future as a result of declining cotton and other prices.

The policy measures recommended for Pakistan while it continues to pursue increased capital flows are, therefore, to: (i) allow the exchange rate to depreciate in the interbank market in an orderly manner by an estimated 5–15 percent—as the foreign exchange market tightens—to between PKR90 and PKR100 per dollar; (ii) impose import surcharges comprising an additional 10–20 percent customs duty on all imports excluding petroleum products, raw materials, and security-related imports.

Ideally, nonessential consumer goods will have at least an additional 20 percent customs duty. It is recommended that more weight be given to import surcharges since this will mitigate the extent of the exchange rate adjustment required, and also help the fiscal situation (discussed further below). In addition, (iii) the SBP, which had recently withdrawn its additional cash and other requirements for opening import letters of credit (perhaps at the urging of the IMF), should re-impose these earlier measures.

4. Federal Public Finances

The Seventh National Finance Commission award was signed on 30 December 2009, under which the provinces' share in federal taxes was increased from 46.75 percent in FY2010 to 56.70 percent in FY2011 and 57.50 percent in all subsequent years. In addition, the 18th Amendment to the Constitution was approved on 9 April 2010 through which the Concurrent List (defining areas of joint federal and provincial legislation) was abolished and all its subjects transferred to the provinces, with the exception of a few—notably criminal law and procedure; and standards in higher education institutions, science and technical institutions, and legal, medical, and other professions—which were moved to Part II of the Federal List that is administered by the Council of Common Interests comprising the federal government and the provinces (Beaconhouse National University, 2011, pp. 62–63).

As Table 3 indicates, the Seventh National Financial Commission Award severely restricted federal finances in FY2011 to PKR2,620 billion, which was only 4 percent higher than the PKR2,517 billion available in FY2010 (a period during which the consumer price index [CPI] increased by 13.1 percent). While 15 federal ministries were moved to the provinces (including local government, education, social welfare, food and agriculture, health, and labor and manpower), slimming down the federal government did not mitigate the severe adjustment the federal public

finances had to undertake to meet the IMF program's fiscal deficit targets of 4–5 percent of GDP (Beaconhouse National University, 2011, pp. 64–65).

Table 3: Pakistan's Federal Public Financial Resources
(In PKR billion, current prices)

		FY2009	FY2010	FY2011 (Revised Est.)	FY2012 Budget
1	Total internal receipts	1,970	2,237	2,554	3,032
	(Tax revenues divisible pool)	(1,180)	(1,483)	(1,679)	(2,074)
	(Nontax revenues)	(603)	(569)	(556)	(657)
	(Capital receipts)	(187)	(185)	(319)	(299)
2	Total external receipts	367	578	290	414
3	Public accounts receipts	64	191	201	164
4	Gross federal resources (1+2+3)	2,401	3,006	3,046	3,610
5	Less provincial share of divisible pool	560	655	998	1,203
6	Net federal resources (4-5)	1,841	2,350	2,048	2,406
7	Cash buildup by provinces	37	78	119	124
8	Credit from banking sector	146	89	452	303
9	Total federal resources (6+7+8)	2,024	2,517	2,620	2,835

FY = fiscal year.

Sources: Finance Division's *Federal budget: Budget in brief, 2008–09* for FY2009. Finance Division's *Federal budget: Annual budget statement* for 2009/10, 2010/11, and 2011/12 for FY2010, FY2011, and FY2012, respectively.

Unfortunately, as always, the federal Public Sector Development Program (PSDP) had to bear the burden of the downward adjustment—from PKR229 billion in FY2009 to PKR138 billion in FY2010 and PKR99 billion in FY2011 (Table 4) with dramatic adverse consequences for federal public infrastructure development and the colossal waste inflicted on the national economy when ongoing projects of national importance in roads, highways, water, power, health, and education ceased to be financed.

An analysis of federal financial expenditures (Table 4) shows the squeeze on both the current and capital (development) expenditures of the federal government. Current expenditures, excluding debt service (primarily interest payments), are projected to be reduced from PKR1,501 billion in FY2011 to PKR1,349 billion in FY2012, or by 11 percent at a time when CPI inflation for the current fiscal year (FY2012) is estimated at 11–12 percent. This 20 percent real reduction in current expenditures for FY2012) is clearly unsustainable, and is due to the unrealistic (and self-

inflicted) bleeding of public finances caused by a very high level of debt service, which is primarily the result of the SBP's present (August 2011) reverse repo rate (policy rate) of 13.5 percent that has led to high interest rates in the economy and for government borrowing. Each 100-basis points or 1 percent drop in the SBP's policy rate will result in a gain of approximately PKR75 billion to federal public finances. A 300-basis points or 3 percent drop in the policy rate will make available resources sufficient to restore the federal PSDP to its earlier levels in real terms.

Table 4: Pakistan's Federal Public Financial Expenditure
(In PKR billion, current prices)

	FY2009	FY2010	FY2011 (Revised Est.)	FY2012 (Budget)
Total federal expenditure	2,024	2,517	2,620	2,835
Current expenditure	1,649	2,132	2,356	2,383
(Defense)	(311)	(378)	(445)	(495)
(Debt service)	(752)	(814)	(855)	(1,034)
Development expenditure	375	384	263	451
(PSDP)*	(229)	(138)	(99)	(177)
(Other development a/c)	(59)	(118)	(46)	(197)
(Development expenditure on capital a/c)	(87)	(127)	(118)	(178)

FY = fiscal year, PSDP = Public Sector Development Program.
* PSDP includes operational shortfall except for FY2012, where operational shortfall is not included but is likely to be at the same level as in FY2011 (PKR58 billion), which would reduce the FY2012 PSDP to PKR119 billion.
Sources: Finance Division's *Federal budget: Budget in brief, 2008–09* for FY2009. Finance Division's *Federal budget: Annual budget statement* for 2009/10, 2010/11, and 2011/12 for FY2010, FY2011, and FY2012, respectively.

The policy measures recommended for Pakistan with regard to the availability of federal public financial resources are, therefore, to: (i) reduce the SBP's policy rate by at least 300 basis points to 10.5 percent in FY2012 to free up an additional estimated PKR225 billion for the federal PSDP. This will also restore growth to the economy. High interest rates are the IMF's prime instruments aimed at stabilizing the economy in developing countries by reducing inflation and growth. However, the fiscal deficit will have to be contained and the present policy of federal borrowing only from the banking system (and not from the SBP) continued. The SBP will have to fight inflation using the still high interest rates as well as other monetary instruments, and/or to mobilize additional resources through taxation (discussed further below).

A review of Pakistan's tax revenues (Table 5) indicates the overwhelming role of income taxes (on individuals and corporations) in direct taxes, and the dominant position of sales tax and reduced role of customs duties and federal excise in indirect taxes. This reflects the effects of the IMF's free-market ideology, which was both imposed on and willingly adopted by Pakistan during the IMF program period (FY2009–FY2011) and which continues to date.

Table 5: Pakistan's Federal Tax Revenues
(In PKR billion, current prices)

	FY2009	FY2010	FY2011 (Revised Est.)	FY2012 (Budget)
Total tax revenues (1+2)	1,180	1,483	1,679	2,074
Direct taxes	461	540	627	744
Income taxes	443	520	603	719
Workers Welfare Fund	12	16	20	25
Capital value tax	6	4	4	-
Indirect taxes	719	943	1,052	1,330
Custom duties	145	165	173	206
Sales tax	457	540	655	837
Federal excise	116	134	133	157
Petroleum levy*	112	102	90	112
Islamabad Capital Territory taxes*	1	1	1	2
Airport tax*	neg.	neg.	neg.	neg.

FY = fiscal year.
* These taxes are not FBR taxes; all other taxes are FBR taxes.
Sources: Finance Division's *Federal budget: Budget in brief, 2008–09* for FY2009. Finance Division's *Federal budget: Annual budget statement* for 2009/10, 2010/11, and 2011/12 for FY2010, FY2011, and FY2012, respectively.

Tax policy economists have focused primarily on the possibility of reviewing and strengthening the capital value tax on property transactions in order to increase direct tax revenues (Beaconhouse National University, 2011, pp. 103–106). Unfortunately, this proposal falls foul of the 18th Amendment to the Constitution, which removed taxes on capital gains on immovable property from the Federal Legislative List. There is very little appetite in the system to increase income taxes on individuals or corporations, or to increase workers' welfare taxes on the profits of corporations. In fact, the special revenue measures imposed by the federal government in March 2011—including a 15 percent surcharge

on income tax—were largely abolished in the FY2011–12 budget, and the income tax regime prevalent earlier restored.

Similarly and rather strangely, given the resources-constrained situation, many of the other special revenue measures of March 2011 relating to indirect taxes—particularly the increase in the rate of the sales tax from 16 to 17 percent—and the additional special excise taxes were also reversed. The special measures were expected to add PKR40 billion in additional revenues in the last quarter of FY2011. The reduction in the sales tax rate was particularly pointless since manufacturers had already adjusted their prices upward earlier and did not reduce prices as a result of the reduction. However, some of the special economic measures, including the removal of zero ratings for a few exempted sectors (particularly agricultural tractors), have been retained.

On the whole, the focus of the current FY2012 budget is to reduce federal excises (15 out of 46 were removed from the Excise Law) and almost eliminate regulatory duties (392 out of 397 were abolished, and only regulatory duties on luxury vehicles, cigarettes, arms and ammunition, betel nuts, and sanitary tiles have been retained). Similarly, the FY2012 budget approved that federal excise duty on cement be phased out in three years with a reduction of PKR200/MT in FY2012 and equal reductions of PKR500/metric ton in the next two years, giving a windfall profit gain to cement manufacturers. It was also announced that the federal excise duty on beverages was being phased out by reducing it to 6 percent in FY2012 and abolished the following year. These revenue losses were to be compensated for by (i) the removal of selected exemptions and zero ratings on sales taxes (in part continuation of the special economic measures mentioned above), (ii) an upward revision of the federal excise duty on cigarettes, (iii) revision of the rate of tax in lieu of VAT on commercial importers from 2 to 3 percent, and (iv) improving tax compliance (Government of Pakistan, 2011c).

The policy measures recommended for Pakistan with regard to additional taxation measures are, therefore, to: (i) increase the sales tax rate from its present level of 16 percent to 18 percent; (ii) increase the customs duty on all imports (excluding petroleum products, raw materials, and security-related imports) by 10–20 percent as recommended earlier, which will also benefit the balance of payments by restricting imports and helping avert a sharp depreciation of the exchange rate; and (iii) increase federal excise duties and the petroleum levy by extending it to domestically produced raw and compressed natural gas. This is particularly important given the windfall gains that will further accrue to domestic natural gas

field operators as the Iranian natural gas (to be priced at approximately twice the present domestic gas prices) is brought on stream into Pakistan by the Iran-Pakistan gas pipeline by 2014.

5. Conclusion

The analysis presented in this paper indicates that Pakistan faces interesting challenges on both the balance of payments account and the public finance account. The emerging balance of payments problems resulting from the suspension of the IMF program and the cessation of US cash logistics support can be dealt with by: (i) allowing the interbank foreign exchange market to work and accepting an orderly depreciation of the exchange rate in this market by about 5–15 percent or to PKR90–100/dollar; (ii) imposing import surcharges of 10–20 percent on nonessential imports; and (iii) reinstating the additional requirements (including cash) on import letters of credit, which have recently been withdrawn by the SBP.

The public finance issues on the expenditures side can be resolved primarily by: (i) reducing the SBP policy rate by at least 300 points, which would reduce debt amortization payment; and (ii) using these savings on amortization payment to restore the federal PSDP for completing suspended ongoing important infrastructure projects (particularly roads, dams, power, and education and social sector projects). Public finance tax-related issues can be resolved by: (i) increasing the sales tax rate from 16 to 18 percent; (ii) increasing customs duties by 10–20 percent on nonessential imports, which is also required to manage the balance of payments; and (iii) increasing regulatory and excise duties and restoring their original coverage. By adopting these measures, Pakistan will be able to do without a follow-up IMF program, restore multilateral institution project lending, substitute its own resources for US cash logistics support, and restore much needed growth to the economy.

References

Beaconhouse National University. (2011). *Fourth annual report: State of economy: Devolution in Pakistan*. Lahore: Institute of Public Policy.

Government of Pakistan. (2008). *Federal budget: Budget in brief, 2008–09*. Islamabad: Finance Division.

Government of Pakistan. (2009). *Federal budget: Annual budget statement, 2009–10*. Islamabad: Finance Division.

Government of Pakistan. (2010). *Federal budget: Annual budget statement, 2010–11*. Islamabad: Finance Division.

Government of Pakistan. (2011a). *Annual plan, 2011–12*. Islamabad: Planning Commission.

Government of Pakistan. (2011b). *Federal budget: Annual budget statement, 2011–12*. Islamabad: Finance Division.

Government of Pakistan. (2011c). *Federal budget: Budget speech, 2011–2012*. Islamabad: Finance Division.

Government of Pakistan. (2011d). *Pakistan Economic Survey 2010–11*. Islamabad: Finance Division, Economic Adviser's Wing.

State Bank of Pakistan. (2006). *Annual report 2005–2006: Review of the economy*. Karachi: Author.

State Bank of Pakistan. (2007). *Annual report 2006–2007: Review of the economy*. Karachi: Author.

State Bank of Pakistan. (2008). *Annual report 2007–2008: Review of the economy*. Karachi: Author.

State Bank of Pakistan. (2009). *Annual report 2008–2009: Review of the economy*. Karachi: Author.

State Bank of Pakistan. (2010a). *Annual performance review, 2009–10*. Karachi: Author.

State Bank of Pakistan. (2010b). *Annual report 2009–2010: Review of the economy*. Karachi: Author.

State Bank of Pakistan. (2011). *Monetary policy statement, July 2011*. Karachi: Author.

Pakistan: Breaking Out of Stagflation into Sustained Growth

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Abstract

This paper proposes that the underlying cause of the macroeconomic problems facing Pakistan today are a series of supply shocks which have constrained output growth. It is argued that while the current debate has solely focused on government expenditures and revenues, it is critical to also address the acute energy shortages which is constraining supply. The paper goes on to present four recommendations for breaking out of the present stagflation: (i) prudent macroeconomic management, (ii) reviving the role of the government in development while restoring fiscal balance, (iii) loosening monetary policy in order to spur the private sector, and (iv) improving social safety nets.

Keywords: Economic Growth, Supply Shock, Pakistan.

JEL Classification: F43, P44.

1. Introduction

As far back as the 1950s, Pakistan's economic growth has been characterized by stop-go cycles. Periods of high economic growth, sparked in many cases by increases in foreign resource inflows, have been followed by a sharp slowdown as foreign resource inflows dried up, resulting in unsustainable current account and fiscal deficits that dictated deflationary measures.

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Figure 1: Pakistan's Macroeconomic Performance
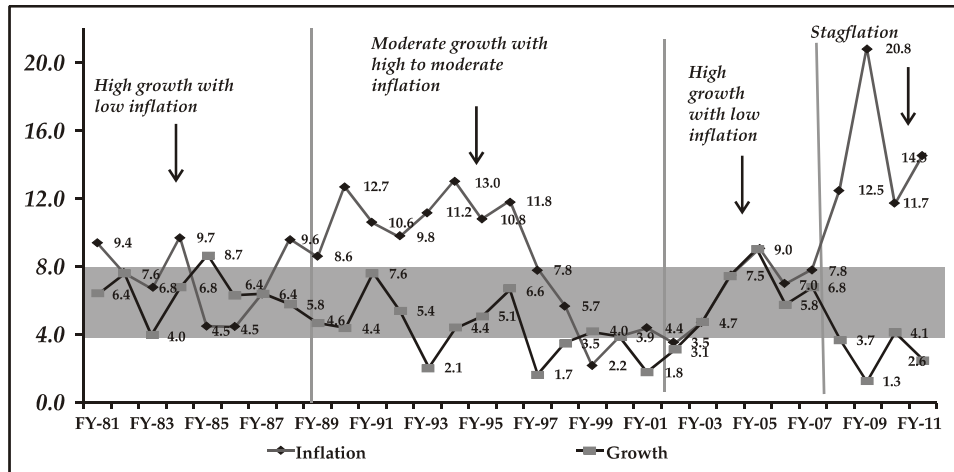
As can be seen from Figure 1,[1] Pakistan has over the last 30 years experienced periods of high economic growth with low inflation followed by low economic growth with low to moderate inflation (or variants of this combination). It is important to note here that spurts of high economic growth since 1980 have taken place when inflation levels were generally low. Starting in 2007/08, the economy has, over the last four years, witnessed a new phenomenon—very low economic growth with very high double-digit inflation, a situation classically described as stagflation.

The main aim of this study is to identify the factors that are responsible for this continuing stagflation, and new policy measures needed to break out of this undesirable situation. The thrust of the analysis is on understanding the macroeconomic dynamics of this continuing stagflation, which could form the basis of the remedial measures being proposed.

The fundamental proposition being put forward is that, while the underlying cause of this crisis still lies in the economy's basic structural weaknesses and lack of political will to carry out much needed economic

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[1] The two bands shown in Figure 1 represent the lower side of minimum economic growth (4 percent) that would ensure at least some increase in per capita income, given Pakistan's population growth rate, which is estimated at just over 2 percent. (To avoid rising unemployment with a growth rate of 3 percent of the labour force would require a minimum growth of around 6 percent.) The upper band (8 percent) represents the average inflation rate for the entire period. Pakistan, with the exception of the recent past, has very seldom experienced double-digit inflation.

reforms, the major cause of this current stagflation is a series of supply shocks (acute energy shortages, rising global oil prices, and unprecedented floods in the summer of 2010). These supply shocks—which have pushed the supply curve upward, seriously constraining output growth—when combined with rising demand pressures (high fiscal deficits financed by direct borrowings from the State Bank of Pakistan (SBP), large increases in remittances, high government-supported cereal prices, and large increases in the wages of public sector employees) have unleashed high inflation. In these conditions, both unemployment and poverty levels must have risen.

The article goes on to argue that, while the current and almost sole emphasis in the policy debate on raising revenues and curbing the fiscal deficit is well justified, this in itself will not be sufficient. Equally important is solving or easing the real binding constraint to the supply side of acute energy shortages, which are crippling the economy, especially manufacturing, services, and the informal economy. We then propose a four-point strategy to tackle the current crisis and move the economy out of stagflation.

2. The Economic Context

A growing body of opinion (see Ahmed, 2011; Haque, 2010) traces the roots of the current crisis to many of the economic policies adopted by the last Musharraf government. These included in 2002/03 (i) the adoption of a loose monetary policy to jumpstart the economy; (ii) the lack of any serious attempt to undertake basic structural reforms or raise the tax/gross domestic product (GDP) ratio; and (iii) a policy of "inaction and neglect" in anticipating the emerging large gap in supply of and demand for energy, and failing to raise energy prices when the first oil shock hit; these measures were politically expedient as it was an election year. While the government implemented some desirable economic policies that spurred growth, on the whole they were not sufficient.

The Musharraf government appears to have been lulled into inaction, as previous governments had also been, by the massive increases in remittances and foreign inflows as well as the rescheduling of foreign debt and easier access to some (European Union) export markets for some time, following 9/11. Growth was also mainly consumption-led and energy-intensive as cheap credit was made available to buy consumer durables, especially automobiles. Investment levels did increase (domestic and foreign) but were clearly still low, hovering at

their peak at just over 20 percent of GDP, and were clearly insufficient to result in sustainable growth.

The economy, therefore, remained delicately balanced and vulnerable during the Musharraf period. With the very first external shock in 2006/07—the unprecedented increase in global oil and cereal prices—the economy began to flounder. This downturn in economic growth, which started in 2006/07, had by March 2008—when the new government took office—ballooned into a full-fledged economic crisis. The fiscal deficit estimated for 2007/08 (in March 2008) was 9 percent, the current account deficit was 8 percent of GDP, and falling foreign exchange reserves were declining by almost USD1 billion each month at the peak of the increase in global oil prices.

With foreign exchange reserves in early 2007 at only USD17 billion and fast declining, the new government had no choice but to opt for strong deflationary measures. When the government found that there were few "friends" who could bail it out, it had no recourse but to approach the International Monetary Fund (IMF). Indeed, even Pakistan's "friends" encouraged the government to seek IMF support as many felt that only it could provide the "strong arm" needed to ensure that the government would implement stabilization measures together with much needed economic reforms, especially the imposition of value-added tax (VAT) (later called the reformed general sales tax [RGST]). There was clearly a "trust deficit" between the new government and major donor countries.

That Pakistan suffered from weak macroeconomic fundamentals, which made it much more vulnerable, first, to the oil and commodity price shocks and then the financial crisis that followed, can be seen by comparing its performance to its neighbors in the South Asian Association for Regional Cooperation (SAARC) (Amjad & Din, 2010). Pakistan fared far worse from the global financial crisis than India, Bangladesh, and Sri Lanka, and these countries also rebounded quickly to return to their earlier high growth path while Pakistan remained mired in stagflation (see Table 1).

Table 1: Macroeconomic Policies and Growth Reforms
South Asia: Impact of the Financial Crisis
GDP Growth Rates (%)

Country	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Bangladesh	6.3	6.0	6.6	6.4	6.2	5.9	5.5	6.0
India	8.5	7.5	9.5	9.6	9.3	6.8	8.0	8.6
Pakistan	7.5	9.0	5.8	6.8	3.7	1.7	3.8	2.4
Sri Lanka	5.4	6.2	7.7	6.8	6.0	3.5	8.0	8.0

FY = fiscal year, GDP = gross domestic product.
Sources: Bangladesh Economic Review, 2011; Economic Survey of India, 2009; Economic Survey of Pakistan, 2011; Economic Survey of Sri Lanka, 2009; Economic and Social Survey of Asia and the Pacific, 2011.

In all fairness it should be said that Pakistan has suffered, especially in the last three years, due to a fragile security situation and low-level insurgency resulting in considerable loss of both domestic and foreign business confidence. Also, the unprecedented floods in the summer of 2010 estimated at costing USD10 billion by a joint World Bank/Asian Development Bank study shaved off nearly 1 to 1.5 percent of expected growth, besides destroying badly required physical infrastructure.

Yet, as we shall argue, this difficult and challenging situation has been made worse by poor macroeconomic management and a serious lack of coordination in economic policymaking, especially by fiscal and monetary policy authorities.

3. Supply Shocks and Stagflation[2]

How a supply shock flowing from, say, an increase in oil prices or severe power shortages can result in stagflation is illustrated by the simple diagram below.

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[2] There is a large body of literature on stagflation. During the 1960s and 1970s, stagflation in Latin American economies, with their peculiar characteristics (wide income and asset inequalities, the vast majority of the population living in urban areas, strong trade unions, and high dependence on the export of commodities) was widely debated. The jump in oil prices in the 1970s caused by Organization of Petroleum Countries (OPEC) also resulted in stagflation and, again, was subject to considerable analysis (see, for instance, Barsky & Kilian, 2002; Blinder, 1981; Brunner, Cukierman, & Meltzer, 1980; Bruno & Sachs, 1979).
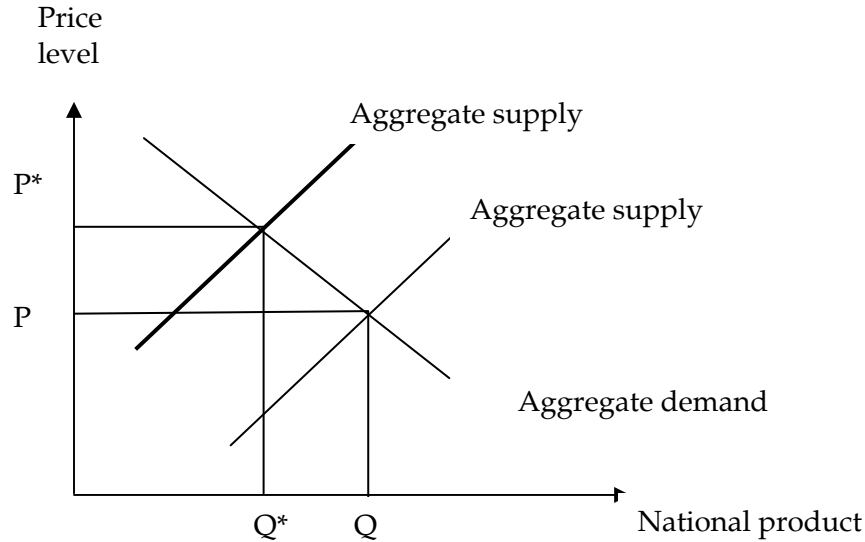
Price
level

Aggregate demand and aggregate supply as shown above will result in output Q and price level P. As the supply shock pushes the supply curve upward, output declines to Q* and the price level increases to P*, with the extent of this price increase and output contraction depending on the intensity and magnitude of the supply shock.

If the resulting price increase is large, the monetary authorities can deflate the economy by tightening money supply and raising interest rates, thus pushing the aggregate demand downward. This could bring prices down but further accentuate the fall in output and deepen the recession.

If the government was to, however, counter the recession resulting from the upward shift in the supply curve by increasing aggregate demand, say, through a fiscal stimulus, then depending on peculiar economic conditions in the economy, this could result in much higher inflation without stimulating a corresponding increase in output. This would then result in a classical stagflation situation. The point to grasp is that, faced with an upward shift in the supply curve, policymakers face hard choices.

4. Pakistan's Attempt at Stabilization

That Pakistan had to stabilize its economy in early 2008, given its precarious and fast deteriorating macroeconomic situation, was never in

doubt.[3] Although the IMF Stand-By Agreement (SBA) was signed in November 2008, a "shadow" IMF program had been agreed on earlier and was the basis on which the 2008/09 national budget was announced in June 2008.

The key elements of the 23-month SBA for special drawing rights (SDR) of USD7.3 billion in support of the macroeconomic stabilization program included the following (IMF, 2008):

- Under the fiscal program, it sought to reduce the deficit from 7.4 percent of GDP in 2007/08 to 4.2 percent in 2008/09 and 3.3 percent in 2009/11, while allowing for increased spending on a social safety net (through the Benazir Income Support Program [BISP]). This reduction was to be achieved by phasing out energy subsidies, reducing development expenditures, and raising tax revenues including through the introduction of a VAT and other tax and administration reforms.

- Monetary policy was to be tightened by raising interest rates from 13 to 15 percent.

- While not made explicit, the exchange rate was also to be suitably depreciated to ensure lost competitiveness over the last few years and compress imports.

Table 2: Movement of Key Economic Variables

Variable	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Economic growth	7.5	9.0	5.8	6.8	3.7	1.7	3.8	2.4
Fiscal deficit (% of GDP)	-2.4	-3.3	-4.3	-4.3	-7.6	-5.3	-6.3	-5.6*
Average annual inflation rate	4.6	9.3	7.9	7.8	12.0	20.8	11.7	14.1
Current account balance (% of GDP)	1.3	-1.6	-4.4	-5.1	-8.7	-5.7	-2.2	0.4

FY = fiscal year, GDP = gross domestic product.
* Latest estimates.
Source: Government of Pakistan, Pakistan Economic Survey 2010–11.

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[3] This was also the main conclusion of the Panel of Economists set up by the Planning Commission in September 2008 (see Government of Pakistan, 2008).

How well has Pakistan fared in its attempts to stabilize and bring about the necessary economic reforms?[4] The simple answer to the question is that it has not and indeed the economy finds itself in the worse of both worlds—low economic growth and high double-digit inflation (see Table 2). True, the current account is in a small surplus, but this is a reflection of low growth and low investment. Also, Pakistan benefited in 2010/11 from favorable terms of trade (cotton, rice), which resulted in record exports but with a fall in global prices in cotton, this may turn out to be a short-term windfall.

How has this stagflation come about? The answer lies in the lack of consistent and, indeed, ineffective policy measures adopted both on the aggregate demand and aggregate supply side. On curbing aggregate demand as Table 3 and Figure 2 show, the main burden has fallen on investment, with both private and public sector investment falling drastically (see also Beaconhouse National University, 2011, p. 24). While the former reflects economic stagnation, lack of available energy, and a loss of business confidence due to the security and law-and-order situation, the latter is mainly because the adjustment burden has fallen on the Public Sector Development Program (PSDP), a "low-hanging fruit," as the government has been unable to curb its current expenditures.

Table 3: Domestic Absorption of Resources (1999–2000 Prices)
(PKR billion)

Resource	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Consumption	4,297	4,415	4,518	4,746	4,929	5,275
Of which (private)	(3,708)	(3,883)	(3,779)	(4,246)	(4,412)	(4,719)
Investment (incl. stocks)	924	1,043	1,114	965	916	915
GCFG	841	955	1,025	873	820	817
Of which (public)	(200)	(262)	(275)	(236)	(238)	(2,29)
Total	5,221	5,458	5,632	5,711	5,845	6,190

GFCF = gross fixed capital formation.
* Public investment based on Annual Plans (different issues). This is given in current prices and has been deflated using the implicit investment price deflator in the GFCF series above.
Source: Government of Pakistan, Pakistan Economic Survey 2010–11.

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[4] Initially, the IMF found that progress under the SBA was satisfactory and—given Pakistan's peculiar circumstances—relaxed some of the conditionalities for the short run in view of the global recession and Pakistan's fight against insurgents. The agreement was augmented in August 2009 to SDR of USD10.66 billion and extended through December 30, 2010. However, lack of progress with economic reforms has led to an impasse in the first half of 2011 with the transfer of the next tranche put on hold.

Figure 2: Private Investment and Consumption
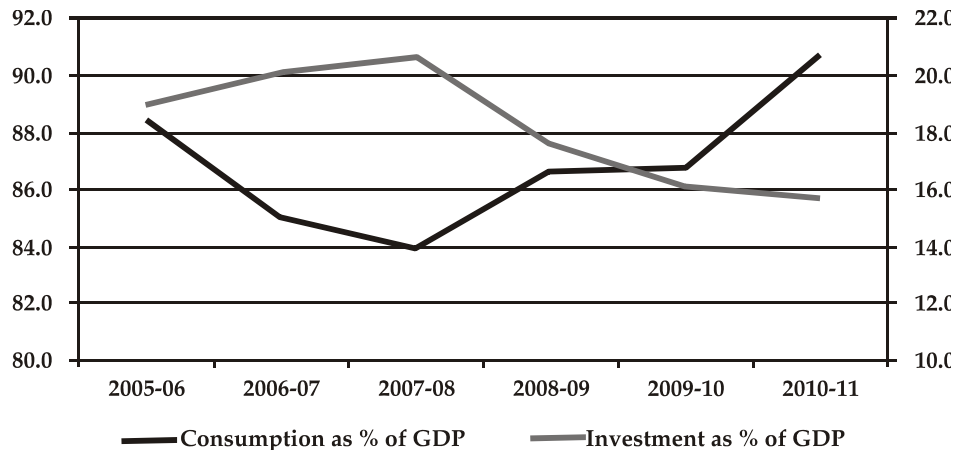
GDP = gross domestic product.
Source: Government of Pakistan. (n.d.). *Pakistan Economic Survey* (Various issues). Islamabad.

While in constant 1999–2000 prices both private and public investment declined by 20 percent between 2007/08 and 2010/11, total consumption in the same period increased by 14.3 percent and private consumption by 20 percent. The latter has clearly been driven to quite some extent by the steep increase in workers' remittances from abroad, which rose from USD6.5 billion in 2007/08 to an estimated USD11 billion in 2010/11. The increase in remittances is attributed to a shift in transmitting money from informal to formal channels as well as to the floods in summer 2010. However, this area needs further investigation.

The other injection in demand was the increase in government procurement prices for wheat, the staple food, from PKR450/40 kg to PKR625/40 kg in April 2008 and further to PKR950/40 kg in October 2008. The unprecedented increase in prices is believed to have significantly boosted aggregate demand in 2008/09, and has been seen as a major factor in further fuelling inflation, which touched over 20 percent in 2008/09.

Another boost to demand has been the increase in salaries of a hefty 50 percent by the federal government in the 2010/11 budget and a further 15 percent in the recent 2011/12 budget. These salary increases have to be followed not only by the semi-autonomous federal bodies but also by the provincial government and local bodies. At the same time, the government has not been able to fully remove fuel subsidies despite some increases in price, leading to a continuing high circular debt that has made worse the energy shortages faced by the economy (Box 1).

Box 1: Circular Debt

The problem of circular debt has plagued the energy sector for more than three years, resulting in below-capacity power generation and consequent load-shedding. The nonpayment of electricity bills by federal and provincial government departments lies at the heart of the problem. Unable to recover their bills from the government departments, the power distribution companies fail to pay the power generation companies who, in turn, default on their payments to their major supplier, the Pakistan State Oil Company (PSO), with the oil refineries next in line. The delay in the payment of subsidy by the government—which the distribution companies pass on to consumers—only makes the situation worse. Anecdotal evidence puts the size of the circular debt at about PKR350 billion. To address the problem of circular debt, the default by government departments on their electricity dues—the root cause of the problem—must stop immediately. This can be done by allocating a separate amount in the budget with which to pay electricity dues to the stakeholders concerned. Furthermore, the electricity distribution companies must be empowered to discontinue supply to defaulters regardless of their status. Resolving the problem of circular debt could mitigate the energy crisis to a significant extent, as experts reckon that it could bring 2,000–2,500 MW into the power system within a relatively short period.

Source: Amjad, Din, and Khawaja (2011).

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5. Ineffectiveness of Monetary Policy

Why has inflation persisted despite a tight monetary policy stance by the SBP? We argue that a combination of factors have contributed to the ineffectiveness of monetary policy in curbing the rate of inflation. First, inflationary expectations remain entrenched due to supply disruptions caused by catastrophic floods, increase in electricity prices, and the government's continued reliance on borrowings from the SBP. Second, studies have shown that the interest rate channel of monetary policy transmission is weak in Pakistan. Since 2005, monetary policy has relied mainly on the interest rate channel. It is well known that monetary policy actions transmit their effects on macroeconomic variables with a considerable lag and with a high degree of volatility and uncertainty. The current monetary policy stance is silent on the issues of lags and the pass-through effect of the policy rate to inflation. There is evidence based on empirical analysis that the interest rate influences the rate of inflation with a lag of 12 to 18 months, and the magnitude of this impact is very small (Khan & Qayyum, 2007; Qayyum, Khan, & Khawaja, 2007). Indeed, some studies show that the relationship between the interest rate and rate of inflation is positive (Khan, 2007).

Interest rate and inflation movements for the period 2007–10 is presented in Figure 3. It suggests a positive relationship between the interest rate and inflation, although clearly a number of other factors were at play. The coefficient of correlation is 0.688. It implies that the rising interest rate in recent years has had little impact on dampening inflation and there is no reason to believe that the situation has now changed.

Figure 3: Movements of Inflation and Interest Rate
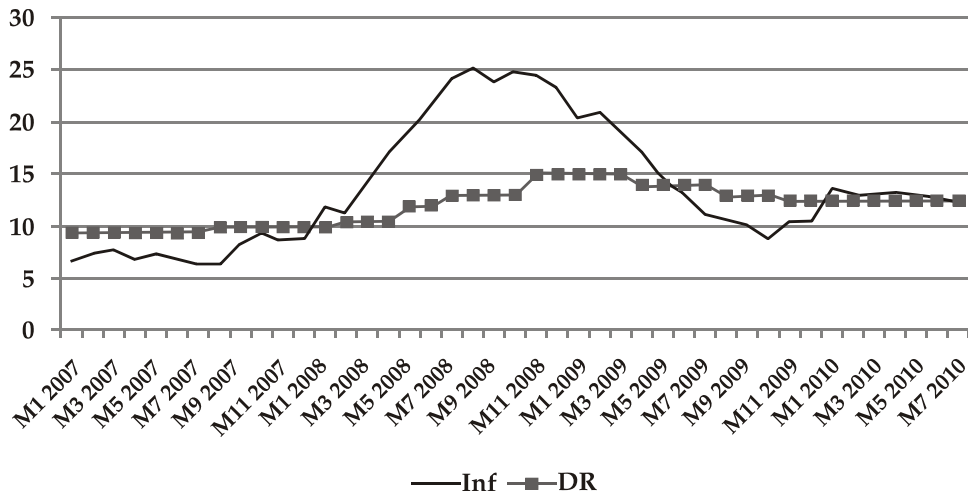
Source: Government of Pakistan. (n.d.). *Pakistan Economic Survey* (Various issues). Islamabad.

Third, the lack of coordination between fiscal and monetary policies has made monetary policy largely ineffective in controlling the rate of inflation. The government is borrowing beyond the agreed level from the SBP, and the SBP is not able to restrain this level of borrowing. The likelihood then is that the government would finance the higher deficit on account of higher interest payments by borrowing further from the central bank. Borrowing from the SBP injects liquidity into the system through increased currency in circulation. The impact therefore of a tight monetary policy stance is diluted with this automatic creation of money, which increases the money supply. International experience has shown that monetary expansion can be an important source of stagflation. For example, the excessive expansion of money is generally believed to be the main cause of the stagflationary episode of 1973–75 in the US. A similar monetary expansion preceded the second stagflationary episode of 1982 (Blinder, 1979). Sargent (1988) argues that monetary policy is less effective than is generally believed mainly because the size of the portfolio of government debts is beyond the control of the monetary authorities. The

study predicts that "under a deficit spending policy it is *impossible* to run a noninflationary monetary policy" (p. 321).

It is generally expected that an increase in the interest rate would act as a deterrent to increased government borrowings from the central bank. In fact, it could further worsen the situation. The increase in the interest rate would increase interest payments on government debt, leading to an even higher fiscal deficit even if we take into account the higher profits of the SBP. During 2008/09, the increase in the discount rate increased the cost of borrowing from the treasury bills, Pakistan investment bonds, and national savings schemes. During the same period, an amount of PKR580 billion was spent on servicing domestic debt against the budgeted estimates of PKR459.1 billion. The fact is that easy recourse to increased borrowings from the SBP leaves little incentive for the government to put its fiscal house in order. In this situation, an increase in the interest rate can further worsen rather than improve the situation.

If the increase in the interest rate neither helps to reduce inflation nor appears to deter government borrowing, then the real hit is taken by the private sector. Higher interest rates increase the cost of borrowing for the private sector, which discourages the demand for private sector credit, thus stifling private investment and economic growth. There is a strong negative correlation between the discount rate and credit to the private sector (-0.84 over the period August 2009 to August 2010). When the monetary authority reduced the policy rate by 100 basis points from 14 to 13 percent in August 2009 and then further to 12.5 percent in November 2009, credit to the private sector increased gradually during this period. In August 2010, the monetary authority again tightened monetary policy by increasing the policy rate by 50 basis points from 12.5 to 13 percent, which has again negatively affected credit to the private sector (see Figure 4).

Figure 4: Interest Rate and Credit to Private Sector
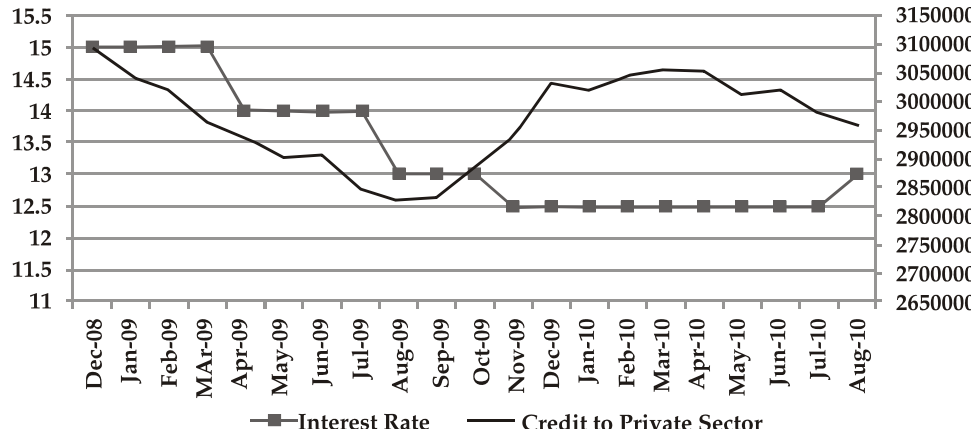
Source: Government of Pakistan. (n.d.). *Pakistan Economic Survey* (Various issues). Islamabad.

6. Breaking Out of Stagflation[5]

Breaking out of stagflation requires a coherent approach to stabilize the macroeconomy and address the binding constraints to the supply side to boost output on a sustained basis. To achieve these objectives, we suggest a four-point approach.

i. Better Macroeconomic Management

Prudent macroeconomic management is essential to pull the economy out of the current malaise. First, there is an urgent need to curb the monetization of fiscal deficit, which has contributed to inflationary pressures in the economy. Such a move would provide the necessary space for monetary policy to adjust so as to facilitate private credit without compromising price stability. Second, better policy coordination between the center and the provinces, especially after the 18th Constitutional Amendment and the 7th National Finance Commission award, is essential to maintain macroeconomic stability.

Third, sectoral economic decisions (e.g., food prices) must be weighed carefully, keeping in view their impact on key macroeconomic variables. Past experience has shown that arbitrary decisions on key food prices helped stoke inflationary pressures in the economy that still show

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[5] This section draws heavily on Amjad, Din, and Khawaja (2011).

no signs of abating.[6] Finally, a more effective utilization of foreign loans with a particular focus on channeling resources to addressing binding supply constraints, including energy shortages, would help revive the commodity producing sectors. There is room for better coordination between the Economic Affairs Division and the Planning Commission to ensure that the foreign resource envelope is utilized in line with the country's development priorities.

ii. Achieving Fiscal Discipline while Reviving the Government's Role in Development

Fiscal profligacy has been a root cause of macroeconomic imbalances. We argue that, whereas maintaining fiscal prudence is absolutely essential, it is also necessary to revive the government's role in the development process. To achieve fiscal discipline, concerted efforts are needed both to rationalize public spending and to reform the taxation system. In particular, all but targeted subsidies must be eliminated, the PSDP must be reprioritized to concentrate resources on development projects that are critical for the country's competitiveness, and the massive losses of state-owned enterprises must be plugged to free up resources to finance the country's development needs. These measures need to be complemented by a freeze on nondevelopment spending that would encourage the public sector to adopt austerity measures, thus allowing more space for development spending.

On the revenue generation front, the need to generate more revenues cannot be overemphasized, given the abysmally low tax-to-GDP ratio. The imposition of RGST has been stalled due to lack of political will. We believe that introducing RGST is essential to fully tap the revenue generation capacity as well as to help the process of documentation in the economy. To widen the tax base, all sources of income—including agriculture, services, and real estate—must be brought under the tax net. In addition, there is significant potential for generating tax revenues at the provincial level, given that the contribution of the provinces to total tax revenues is just around 10 percent. The provinces could be encouraged to generate more tax revenues if the transfer of funds to the provinces under the 7th National Finance Commission award was linked to the provinces' taxation efforts while taking into account the revenue generation capacity of each.

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[6] An example is the massive increase in the wheat procurement price from PKR450/40 kg in 2007 to PKR950/40 kg.

It must be emphasized here that the restoration of fiscal balance must not come at the cost of critical development spending by the public sector. Unfortunately, the current fiscal squeeze meant to contain the fiscal deficit has largely been borne by the PSDP while nondevelopment expenditures have not seen any significant reductions. Cuts in development spending, including on critical physical infrastructure, will have adverse implications for the country's long-term competitiveness. What is needed here is a strategy to rationalize public spending to avoid across-the-board cuts in development expenditures, and to ensure that scarce development funds are channeled into key sectors such as energy and more labor-intensive activities to help promote job creation and boost economic growth. Furthermore, public spending on physical infrastructure would not only strengthen the country's long-term competitiveness, it would also help in poverty alleviation, as research has shown that spending on infrastructure is the most pro-poor public expenditure (see Arif & Iqbal, 2009).

iii. Prudent Monetary Management to Spur the Private Sector

The current monetary policy has not been helpful in either ensuring macroeconomic stability or reviving growth in the economy. There are some encouraging signs that point out that there is some scope for monetary policy to adjust toward helping the revival of the private sector. First, the government is reining in its borrowings from the SBP. This move should enable the central bank to contain monetary expansion within the desired limits, thus providing the necessary space for monetary policy to be more accommodating toward shoring up economic activity. Second, the exchange rate remains stable and is underpinned by favorable external account indicators, including a surge in remittances, a pickup in exports, and a healthy foreign exchange reserves position. Third, according to the Pakistan Institute of Development Economics' latest business barometer survey (April 2011), there are distinct signs of "green shoots" in the economy. The survey reported a modest increase in business volumes by almost half the respondents during the second half of 2010, and firms were optimistic about growth in their business volumes in the future.

Recent data shows that growth in the large-scale manufacturing sector, though sluggish, remains positive. There is ample unutilized capacity and growth could quickly accelerate with a significant boost coming from an improvement in rural incomes triggered by an increase in commodity prices. The above factors point out that the private sector is expected to respond positively to an appropriate adjustment of monetary policy, and that the latter move is not likely to imperil price or exchange rate stability.

iv. Social Safety Nets

The combination of persistently high inflation and low growth is a recipe for declining purchasing power, joblessness, and poverty. In this scenario, well-designed social safety nets could ease the pain of adjustment for poor households during the time the economy takes to revert to robust growth with price stability. Whereas the BISP has proved an effective tool in poverty alleviation, its coverage remains limited. We believe that some fiscal space could be created to widen the scope of income transfers under the BISP by cutting waste in nondevelopment spending and by minimizing the losses of public sector enterprises. In addition, more effective and judicious utilization of *zakat* funds would be instrumental in providing the necessary support to the poor and vulnerable groups.

7. Concluding Remarks

This article has identified the factors underlying the current episode of stagflation, and has spelled out a set of policy measures to pull the economy out of this quagmire. We have argued that, while the economy remains beset by structural weaknesses and lack of political resolve to undertake critical economic reforms, the major cause of the current stagflation can be traced to supply shocks that have resulted in output contraction with a concomitant increase in the price level. Buoyant demand on the back of high fiscal deficits, strong growth in remittances, high support prices for cereals, and a significant increase in public sector wages has only added to the inflationary pressures. Furthermore, macroeconomic stabilization policies have been unsuccessful in curbing the rate of inflation, due mainly to the lack of coordination between monetary and fiscal policies.

We have stressed that, whereas achieving macroeconomic stability is essential, it is equally important to address the binding supply-side constraints, including the crippling energy shortages. With this in view, we have outlined a four-point strategy that emphasizes better macroeconomic management, achieving fiscal discipline while reviving the role of the government in the development process, prudent monetary management to spur private activity, and social safety nets. Pakistan's economy has shown resilience in the past and it is hoped that, with the right policies in place, economic growth can be revived on a sustained basis in an environment of macroeconomic stability.

References

Ahmad, M. (2011). An economic crisis state? In M. Lodhi (Ed.), *Pakistan: Beyond a crisis state*. Karachi, Pakistan: Oxford University Press.

Amjad, R., & Din, M. (2010). *Economic and social impact of global financial crisis: Implications for macroeconomic and development policies in South Asia*. Islamabad: Pakistan Institute of Development Economics.

Amjad, R., Din, M., & Khawaja, I. (2011). *PIDE budget viewpoint 2011–2012: Breaking out of stagflation—A three-point strategy*. Islamabad: Pakistan Institute of Development Economics.

Arif, G. M., & Iqbal, N. (2009). Infrastructure and poverty nexus: The case of rural Pakistan. In *Socioeconomic Challenges faced by Pakistan: Proceedings of the National Conference*. Islamabad, Pakistan: International Islamic University.

Barsky, R. B., & Kilian, L. (2002). Do we really know that oil caused the Great Stagflation? A monetary alternative. In *Macroeconomics Annual 2001*. Cambridge, MA: National Bureau of Economic Research.

Beaconhouse National University. (2011). *Fourth annual report on the state of the economy*. Lahore, Pakistan: Institute of Public Policy.

Blinder, S. (1979). *Economic policy and the Great Stagflation*. New York, NY: Academic Press.

Brunner, K., Cukierman, A., & Meltzer, A. H. (1980). Stagflation, persistent unemployment and the permanence of economic shocks. *Journal of Monetary Economics*, *6*, 467–492.

Bruno, M., & Sachs, J. D. (1979). *Supply vs. demand: Approaches to the problem of stagflation* (Working Paper No. 382). Cambridge, MA: National Bureau of Economic Research.

Government of Pakistan. (n.d.). *Pakistan Economic Survey* (Various issues). Islamabad.

Government of Pakistan. (2008). *Panel of economists: Interim report—Economic stabilization with a human face*. Islamabad, Pakistan: Planning Commission.

Haque, I. (2010). *Pakistan: Causes and management of the 2008 economic crisis* (Global Economic Series No. 22). Penang, Malaysia: Third World Network.

International Monetary Fund. (2008). *Pakistan: Request for stand-by arrangement* (Country Report No. 08/364). Islamabad, Pakistan: Author. Retrieved from www.imf.org/external/pubs/ft/scr/2008/cr08364.pdf

Khan, M. A., & Qayyum, A. (2007). Trade, financial and growth nexus in Pakistan. *Economic Analysis Working Papers*, *6*(14).

Khan, S. (2007). *Channels and lags in effects of monetary policy's transmission mechanism: A case of Pakistan*. Unpublished PhD dissertation. Pakistan Institute of Development Economics, Islamabad.

Qayyum, A., Khan, S., & Khawaja, M. I. (2007). Interest rate pass-through in Pakistan: Evidence from transfer function approach. *Pakistan Development Review*, 44(4), 975–1001.

Sargent, T. J. (1988). The role of monetary policy under US institutions. In A. Anderson & D. J. Bark (Eds.), *Thinking about America: The United States in the 1990s* (pp. 311–322). Stanford, CA: Hoover Institution.

Reconstructing the Performance of Pakistan's Political Economy: Another Paradigm

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Abstract

This paper looks at the major factors limiting economic growth in Pakistan. The paper then analyzes the structural problems faced by Pakistan today and goes on to discuss the challenges facing monetary policy makers in Pakistan as well as the problem of budget and trade deficits. The paper concludes with a discussion on the key institutional changes needed in Pakistan.

1. Introduction

When I started thinking about this paper in the dull, cold, snowy winter of Michigan, several thoughts and approaches came to mind. The first concerned where to start Pakistan's performance and growth story—perhaps in 1958, when the second martial law was imposed by Ayub's regime. The country's macroeconomic performance on a relative basis was fairly good during the three military regimes it experienced—under Ayub in the 1960s, under Zia in the 1980s, and under Musharraf in the 2000s—compared its performance under politically elected governments. But that approach sends the wrong policy message for the political economy and for sustained economic growth. High growth in these regimes may legitimize their existence since these higher growth rates can, at best, be attributed to what economists call the benefits of positive externalities.

A second approach was to look at these issues using a purely econometric framework either by invoking the standard regression techniques or by simply comparing the actual and simulated data (see, for instance, Government of Pakistan, 2010a; Khan & Din, 2011; and Malik &

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Ahmad, 2009). This would mean analyzing several imbalances in the economy by looking at the savings-investments gap, actual vs. potential output of the economy, trade gaps, and budget deficit gap, etc.; and the role of fiscal and monetary policies in fine-tuning and combating these gaps.

In recent years, some of the elaborate studies carried out at different places—the Pakistan Institute of Development Economics (PIDE), Social Policy Development Centre, Planning Commission, the Lahore School of Economics, and Quaid-i-Azam University—convinced me to look at the anatomy of growth from a different perspective, including theirs. In the presence of these excellent studies, I have decided not to run my own regressions and instead focus on adding a few shades to the existing excellent research.

Today, we all know the macroeconomic ills of Pakistan's economy, which is characterized by stagflation, (or to be exact low growth and high inflation), huge twin budget and trade deficits, crumbling state-owned enterprises, booming domestic and external debt, energy shortages, political unrest, the ongoing war on terrorism, etc. to name a few. The public mood in Pakistan has soured badly to the point where even upper-middle-class people have begun to complain that things are seriously amiss.

No one disputes that, over the long term, macro-performance in the last 64 years has created wealth and perhaps better lives for a few million people, but benefits of growth have still not spread or trickled down widely among the country's 170 million residents. Pakistan has increased its gross domestic product (GDP) and per capita income, and improved some other social indicators, but in relative terms, the glass is half full and half empty, especially in terms of attaining a sustainable growth path for the economy and "resilience" to shocks.

The question we need to address is, why policies or their effects on the economy have for so long been so unstable and erratic? Why has each successive policy package not only been abandoned but sometimes reversed? Why has it so frequently been possible to assemble blocking coalitions (what some economists have called "rent-seeking"), capable of vetoing policies that threaten their interests, but subsequently incapable of holding together to implement some positive alternatives.

The characteristics of Pakistan's political economic structure might help us explain this national economic malaise. To keep things in perspective, consider the following two statements:

With inflation still hovering around 8%—despite the monetary tightening over the last two years—a fiscal deficit threatening to cross 4.2% of GDP and the reversal of the current account surplus into a large deficit that could touch 5.5% of GDP, there are understandably fears that the macroeconomic stability achieved after a long and hard struggle, with a fair sprinkling of luck thrown in by the events of 9/11, has been lost (Kardar, 2007).

The second is from Haque (2010):

Never has there been a more pressing need in Pakistan's history to search for a new model, however at the outset it should be said that if there has to be a new development framework, it should by all means take account of the damages caused by recent flash floods, security and governance issues currently facing the country. In the new development framework, [the] private sector should be the growth-driver in open market environment that rewards efficiency, innovation and entrepreneurship, while the government is [a] facilitator that protects public interest and rights, provides public goods, enforces laws, punishes exploitative practices, and operates with transparency and accountability (p. 45).

After reading the first quotation, we should ask where we stand after four years. Here is a summary snapshot from the State Bank of Pakistan (SBP)'s annual report (October 2010):

… some key reforms failed to gather traction: (1) persistent disagreements led to the deferment of a proposed expansion of the tax net through the introduction of a broad based GST, (2) the proposed restructuring of public sector enterprises, to improve efficiency and lower the fiscal burden, did not take place; and (3) after some initial work, there was little or no progress in either resolving the energy sector debt chain (the so-called "circular debt" problem" or substantially improving electricity supply. The principal structural problem however was the weak fiscal performance; the fiscal deficits bounced back to 6.3 percent of GDP in [fiscal year] FY10.

… The initial Rs 1.6 trillion tax revenue targets for FY10 had looked optimistic, incorporating a record 29.8 percent annual growth, compared with an average growth of 14.6 percent over the preceding five years… [This was] not very surprising, given the absence of any significant measures to expand the tax base or to exploit the existing tax base more effectively.

The slippage on the expenditure side was more disappointing. There are significant rigidities in government spending, including debt-servicing, defense, the government salary bill, etc. However, there appears little evidence of efforts to contain the growth in even the discretionary components.

… A large part of the rise in subsidies and PSEs losses is a function of the continuing government intervention in market pricing of goods and services. Such interventions are typically undesirable, as they encourage over-consumption, reduce incentives to increase efficiency, and lead to misallocation of resources (State Bank of Pakistan, 2010).

This is the summary performance of our macroeconomic activity after four years. The *Pakistan Economic Survey* for 2009/10 puts it mildly:

Checking inflation… involves limiting borrowing by the government and the public sector… But there are major risks to the growth and stabilization prospects if there is…

… non-implementation of the reform of the GST, leading to a VAT, or other significant tax broadening measures… Failing to reform public sector enterprises, including the power sector, with no resolution of the energy circular debt issue; continued overhang of commodity financing debt stock, if unchecked, threatens to constrict access to bank credit by the private sector, while simultaneously increasing the interest rates in the economy (Government of Pakistan, 2010b).

Looking at the country's performance since 2010, most macro-indicators show mixed trends.

- The inflationary impact is also reflected in the prices of raw material and finished products.

- The record volume of remittances worth USD11.2 billion in FY2011 has improved savings.

- The gross total investment of Pakistan has come down to 13.4 percent of GDP in FY2011. The improvement in savings has not reflected the investment trend, which is falling.

- The gap between national savings and investment as a percent of GDP has become marginally positive. Since this positive gap is mostly due to failing investment, it cannot be considered an encouraging development from the perspective of reviving economic activities and sustaining high growth in the medium term.

- Whatever is being saved in financial institutions is being invested in nonproductive government papers, and does not help the economy perform better.

In the wake of these developments and other policy differences with the government, the SBP's governor resigned in the summer of 2011. Thus, the scope of this paper is as follows: Section 2 provides an overview of Pakistan's macroeconomic performance over the last two decades. Section 3 looks at a new paradigm from an institutional and political economic structure that may explain the quasi-deterioration of our macro-performance. Section 4 concludes the study by outlining some of major challenges for macroeconomic policy, policymakers, political leaders for institution building, and planning leaders.

2. Macro-Performance Indicators

In Pakistan, as in some other developing countries, an import substitution policy prevailed until the late 1960s, with the state playing a dominant role in the development process. This provided a strong stimulus to investment and growth. Investment levels and GDP growth rates doubled during 1960–65, but such a policy also created distortions in the economy that were aggravated by the nationalization policies of the 1970s. The second phase (1973–88) reflected the national pursuit of a form of "Islamic socialism" and social justice. The third phase, "liberalization," marks the shift toward a market-based economy and is characterized by the liberalization of external accounts and the removal of

regulatory barriers on private and foreign investments. Initially, "privatization" and "liberalization" were dirty words but they have gained acceptance over time.

Pakistan's economic liberalization was triggered in the early 1990s, especially in the financial sector. The deregulation of the financial sector occurred quickly and with reasonable success, and contributed to the growth of the economy. The value of the services sector has increased as a proportion of GDP, rising to 53 percent in 2010 from less than 30 percent in 1990. However, many such fast-growing areas—finance, telecommunication, and technology—employ relatively few workers and rely heavily on skilled labor.

India's experience in this sector has been similar; it employs just 2.5 million workers in information technology—a tiny fraction of the total labor force. These reforms have been pursued persistently—some would argue even inconsistently—since the 1990s. Amjad (2003) is critical of the sequencing and timing of these reforms and their impact on poverty reduction. Some of the inefficiencies and weaknesses that were typical of banks' operations in the pre-reforms era have been reduced to some extent. Pakistan's economy has realized the dividend of these reforms in the shape of a healthier and stronger banking system. Up till 2007, liberalization and deregulation—the core pillars of the reform measures— have served well in enhancing the size of the banking industry, both in terms of the number of banks and growth in credit.

Historically, infrastructure and development projects fall in the public sector's domain of activities in Pakistan. However, in the 1990s, we saw a shift in this area, with a growing interest by the private sector in undertaking such projects. Based on the growth of the financial sector, it was hoped that there might exist immense potential for financial institutions to finance such infrastructure projects built on public-private partnerships or even exclusively in the private sector. This would help diversify activities and enhance earnings. However, this did not materialize due to several political developments in the last two decades; more recently, we have tended to blame the global financial crisis.

The financial system of any country has an intrinsic relationship and needs to be shaped in accordance with its broader economic objectives. Considering this interdependence, it is imperative that we assess key macroeconomic objectives in the context of the financial sector. Simultaneously, what is often overlooked is that the foundations of a

market economy and those of capitalism are: the rule of law and an independent judiciary; efficient governance; a private sector able to thrive free of state favor; and competition and open borders for goods, people, and capital.

In evaluating the country's macroeconomic performance, we are dealing with the behavior of very large economic aggregates, their relationships and determinants, and a set of relative prices such as the inflation rate and exchange rate. Macroeconomic policies refer to those policies that influence macro-aggregates and relative prices. Table 1 provides selected macroeconomic/financial indicators for Pakistan for the period 1991–2010.

Table 1: Selected Macroeconomic /Financial Indicators for Pakistan

	1	2	3	4	5	6	7	8	9	10	11
Year	Y_n (%)	$\dot{y}$ (%)	Þ (%)	M_2 (%)	M (%)	R_D (%)	R_c (%)	ER	REER	BD/GDP (%)	TD (%)
FY1991	15.56	3.50	12.28	16.05	3.76	10.00	7.29	21.90	116.0	8.30	-4.58
FY1992	15.72	6.46	9.58	23.26	13.68	10.00	7.64	24.72	114.4	7.54	-6.32
FY1993	9.79	1.51	8.34	16.35	8.01	10.00	7.51	25.70	114.0	5.73	-3.83
FY1994	15.30	3.22	12.12	16.67	4.55	10.00	11.00	30.12	111.4	4.84	-4.16
FY1995	18.33	5.29	12.99	15.91	2.92	15.00	8.69	30.95	110.7	4.47	-5.80
FY1996	11.69	3.76	8.04	12.94	4.90	17.00	11.66	35.27	107.3	5.34	-4.99
FY1997	13.11	0.61	12.56	11.51	10.50	20.00	11.40	40.19	108.8	5.66	-3.01
FY1998	9.66	2.35	7.26	13.57	6.31	18.00	12.10	44.55	106.7	4.92	-3.35
FY1999	9.33	3.68	5.70	5.97	0.27	16.50	10.71	61.93	99.5	6.26	-2.40
FY2000	6.30	3.82	2.69	8.96	6.27	13.00	9.04	59.72	100.0	5.68	-1.70
FY2001	8.35	2.57	5.88	8.58	2.69	13.00	8.57	57.75	91.5	4.11	-0.41
FY2002	8.20	4.55	3.03	14.34	11.31	10.00	8.49	58.00	94.8	7.40	-0.53
FY2003	13.71	8.51	4.54	16.57	12.02	7.50	5.53	59.96	91.8	3.27	-1.23
FY2004	11.45	4.82	6.57	17.92	11.35	7.50	2.14	60.36	91.1	2.44	-4.12
FY2005	16.51	7.67	9.35	17.64	8.30	7.50	2.70	60.65	93.995	1.71	-6.67
FY2006	16.30	6.17	9.83	14.13	4.30	9.00	6.83	59.86	95.97	2.28	-6.76
FY2007	15.20	5.68	7.80	19.30	11.50	9.50	8.85	60.63	96.5	1.73	-9.12
FY2008	20.50	3.70	12.00	15.30	3.30	10.00	9.20	62.55	95.39	5.06	13.50
FY2009	21.80	1.20	20.80	9.60	-11.20	13.00	10.60	78.50	94.44	5.20	-5.80
FY2010	14.60	4.10	11.70	12.50	0.80	14.00	10.30	85.55	95.3	6.30	-3.80
Mean (1991–2010)	13.57	4.16	9.15	14.35	5.78	12.03	8.51	50.94	101.48	4.91	-3.25
Mean (1991–2000)	12.48	3.42	9.16	14.12	6.12	13.95	9.70	37.51	108.88	5.87	-4.01
Mean (2001–2010)	14.66	4.90	9.15	14.59	5.44	10.10	7.32	64.38	94.09	3.95	-2.49
SD (1991–2010)	4.20	2.06	4.19	4.08	5.65	3.71	2.72	18.10	8.64	3.89	3.90

BD = budget deficit, ER = Pakistan rupee exchange rate, FY = fiscal year, M = real growth rate of money, M_2 = growth rate of broader measure of money stock, þ = average inflation rate excl. food (core), R_C = interbank call money rate, R_D= short-term interest rate (discount rate), REER = real effective exchange rate, TD = trade deficit as percentage of GDP, $\dot{y}$ = real growth rate of economy, Y_n = nominal GNP growth rate.

Sources: Karachi Stock Exchange, State Bank of Pakistan's annual reports and economic surveys, and the *Pakistan Economic Survey*.

Economic Growth (y)

Economic growth is the principal yardstick measuring macroeconomic performance, either in terms of nominal GDP (Yn) or real GDP (y). A serious investigation of the determinants of growth in the last two decades is far beyond the scope of this paper, but Table 1 (Column 2) provides a brief capsule of information.

The average real growth rate of the economy during the 1990s was 3.42 percent—a low rate for an emerging economy, and one of the lowest among Asian countries (Table 2). This growth rate should be seen in the context of the ongoing technological revolution in the global economy, increases in productivity and efficiency, and the financial sector reforms undertaken in Pakistan. This rate is even lower than the "Hindu rate" (3.6 percent) that marked the 30 years between 1950 and 1980 for the Indian economy, which operated under a Soviet model (Acharya, 1999).

After averaging 3.4 percent, GDP growth accelerated to almost 5 percent during the last decade, but the good news ended after 2007. The overall average real growth rate for the last two decades has been 4.2 percent, and if we subtract the population growth rate of 2.9 percent, the net real growth rate is 1.5 percent, which is the average productivity growth rate for the whole period. How does Pakistan's growth stack up against its peers? It is the lowest among its "peer" group of countries.

Table 2: Growth Trends for Selected Years, 1991–2010

Country	GDP: 1991–2000		GDP: 2001–10	
	Growth Trend (%)	Rank	Growth Trend (%)	Rank
China	10.1	1	10–11	1
India	6.1	4	7–9	2
Indonesia	5.7	6	5–6	5
Malaysia	6.0	5	6	3
Pakistan	3.4	7	5	7
Republic of Korea	7.7	2	4–5	6
Thailand	7.1	3	5.5	4

GDP = gross domestic product.
Sources: International Monetary Fund's *Statistical bulletin* and *The Economist*.

Let us remember that "statistics" are like mud: we can make clay, bricks, or houses out of it. When we look at the data on macroeconomic performance, some numbers show inclines, some declines, and some are

mixed. What the data omits is as significant as what it conveys. For example, Pakistan's average annual GDP growth rate was 6.80 percent in the 1960s, 4.80 percent in the 1970s, 6.50 percent in the 1980s, 3.42 percent in the 1990s, and 5.02 percent in the 2000s. The earlier higher growth rates were achieved through heavy and continued dependence on external resources such as foreign assistance and remittances. Very little policy attention was given to the structural weaknesses in different industries. Remittances, which had provided the stimulus to the economy during the 1970s and most of the 1980s, decreased to an average of 5.3 percent of GDP in the 1990s.

Savings and investment remained low at 14–18 percent of GDP during this period. With persistent macroeconomic imbalances, there was also a sharp decline in the availability of external assistance that had played a key role in financing investment until the 1980s. During the latter half of the 1990s, the government introduced a scheme for foreign currency deposits, which was used as a substitute for declining external assistance.

The omissions in the data include societal and systemic factors that stimulate or impede the economy. These include creativity, innovation, entrepreneurship, and new ventures. The numbers also ignore the effects of culture, property rights, laws, and political freedom in the short and long term. The issue of accountability, rule of law, and better governance cannot be exactly measured by the data. If governance in Pakistan had not deteriorated so much, economic performance would not have declined so precipitously in later decades. Considering the last 30 years from 1981 to 2011, governance failures in Pakistan stand out much more than subdued economic growth. Thus, the overall performance picture is far more complex than the simple one portrayed by conventional economic indicators and economic models.

We usually analyze macro-policies from the perspective of economic models—the views of policymakers—with hardly any feedback from the business community. The *Business Recorder* (26 March 2011) recently documented the view of M. Mansha, a business leader:

What are Pakistan's problems?

> The biggest of all are our **structural problems**, and law and order is inter-related with these structural problems. Then there is a lot of uncertainty; until price distortions are removed, people will not make any long-term investment.

… **The bottom-line is all about competence and good governance**. For instance, in case of PSEs, before we sell their strategic shares, we have to pre-qualify the investors to verify their track records. Unfortunately, democracy hasn't worked in this country because the management practices of the politicians are very poor.

… Human capital can and should be our biggest strength. We need a growth rate of 6–8 percent to absorb a rising youth population. And for that, we need to prioritize the industries in which we are going to concentrate. The textile industry is the biggest opportunity for Pakistan to generate employment for the youth, besides earning foreign exchange. The distortions in that industry alone, if removed, would be hugely beneficial to the national economy.

What should be the role of the private sector in education?

I think we need to spend a lot of money on education than we are doing right now. I believe that industrialists need to support them. If the government is building two schools, we should build 20.

Without going into sectoral details, it is worth mentioning the sources of economic growth and tax contributions for three major sectors for FY2010 (Table 3).

Table 3: Sources of Growth in FY2010

Sector	GDP (%)	Growth (%)	Taxes (%)
Agricultural	22	2.0	1
Industrial	25	4.9	63
Services	53	4.6	26
Other			10

FY = fiscal year, GDP = gross domestic product.
Sources: *Pakistan Economic Survey*, Federal Bureau of Statistics, Federal Board of Revenue (2010).

There is an imbalance in tax contributions. Certainly, there is a need to increase tax contributions by the agriculture sector—a long overdue reform that lacks political will. The industrial sector seems to be overburdened by tax, but this may not be the case when we look at the structure of tax contribution.

While the growing importance of the services sector in Pakistan's economic growth is a desired outcome, it also raises issues of plausibility and sustainability. Perhaps a part of the sector's growth in this decade is "spurious" in the sense that it reflects the value-added in huge increases in pay scales over the years, which has put further pressure on our fiscal deficits.

It could also have the unintended consequence of neglecting the significant role of the agriculture sector, which still employs 44 percent of the country's labor force. According to the Government of Pakistan (2010a), "agriculture and livestock are the backbone of this country since they directly employ 44% of the labor force while two-thirds of the population living in rural areas directly or indirectly depends on these sectors for its livelihood." Pakistan has ignored the potential of agriculture sector development after the 1960s, and that is where the country's economies of scale exist.

It is imperative to address the structural constraints of the economy to long-run sustainable growth. This would provide greater visibility to investors with regard to Pakistan's economic prospects in the medium to longer term, and prove a key catalyst for higher private capital inflows and investment. In this regard, the Government of Pakistan's (2010a) report has some important recommendations worth mentioning:

> The universal elements of success have been high rates of domestic savings, an educated labor force with ability to acquire new skills. A committed, focused and evenhanded political leadership and government that ensure availability of global knowledge as a public good and effective institutional framework that ensure competition and functioning of markets and is fiscally responsible, particularly by not borrowing excessively, especially in foreign currency.
>
> … The sector requires support not only for poverty reduction and more equitable development of regions but also to bring more stability in growth in a manner that ensures that the gains in that accrue from this process are safeguarded. Growth biased in favor of the lowest income households will, apart from directly creating employment opportunities, through increased demand for goods and services that are produced domestically are less import intensive and more labor intensive.

The preceding line analysis omits the important issue of potential growth over time and the gap between potential and actual GDP growth. Some interesting but controversial work has been carried out at PIDE in the last couple of years (see, for instance, Ahmed, 2010; Malik, 2007; Nasir & Malik, 2011). Although these studies are not conclusive, they seem to persistently suggest that macroeconomic policy has had less success in attaining the economy's output potential in the last 15 years (this is discussed later in the analysis of inflation).

A few observations of future performance are warranted. The GDP growth rate was projected at 1.82 percent for 2010 (PIDE Econometric Model). This could have been due to shocks attributed to the energy shortage, the after-effects of hikes in global food and oil prices, the depreciation of the Pakistani rupee, the global financial crisis, and the deterioration of security, law, and order in Pakistan. However, signs of recovery were expected in 2011 and the real GDP growth rate was projected to approach 6.9 percent by 2013. The average growth rate expected for the period 2009–13 is 4.08 percent.

Projected trends in the GDP growth rate are shown in Figure 1, although they perhaps overestimate the growth rates of their model, e.g., the actual ex post growth rate for FY2011 was only 2.4 percent, and it is hard to see any significant improvement in the near term. The actual institutional progress has fallen too far short of expectations.

Figure 1: Projected Trends of GDP Growth Rate (2009–13)
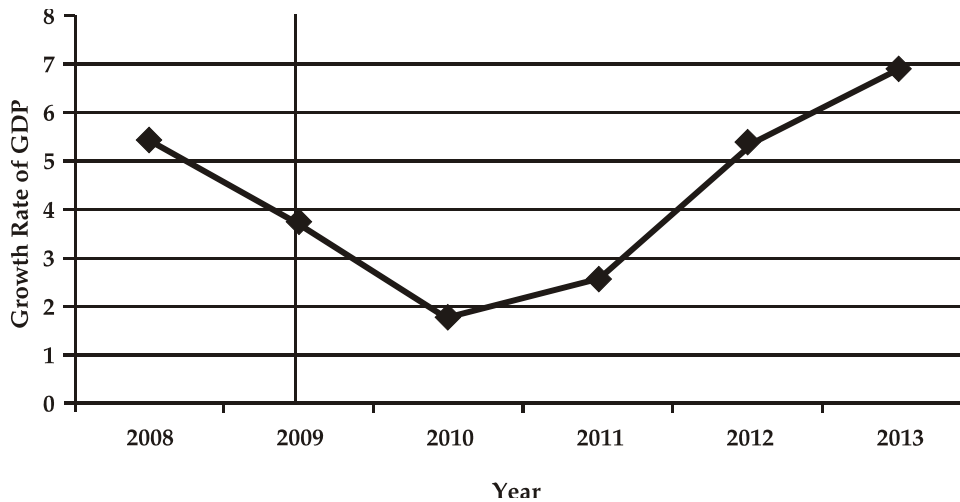
GDP = gross domestic product.
Source: Adapted from Pakistan Institute of Development Economics (2010).

A similar projection adopted from the Government of Pakistan (2010a) provides the following framework. As shown in Table 4,

> … primary stimulus to growth initially has to come from public investment, while private investment remains depressed, with a likely fall of 7% in 2009–10. From 2011–12, however, it is expected that private investment will start showing double digit growth rates in line with the improvement in conditions, as described above.

Thus, both projections seem to be optimistic.

Table 4: Projection of GDP by Expenditure during Plan Period (Growth Rates)

Indicator	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	Average (2011–15)
GDP		3.9	4.7	5.1	5.9	6.8	5.3
Private consumption		3.4	3.9	4.3	4.9	5.7	4.4
Private investment	-7	6.2	10.7	8.6	10.0	11.2	9.3
Public investment		10.0	10.0	15.0	17.5	17.5	14.0

GDP = gross domestic product.
Source: Adapted from Government of Pakistan (2010a).

Based on the last few years' experience, the report suggests first, that the economy be gradually restored to a trajectory of high growth from about 3 percent currently to above 6 percent in the next five years. Second, the development strategy to be adopted must focus on achieving inclusive and sustainable growth, not just high rates of growth. This will require keeping the inflation rate under control (especially food prices) and the current account and fiscal deficits within manageable levels, and focusing on a sectoral growth pattern that will create employment for the growing labor force. For the last two years, we have not seen much progress in policy initiatives to achieve these projections. A robust macroeconomic framework is lacking, and implementation of an economic plan is critical.

Inflation (p)

Let us now turn to inflation, the primary enemy of the economy and markets as it creates uncertainty for household consumption and

business investment. If growth is the key measure of macroeconomic performance, inflation or its absence is generally the preferred indicator of macroeconomic stability. Pakistan has experienced sustained bouts of inflation of 10–24 percent during the last two decades with the exception of a few years in between.

Several studies on inflation in Pakistan—spread over the last two decades—agree broadly on the key factors that influence the rate of inflation: (i) growth in money supply, (ii) supply-side bottlenecks and shocks, (iii) adjustment to government-administered prices, (iv) imported inflation (exchange rate adjustment), (v) escalations in indirect taxes, and (vi) inflationary expectations. However, these studies do not concur on the relative factors that determine inflation. Earlier studies from the 1990s (see, for instance, Hossain, 1990; Nasim, 1995) find money supply to be the principal factor underlying the rising inflation rate in Pakistan. Others suggest that food prices followed by government-administered fuel/energy prices and indirect taxation are the primary impetus for the upward inflationary spiral (see Hasan, Khan, Pasha, & Rasheed, 1995; Naqvi, Khan, Ahmed, & Siddiqui, 1994).

A highly regarded study on food inflation in Pakistan by Khan and Qasim (1996) finds that this component of inflation is co-integrated with money supply, value-added in agriculture, and the support price of wheat. Their results suggest that (i) a 10 percent increase in money supply would increase food price inflation by 3.7 percent, (ii) a 10 percent increase in agricultural output would reduce food prices by 6.2 percent, and (iii) a 10 percent increase in the support price of wheat would increase food inflation by 7.4 percent. The role of money supply appears to be significant in influencing food price inflation in Pakistan.

The two main estimated equations in Khan and Qasim (1996) are reproduced below. I am extremely confident that, if these two equations were to be re-estimated to include the later period of 1998–2010, the results would hold even more strongly. Therefore, one can safely conclude that the significance of these factors in determining the inflation rate has increased even more now.

Food price inflation (Khan & Qasim, 1996)

(a) $\ln P_f = 4.31 + 0.37 \ln M_s - 0.62 \ln y_{ag} + 0.74 \ln P_s$

       (1.83)*   (3.97)*   (2.22)*   (6.71)*

$R^2 = 0.99$; DW = 1.97; SER = 0.06; DF = -4.98*; ADF= 4.77*

Overall rate of inflation

(b) $\ln P_g = 5.33 + 0.55 \ln M_s - 0.46 \ln y_{ag} + 0.46 \ln y$

(4.14)*   (9.55)*   (13.08)*   (4.79)*

$R^2 = 0.99$; DW = 2.49; SER = 0.03; DF = -5.83*; ADF= 5.43*

In this respect, what role do monetary policy and the central bank (SBP) play in curbing the inflationary spiral? Given these empirical and heuristic explanations of inflation, the key questions are: (i) What are the primary objectives of the SBP's monetary policy? (ii) Is the SBP's main mandate economic growth or control of inflation? (iii) Does the SBP focus on controlling inflation and several offshoots such as price targets, "inflation targets," credit expansion, and inflationary expectations, etc? (The SBP's policy announces an "inflation target" each year in the annual budget statement.) (iv) How is monetary policy formulated in light of those objectives and how independent is the SBP in asserting and adhering to those objectives? (v) What are the SBP's operational and intermediate targets? (vi) Why are the interbank call money rate (market rate) and policy rate significantly different? These are policy questions and need policy forum discussions, where the SBP can obtain feedback from major stakeholders in the private banking industry, the Planning Commission, institutions such as PIDE, the academic community, and business leaders on the state of economy before announcing its decision on the policy rate.

Another recent theoretical development is the "Taylor rule." Policy debates and empirical estimations have applied this rule to Western and emerging economies (see, for instance, Alper & Hatipoglu, 2006; Taylor, 1999a; Yazgan & Yilmazkuday, 2007). Simply put, the Taylor rule is a formula designed to provide recommendations on how a central bank should set the short-term rate as economic conditions change to achieve both its short-term goal of stabilizing the economy and its long-term goal to attain price stability. The basic equation of the rule is:

$i_t = \alpha_0 + \alpha_1 y_t + \alpha_2 \pi_t.$

where *i* is the short-term policy rate, *y* is potential output, and π is the inflation rate.

Malik and Ahmed (2010) are probably the first to examine the rationale for applying the Taylor rule to Pakistan, and estimating it for the period 1991–2005 as well as for subsamples of different governors' regimes during that period. They find no evidence that the SBP has ever followed this type of rule. It is a big "charge" for the SBP. The weakness in the study lies, however, in its results from estimating their equation. For the model to be stable, the estimated values of the parameters should be such that $\alpha_1 > 0$ and $\alpha_2 \geq 1$. However, the estimated value for the output coefficient (y), α_1, is 0.38, and for the inflation coefficient, α_2, is 0.51; both coefficients are also significant. As the authors note, this may imply that "the reaction function (eq. 7) is mis-specified." The term α_2, being substantially lower than 1.0, "implies [the] pro-cyclical response of the monetary policy to the business cycle."

The estimated values of the Malik and Ahmed (2010) model describe an economy that would be unstable. Clearly, that has not happened to Pakistan's economy in the strict sense. The authors seem to realize this and, as they do, note that, "it might also be a reflection of a mis-specified model where important variables have been omitted." They find that, given the level of inflation and output, the Taylor rule would have recommended a much more aggressive monetary policy than that actually set during 1991–2005.

Thus, the validity of the subsequent simulation also becomes blurred when the basic model does not describe the monetary policy well. In view of the likely mis-specified model, the study's conclusions and policy implications may have limited validity. Hence, claims such as that the SBP has not followed the Taylor rule might unnecessarily indict the central bank's policy. In their own words,

> Before adopting [a] policy rule it is essential to explore the monetary policy objectives in a country like Pakistan. Literature on the Taylor rule is still inconclusive on the coefficients of variables (other than output and inflation) in the policy reaction function. So a lot of research is needed to reach some firm conclusions on coefficients of these other variables. There is also a need to explore the ways and possibilities for developing countries to adopt more elaborate inflation targeting framework (Malik and Ahmed, 2010).

Nonetheless, one should give credit to Malik and Ahmed (2010) for starting this debate. Research in this area would benefit Pakistan

where institutions are not yet strong and there is weak focus on issues such as monetary policy transparency and accountability. There could be no better place than the SBP to further this research agenda.

A more recent study by Nasir and Malik (2011) at PIDE provides yet another policy twist in light of the changing nature of monetary policy in the last two decades: "Modern monetary policy is supposed to be forward-looking, and the central banks respond contemporaneously to structural shocks that are expected to make inflation deviate from the future target." They find that policy has a weak response to supply-side shocks as the correlation coefficient between the demand and supply shocks is only 0.041. Their results show that demand shocks make no significant contribution to output fluctuations, but that both demand and supply shocks, along with foreign supply shocks, significantly contribute to inflation variability in Pakistan: "Moreover, domestic supply shock is the central cause of variation of inflation with foreign supply shock at second and domestic demand shock in third place."

The **policy implications** of their study are: (i) The central bank should be careful in controlling inflation through a **tight monetary policy** (a continuous message of studies from Islamabad) since an increase in interest rates to reduce domestic demand might not reduce inflation to the desired extent as demand contributes less to inflation; (ii) The **cost channel** of monetary policy may come into effect, i.e., "the continuous increase in the policy rate by the SBP in recent times is astonishing and rather undesirable" (Nasir & Malik, 2011). Moreover, a tight monetary policy may not be efficient in the absence of coordination between the demand management policies.

The SBP's current monetary policy stance of raising the policy rate could be justified as follows. Aggregate demand alone cannot explain inflation if the productive capacity of the economy is decreasing, and inflation may persist at the same level of aggregate demand. However, assessing the prevailing output gap is a difficult task for economic managers. It involves judging the capacity or potential of the economy, which is almost impossible to measure.

The behavior of monetary variables, such as the credit demand of the private sector and government sector, can serve as useful indicators of aggregate demand. We know that the government increased the "support price" of wheat. Would we consider this to be a supply shock or a policy decision? Such price increases cannot be considered pure supply shocks.

The credit extended for "commodity operations," including both wheat and sugar, grew by 288 percent during 2007–10 as compared to 33 percent in the three preceding years. Borrowings on this scale would not have been possible without applying upward pressure on market interest rates. Thus, aggregate demand pressure rises because of the public sector. In response to growing demand pressures, the SBP started tightening its monetary policy stance, and has continued to do so because foreign investment has contracted by 74 percent and net foreign assets have fallen by 37 percent. While aggregate demand has declined, so has the economy's ability to meet this demand and flow of resources from abroad to fill the gap.

In summary, what insight is gained from these studies/commentaries on inflation in Pakistan? The result of PIDE's Econometric Model (2011) predicts that the inflation rate will remain in double digits during 2010–13 (see Table 5). The average inflation rate for 2010–13 will be 14.5 percent. Therefore, a tight monetary policy stance will not have any impact on future inflation. It may be even higher than predicted by the PIDE Econometric Model. Our financial mismanagement is usually good. Despite the model's favorable assumptions, it under-predicts actual inflation by 3–4 percent, as we have ex post inflation data for 2009 and 2010 (see Table 5).

From a personal point of view of monetary policy in Pakistan and inflation rate forecasts, let us remember that behavioral statistics can tell "lies," even if twisted as one might like. Monetary policy is still loose (easy). With any measure of inflation—the consumer price index, producer price index, or gross national product deflator—the actual true inflation rate is higher than the official rate. I do not believe in core inflation as if we do not consume food and energy (if at all available in Pakistan!).

Real rates in Pakistan have been negative for the last 10–15 years. Negative real rates do not imply tight monetary policy. Economies do not produce high real growth rates with negative real interest rates. This is the lesson of the economic history of 1974–2011, and is also supported by the SBP's governor in a recent speech in December 2010 at the chamber of commerce in Karachi.

Table 5: PIDE Econometric Model Forecast
(Out-of-Sample Forecast Results in Percentage Change)

	2009	2010	2011	2012	2013	Average
Real GDP	3.71	1.82	2.60	5.36	6.89	4.08
Inflation	14.42	13.75	13.96	14.95	15.46	14.51
Private consumption	4.36	-2.44	-1.11	2.49	4.57	1.57
Government consumption	7.43	17.81	12.32	12.41	12.71	12.54
Private investment	-12.30	0.97	0.98	5.18	6.71	0.31
Money supply (M2)	20.29	16.03	16.09	23.09	26.17	20.34
Export of goods and services	6.50	7.28	9.23	9.88	10.21	8.82
Import of goods and services	-6.02	-1.30	0.03	3.99	6.19	0.57
Direct tax revenues	30.62	12.38	14.90	18.67	22.47	19.81
Indirect tax revenues	22.00	9.08	10.88	13.59	16.28	14.37

GDP = gross domestic product, PIDE = Pakistan Institute of Development Economics.
Note: Negative values indicate a decrease and positive values an increase. The average is
       taken for the period 2010–13.

On the inflation front, the double-digit growth rates of money supply running at 15–20 percent and projected as being even higher in econometric models' forecasts do not bode well. Simultaneously, growth in BRIC and emerging economies will keep resource and commodity prices high, and inflation and inflationary expectations higher. Pakistan's economy has lived on war dividends that are going to diminish over time in the wake of fiscal belt-tightening among the Western economies.

Budget Deficit, Trade Deficit, and the Exchange Rate

Looking at its fiscal consolidation over the years, Pakistan's experience with fiscal management has been quite ineffective. The success of monetary policy depends heavily on fiscal support and its prudence. Otherwise, monetary policy is overburdened. The federal government budget deficit as conventionally defined has fluctuated around 5 percent of GDP during the last two decades. In the 1980s, it was 7.1 percent excluding grants, and 6.4 percent including grants. In the last decade, the deficit-to-GDP ratio has decreased to an average of 4 percent.

The real issue in fiscal management is not so much the absolute or percentage changes in data or the Ministry of Finance's accounting maneuverings, but the decomposition of government expenditure on development vs. current expenditure. While development spending generates economic activity and thus reduces the overall debt burden,

current spending only adds more to the debt burden. The debt data speaks for itself. Over the decades, our internal and external debt has increased. Bukhari and Haq (*Business Recorder*, 18 February 2011) point out that, in November 2008, the International Monetary Fund (IMF) approved a USD7.6 billion 23-month standby arrangement for Pakistan, which committed to introducing value-added tax (VAT) from July 2010 onward. Much to the IMF's annoyance, the commitment was not honored even by October 2010 and beyond. The finance minister claimed that a huge amount of money had been spent by vested interests to resist reformed general sales tax (RGST), which would have led to the "documentation of [the] economy" and "better tax compliance." It is a fact that the Federal Board of Revenue has failed to improve the tax-to-GDP ratio, which dropped to 8.87 percent in FY2010 from 12.5 percent in FY2002.

Due to inept leadership and corrupt government structures, the country is piling up huge debts–external debt till 2015 is expected to increase to USD75 billion from the current figure of USD55 billion. The country's total foreign and domestic debt at the beginning of 2011 had reached almost USD130 billion. Our financial managers are caught in a dilemma. On one hand, there is mounting pressure from donors to reduce the fiscal deficit through improved collections; on the other, the ailing economy is not in a position to meet the ever-growing revenue targets

It is a pity that, for the latest year, our direct taxes were 3.40 percent of GDP and indirect taxes were 5.48 percent of GDP—a total of 8.88 percent of GDP. Thus, two areas need attention. First, Pakistan's tax base is the lowest among other countries in this region (9–10 percent of GDP). Our dependence on import-related "indirect" taxes is a significant risk to the economy. There is a need to raise the tax-to-GDP ratio to bring it to a minimum of 13–15 percent. This should be vigorously implemented in the under-taxed sector and undocumented areas of the economy, e.g., agriculture, the services sectors, and stock market.

Second, our method of financing fiscal deficit has become a significant threat to the economy and to achieving sustainable growth over the years. This risk stems from the continued reliance of substantial fiscal expansion on the banking system. During 2007–10, the cumulative borrowing from banking increased by 187 percent, as against 58 percent during 2003–07. Within the banking sector, the government has substantially increased its reliance on the SBP for borrowing more than PKR1,500 billion.

The external sector of Pakistan's economy has been a point of stress for the last 30 years with different degrees of volatility. In the wake of the global financial crisis, emerging economies in our peer-group region have proved much more resilient and recovered more quickly. Pakistan's current account deficit (CAD) as a percentage of GDP is the highest it has been in the last two years. Despite some improvement in the CAD in 2010, it is likely to widen, given the rising trend in international commodity prices and uncertainty of domestic and global recovery. Furthermore, our export growth could slow down as global recovery is expected to slow down. Thus, there seems to be an inherent weakness in Pakistan's external account. The Government of Pakistan's (2010a) report elegantly summarizes this situation as follows:

> The present balance of payments crisis (2008) and slow down in GDP growth brings out in sharp relief the historical pattern of Pakistan's growth process. Periods of high growth end due to mounting balance of payments pressures such as at the end of the Ayub period in the 1960s, the Zia period in the 1980s and the recent Musharraf period: High growth has been critically dependent on concessional foreign capital inflows. An export structure that prevents an export growth high enough to finance the import requirements of a high growth trajectory. A domestic savings rate that given Pakistan's existing ICOR is inadequate to finance the investment rate required for a sustained GDP growth of 7 percent.

Among several other studies on exchange rates, Ahmed (2009) examines the role of exchange rate determination in Pakistan and how it impacts a country's macroeconomic stability and the size of its tradable sector. Her conclusion is that Pakistan has "fared poor[ly] on both scores and the situation [has] worsen[ed] in recent years." She notes that, since 2000, "the terms of trade have deteriorated as [the] share of exports in total trade has been small relative to imports." Her hypothesis is that all these trends with a depreciating real exchange rate (RER) should be consistent as predicted by economic theory.

After calculating the equilibrium RER, she finds that it has suffered "from chronic overvaluation in Pakistan between 1% to 23% till 2007." One might add that, after the balance of payments crisis of 2008, the depreciation of the Pakistan rupee by almost 42 percent over the last three years may bring this overvaluation to a lower level. This

overvaluation has occurred due to an increase in foreign remittances and a sharp rise in foreign direct investment in earlier years. This finding provides some explanation for Pakistan's poor experience with macroeconomic stability and its poor performance in the trade sector. The Government of Pakistan's (2010a) report also alludes to a similar view of the overvaluation of the rupee, and suggests measures to

> … ease the constraints to growth, especially the financing of the current account deficit, and to enhance the efficiency and competitiveness of the Pakistani economy in general and the heavily protected industrial sector in particular requires continuous and sustainable improvements in total factor productivity. Policy suggestions include interventions like reduction in the anti-export bias in via an undervalued exchange rate regime.

Thus, most studies on exchange rate policy seem to suggest a proactive exchange rate policy to improve the competitiveness of its tradable sector.

3.   The Economics of Institutional Change

A number of studies have concluded that a society's fundamental political and legal institutions are conducive to growth. Of these, political stability, secure property rights, and legal systems based on the rule of law, are among the most important. Mahoney (2001) finds that the security of property rights is much stronger in nations with common law systems, such as the UK and US. The reasoning is simple. If the police will not help you protect your right to own a home or car, you are less likely to acquire those assets. Similarly, if you cannot easily enforce business or employment contracts, you are far less likely to enter into those contracts. If you cannot plan for the future because you do not know what the rules of the game will be ten years or perhaps even a year from now, you are far less likely to make productive long-term investments that require years to yield returns.

This growing body of literature from economists and social scientists has examined political impediments to the macroeconomic management of developing economies. These explanations include: (i) historical traditions, (ii) socio-structural determinants, (iii) the self-interest of politically powerful sectors, (iv) the entrenched characteristics of a political system, (v) formal properties of political institutions, (vi) the influence of particular economic

ideologies or schools of thought, (vii) vicious circles, and (viii) a residual category of conjectural factors (see Whitehead, 1990).

These explanations certainly have their merit in the context of Pakistan and can be classified as "political constraints" to the selection of optimal economic strategies. There is ample evidence of the entrenched characteristics of the political system and of vicious circles in Pakistan. Hence, it is imperative to explore macroeconomic stability or instability in developing countries in the absence of appropriate institutions or existence of weaker institutions.

Vulnerability is derived from the notion that, in both dictatorial and democratic regimes, governments can fail; hence, it accelerates the process of market failure, which governments are supported to minimize. Macroeconomic imbalances such as unemployment or recessions are examples of market failure (see North, 1990, 1995). North distinguishes between institutions and organizations. The two examples of organizations are "markets" and "governments." The organization of government is created to prevent market failure. However, what is not realized is that strong government interventions can also lead to government failure.

According to North, a consistent shortcoming of several approaches to macroeconomic (classical, neoclassical, Keynesian, monetarist, and rational expectationist, etc.) is the inadequate focus on institutions—hence, the New Institutional Economics (NIE). The NIE literature shows that the most important determinant of sustained growth is the institutional structure within which growth occurs. The predominant paradigm in the 1950s and 1960s was the primacy of governments over markets. The stagflation of the 1970s demonstrated that market interventions can lead to government failures. As the damage wrought by government failure was established in the 1980s, the response was a full-fledged attack on the role of the government (Friedman, Thatcher-Reaganism, supply-side economics, the IMF and World Bank). In the presence of weak political systems and market imperfections lies the need for "institution building."

This analysis suggests that government failures can be rampant in both democratic and dictatorial regimes. In the context of Asian economies, Chowdhury (1996) finds that the macroeconomic performance of weak states is inferior to that of strong states, and the result is macroeconomic crisis. Whether a state is "strong" or "weak" depends on the historical, cultural, and geopolitical factors mentioned earlier by Whitehall (1991).

In Pakistan, three important organizational branches that affect macroeconomic policy and growth are the bureaucracy (Ministry of Finance, the Planning Commission), the central bank, and the parliament. Institutional change must occur first in these organizations. If government interventions are necessary, market pricing should be given priority with a clear focus on providing transparency and accountability (e.g., sugar pricing in 2010). The state can still provide a long-term vision and direction to the economy, but this is only possible if both governance and public institutions are strong. The political sector should prevent "coalition governments" where minority parties hold the balance of power (e.g., on the issue of RGST). Coalition governments may *not* be conducive to swift fiscal reforms when they are needed (Alesina, 1992).

We could make a long list of the sources of government failure, which might include poor administrative capacity, overzealous regulations, rent-seeking behavior, inefficient political cycle(s), poor governance, and lack of transparency and accountability. The main emphasis of NIE is the quality of governance, which is the key to success. Poor governance has been at the heart of most economic failures in Pakistan. To achieve good governance, a country must have reasonable political stability and a political leadership that respects the rule of law, a bureaucracy that is honest and efficient, and the political will to mobilize resources for an effective government.

Sequentially, the reform process should begin with the central bank being given a clear mandate of price stability to enhance macroeconomic performance (Alesina & Summers, 1993). The central bank's authority should be amended to give it a mandate to solely control inflation rather than a host of conflicting objectives to enhance accountability and transparency. The central bank's independence extends to "instrument independence," not "goal independence."

Let us look at the SBP's experience as an "institution" with reference to its policy setting and achieving this goal. An excellent study by Malik and Din (2008) shows that monetary policy transparency requires the central bank to disclose information that is relevant to the conduct of monetary policy, and symmetric information between the central bank and private economic agents (Geraats 2002, 2005). In addition, transparency does not require perfect knowledge of the economy as both the central bank and public may have imperfect information regarding shocks to the economy.

A transparent monetary policy has several benefits, such as increased public support for central bank policies, and the legitimacy of monetary policy. It also helps improve the efficiency of the central bank and increase transparency, which helps reduce uncertainty in financial markets, thereby improving long-run growth prospects. A high degree of transparency forces the central bank to adhere to its stated objectives and targets, thus increasing its credibility. Thus, transparency lies at the heart of the central bank's independence and accountability.

Malik and Din (2008) evaluate the SBP's monetary policy transparency using the Eijffinger and Geraats (2006) index, and compare Pakistan's transparency practices to those of eight other countries, using a 15-point scale. According to the their results, Pakistan scores only 4.5 out of 15, ranking last among those included in the comparative index. The study is highly critical of the fact that the targets for the SPB's goals—price stability and output growth—are not set by the SBP but by the government. However, the SBP does not prioritize these goals, which compromises its independence, at least with regard to goal setting.

The one-year-or-less timeframe used to report goals is further problematic because "the lag with which monetary policy actions affect the outcome (inflation) is normally greater than one year." On the positive side, the IMF (2010b) notes that the SBP has achieved a range of improvements, from the modernization of its information technology system to enhanced professional staffing, all of which should have a positive impact on the country's monetary policy transparency.

To be fair to the SBP, Malik and Din (2008) are comparing its transparency with the most advanced countries' central banks that have a much longer history and maturity in monetary policy setting. Another comparison of central banks among "peer" group of countries is given in the IMF's reports on the observance of standards and codes. These evaluate the extent to which countries observe certain internationally recognized standards and codes. The reports cover banking supervision, corporate governance, data dissemination, and monetary and financial policy transparency. It is clear that, while other countries have improved, Pakistan's performance remains constant.

Figure 2: Code of Good Practices on Transparency in Monetary Policy
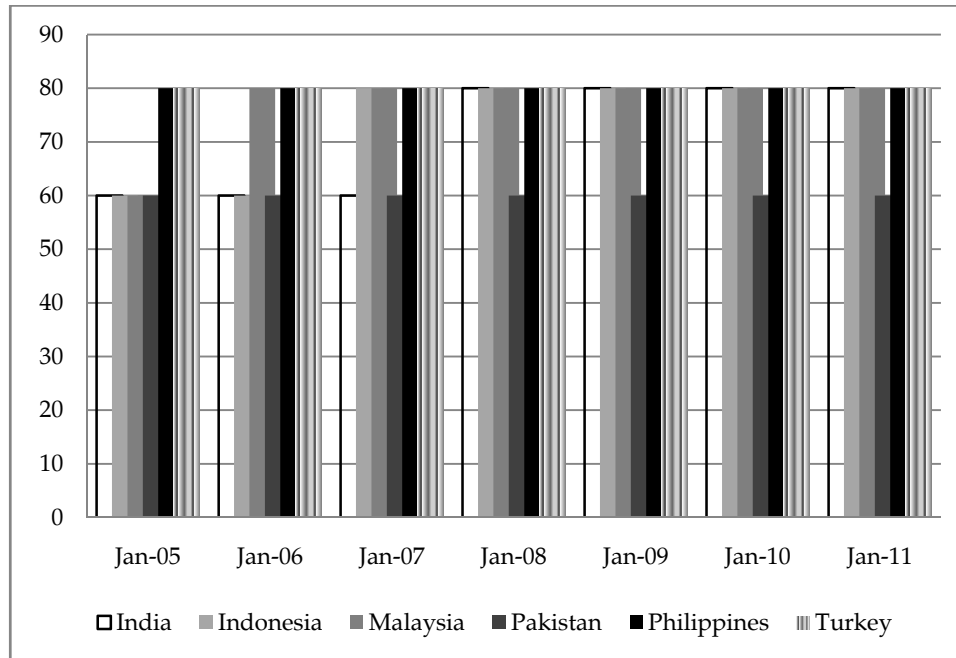
Source: International Monetary Fund. (2011). *Pakistan: Financial system stability assessment.*

Economic Vulnerability and Resilience

In the wake of the growing importance of institutional economic explanations of growth, the literature has developed several models and indices to assess the role of institutional variables. In this strand, one emphasis is on economic vulnerability and resilience. The term "resilience" is generally understood to mean the ability to recover quickly from the effect of an adverse incident.[1] As Briguglio, Cordina, Farrugia, and Vella (2009) note, the term has been used in the economic literature in at least three senses relating to the ability to (i) recover quickly from a shock—"shock counteraction," (ii) withstand the effect of a shock—"shock absorption," and (iii) to "avoid" shock as the obverse of economic vulnerability.

In his conceptual framework, Briguglio (2004) identifies four possible categories into which countries can be classified according to

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[1] Merriam-Webster defines resilience as (i) the capability of a strained body to recover its size and shape after deformation caused especially by compressive stress, (ii) the ability to recover from or adjust easily to misfortune or change; origin, Latin *resilire*, to jump back, recoil.

their vulnerability and resilience characteristics. He terms these "best-case," "worst-case," "self-made," and "prodigal son."

- "Self-made" countries have a high degree of inherent economic vulnerability, but have adopted offsetting policies to build their economic resilience, thereby reducing their overall exposure to external shocks.

- Countries termed "prodigal sons" are characterized by a relatively low degree of inherent economic vulnerability, and have adopted policies that increase their exposure to exogenous shocks.

- The "best-case" countries are not inherently highly vulnerable, and have also adopted resilience-building policies.

- The "worst-case" countries are highly vulnerable, and have also adopted policies that exacerbate the negative effects of their vulnerability.

These four cases are illustrated in Figure 3, where inherent economic vulnerability and nurtured resilience are measured on the horizontal and vertical axes, respectively. Where does Pakistan stand in this classification? Without any hesitation, the answer is "worst-case."

Figure 3: Four Economic Scenarios
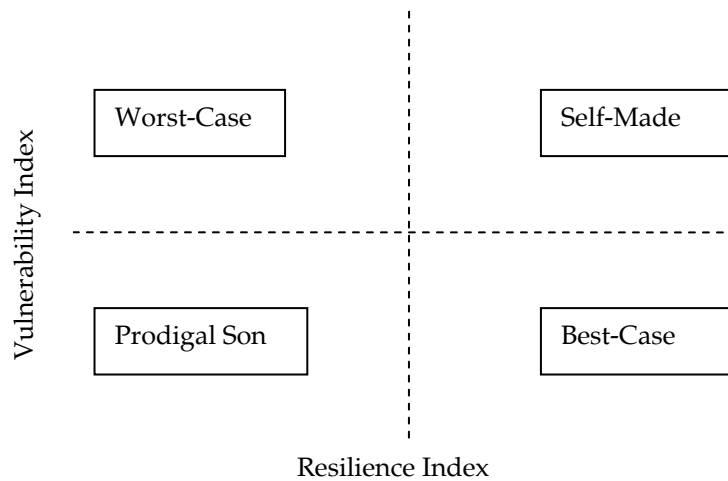
Governance Indicators

In order to capture the governance environment in different countries, the World Bank has developed aggregate governance indicators as follows:

1. *Voice and accountability (VA)*: The extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

2. *Political stability and absence of violence (PV)*: Perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including political violence and terrorism.

3. *Government effectiveness (GE)*: The quality of public services, the quality of the civil service and its degree of independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

4. *Regulatory quality (RQ)*: The ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

5. *Rule of law (RL)*: The extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence.

6. *Control of corruption (CC)*: The extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

This study does not look empirically at these six performance indices for Pakistan, but it could be a potential graduate thesis topic ("That is why God made graduate students," Solow, 1972). However, Uppal (2011) looks at some of these indicators and their performance for other countries.

The anecdotal evidence suggests that Pakistan has not performed well on most of these governance issues, nor has it been able to match pace with the high-performing Asian economies despite its considerable

potential and large inflow of financial resources. It is usually observed that foreign aid cannot be the driver of high economic growth. At best, aid is "secondary." According to Hasan (2011), "the countries that benefitted from foreign aid are those who knew where they wanted to go and were willing to make tough choices to achieve their goals, e.g., Korea, Turkey, Indonesia and Malaysia." Pakistan's excessive external dependence, high defense spending, and an active military role in national politics have been the root cause of its inability to achieve sustained economic growth. With the deterioration of the quality of governance over time, public institutions too have been eroded.

4. Pakistan's Challenges

I have already touched on some of the systematic and systemic risks to the economy. There is no shortage of challenges. However, I will focus on a few important ones. Pakistan's experience with macroeconomic management in general and fiscal and monetary policy in particular, has been inconsistent. Many scholars have documented this and I have expanded on some of these in this study. Judging by the evidence, we have observed high inflation rates, fluctuating growth, high unemployment rates, highly volatile rates of inflation, low growth, and volatile exchange rates as compared to peer countries.

Within a macroeconomic framework, both at a theoretical and empirical level, there is now near-consensus among economists and even policymakers on the following four propositions (although there is still disagreement on the operational mechanisms):

1. Prolonged and pronounced inflationary deficit financing should be excluded as a deliberate instrument of growth.

2. Monetary policy should be directed to price stability and be used for short-term output fluctuations in extreme conditions.

3. Adjustments to external shocks require both absorption and production responses.

4. Exchange rates should not be misaligned for a prolonged period of time.

These propositions can more or less be classified as the "systematic" challenges faced by all economies. Economics is a dismal science, further obscured by the onslaught of globalization forces and competition since the early 1980s. Naturally, some forecasts lack accuracy

and precision because global economies have traded jobs for profits through outsourcing. Time and chance also influence economic events. Thus, systematic challenges have to be resolved by using an optimal combination of fiscal and monetary policies, and effective planning.

Friedman (1963, 1968) recommended long ago that money growth be left alone. "Money is a veil" and acts as grease to lubricate the economy and follow a stable monetary growth. What we see are ad hoc attempts to actively intervene in the monetary sector in Pakistan. Do we follow the Taylor rule? According to the evidence, we do not. If so, why? The SBP needs to spell out its reasons to the public and other stakeholders. Have we worked on improving the policy formulation process and strengthening economic and political institutions? In the 2000s, state institutions were politicized, and the National Accountability Bureau was willing to ignore cases (e.g., in 2005, an inquiry by the Securities and Exchange Commission of Pakistan [SECP] into charges of manipulation at the Karachi Stock Exchange was totally dismissed).

Fiscal Policy

On the fiscal policy front, our usual challenge is to increase our tax base from direct taxes. What is even more important is the tax structure itself. "Why is the government subsidizing power to the public through SOEs? If it must, it should subsidize through its fiscal budget," says business leader Altaf Saleem. "Policy liberalization in Pakistan was much faster, as compared to India. Yet investments did not flow. The prime reason was unclear and inconsistent corporate tax policy." (I refer again to the role of "institution building" and devising and implementing fiscal and monetary instruments and strategies to finance our prolonged budget deficits.) On the fiscal front, Ikram (2011) puts a heavy burden on the Federal Board of Revenue and its lack of administrative capacity.

Monetary Policy

Monetary policy can help fiscal policy raise capital for the government by developing a bond market. Several questions arise in this respect:

- Why does the SBP rely heavily on the issuance of short-term treasury bills?

- What operational difficulties hamper the development of an investment bonds market?

- What steps are being taken by the Ministry of Finance, SBP, and SECP to develop a bond market?

- What are the impediments to developing a meaningful "yield curve" in Pakistan?

- Why has the yield curve in Pakistan been almost flat over the last five years and even slightly negatively sloped in the last decade? A negatively sloped yield curve can predict recessions.

- What have we done in terms of policy to improve the process of "financial intermediation" to attract domestic savings for productive investments?

- Why does the spread between lending and deposit rates in the Pakistan banking industry diverge so largely?

- Despite 30 years of implementing Islamic banking, we have not attracted investment through true long-term instruments such as *musharaka* and *mudaraba.* The practice is nothing more than a mark-up mechanism based on conventional interest rates.

In the corporate sector and stock market, the SECP faces several challenges:

1. The development of investment bond and corporate bond markets.

2. The role of the stock market in providing liquidity, price information, and efficiency; and the ability to raise funds in the capital market.

3. In the last five years, the Pakistan capital market has issued one IPO of PKR200 million, whereas India issued more than USD30 billion in the autumn of 2010 alone.

All these issues are related to institutional and regulatory failures in Pakistan.

Industrial Policy

The industrial sector contributes to 25 percent of Pakistan's GDP. It was the largest consumer of energy in the last decade, followed by transport, residential, and commercial consumers, agriculture and others. Investments in energy were clearly neglected and the ability of the industrial sector to use RER adjustment was postponed. Cotton textiles production and apparel manufacturing are the largest industries, accounting for about 66 percent of merchandise exports and almost 40 percent of the employed workforce. Yet the international competitiveness of the textiles sector remains fairly mediocre.

Even in the heyday of 2000–07, when fiscal borrowing was curtailed, interest rates were relatively low, and inflation was in check, (although I would disagree with the data), there was confidence in the domestic currency. Yet there was no worthwhile industrial development in this decade. The only industries that expanded were those that were heavily subsidized. The prerequisites of industrialization include geographical advantage, a stable economy, presence of raw material, and most importantly, skilled human capital. The possibility of errors is embedded in any policymaking process; what matters is consistency.

There is no single formula that a country can simply adopt to achieve sustained growth. However, three sectors that face greater challenges and have the capacity to improve include international trade, agriculture, and human development. I will briefly comment on trade.

International Trade

Economic growth does not proceed smoothly. Economic crises often occur. For instance, in the last five years, almost 2.5 percent of GDP growth was reduced by losses in terms of trade. Unfortunately, the 21st-century world in which we live is neither flat nor merciful: "Our range of merchandise exports and SMEs are essentially labor intensive with relatively higher employment elasticities" (Government of Pakistan, 2010a).

The Government of Pakistan's report (2010) makes an excellent case for regional trade opportunities and challenges. It is a pity that Pakistan's official bilateral trade with India is only around USD2 billion. Pakistan and India account for almost 90 percent of South Asia's GDP. Low bilateral trade is an important constraint to the growth of South Asian exports to the rest of the world. There are several advantages of normalizing trade

between the two countries. Geographical proximity, cheaper transportation costs, low levels of inventories of raw material, and reduced costs of operations are a few areas in which potential advantages could help realize normalize trade. The report also enumerates several macroeconomic advantages such as trade deficit, inflation, reduced cost of investment, and the fear of Pakistan's manufacturing industry.

Finally, there is the "new paradigm"—the biggest challenge facing Pakistan's economy. Our main shortfalls are due to our failure to guard against internal and external vulnerabilities that make Pakistan less resilient to shocks. This has two aspects.

Systemic risk assessment and management

Systemic risk relates to risk arising from internal shocks such as the floods of 2010, the earthquake of 2005, and energy shortages, and from external shocks such as fluctuations in foreign remittances, the threat of capital controls, a decline in foreign economic assistance, global financial crises, and recent EU debt issues. Other internal shocks are due to institutional failure. Some recent examples of institutional failure include the *badla*-related stock market crash (2005), the closure of markets for four months in August 2008, the failure of cooperative societies, and accumulation of nonperforming loans in our banking system. The main challenge is finding the capacity to foresee these systemic risks. The political process and lack of institution building have put Pakistan in this situation.

Building resilience to shocks

In Section 3, we examined some indicators of good governance and building resilience. There could be emerging vulnerabilities. An imminent threat is the drastic drop in external assistance coupled with sanctions, trade restrictions by Western economies, heavy reliance on foreign remittances, and prolonged internal conflict born out of the war on terrorism. How prepared are we for these emerging vulnerabilities?

The last two decades have seen poor macroeconomic management. Negative external and internal shocks have significantly reduced the economy's growth rates toward 2–3 percent. Fiscal and monetary policies have remained expansionary, and structural reforms have been postponed. Hasan (2011) provides the following intermediate prospect for Pakistan:

Under the present circumstance, it is clear that a strong revival of the economy presupposes a restoration of law and order and rule-based governance. In other words, at the moment, the non-economic issues are the one that seem most intractable. A quick and strong turnaround in economic growth does appear problematic in the best of circumstances. The elimination of macroeconomic imbalances would continue to constrain growth in domestic demand for some time.

Restoring strong export competitiveness would also take time because of the lag in education and skills. In any case, international economic conditions may remain difficult and limit the growth in world trade. On the supply side, the constraints imposed by the scarcity of water and power and other infrastructure are very real. But the economic prospects for Pakistan in the medium and long run appear excellent, if strong economic policies and a pragmatic approach is taken to issues of the respective roles of the state and the market and if governance and security problems are brought under control (p. 461).

One hopes that his assessment is correct.

References

Acharya, S. (1999). *Managing external economic challenges in the nineties: Lessons for the future* (Occasional Paper No. 33). Colombo: Central Bank of Sri Lanka.

Ahmed, H. (2009). Capital flows and real exchange rate overvaluation: A chronic ailment: Evidence from Pakistan [Special edition]. *Lahore Journal of Economics, 14*, 51–86.

Alesina, A. (1992). *Political models of macroeconomic policy and fiscal reform* (Policy Research Working Paper No. 970). Washington, DC: World Bank.

Alesina, A., & Summers, L. (1993). Central bank independence and macroeconomic performance. *Journal of Money, Credit, and Banking, 25*, 151–162.

Alper, E., & Ozan, H. (2006). *Taylor rule estimation in emerging markets* [Working paper]. Istanbul, Turkey: Bogaizici University, Department of Economics.

Amjad, R. (2003). Solving Pakistan's poverty puzzle: Whom should we believe? What should we do? *Pakistan Development Review, 42*(4), 375–393.

Bhanumurthy, N. R., & Kumawat, L. (2009). *External shocks and the Indian economy: Analyzing through a small structural quarterly macroeconomic model*. New Delhi, India: National Institute of Public Finance and Policy. Retrieved from http://mapra.ub.uni-muenchen.de/19776

Briguglio, L. (2004). Economic vulnerability and resilience: Concepts and measurements. In L. Briguglio & E. J. Kisanga (Eds.), *Economic vulnerability and resilience of small states*. Malta: Islands and Small States Institute.

Briguglio, L., Cordina, G., Farrugia, N., & Vella, S. (2009). Economic vulnerability and resilience: Concepts and measurements. *Oxford Development Studies, 37*(3), 229–247.

Chaudhary, M. A., & Waseem, S. (1996). *Fiscal policy and sustainability of debt, deficit and inflation in Pakistan* [Working paper]. Islamabad, Pakistan: Quaid-i-Azam University, Department of Economics.

Chishti, S. U., Hasan, M. A., & Mahmud, S. F. (1989). Macroeconomic policies and Pakistan's economy. *Pakistan Development Review*, *28*, 717–730.

Chowdhury, A. (1996). Macroeconomic management in East Asian newly industrializing economies. In B. Kapur, E. Quah, & H. T. Hoon (Eds.), *Trade and development, and the Asia-Pacific*. Singapore: Prentice-Hall.

Cordina, G. (2004a). Economic vulnerability, resilience and capital formation. In L. Briguglio and E. J. Kisanga (Eds.), *Economic vulnerability and resilience of small states*. Malta: Islands and Small States Institute.

Cordina, G. (2004b). Economic vulnerability and economic growth: Some results from a neoclassical growth modeling approach. *Journal of Economic Development*, *29*(2), 21–39.

Eijffinger, S. C. W., & Geraats, P. M. (2006). How transparent are central banks? *European Journal of Political Economy*, *22*(1), 1–21.

Geraats, P. M. (2001). *Transparency of monetary policy: Does the institutional framework matter?* [Mimeo]. Cambridge, UK: University of Cambridge.

Geraats, P. M. (2002). Central bank transparency. *Economic Journal*, *112*, F532–F565.

Government of Pakistan. (2010a). *Final report of the Panel of Economists: Medium-term development imperatives and strategy for Pakistan*. Islamabad, Pakistan: Planning Commission.

Government of Pakistan. (2010b). *Pakistan economic survey 2009–10*. Islamabad: Finance Division.

Haque, N. (2010, December). *Can Pakistan grow faster?* Paper presented at the Quaid-i-Azam Lecture, 26th Annual Conference of the Pakistan Society of Development Economists, Islamabad. p. 45.

Haque, N., & Montiel, P. (1992). *Fiscal policy in Pakistan since 1970* (Working Paper No. 92/97). Washington, DC: International Monetary Fund.

Hasan, P. (2011). *My life, my country*. Lahore, Pakistan: Ferozsons.

Hasan, M. A., Khan, A. H., Pasha, H. A., & Rasheed, M. A. (1995). What explains the current high rate of inflation in Pakistan? *Pakistan Development Review*, *34*(4), 927-943.

Hossain, A. (1990). The monetarist versus the neo-Keynesian view on the acceleration of inflation: Some evidence from South Asian countries. *Pakistan Development Review*, *29*(1), 19–32.

International Monetary Fund. (2010a). *World economic outlook database*. Washington, DC: Author.

International Monetary Fund. (2010b). *Pakistan: Third review under the stand-by arrangement*. Washington, DC: Author.

Kardar, S. (2007). Monetary and fiscal policies [Special edition]. *Lahore Journal of Economics*, *12*, 43–65.

Khan, A. H., & Qasim, M. A. (1996). Inflation in Pakistan revisited. *Pakistan Development Review*, *35*(4), 747–759.

Khan, M. A., & Din, M. (2011). *A dynamic macroeconometric model of Pakistan's economy* (Working Paper No. 69). Islamabad: Pakistan Institute of Development Economics.

Khan, S., & Khan, M. A. (2007). *What determines private investment? The case of Pakistan* (Working Paper No. 36). Islamabad: Pakistan Institute of Development Economics.

Little, I., Cooper, R., Corden, M., & Rajapatirana, S. (1993). *Booms, crisis and adjustment: The macroeconomic experience of developing countries*. New York, NY: Oxford University Press.

Mahoney, P. G. (2001). The common law and economic growth: Hayek might be right. *Journal of Legal Studies*, *30*(2), 503–525.

Malik, W. S. (2007). *Monetary policy objectives in Pakistan: An empirical investigation* (Doctoral dissertation). Pakistan Institute of Development Economics, Islamabad.

Malik, W. S., & Ahmed, A. M. (2010). Taylor rule and macroeconomic performance in Pakistan. *Pakistan Development Review*, 49(1), 37–56.

Malik, W. S., & Din, M. (2008). *Monetary policy transparency in Pakistan: An independent analysis* (Working Paper No. 44). Islamabad: Pakistan Institute of Development Economics.

McKibbin, W. J., & Sachs, J. D. (1991). *Global linkages: Macroeconomic interdependence and cooperation in the world economy*. Washington, DC: Brookings Institute.

Mundell, R. A. (1999, December). *A reconsideration of the twentieth century* (Document No. 1999-5). Nobel Prize in Economics documents. Nobel Prize Committee. Retrieved from http://www.nobelprize.org/nobel_prizes/economics/laureates/1999/mundell-lecture.pdf

Naqvi, N. H. (2002). Crowding in or crowding out? Modeling the relationship between public and private fixed capital formation using cointegration analysis: The case of Pakistan 1964–2000. *Pakistan Development Review*, *41*, 255–276.

Naqvi, N. H., Khan, A. H., Ahmed, A. M., & Siddiqui, R. (1994). *Inflation in Pakistan: Causes and remedies*. Islamabad: Pakistan Institute of Development Economics.

Naqvi, N. H., Khilji, N. M., & Ahmed, A. M. (1983). *The PIDE macroeconomic model of Pakistan's economy*. Islamabad: Pakistan Institute of Development Economics.

Nasim, A. (1995). *Determinants of inflation in Pakistan*. Karachi: State Bank of Pakistan.

Nasir, M., & Malik, W. S. (2011). *The contemporaneous correlation of structural shocks and inflation: Output variability in Pakistan* (Working Paper No. 70). Islamabad: Pakistan Institute of Development Economics.

North, D. (1990). *Institutions, institutional change and economic performance*. Cambridge, UK: Cambridge University Press.

North, D. (1995). The New Institutional Economics and third world development. In J. Harries, J. Hunter, & C. M. Lewis (Eds.), *The New Institutional Economics and third world development*. New York, NY: Routledge.

Pasha, H., et al. (1995). *Integrated social policy and macroeconomic planning model for Pakistan*. Karachi, Pakistan: Social Policy and Development Centre.

Qayyum, A. (2005). Modeling the demand for money in Pakistan. *Pakistan Development Review*, *44*, 233–252.

Rashid, A. (2005). Public/private investment linkages: A multivariate cointegration analysis. *Pakistan Development Review*, *44*, 805–817.

State Bank of Pakistan. (2010). *Annual report 2009–2010*. Karachi: Author.

Taylor, J. B. (1999a). *Introduction in monetary policy rules*. Chicago, IL: Chicago University Press.

Taylor, J. B. (1996b). A historical analysis of monetary policy rules*.* In J. B. Taylor (Ed.), *Monetary policy rules.* Chicago, IL: Chicago University Press.

Whitehead, L. (1990). Political explanations of macroeconomic management: A survey. *World Development*, *18*, 1133–1146.

Woodford, M. (2001). The Taylor rule and optimal monetary policy. *American Economic Review Papers and Proceedings*, *91*, 232–237.

Yazgan, M. E., & Yilmazkuday, H. (2007). Monetary policy rules in practice: Evidence from Turkey and Israel. *Applied Financial Economics*, *17*(1), 1–8.

Pakistan, Growth, Dependency, and Crisis

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Abstract

Compared to the historical and even contemporary experience of India, Pakistan has long been regarded as a "dependent" economy. Gross domestic product growth in Pakistan is typically argued to be contingent on external factors: trade, financial flows, and the interdependence of asset markets. Beyond the rhetoric, there is only ambiguous and contradictory empirical evidence to support this view. This paper offers a new methodology, that of case studies of growth and stagnation, to test the hypothesis of dependency. The results show that growth in Pakistan is influenced by external factors, but that growth is driven primarily by the dynamics of the domestic economy.

Keywords: Economic Growth, Dependency, Crisis, Pakistan.

JEL Classification: F43, O16.

1. Introduction

There is an ongoing debate about the impact of trade, foreign direct investment (FDI), and financial liberalization on economic growth. Its proponents favor a positive link, having been more vocal in recent decades than during the years of import substitution and self-sufficiency in the 1950s and 1960s. The Asian crisis of 1997/98 and current global financial crisis have focused new and more critical attention on the question of global trade and particularly financial links. This article looks at a particular case study—that of Pakistan since independence. There is a common presumption in much of the economic literature that Pakistan is a "dependent" economy—its growth and development conditioned on the global economy. Beyond the rhetoric, the empirical evidence offers at best only hesitant and ambiguous support for this hypothesis. This article derives a new (for the case of Pakistan) methodology to examine the link between the global economy and episodes of growth and stagnation in Pakistan. Section 2 looks at the general and Pakistan theoretical and empirical debate, Section 3 discusses the rationale of using this new methodology to examine growth in Pakistan,

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Section 4 uses a rigorous statistical methodology to isolate episodes of growth and stagnation, Section 5 tests the "dependency" hypothesis and Section 6 concludes the study.[1]

2.   Dependency and Pakistan: The Debate

The academic literature examining the link between the global economy and domestic growth is voluminous in both theory and evidence. There is a large literature testing the link between trade liberalization and economic growth (Dollar, 1992; Krueger, 1998; Sachs & Warner, 1995), FDI, and economic growth (Aitken & Harrison, 1999; Balasubramanyam, Salisu, & Sapsford, 1996; Gorg and Greenaway, 2004), foreign aid and economic growth (Burnside & Dollar, 2000; Guillamont & Chauvet, 2001) and, after the 1997/98 Asian crisis, a growing appreciation of issues such as contagion and herding that work principally through global financial markets (Krugman, 1999; Stiglitz, 2002; Wade 1998).[2] Collectively, these various linkages from the global economy inspire confidence about the positive benefits of globalization in some (Bhagwati, 2004; Wolf, 2004), and views ranging from heavily qualified optimism (Rodrik, 2000) to the hostile, especially among those writing from the perspective of the dependency school (Cardoso, 1972; Frank 1967). During the early years of the recent global financial crisis, a third view gained some prominence—that of "decoupling," which argued that growth in several large developing countries was driven mainly by internal factors and would likely be sustained throughout the crisis (Akin & Kose, 2007). This optimistic apathy was soon after being questioned for the case of India, among others (Nachane, 2009).

The currently fashionable thesis of "decoupling" makes some historical sense for the case of India. There is no clear evidence to suggest the external economy ever made a significant contribution to driving episodes of growth or stagnation in India. The shift to the (currently) relatively rapid gross domestic product (GDP) growth rates occurred in the late 1970s/early 1980s (Nayyar, 2006). This break occurred in the context of recession in the developed world and the most unfavorable external terms of trade for India since the 1960s (Joshi & Little, 1994,

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[1] Many thanks to Grace Kite (SOAS) who did the econometric work in Section 4, which can be read in more detail in Kite and McCartney (2011).

[2] There are other possible links: an external threat may push up military spending, domestic consumers may seek to emulate consumption patterns of more developed countries and so reduce domestic savings, political instability in neighboring countries may spill over—such links are not examined in this article, which focuses on testing more widely debated and narrow economic linkages.

Chapter 6; Rodrik & Subramanian, 2004). More broadly, in terms of foreign investment, foreign control of key economic sectors such as banks and oil, and domestic self-reliance in modern industrial inputs such as capital goods, India was long insulated from the world economy—the "Indian state has played a decisive role in constructing the most self-reliant and insulated capitalist economy in the third world… There is no major capitalist country in the third world which has a more powerful state than India's or an indigenous bourgeoisie with more autonomy from foreign capital" (Vanaik, 1990, pp. 8, 11). FDI into India after 2003 and GDP growth did increase rapidly, but so too did domestic savings; there is evidence that FDI was more obviously driven by domestic growth than the opposite (Chakraborty & Nunnenkamp, 2008).

Pakistan has long been regarded as different. A very common unifying hypothesis to explain Pakistan's growth and development has been its dependence on foreign capital inflows. Since 1951, domestic investment has systematically exceeded domestic savings; investment has been substantially funded by foreign capital inflows. For example, in 1974/75, domestic investment was 15.6 percent of GDP and gross domestic savings 4 percent, leaving Pakistan heavily dependent on foreign resource inflows (V. Ahmed & Amjad, 1984, p. 97). The ebb and flow of capital inflows according to many has been a determining influence on growth rates, as well as exposing Pakistan to policy influence from donors: "US priorities determined Pakistan's domestic and foreign policies from 1951 onward" (Ali, 2008, p. 251). The most dramatic and frequently discussed example in the literature is the "Decade of Development" (1958–1968) under Ayub Khan. In response to Ayub's pro-US foreign policy stance during the Cold War, many argue that a surge of capital inflows generated an investment-led boom until 1965, then declining capital inflows (related to the war with India in 1965) led to economic slowdown (Amjad, 1983; Griffin, 1965).

The intermittent global financial crises since the 1990s have helped scholars provide a framework to clarify the channels of contagion by which the global economy, for good or ill, may impact on the domestic economy. Van Rickenghem and Weder (2001) identify four major channels of contagion: (i) trade channel (merchandise and invisibles); (ii) foreign capital flows; (iii) contamination of financial assets; and (iv) interdependence of asset markets, especially equity, bonds, and housing. For the case of Pakistan, as many other developing economies, we would expect liberalization in trade, FDI, and finance to have increased the potency of these channels over the last 20 years.

Despite the very strong conclusions regarding Pakistan as being "dependent," there is very little clear evidence to link the global economy to variations in Pakistan's GDP growth. Following the four-point framework described above:

The trade ratio (exports plus imports divided by GDP) is found to have a positive impact on GDP growth (Din, Ghani, & Siddique, 2003; Iqbal, 1993; Iqbal & Zahid, 1998; M. A. Khan & Qayyum, 2007). Exports alone are found to have a positive (Ahmad, Alam, & Butt, 2003) or no relation with GDP growth (Q. M. Ahmed, Butt, & Alam, 2000; Akbar & Naqvi, 2000). Exports are also found to have a positive relationship with household saving (Iqbal, 1993). The external terms of trade are found to have a positive impact on public savings (Iqbal, 1993) and an insignificant effect on domestic savings (Nasir & Khalid, 2004).

External debt is found to have no relation to GDP growth (Q. M. Ahmed et al., 2000); foreign savings an insignificant impact on domestic investment (Aslam, 1987; Franco-Rodriguez, Morrissey, & McGillivray, 1998; Nasir & Khalid, 2004); and FDI a positive (Atique, Khan, & Azhar, 2004) and a negative (Shabbir & Mahmood, 1992) relation with GDP growth. World Bank/International Monetary Fund (IMF) adjustment lending is found to have no relation with GDP growth, savings, and foreign borrowing; and a positive impact on investment and government spending (Iqbal, 1994). Foreign aid is found to have a small and positive impact (N. Z. Khan & Rahim, 1993) and a negative impact (S. R. Khan, 1997) on GDP growth, and also an insignificant impact on domestic savings (A. H. Khan, Hasan, & Malik, 1992). There is a general and widespread (if not total) agreement that domestic savings have been negatively impacted by foreign capital inflows and are more obviously dependent on domestic policy factors (such as real interest rates, the dependency rate, and expected inflation) (Aslam, 1987; Iqbal, 1993, 1997; S. R. Khan, 1997; Khilji & Zampelli, 1991; Mahmood & Qasim, 1992; Nasir & Khalid, 2004; Qureshi, Din, Ghani, & Abbas, 1997; Shabbir & Mahmood, 1992).

There is evidence that domestic financial markets in Pakistan have become more integrated with both the world economy and with Pakistan's real domestic economy over the era of liberalization. Uppal (1993) finds that volatility on foreign stock markets, particularly in Asia and going right back to the 1960s, have affected the stock market in Pakistan. There is also evidence that financial liberalization from the 1990s onward, strengthened interlinkages between stock prices and macroeconomic variables in Pakistan (F. Husain & Mahmood, 2001). In particular, there exists a causal

relationship from the currency market to the stock market and from the stock market to the money market (Khalid & Rajaguru, 2006). There is, though, stronger evidence that domestic investment strategies have driven the volatility of Pakistan's stock market (Farid & Ashraf, 1995; Hameed & Ashraf, 2006; F. Husain & Mahmood, 2001).

3. A New Method for Exploring Economic Growth

This section reviews existing work on economic growth in Pakistan. There is a steadily accumulating literature (some of it reviewed in the previous section) derived from Barro (1991) using time series data for Pakistan or else running large cross-country regressions and focusing on the implications of the findings for Pakistan. The usual suspects make their appearance as independent variables: initial income, education, investment, government spending, etc. This literature is gradually absorbing theoretical progress into its methodology, and procedures such as testing for stationarity and causation/endogeneity are now the norm (Ahmad et al., 2003; Atique et al., 2004; Din et al., 2003; Ghani & Din, 2006; Iqbal, 1994; Iqbal & Zahid, 1998; M. A. Khan & Qayyum, 2007, etc).

This literature reflects the wider problems of cross-country/state/time series growth regression. Many theoretically important policies such as trade liberalization or government intervention are notoriously difficult to measure for the sake of regression analysis. For Pakistan, crude proxies for "government intervention" such as "government consumption or defense spending" or "the budget deficit" have no clear relation with GDP growth (Ghani & Din, 2006; Iqbal & Zahid, 1998; Tahir, 1995). This is not surprising. Knowles and Garces-Ozanne (2003) found that measures of government spending are a very poor statistical proxy for the government's actual influence on the economy. A tax cut and a subsidy, for example, may have identical economic impacts but would have very different implications for the measured size of state intervention. In a wider literature, government spending has no robust relation to GDP growth (Levine & Renelt, 1992, p. 951).

Case studies offer important benefits for the study of economic growth. They enable greater attention to the causal mechanism (rather than the statistical significance) linking, for example, policy and growth (Gerring, 2007; Wacziarg, 2002). All intervening steps between cause and effect can be taken into account, and each step can be preceded by a hypothesis (Gerring, 2007, p. 181). A focus on the causal mechanism would allow case studies to examine the relation between different theories of

growth, the assumption of universalism in the growth process,[3] and contingent causes of growth,[4] all of which have been identified as particular problems for regression analysis (Kenny & Williams, 2001; McCartney, 2009; Temple, 1999). This advantage is exploited in this article.

A common criticism of the case study methodology is that it has no formal method of case study selection (George & Bennett, 2005). The typical pattern of economic growth in developing countries suggests a rigorous methodology with which to choose case studies. In least developed countries (LDCs), there is little correlation between growth rates across different time periods (Easterly, Kremer, Pritchett, & Summers, 1993; Easterly & Levine, 2001; Maddison, 1995), and growth is best characterized as occurring in episodes of growth and stagnation (Berthelemy & Soderling, 2001; Hausman, Pritchett, & Rodrik, 2004; Mkandawire, 2001; Rodrik, 2003; Temple, 1999); this has also been found to be true at state level in India (Dholakia, 1994). Such shifts or episodes in growth also represent easily identifiable case studies. It is these considerations that motivate the empirical analysis given in Section 4 below. The analysis there identifies episodes of growth and stagnation in Pakistan that offer a rigorous method with which to choose case studies.

A problem with many growth regressions is that they crowd in the deeper (institutions, geography, culture, history, etc.) and proximate (trade policy, taxation, investment, etc.) causes of growth into the same regression analysis. Theory, however, suggests the latter affect growth through the former. Strong institutions (property rights) increase the incentive for private agents to invest. Poor geography (a country being landlocked) reduces the impact of trade liberalization on growth. Looking at distinct episodes of growth allows us to avoid this methodological problem. The deeper determinants of growth are likely fixed in the short term and change only slowly over the longer term. It is unlikely that culture or geography will change quickly and significantly enough to be responsible for structural breaks in economic growth. The methodology

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[3] Cross-country growth regressions assume that economic growth operates according to universal laws across all economies and through time and space. Each individual country/state then provides evidence used to elucidate this one underlying universal economic relation (regression parameter). An increase in education, for example, is hypothesized to have the same effect on growth in all countries/states.

[4] In econometric analysis, variables typically enter the right-hand side of regressions separately without diagnostic tests allowing for any but very limited interaction among them. Theory *does* suggest that complementarity is important. For example, investment may be only causally related to growth in the presence of strong property rights, reforms causally related to growth only if considered credible or if correctly sequenced.

used in this article allows us to focus more precisely on policy, trade flows, etc. as determinants of growth in Pakistan.

4. Identifying Episodes of Growth and Stagnation

This section presents the results of a statistical analysis of GDP growth in Pakistan since independence. The analysis seeks to identify episodes of growth and stagnation in GDP. The data reveals that there have been five broad episodes of growth and stagnation in Pakistan since independence. These are three episodes of growth—1951/52 to 1958/59, 1960/61 to 1969/70, and 2003/04 to 2008/09—and two episodes of stagnation—1970/71 to 1991/92 and 1992/93 to 2002/03. The evidence for the breaks in 1970/71 and 2003/04 is slightly weaker, but such evidence has been often accepted in the related literature (e.g., Stiroh, 2001, pp. 13–14). There is a broad literature trying to identify episodes of growth and stagnation in India (Balakrishnan & Parameswaran, 2007; Bhargava & Joshi, 1990; Hateker & Dongre, 2005; Kaur, 2007; Nagaraj, 1990; Sinha & Tejani, 2004; Virmani, 2005; Wallack, 2003), but this work is pioneering for the context of Pakistan.

The classical method for assessing the significance of structural change in the context of an econometric model is the Chow (1960) test. Application of the Chow test would involve splitting the data into two subsamples and then regressing the real GDP growth rates on a constant and any relevant controls. A dummy variable that takes the value 1 for one of the subsamples and 0 for the other would be included and its significance tested using an F-test. A coefficient significantly different from 0 would demonstrate the existence of a breakpoint in that year. In this article, the analysis proceeds by applying the Chow procedure iteratively to all possible splits of the Pakistan data into two subsamples. It is a procedure suggested by Quandt (1960) for application to situations where there is no candidate breakpoint hypothesized in advance. Quandt's method involves estimating T-1 equations, where T is the sample size, and assessing the significance of T-1 dummy variables by calculating T-1 F-statistics. The largest of these (*supF)* can then be the subject of a test whose null hypothesis is no breakpoint versus the alternative that there is a break in the year where the maximum F-statistic was found. Andrews (1993) took this work forward by deriving the correct critical values for the procedure. Vogelsang (1997) and Hansen (1997) extended the theme further by modifying the critical p-values for models with serial correlation.

Applying Quandt's (1960) methodology to the Pakistan GDP data begins by assessing which control variables should be included in the test equations, and which of Andrews' (1993) or Volgelsang's (1997) critical values are appropriate. Various lagged values of GDP growth are tested as controls and found to be insignificant, so a baseline equation using just a constant term is used in practice. Breusch-Godfrey's methodology is used to test for serial correlation and the resulting p-values are all well over 10 percent, so we can conclude that there is no serial correlation problem and Andrews' critical values are appropriate for the Quandt-Andrews (Q-A) test.

The next step is to carry out the Q-A test using the chosen test equation over the whole of the sample period, and testing for the significance of a breakpoint in the year with the maximum F-test. It is a significance test that takes into account a "small subsample" problem where the test statistic is degenerative when small subsamples contain too few observations. To compensate for this, it is generally suggested that the ends of the sample period not be included in the testing procedure. A standard level for this "trimming," followed here, is 15 percent, with the first and last 7.5 percent of the observations in the test equation ruled out as potential breakpoint years. The procedure generally followed for overcoming the "two-way split" problem is to identify the first breakpoint and then repeat the Q-A test using a test equation that only includes the period after that year. This process can be repeated until there are no more significant *supF* statistics (Wallack, 2003, p. 4312).

Table 1 below presents the results of following this procedure on Pakistan's GDP data. The episodes of growth and stagnation identified by the Q-A test have been presented as simple mean growth rates for each of the possible splits of the sample. The first column splits the sample only at the significant breakpoint in 1960/61, while the second column also accepts a breakpoint in 1992/93. The final case where there are five different episodes of growth and stagnation in the post-independence period is in the last column.

Table 1: Average Growth Rates in Periods between Breakpoints

Period	1 Breakpoint	2 Breakpoints	5 Breakpoints
1951/52 to 1958/59	3.1%	3.1%	3.1%
1960/61 to 1969/70	5.4%	5.9%	6.8%
1970/71 to 1991/92			5.6%
1992/93 to 2002/03		4.5%	3.7%
2003/04 to 2008/09			5.9%

Source: Kemal, A. R., Din, M. U., & Qadir, U. (2006). Economic growth in Pakistan. In K. S. Parikh (Ed.), *Explaining growth in South Asia*. New Delhi, India: Oxford University Press. Author's calculations.

It seems clear from these results that the 1960/61 breakpoint can be accepted. However, all the other three breakpoints need to be treated with some caution. 1992/93 emerges as the most likely of the other three principally because it has the highest maximum F-stat and the lowest p-value. Evidence for potential breakpoints in 1970/71 and/or 2003/04 is weaker, but cannot be discounted. 1970/71 is likely to be a breakpoint that the methodologies used here are ill suited to identify. Its position between two more significant breakpoints clearly identifies it as a possible victim of a "two-way split" problem, which as we have seen can be solved only by performing the Q-A test on a much smaller sample where the test has much less power to find a significant breakpoint. As for the truth of a breakpoint in 2003/04, more time will be the best solution to the "small-sample problem" here.

5. Episodes of Growth and Stagnation and the Dependency Hypothesis

This section looks at the episodes of growth and stagnation that were identified in Section 4, and examines to what extent they can be explained by factors external to Pakistan—the dependency hypothesis. It is worth noting at this point that the terms episodes of "growth" and "stagnation" are used relatively, not in an absolute sense. Thus, the episode of stagnation 1970/71 to 1991/92 experienced reasonable rates of economic growth (5.6 percent) but is referred to as an episode of stagnation because it witnessed a statistically significant decline in the growth rate over the immediately preceding period, 1960/61 to 1969/70 (6.8 percent).

5.1. An Episode of Growth, 1951/52 to 1958/59

There is no evidence that favorable impacts from the world economy initiated or sustained the episode of growth after 1951/52. The

episode of growth did begin with an improvement in Pakistan's external terms of trade (Burki, 1999, p. 112; A. I. A. Islam, 1961, pp. 59–60; Papanek, 1967, p. 15). The effect was neither long-lived nor large enough in its aggregate impact to explain the decade-long episode of growth. As the Korean War came to an end, there was a collapse in Pakistan's terms of trade, from 125 in 1950/51 to 84 in 1952/53, and a low of 52 in 1959/60 (A. I. A. Islam, 1961, pp. 59–60; Lewis, 1970, p. 126; Papanek, 1967, p. 15). Over the early 1950s, foreign trade shrank in terms of its aggregate importance to Pakistan's economy. Between 1950 and 1955, exports declined from 10.4 to 3.4 percent of GDP and imports from 9.0 to 5.4 percent (I. Husain, 1999, p. 324; Lewis, 1969, p. 47).

5.2. An Episode of Growth, 1960/61 to 1969/70

The most common evidence for the dependency hypothesis is the era of Ayub Khan's dictatorship (1958–1968); there is, at best, only weak evidence for this proposition. In response to Ayub's pro-US foreign policy stance during the Cold War, some argue that a surge of capital inflows generated an investment-led boom until 1965, then declining capital inflows (related to the war with India in 1965) led to economic slowdown and debilitating domestic conflict over the more limited foreign largesse (Amjad, 1983). Between 1960 and 1965, a government sanction for an investment project came with the ability to obtain the necessary foreign exchange from the Pakistan Industrial Credit and Investment Corporation (PICIC) or Industrial Development Bank of Pakistan (IDBP) at the official exchange rate. Such loans were significantly below the market rate and had low interest rates. PICIC and IDBP financed about 40 percent of total gross investment in the early 1960s, and provided about 70 percent of the foreign exchange component of investment for such loans (Amjad, 1982). Foreign economic assistance increased from 2.8 percent (40 percent of domestic investment) in 1959/60 to 6.6 percent of GDP (38 percent of domestic investment) in 1964/65, then declined to 3.8 percent of GDP (23 percent of investment) in 1969/70 (N. Islam, 1972, p. 503). There seems at first glance to be a strong association between the behavior of investment and the inflow of real resources between 1960 and 1965. Some agree: the "entire social and economic system, and the planning exercise which is its manifestation, is supported and sustained by foreign assistance" (Griffin, 1965, p. 621) and the "entire edifice had been built upon these large doses of foreign capital, their reduction threatened the entire system" (Amjad, 1983, p. 264). The timing is more difficult to account for than these explanations allow. M. H. Khan (2000) notes that total investment continued to rise until 1968, long after foreign

aid had slowed. Rather, he argues that growth slowed down in response to increased pressures on the Ayub government to allocate resources according to political rather than economic criteria in response to the growing opposition to his regime after the mid-1960s. This took the form of efforts to build up a Bengali bourgeoisie in East Pakistan. By the mid- to late 1960s, large resource transfers meant that East Pakistani industrialists often needed barely 10 percent of the required capital to start an enterprise. Such efforts were reasonably successful in raising the profitability of investment in East relative to West Pakistan, but in the short run reduced the growth impact of investment (Amjad, 1982, p. 68).

Measures of the external terms of trade offer some support for the view that a positive shock from the world economy could have been behind the acceleration of growth in the early 1960s. There was an improvement in Pakistan's external terms of trade (Lewis, 1970, p. 126; Papanek, 1967, p. 15) although there is reason to believe that the role of foreign trade was simply too small for this improvement to have much aggregate influence. The ratio of exports to GDP stagnated at 4.5 percent between 1960 and 1965, and then declined to 3.7 percent by 1970 (I. Husain, 1999, p. 324).

There are only rough estimates for FDI in Pakistan over the 1960s. The State Bank of Pakistan estimated that FDI averaged Rs80 million p.a. over the 1960s (Chaudhry, 1970). There is reason to believe that positive spillovers from even this low level of FDI would have been negligible. Typically, foreign firms had such restrictive clauses on the use of the technology that positive spillovers to the rest of the domestic economy would likely have been negligible (Radhu, 1973). Predictably, Shabbir and Mahmood (1992) find that, after 1959/60, there was no significant correlation between FDI and GDP.

5.3. An Episode of Stagnation, 1970/71 to 1991/92

Some studies have linked the slowdown of GDP growth after 1970/71 to external factors, but there is no clear evidence of this proposition. Foreign debt increased from 32 percent of GDP in 1969/70 to 37 percent in 1979/80. This modest increase, though, marked a significant increase in the burden of its financing (V. Ahmed & Amjad, 1984). After the mid-1970s, the average interest rate on foreign borrowing increased, and the average maturity period and average grant element on both declined (S. R. Khan, 1997, pp. 948–949). Debt service payments increased from 25.4 percent of gross disbursements in 1974/75 to 52.1 percent in

1978/79 (Nawab, Naqvi, & Sarmad, 1984, p. 101). The real value of foreign loans was reduced further because of the typically 10–15 percent (Griffin, 1965, p. 615) and up to 170 percent (V. Ahmed & Amjad, 1984) higher price paid on procurements using tied aid. More than 90 percent of total foreign assistance contracted up to December 1980 was tied to specific projects or commodities, and confined to purchases from donors (V. Ahmed & Amjad, 1984). Increases in global commodity prices (particularly wheat and kerosene) increased the unit value index for Pakistani imports from 155.9 in 1971/72 (1969/70 = 100) to 802.8 in 1979/80. This was offset to some extent by the increased prices of Pakistani exports, from 129.1 to 673.4. As a result, the terms of trade declined from 100.0 in 1969/70 to 82.8 in 1971/72, rose to 106.4 in 1973/74, fell to 66.7 in 1974/75, and slowly increased to 83.9 in 1979/80 (Nawab et al., 1984, p. 107). Sarmad (1992) has built a computable general equilibrium model of Pakistan's economy that allows us to quantify more exactly the impact of the world economy. He finds that the negative impact of external shocks in the mid-/early 1970s on the current account was not as significant in Pakistan as in other LDCs. In Pakistan, the process of adjustment was underwritten by the dramatic increase in remittance inflows that increased from 0.5 percent of GDP in 1970/71 to 7.5 percent in 1979/80, or from 10.0 percent of the trade gap in 1970/71 to 79.0 percent in 1977/78 (Nawab et al., 1984, p. 97). Remittance income was supplemented by a huge surge in aid from the US related to the Afghan war after 1979. Recession in high-income economies (and hence reduction in world trade growth) was offset by a rising share of the booming Middle East market. Between 1974 and 1982, the share of Organisation of Islamic Countries (mostly oil exporters) increased from 14.0 percent of Pakistani exports to 24.4 percent.

FDI remained negligible throughout the 1970s. It increased from a total of USD41 million between 1970 and 1974 (0.53 percent of gross capital formation) to USD138 million between 1975 and 1979 (0.98 percent), USD322 million between 1980 and 1984 (1.22 percent), and USD764 million between 1985 and 1989 (2.31 percent). (Atique et al., 2004, p. 709). FDI was not a significant component of capital inflow. The share of FDI in total foreign capital inflows increased from 6.77 percent in 1970/71, to 6.96 percent in 1980/81, and 8.62 percent in 1990/91 (Shah & Q. M. Ahmed, 2003, p. 698). There is very little work on the economic impact of FDI in Pakistan over this period. N. Z. Khan and Rahim (1993) find domestic savings to be positively correlated with FDI, and negatively so with foreign loans. The results hint at a more favorable impact of FDI than other forms of capital inflow, but the results do not for example

consider the question of causality in the relationship. Shabbir and Mahmood (1992) find that, between 1959/60 and 1987/88, there is no significant correlation between FDI and GDP. Ahmad et al. (2003) meanwhile find a positive relation after 1972.

5.4. An Episode of Stagnation, 1992/93 to 2003/03

There is no clear evidence that this episode of stagnation was precipitated by external conditions. The decline in foreign remittance inflows between 1987 and 1990 was the single most important factor leading to deterioration in Pakistan's current account deficit despite significant growth of exports. The Iraqi invasion of Kuwait in 1990 in particular led to a sharp fall of remittance income (and falling exports to Gulf states). Domestic macroeconomic adjustment was successful in that it focused not on expenditure reduction (deflation) but on expenditure switching; hence, changes in domestic absorption variables were small. Devaluation and improved incentives led to adjustment through export growth rather than import decline (Sarmad, 1992, p. 866).

Workers' remittances were replaced by other sources of funds, access to which proved relatively easy in the early 1990s. To attract funds held abroad by Pakistani nationals, nonresident Pakistanis were allowed to open foreign currency accounts with Pakistani banks, which were freely transferable abroad. These accounts were exempted from income and wealth tax and no questions were asked about the source of foreign exchange. Those holding foreign currency accounts could also obtain rupee loans against such accounts (M. A. Khan et al., 2005). Between June 1991 and June 1996, USD4 billion was deposited in domestic foreign exchange accounts (Wizarat, 2002, p. 27).

5.5. An Episode of Growth, 2002/03 to 2008/09

There is reasonable evidence to show that this episode of growth was strongly influenced by external factors; internal factors were also important and have often been overlooked by commentators. By the end of the 1990s, servicing the stock of debt had crowded out other forms of public expenditure; it consumed more than 50 percent of budgetary revenues. Annual external debt service payments of USD6 billion–7 billion were required every year (for a total external debt of almost USD38 billion by mid-2001), which was equivalent to two thirds of export earnings. After 11 September 2001, Pakistan gave assurances that it would help the US in Afghanistan. This led to the rapid resumption of financial aid ties with the

US, World Bank, and IMF—relations that had been suspended after Pakistan conducted nuclear tests in 1998. On 23 September, Bush waved key sanctions and the US voted in favor of the IMF negotiating a Poverty Reduction and Growth Strategy with Pakistan that had been opposed a few days before (Zaidi, 2005). In December 2001, relief was granted to the entire stock of USD12.5 billion owed to the Paris Club (18 key creditor countries). Pakistan benefited from lower interest rates and extended repayment periods. The net present value of the debt stock was consequently reduced by 50 percent and saved USD1.2 billion–1.5 billion in annual servicing costs after 2001. There is one strand of thought that sees growth after 2002/03 as being dependent on this resumption of capital inflows and part of a longer-term argument that sees growth in Pakistan as being ultimately dependent on favorable relations with the US (Ali, 2008).

There is more to the story than the vagaries of US goodwill. September 2001 did lead to a dramatic shift in Pakistan's relations with the outside world that facilitated significant capital inflow, but the strategy to reduce the burden of debt predated 2001 and can be related to domestic reforms initiated by the technocratic managers of the Musharraf government. Between 1999/2000 and 2001/02, the government repaid USD4.5 billion of commercial and short-term debt and made considerable efforts to build up foreign exchange reserves. The external position had been improving since 1999; September 2001 accelerated an existing trend. Between 1999/2000 and 2001/02, the trade gap declined from -USD1.6 billion to -USD1.2 billion, and the current account shifted from a deficit of -USD1.9 billion to a surplus of USD2.7 billion (I. Husain, 2003; Zaidi, 2005). There was a sudden surge in remittances from the US, from USD80 million in 1999/2000 to USD1.2 billion–1.7 billion p.a. after 2001/02. Some have argued this to have been a one-off shift in portfolios in response to tighter banking regulations in the US after September 2001. The remittances from the US continued unabated throughout this episode. Others have argued that much of this represented remittances from more established professionals in the US who were making economic investments in Pakistan (Burki, 2007, p. 260). Higher oil prices toward the end of this episode led to higher remittances from the more traditional Gulf countries, in particular Saudi Arabia and the United Arab Emirates. This again was not related to September 2001.

6. Conclusion

This article has used a rigorous statistical methodology to test the hypothesis of "dependent" Pakistan. Economic dependency can be

manifested through flows of goods and services, finance, or contagion effects through asset markets. Despite some bold claims in the existing academic literature, the empirical evidence for the dependency hypothesis is weak. The statistics of this article have allowed us to isolate episodes of growth and stagnation in Pakistan since 1951, and examine how they were related to changing impacts from the world economy. Our results here echo the poor existing evidence from cross-country growth regressions. Growth in Pakistan is certainly influenced by the world economy, but is primarily dependent on domestic factors, policy, weather, and the nature of state-economy relations. A good example is the recent global financial crisis. GDP growth slowed sharply to 1.2 percent in 2008/09. The slowdown, however, predated the onset of global crisis, growth falling from 6.8 percent in 2006/07 to 3.7 percent in 2007/08, and recovery resumed while the crisis was still raging with GDP growth rising to 4.1 percent in 2009/10. Between 2006/07 and 2007/08, the sharpest falls in growth rates were in those sectors that were least exposed to the global economy—agriculture from 6.6 to 1.3 percent, construction 24.3 to -5.5 percent, and public administration and defense from 7.1 to 1.2 percent. The Karachi Stock Exchange did fall rapidly during the crisis, undoubtedly affected by contagion effects, but the fall began in 2006/07, both in terms of aggregate market capitalization and primary capital mobilization. The fall was more closely linked to sharp falls in corporate sector profitability after 2006. As discussed in Section 2, the global financial crisis after 2008 was associated with negative growth in the most trade-exposed sector of Pakistan's economy (manufacturing), and also declining exports, foreign portfolio investment, bank sector credit, and domestic investment, but by then the slowdown was already well established in Pakistan. Finally, Pakistan showed far more resilience to the global financial crisis than did many other developed and developing countries by maintaining positive GDP growth throughout. In 2008/09, GDP growth was negative in the world as a whole, in the Euro area, Japan, Malaysia, Singapore, Thailand, and South Korea; only a few countries, notably China and India, fared better than Pakistan (Government of Pakistan, 2011). Disappointment with Pakistan's growth should turn attention not to fatalism about the world economy but to domestic policy and governance reform.

References

Ahmad, M. H., Alam, S., & Butt, M. S. (2003). Foreign direct investment, exports and domestic output in Pakistan. *Pakistan Development Review*, *42*(4), 715–723.

Ahmed, Q. M., Butt, M. S., & Alam, S. (2000). Economic growth, export and external debt causality: The case of Asian countries. *Pakistan Development Review*, *39*(4), 591–608.

Ahmed, V., & Amjad, R. (1984). *The management of Pakistan's economy, 1947–82*. Karachi, Pakistan: Oxford University Press.

Aitken, B. J., & Harrison, A. E. (1999). Do domestic firms benefit from FDI? Evidence from Venezuela. *American Economic Review*, *89*(3), 605–618.

Akbar, M., & Naqvi, N. F. (2000). Export diversification and the structural dynamics in the growth process: The case of Pakistan. *Pakistan Development Review*, *39*(4), 573–589.

Akin, C., & Kose, M. A. (2007). *Changing nature of North-South linkages: Stylized facts and explanations* (Working Paper No. 07/280). Washington, DC: International Monetary Fund.

Ali, T. (2008). *The duel: Pakistan on the flight path of American power*. London, UK: Simon and Schuster.

Amjad, R. (1982). *Private industrial investment in Pakistan, 1960–1970*. Cambridge, UK: Cambridge University Press.

Amjad, R. (1983). Industrial concentration and economic power. In H. Gardezi & J. Rashid (Eds.), *Pakistan: The roots of dictatorship: The political economy of a praetorian state*. London, UK: Zed Press.

Andrews, D. (1993). Tests for parameter instability and structural change with unknown change point. *Econometrica*, *61*, 821–856.

Aslam, N. (1987). The impact of foreign capital inflow on savings and investment: The case of Pakistan. *Pakistan Development Review*, *26*(4), 787–789.

Atique, Z., Khan, M. H., & Azhar, U. (2004). The impact of FDI on economic growth under foreign trade regimes: A case study of Pakistan. *Pakistan Development Review*, *43*(4), 707–718.

Balakrishnan, P., & Parameswaran, M. (2007, July 14). Understanding economic growth in India: A prerequisite. *Economic and Political Weekly*, pp. 2915–2922.

Balasubramanyam, V. N., Salisu, M., & Sapsford, D. (1996). Foreign direct investment and growth in EP and IS countries. *Economic Journal*, *106*, 92–105.

Barro, R. J. (1991). Economic growth in a cross section of countries. *Quarterly Journal of Economics*, *106*, 407–431.

Berthelemy, J.-C., & Soderling, L. (2001). The role of capital accumulation, adjustment and structural change for economic growth take-off: Empirical evidence from African growth episodes. *World Development*, *29*(2), 323–343.

Bhagwati, J. N. (2004). *In defence of globalization*. New York, NY: Oxford University Press.

Bhargava, S., & Joshi, V. (1990, December 1). Increase in India's growth rate: Facts and a tentative explanation. *Economic and Political Weekly*, pp. 2657–2661.

Burki, S. J. (1999). *Pakistan: Fifty years of nationhood*. Boulder, CO: Westview Press.

Burki, S. J. (2007). *Changing perceptions, altered reality: Pakistan's economy under Musharraf, 1999–2006*. Karachi, Pakistan: Oxford University Press.

Burnside, C., & Dollar, D. (2000). Aid, policies and growth. *American Economic Review*, *90*(4), 847–868.

Cardoso, F. H. (1972). Dependency and development in Latin America. *New Left Review*, July-August, 83–95.

Chakraborty, C., & Nunnenkamp, P. (2008). Economic reforms, FDI, and economic growth in India: A sector level analysis. *World Development*, *36*(7), 1192–1212.

Chaudhry, S. A. (1970). Private foreign investment in Pakistan. *Pakistan Development Review*, *10*(1), 100–111.

Chow, G. (1960). Tests of equality between sets of coefficients in two linear regressions. *Econometrica*, *28*(3), 591–605.

Dholakia, R. H. (1994, August 27). Spatial dimension of acceleration of economic growth in India. *Economic and Political Weekly*, pp. 2303–2309.

Din, M. U., Ghani, E., & Siddique, O. (2003). Openness and economic growth in Pakistan. *Pakistan Development Review*, *42*(4), 795–807.

Easterly, W., Kremer, M., Pritchett, L., & Summers, L. (1993). Good policy or good luck: Country growth performance and temporary shocks. *Journal of Monetary Economics*, *32*, 459–483.

Easterly, W., & Levine, R. (2001). It's not factor accumulation: Stylized facts and growth models. *World Bank Economic Review*, *15*(2), 177–219.

Farid, A., & Ashraf, J. (1995). Volatility at Karachi Stock Exchange. *Pakistan Development Review*, *34*(4), 651–657.

Franco-Rodriguez, S., Morrissey, O., & McGillivray, M. (1998). Aid and the public sector in Pakistan: Evidence with endogenous aid. *World Development*, *26*(7), 1241–1250.

Frank, A. G. (1967). *Capitalism and underdevelopment in Latin America*. New York, NY: Monthly Review Press.

Gardezi, H., & Rashid, J. (1983). *Pakistan: The roots of dictatorship: The political economy of a praetorian state*. London, UK: Zed Press.

George, A. L., & Bennett, A. (2005). *Case studies and theory development in the social sciences*. Cambridge, MA: MIT Press.

Gerring, J. (2007). *Case study research: Principles and practices*. Cambridge, UK: Cambridge University Press.

Ghani, E., & Din, M. U. (2006). The impact of public investment on economic growth in Pakistan. *Pakistan Development Review*, *45*(1), 87–98.

Gorg, H., & Greenaway, D. (2004). Much ado about nothing? Do domestic firms really benefit from foreign direct investment? *World Bank Research Observer*, *19*(2), 171–197.

Government of Pakistan. (2011). *Pakistan Economic Survey, 2010–11.* Islamabad: Author.

Griffin, K. B. (1965). Financing development plans in Pakistan. *Pakistan Development Review*, *5*(4), 601–630.

Guillamont, P., & Chauvet, L. (2001). Aid and performance: A reassessment. *Journal of Development Studies*, *37*(6), 66–92.

Hameed, A., & Ashraf, H. (2006). Stock market volatility and weak-form efficiency: Evidence from an emerging market. *Pakistan Development Review*, *45*(5), 1029–1040.

Hansen, B. (1997). Approximate asymptotic p-values for structural change tests. *Journal of Business and Economic Statistics*, *15*(1), 60–67.

Hatekar, N., & Dongre, A. (2005, April 2). Structural breaks in India's growth: Revisiting the debate with a longer perspective. *Economic and Political Weekly*, pp. 1432–1435.

Hausman, R., Pritchett, L., & Rodrik, D. (2004). *Growth accelerations* (Mimeo). Harvard University, Cambridge, MA.

Husain, F., & Mahmood, T. (2001). The stock market and the economy in Pakistan. *Pakistan Development Review*, *40*(2), 107–114.

Husain, I. (1999). *Pakistan: The economy of an elitist state.* Karachi, Pakistan: Oxford University Press.

Husain, I. (2003). *Economic management in Pakistan, 1999–2002.* Karachi, Pakistan: Oxford University Press.

Iqbal, Z. (1993). Institutional variations in saving in Pakistan. *Pakistan Development Review*, *32*(4), 1293–1311.

Iqbal, Z. (1994). Macroeconomic effects of adjustment lending in Pakistan. *Pakistan Development Review*, *33*(4), 1011–1031.

Iqbal, Z. (1997). Foreign aid and the public sector: A model of fiscal behavior in Pakistan. *Pakistan Development Review*, *36*(2), 115–129.

Iqbal, Z., & Zahid, G. M. (1998). Macroeconomic determinants of economic growth in Pakistan. *Pakistan Development Review*, *37*(2), 125–148.

Islam, A. I. A. (1961). Pakistan's terms of trade. *Pakistan Development Review*, *1*(2), 55–66.

Islam, N. (1972). Foreign assistance and economic development: The case of Pakistan. *Economic Journal*, *82*(325), 502–530.

Joshi, V., & Little, I. M. D. (1994). *India: Macroeconomics and political economy, 1964–1991*. New Delhi, India: Oxford University Press.

Kaur, P. (2007, April 14). Growth acceleration in India. *Economic and Political Weekly*, pp. 1380–1386.

Kemal, A. R., Din, M. U., & Qadir, U. (2006). Economic growth in Pakistan. In K. S. Parikh (Ed.), *Explaining growth in South Asia*. New Delhi, India: Oxford University Press.

Kenny, C., & Williams, D. (2001). What do we know about economic growth? Or why don't we know very much? *World Development*, *29*(1), 1–22.

Khalid, A. M., & Rajaguru, G. (2006). Financial market integration in Pakistan: Evidence using post-1999 data. *Pakistan Development Review*, *45*(4), 1041–1053.

Khan, A. H., Hasan, L., & Malik, A. (1992). Dependency ratio, foreign capital inflows and the rate of savings in Pakistan. *Pakistan Development Review*, *31*(4), 843–856.

Khan, M. A., & Qayyum, A. (2007). *Trade liberalization, financial development and economic growth* (Working Paper No. 19). Islamabad: Pakistan Institute of Development Economics.

Khan, M. A., Qayyum, A., & Sheikh, S. A. (2005). Financial development and economic growth. *Pakistan Development Review*, *44*(4), 819–837.

Khan, M. H. (2000). *The political economy of industrial policy in Pakistan, 1947–1971* (Working Paper No. 98). London, UK: School of Oriental and African Studies.

Khan, N. Z., & Rahim, E. (1993). Foreign aid, domestic savings and economic growth (Pakistan: 1960 to 1998). *Pakistan Development Review*, *32*(4), 1157–1167.

Khan, S. R. (1997). Has aid helped in Pakistan? *Pakistan Development Review*, *36*(4), 947–957.

Khilji, N. M., & Zampelli, E. (1991). The effect of US assistance on public and private expenditures in Pakistan: 1960–1988. *Pakistan Development Review*, *30*(4), 1169–1184.

Kite, G., & McCartney, M. (2011). *A case for case studies: Economic growth in Pakistan, 1950/51 to 2008/09*. Forthcoming.

Knowles, S., & Garces-Ozanne, A. (2003). Government intervention and economic performance in East Asia. *Economic Development and Cultural Change*, *51*(2), 451–477.

Krueger, A. O. (1998). Why trade liberalization is good for growth. *Economic Journal*, *108*, 1513–1522.

Krugman, P. (1999). *The return of depression economics*. New York, NY: W. W. Norton.

Levine, R., & Renelt, D. (1992). A sensitivity analysis of cross-country growth regressions. *American Economic Review*, *82*(4), 942–963.

Lewis, S. R. (1969). *Economic policy and industrial growth in Pakistan.* London, UK: George Allen and Unwin.

Lewis, S. R. (1970). *Pakistan: Industrialization and trade policies*. London, UK: Oxford University Press.

Maddison, A. (1995). *Monitoring the world economy, 1820–1992*. Paris, France: Organisation for Economic Co-operation and Development.

Mahmood, Z., & Qasim, M. A. (1992). Foreign trade regime and savings in Pakistan. *Pakistan Development Review*, *31*(4), 883–893.

McCartney, M. (2009). *India: The political economy of growth, stagnation and the state, 1951–2007*. London, UK: Routledge.

Mkandawire, T. (2001). Thinking about developmental states in Africa. *Cambridge Journal of Economics*, *25*, 2989–3313.

Nachane, D. M. (2009, March 28). The fate of India unincorporated. *Economic and Political Weekly*, pp. 115–122.

Nagaraj, R. (1990, June 30). Growth rate of India's GDP, 1950/51 to 1987/88: Examination of alternative hypotheses. *Economic and Political Weekly*, pp. 1396–1403.

Nasir, S., & Khalid, M. (2004). Saving investment behavior in Pakistan: An empirical investigation. *Pakistan Development Review*, *43*(4), 665–682.

Nawab, S., Naqvi, H., & Sarmad, K. (1984). *Pakistan's economy through the Seventies*. Islamabad: Pakistan Institute of Development Economics.

Nayyar, D. (2006, April 15). Economic growth in independent India: Lumbering elephant or running tiger? *Economic and Political Weekly*, pp. 1451–1458.

Papanek, G. F. (1967). *Pakistan's development: Social goals and private incentives*. Cambridge, MA: Harvard University Press.

Parikh, K. S. (Ed.). (2006). *Explaining growth in South Asia*. New Delhi, India: Oxford University Press.

Quandt, R. (1960). Tests of the hypothesis that a linear regression obeys two separate regimes. *Journal of the American Statistical Association*, *55*, 324–330.

Qureshi, A. K., Din, M. U., Ghani, E., & Abbas, K. (1997). Domestic resource mobilization for development in Pakistan. *Pakistan Development Review*, *36*(4), 891–912.

Radhu, G. M. (1973). Transfer of technical know-how through multinational corporations in Pakistan. *Pakistan Development Review*, *12*(4), 361–374.

Rodrik, D. (2000, June). *Can integration into the world economy substitute for a development strategy*? Paper presented at the World Bank EBGDE European Conference.

Rodrik, D. (2003). *Growth strategies* (Mimeo). Harvard University, Cambridge, MA.

Rodrik, D., & Subramanian, A. (2004). *From 'Hindu growth' to productivity surge: The mystery of the Indian growth transition* (Mimeo). Harvard University, Cambridge, MA.

Sachs, J. D., & Warner, A. M. (1995). *Economic reform and the process of global integration. Brookings Papers on Economic Activity*, *1*, 1–95.

Sarmad, K. (1992). External shocks and domestic adjustment in Pakistan 1970–1990. *Pakistan Development Review*, *31*(4), 857–869.

Shabbir, T., & Mahmood, A. (1992). The effects of foreign private investment on economic growth in Pakistan. *Pakistan Development Review*, *31*(4), 831–841.

Shah, Z., & Ahmed, Q. M. (2003). The determinants of foreign direct investment in Pakistan: An empirical investigation. *Pakistan Development Review*, *42*(4), 697–714.

Sinha, A., & Tejani, S. (2004, December 25). Trend break in India's GDP growth rate: Some comments. *Economic and Political Weekly*, pp. 5634–5639.

Stiglitz, J. E. (2002). *Globalization and its discontents*. London, UK: Penguin.

Stiroh, K. (2001). *Information technology and the US productivity revival: What do the industry data say?* New York, NY: Federal Reserve Bank of New York.

Tahir, R. (1995). Defence spending and economic growth: Re-examining the issue of causality for Pakistan and India. *Pakistan Development Review*, *34*(4), 1109–1117.

Temple, J. (1999). The new growth evidence. *Journal of Economic Literature*, *37*, 112–156.

Uppal, J. Y. (1993). The internationalisation of the Pakistani stock market: An empirical investigation. *Pakistan Development Review*, *32*(4), 605–618.

Van Rickenghem, C., & Weder, B. (2001). Sources of contagion: Finance or trade? *Journal of International Economics*, *54*, 293–308.

Vanaik, A. (1990). *The painful transition: Bourgeois democracy in India*. London, UK: Verso.

Virmani, A. (2005). *India's economic growth history: Fluctuations, trends, break points and phases* (Occasional Paper). New Delhi, India: Indian Council for Research on International Economic Relations.

Vogelsang, T. (1997). Wald-type tests for detecting shifts in the trend function of a dynamic time series. *Economic Theory*, *13*, 818–849.

Wacziarg, R. (2002). Review of Easterly's 'The elusive quest for growth.' *Journal of Economic Literature*, *40*, 907–918.

Wade, R. (1998). The Asian debt-and-development crisis of 1997–?: Causes and consequences. *World Development*, *26*(8), 1535–1553.

Wallack, J. S. (2003, October 11). Structural breaks in Indian macroeconomic data. *Economic and Political Weekly*, pp. 4312–4315.

Wizarat, S. (2002). *The rise and fall of industrial productivity in Pakistan*. Karachi, Pakistan: Oxford University Press.

Wolf, M. (2004). *Why globalization works: The case for the global market economy*. London, UK: Yale University Press.

Zaidi, S. A. (2005). *Issues in Pakistan's economy* (2nd ed.). Karachi, Pakistan: Oxford University Press.

The Capital Account and Pakistani Rupee Convertibility:

Macroeconomic Policy Challenges

Irfan ul Haque[*]

Abstract

Pakistan embarked on the liberalization of its capital account more than two decades ago. Today, it is an economy with a capital account that is, by and large, free of restrictions, and a convertible currency. However, its actual integration into the global economy in comparison to other emerging market economies has remained rather limited. The opening of a capital account appeared to have improved the country's access to private foreign capital, but because of domestic security and economic and political concerns, the inflow of private capital has fallen in recent years. Although capital outflows were not a major cause for the decline in foreign exchange reserves during Pakistan's economic crisis of 2008, the open capital account and rupee convertibility have made it more vulnerable to outside shocks. This article identifies three areas where policymakers in Pakistan face serious challenges, i.e., macroeconomic management; controlling tax evasion, which the Pakistani rupee's convertibility has made easier; and minimizing the real cost of portfolio investment to the country. The article offers ideas on how these challenges could be met.

Keywords: Capital Account, Covertibilty, Pakistan.

JEL Classification: E22, G11, H26, O16.

1. Introduction

Capital account liberalization is a keenly debated issue. On one side, with the support of mainstream economic theory, free capital flows are held to promote efficient allocation of investable resources because investment can move from less profitable (implying less efficient) to more profitable locations. When accompanied by trade liberalization, open capital markets and flexible exchange rates reinforce and facilitate international specialization in trade on the basis of comparative advantage.

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However, capital account liberalization[1] has also been seen to make economies more vulnerable to international financial crises, especially in the developing world. Reckless commercial bank lending led to the Latin American debt crisis of the 1980s, costing the entire region a whole decade of economic growth. Aggressive trade liberalization and an open capital account brought Mexico to its knees in 1994, when it was made to pay for its over-exposure to short-term capital. Three years later, there was the wrenching East Asian currency and financial crisis, which caused massive economic and financial disruption and thwarted economic growth in Thailand, Indonesia, and Korea, while touching many other countries in the region.

In recent years, emerging market economies have experienced a rather different problem, although still caused by hot money flows. With interest rates falling to near-zero levels thanks to monetary easing in the leading industrial countries, investors have sought opportunities in some of the emerging market economies, where interest rates—because of domestic macroeconomic imperatives—have been significantly higher. Among others, Brazil, South Africa, India, and Singapore have experienced large capital inflows that have put pressure on their currencies to appreciate. The affected countries have tried to stem this inflow through various measures (notably, taxing short-term inflows) but with limited success. This problem has led the International Monetary Fund (IMF) to recognize that capital controls may be justified in certain conditions.

Pakistan started on the course of capital account liberalization and exchange convertibility in the mid-1980s, quite early compared to other developing countries. Indeed, this process started even before Pakistan took steps to bring down tariff barriers and liberalize its trade regime. The rupee has now been more or less freely convertible since the early 1990s and capital movements face few hurdles. Has this helped or hindered Pakistan's economic progress? To what extent have these measures facilitated or constrained the design and implementation of macroeconomic policy in Pakistan? This article attempts to address these questions.

The following section explores how open the Pakistan economy really is, since clarity on this question is essential to a discussion of macroeconomic policy. This is followed, in the third section, by an exploration of the impact of capital account liberalization on Pakistan's

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[1] "Capital account liberalization," "open capital account," and "financial globalization" refer essentially to the same phenomenon, although they have subtle contextual nuances. In this article, they are used interchangeably.

economy. This lays the foundation for a discussion, in Section 4, of the macroeconomic policy challenges that an open capital account and rupee convertibility pose for Pakistan's policymakers. The final section offers a few concluding observations.

2.   How Open is the Pakistan Economy?

The openness of an economy can be looked at in two ways: (i) by tracing the actual measures a country has taken to liberalize and open up its capital account and foreign exchange regime (de jure indicators), and (ii) by examining the economy's actual integration into the global economy in terms of trade and financial flows (de facto indicators).[2] How Pakistan measures up to these indicators is discussed in this section.

De Jure Indicators

Foreign currency accounts (FCAs) were introduced in Pakistan as early as 1973. The intention here was to attract foreign earnings of an increasing number of Pakistanis working overseas by making available to them a reliable, attractive, and safe savings instrument at home. The real motivation behind this step was the government's pressing need to finance fiscal deficits while gaining access to foreign exchange that was, as always, in short supply (see Mirakhor & Zaidi, 2004).

However, the first major step to liberalize the capital account and exchange rate regime was taken with the introduction of foreign exchange bearer certificates in 1985, which foreigners or Pakistanis could purchase with foreign exchange.[3] Six years later, in 1991, all foreign exchange controls were removed and the Pakistani rupee became more or less fully convertible. Within a few months, dollar bearer certificates (DBCs) were introduced, which was a significant development for a variety of reasons. These certificates, which carried a maturity period of one year, were denominated in US dollars and carried an interest rate linked to the London Interbank Offered Rate (LIBOR), not to domestic money market rates. The certificates could be cashed in Pakistani rupees, US dollars, or any other foreign currency at the prevailing exchange rate. However, more consequential was the government's foreswearing to ask questions

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[2] This is a common approach to measuring global integration in trade (see, for example, Dollar & Kraay, 2001). In the context of capital account openness, Prasad (2009) adopts a similar approach.

[3] Much of the factual information in this and the next few paragraphs is taken from *Historical exchange rate regime of Asian countries*, University of Hong Kong, retrieve from http://intl.econ.cuhk.edu.hk/exchange_rate_regime/index.php?cid=22

concerning the sources of funds used to purchase DBCs or to open FCAs. This was, in essence, an open invitation to Pakistani residents to evade tax payment and launder money.

Further refinements to the capital account and foreign exchange regime continued in the succeeding years, culminating in early 1998, when banks were allowed to quote their own currency conversion rates within the buying and selling bands fixed by the State Bank of Pakistan (SBP). However, the process came to a sudden halt just a few months later. FCAs—which were freely allowed and had become popular with both resident and nonresident Pakistanis—were frozen literally overnight. This was a clumsy and poorly managed response to the imposition of severe economic and financial sanctions on the part of the US, Japan, and European countries, as punishment for the May nuclear tests.

The FCA freeze was accompanied by the introduction of a multiple exchange rate system comprising an official rate, an interbank rate, and a composite rate, although banks could still quote their own currency conversion rates. However, since the IMF generally regards multiple exchange rate regimes with disfavor, the issue became an irritant during negotiations for a standby agreement that Pakistan desperately needed to cope with the financial stringency resulting from the sanctions. In mid-1999, the system of multiple exchange rates was, however, abandoned, and a unified exchange rate was reintroduced. The rupee was once again declared free to float, but was effectively pegged to the US dollar within a specified narrow range.

The liberalization process continued during the Musharraf era but the focus shifted to making the foreign exchange regime more transparent and efficient, and improving supervision of the institutions involved. The formation of exchange companies was seen as an important step in curbing—and eliminating—unauthorized moneychangers, who had become important players in the liberalized environment. A major goal was to narrow the differential between the open, kerbside rate and the interbank exchange rate and have home remittances channeled through the banking system rather than through the informal system of *hundi* and *hawala*. Around the same time, a swap desk was set up at the SBP to ensure liquidity in the foreign exchange forward market, and to rationalize forward premiums, a step seen to help both foreign exchange traders and the interbank market (SBP, 2003).

By 2008, the liberalization process was virtually complete and the IMF (2008) could conclude:

> All current international transactions are conducted in the interbank foreign exchange market. Importers, exporters, and businesses are free to shop around for the best possible rates in the interbank market for all exchange transactions without recourse to the central bank. Banks may purchase foreign exchange from exchange companies (ECs) at freely negotiated rates. Individuals may purchase foreign exchange through the interbank or EC foreign exchange market in accordance with regulatory provisions. Some government foreign exchange transactions (e.g., debt service payments, conversion of privatization proceeds) are conducted directly by the State Bank of Pakistan, at the rates determined in the interbank market (p. 1061).

In brief, the current situation is:

- Residents or nonresidents can open FCAs at commercial banks with remittances from abroad, foreign travelers' cheques, or foreign currency in cash, but not with income from export or similar activities.

- Nonresidents or foreign firms may open domestic currency accounts that are fully convertible into foreign currency, so long as foreign funds are channeled through the banking system.

- Nonresidents may acquire listed securities with remittances from abroad with no restrictions on the repatriation of capital gains, dividends, or receipts from the disposal of such securities.

- Nonresidents are free to trade in registered corporate debt instruments and bonds listed on the stock exchange, federal investment bonds, or Pakistani investment bonds as well as market treasury bills. Branches of foreign banks and foreign-controlled investment banks may also engage in these activities.

Today, the only salient restrictions on the capital account relate to the limits on the amount of domestic currency that a traveler may physically carry overseas (PKR500 to India and PKR3,000 to other countries) and on the amount Pakistani residents may hold in overseas bank accounts (a maximum of USD1,000 in all countries other than India, Bangladesh, Afghanistan, and Israel, where Pakistani residents may not own any bank accounts.)

The reform of the domestic financial sector was an essential accompaniment to the opening up of the capital account.[4] This process stretched over more than a decade and consisted of granting the SBP autonomy, improving the regulatory and supervision system, privatizing nationalized banks, liberalizing foreign bank entry and operations, moving toward "market-determined" interest rates, and eliminating financial repression (Haque, 2010). The results of these reforms were impressive not only in terms of the growth of bank deposits and advances—which reached 40 and 30 percent of gross domestic product (GDP), respectively, in 2007—but in the rapid growth of the financial sector as a whole, reaching an annual rate of 17 percent between 2003 and 2007. The sector also attracted some USD4 billion in foreign investment.

De Facto Indictors

Global integration takes place through international trade and the movement of capital across countries. Thus, the magnitudes of international trade and international capital flows relative to a country's GDP provide a fair indication of its integration into the global economy. Since capital movements across countries are meant to narrow differences in investment returns (allowing for country and exchange rate risk), the behavior of a country's stock market relative to other leading markets could also provide an idea of its global financial integration.

Table 1 provides the salient indicators of openness during 2004–09 for Pakistan, while Table 2 gives similar indicators for India and a few other Asian economies for 2004–08.[5] The ratio of foreign trade (i.e., exports plus imports) to GDP for Pakistan fluctuated between 40 and 45 percent during 2004–08, but fell sharply to 35 percent in 2009 because of the economic crisis. The same ratio for Sri Lanka or Indonesia was considerably higher, close to or exceeding 60 percent (Table 2). However, India's position was rather different: the trade ratio was initially of the same order of magnitude as Pakistan's, but it gradually rose to about 50 percent of GDP. In other words, the two countries were more or less similarly placed with respect to openness to foreign trade just a few years ago, but India became considerably more globalized over time.

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[4] The significance of the financial sector reforms is that they are regarded as "threshold conditions" for integration into the global economy (Prasad, 2009). Eichengreen, Gullapalli, and Panizza (2009) maintain that capital account liberalization benefits countries with "relatively well-advanced financial systems" along with sound accounting standards and creditor rights, etc.

[5] The World Bank's *World Economic Indicators 2010* (the source of Table 2) does not contain the data for 2009.

Table 1: Indicators of Openness—Pakistan

Indicators	2004	2005	2006	2007	2008	2009
In USD million						
Total trade (goods and services)	38,072	48,392	55,668	59,550	73,410	57,498
Current transfers	7,666	9,169	11,030	11,215	11,252	12,552
Of which:						
Workers' remittances	3,943	4,277	5,113	5,992	7,025	8,701
Residents' FCAs	576	330	117	455	-51	317
Unspecified transfers (residual)	3,120	4,562	5,800	4,768	4,278	3,534
Private investment inflows	1,510	3,107	6,246	7,671	5,195	1,756
Of which:						
FDI	1,118	2,201	4,273	5,590	5,438	2,338
Portfolio investment	392	906	1,973	2,081	-243	-582
As a percentage of GDP						
Total trade (goods and services)	38.9	44.2	43.7	41.6	44.8	35.5
Current transfers	7.8	8.4	8.7	7.8	6.9	7.7
Of which:						
Workers' remittances	4.0	3.9	4.0	4.2	4.3	5.4
Residents' FCAs	0.6	0.3	0.1	0.3	0.0	0.2
Unspecified transfers (residual)	3.2	4.2	4.5	3.3	2.6	2.2
Private investment inflows	1.5	2.8	4.9	5.4	3.2	1.1
Of which:						
FDI	1.1	2.0	3.4	3.9	3.3	1.4
Portfolio investment	0.4	0.9	1.5	1.5	-0.1	-0.4

FCA = foreign currency account, FDI = foreign direct investment, GDP = gross domestic product.
Source: State Bank of Pakistan.

Table 2: Indicators of Openness—Other Countries

Indicators	2004	2005	2006	2007	2008
Foreign trade (% of GDP)					
Sri Lanka	79.5	73.6	71.2	68.6	63.2
India	38	42.6	47.4	45.9	50.7
Indonesia	59.7	64	56.6	54.8	58.4
FDI net (% of GDP)					
Sri Lanka	1.1	1.1	1.7	1.9	1.9
India	0.8	0.9	2.2	2.1	3.6
Indonesia	0.7	2.9	1.3	1.6	1.8
Pakistan	1.1	2.0	3.4	3.9	3.3

FDI = foreign direct investment, GDP = gross domestic product.
Source: World Bank. (2010). *World development indicators 2010*. Washington, DC: Author.

Private foreign investment (net of outflows) rose to levels never seen before in Pakistan, peaking at close to USD8 billion in 2007 or 5 percent of GDP (Table 1). Portfolio investment reached an annual level of USD2 billion in the two years preceding the 2008 crisis, while foreign direct investment (FDI) reached USD4.2 billion and USD5.6 billion. FDI remained at USD5 billion in 2008 but declined to USD2.3 billion the following year. However, workers' remittances were the major and more reliable source of foreign flows, which, at close to USD9 billion in 2009, amounted to more than double the 2004 level. In fact, total current transfers (including workers' remittances) remained at roughly 8 percent of GDP during the period.

Table 2 gives the data on net FDI as a proportion of GDP for India, Indonesia, and Sri Lanka, as well as Pakistan. During the period covered, Pakistan received significantly more FDI in relation to its GDP than any of the other Asian countries, although in 2008, India's ratio at 3.6 percent was slightly higher than Pakistan's. However, in interpreting the data, two facts should be considered. First, the data in Table 2 relates to *net* FDI, not gross inflows. India's somewhat lower ratio may, therefore, be due to its sizable overseas investment. Second, and more importantly, foreign investors' interest in Pakistan has waned with the worsened economic, political, and security situation, while foreign investment in India remains strong and is rising rapidly. During 2004–08, foreign investment in Pakistan went mostly into telecommunications, banking, real estate development, and the purchase of privatized enterprises, but investment opportunities in these areas are now more limited. Thus, in the current state of affairs, it seems unlikely that Pakistan will attract foreign investment at the scale reached during the 2000s.

Another indicator of a country's integration into the global economy is the degree of its dependence on world capital markets as captured by its international investment position relative to GDP (Lane & Milesi-Ferretti, 2007; Prasad, 2009). Table 3 shows that Pakistan's overall ratio of assets and liabilities during 2004–09 fluctuated from year to year without a clear trend. The ratio peaked at 67 percent in 2007; in other years, it hovered around 60 percent. Normally, a country's international assets and liabilities are expected to be of broadly similar order of magnitude, but in Pakistan's case, assets (consisting mostly of foreign exchange reserves) have averaged only about one third of its international liabilities and its *net* investment position is strongly negative.

Table 3: Pakistan's International Investment Position (End-Period)

	2004	2005	2006	2007	2008	2009
% of GDP						
Assets + liabilities	63.2	59.0	58.8	67.3	53.9	62.0
Assets	17.4	16.2	15.5	15.9	11.0	14.4
Liabilities	45.8	42.8	43.3	51.4	42.9	47.5
Reserves as % of total assets	62.8	62.5	64.3	68.2	53.5	64.8
% of total liabilities						
FDI	17.0	21.8	24.8	34.8	23.4	21.4
Portfolio	2.6	4.6	7.4	9.2	6.7	4.6
Foreign loans	76.1	69.2	63.6	53.1	66.3	67.0

FDI = foreign direct investment, GDP = gross domestic product.
Source: State Bank of Pakistan.

A comparison with India regarding this indicator shows a pattern similar to the other indicators. According to the data reported in Prasad (2009), India's net international investment position just a few years ago was considerably lower than Pakistan's, but the ratio rose rapidly over time, reaching 70 percent of GDP in 2009. Another significant difference between the two countries is that, while gross assets relative to GDP rose steadily in India—thanks to the large accumulation of foreign exchange reserves—they declined for Pakistan. Also, in Pakistan's case, foreign loans account for about two thirds of its liabilities, whereas this ratio for India is about 45 percent.

Figure 1 gives the leading indices for the stock markets in Bombay (SENSEX), Seoul (KOSPI), Kuala Lumpur (KLCI), and Karachi (KSE100), covering the period 2001–09. The indices track the growth in the hypothetical value of the stock, starting with an investment of 100 local currency units on 31 January 2001. It is evident from this figure that, while all four indices displayed broadly similar behavior over time (the rises and falls had some synchronicity), the Karachi Stock Exchange (KSE) was an outlier while the other three markets were more closely clustered. The KSE was also much more unstable, although it yielded a much higher average return on investment. As observed in Haque (2010):

> An investment made at the start of the period was worth more than ten times its original value at its peak in early 2008 in Karachi, compared to about four times the initial investment in Bombay, 2½ times in Seoul and twice the

invested amount in Kuala Lumpur. Even after the sharp
fall in the share prices in 2008, the overall return in the
Karachi market remained much higher than in the other
markets. The average annual return in Karachi was 34
percent, 26 percent in Bombay, 15 percent in Seoul, and
barely 9 percent in Kuala Lumpur, indicative of, among
other things, the relative riskiness of investment in the
different markets (p. 19).

Figure 1: Selected Stock Indices
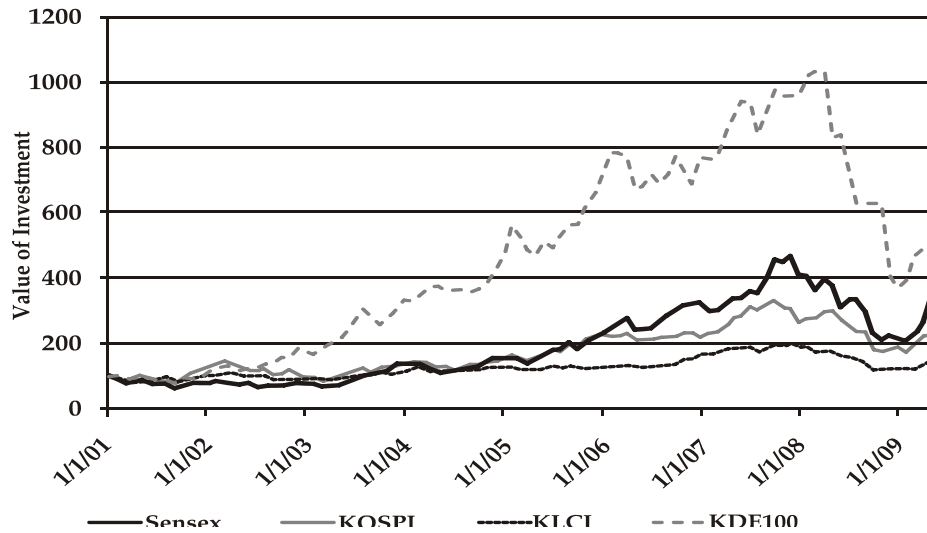
Source: I. Haque. (2010). *Pakistan: Causes and management of the 2008 economic crisis*
(Global Economic Series No. 22). Penang, Malaysia: Third World Network.

Table 4 gives data on price-earning ratios (peaks as well as
troughs) in the four countries. As a flip side to the higher returns, the
price-earning ratios in the KSE were found to be consistently below the
ratios in the other three markets. This is not indicative of generally
underpriced stocks but rather a reflection of the Karachi market being
riskier and relatively insulated. In comparison to the other Asian markets,
the KSE is quite small and dominated by a few large firms in oil and gas,
electricity supply, and banking. It earned a reputation for excessive
speculation, and charges of price fixing, insider trading, and government
involvement were common in the Pakistani media a few years ago,
although no official inquiry was made.

Table 4: Price-Earning Ratios in Selected Markets (2005–08)

	High	Low	Current	Average	H/L ratio
Bombay	24.96	8.06	18.28	18.88	3.1
Karachi	16.61	6.31	12.11	11.54	2.63
Kuala Lumpur	22.58	8.63	14.28	22.47	2.62
Seoul	34.62	8.33	15.8	34.39	4.16

Source: I. Haque. (2010). *Pakistan: Causes and management of the 2008 economic crisis* (Global Economic Series No. 22). Penang, Malaysia: Third World Network.

Overall, the Pakistan economy's exposure to the global economy is not as great as that of some other emerging market economies. Foreign trade relative to its economic size is comparatively small, but it nevertheless remains highly vulnerable to terms-of-trade shocks emanating in the oil and food grain markets. There were sizable private capital inflows during the past decade, but they have since fallen in absolute and relative terms for the reasons discussed. Only a few years ago, Pakistan could be regarded about as integrated into the global economy as India, but over the years, the latter has rapidly moved ahead in terms of virtually all relevant indicators. However, India itself is rather less globalized than most other emerging market economies. According to Prasad (2009), India remains "well below the levels [of integration] attained by most other emerging market economies, including other BRIC economies" (p. 12). This would suggest that Pakistan has considerable catching up to do if it also seeks the path followed by other rapidly globalizing economies. However, the question whether this is a desirable or a feasible goal does not have an easy answer, given the other pressing politico-economic challenges that Pakistan currently faces.

3. Macroeconomic Consequences

An open capital account is meant to give a country better access to foreign sources of finance, thereby permitting higher investment and economic growth. Readily available foreign finance should also enable countries to diversify risk and thereby attain greater stability in consumption when output fluctuates. However, the actual realization of these benefits has been found to be, at best, elusive.

There is no clear evidence that financial globalization has raised investment rates and accelerated economic growth in the developing world. Rodrik and Subramanian (2008) find no correlation between an open capital account and higher investment rates; if anything, the

relationship is found to be negative. In cases where there is a positive correlation between liberalized capital accounts and higher growth rates, the direction of causation is not clearly discernable when the effects of other factors are controlled. At the same time, there is strong evidence that rapid financial globalization brought about greater consumption volatility in the emerging market economies (Rodrik & Subramanian, 2008). In short, the conclusion of Kose and Prasad (2004) is that the evidence on the benefits from capital account liberalization is not "compelling."

Eichengreen, Gullapalli, and Panizza (2009) are no more reassuring. They find that the positive results of financial globalization are confined basically to high-income countries and are contingent on "well-developed financial systems, good accounting standards, strong creditor rights, and rule of law" (p. 5).[6] Presumably, countries with that quality of economic management and institutions would not typically be poor.

There is now wide agreement that uncontrolled and unregulated capital movements increase the risk and exposure of emerging market economies to the vagaries of global finance, which is notorious for its "irrational exuberance" and "panics and manias." Reinhart and Rogoff (2008) note: "Periods of high international capital mobility have repeatedly produced international banking crises, not only famously as they did in the 1990s, but historically" (p. 8).

This section explores the extent and nature of the impact of capital account liberalization and rupee convertibility on the Pakistan economy. This is done first by ascertaining the possible impact of foreign capital inflows on domestic investment in recent years, and then investigating whether capital flight was a significant contributor to the 2008 economic crisis.

Impact on Investment

Whether or not external finance helps a country's economic growth depends in the first place on the constraints to investment. If, for some reason, a country does not have many exploitable profitable opportunities, the availability of finance alone is unlikely to raise the investment rate. Foreign resource inflows are likely then to go into financing consumption (Rodrik & Subramanian, 2008).

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[6] Establishing a relationship between financial globalization and outcomes has become somewhat of a growth industry. The literature is vast. Two other useful studies, not mentioned in the main text, are Edison, Klein, Ricci, & Sløk (2004) and Henry (2007).

During the period 2002–07 as a whole, Pakistan received a total of USD62.2 billion in foreign inflows, which represented roughly 80 percent of exports and about 60 percent of imports.[7] Workers' remittances were by far the single biggest source of foreign exchange, accounting for 40 percent of the net resource inflows. FDI reached the unprecedented level of about USD12 billion and portfolio investment USD5 billion. Net foreign borrowing during the period was actually negative, i.e., the country's outstanding external debt declined. How this large increase in foreign resource inflows was utilized could provide an indication of whether it promoted the growth of the Pakistani economy.

Table 5 gives data on the trade deficit, gross domestic investment in aggregate, private sector investment, and gross domestic savings (measured as a residual). The trade deficit (measuring net foreign resource inflows) rose from 6 percent of GDP in 2004 to 11 percent of GDP in 2006 and 2007. The ratio was even higher in 2008 but it was essentially a consequence of the sharp drawdown of foreign exchange reserves and the deceleration of GDP growth.

Table 5: Investment, Savings, and Trade Balance

	2004	2005	2006	2007	2008	2009
As a percentage of GDP:						
Import of goods and services	25.1	29.6	30.7	29.8	32.7	24.2
Export of goods and services	16.4	17.4	16.1	15.3	15.5	13.7
Trade balance	-6.1	-9.3	-11.4	-10.9	-13.7	-7.9
Current account balance	-0.8	-3.3	-5.3	-5.8	-9.6	-2.2
Gross domestic investment	15.0	17.5	20.5	20.9	20.5	17.4
Gross private investment	10.9	13.1	15.7	15.4	15.0	12.7
Gross domestic savings (res.)	8.9	8.2	9.1	10.0	6.7	9.5
Change in trade balance		-3.2	-2.1	0.5	-2.8	5.8
Change in investment		2.5	3.0	0.4	-0.4	-3.1
Change in private investment		2.2	2.6	-0.3	-0.4	-2.3

GDP = gross domestic product.
Source: World Bank. (2010). *World development indicators 2010*. Washington, DC: Author.

On the whole, the rise in net foreign inflows corresponded closely to the rise in the investment rate, which rose from 15 percent to over 20

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[7] This data is taken from Table 3 in Haque (2010), which also provides other related data and a discussion on the macroeconomic developments of that period.

percent during 2004–08, while domestic savings rate remained more or less unchanged at under 10 percent.[8] The close relationship between net resource inflows and investment is more easily seen in the year-to-year changes in the two variables (also given in Table 5). In fact, as the foreign inflows were mostly private, the correspondence with domestic private investment can be seen to be even closer.

In brief, the inflow of foreign capital during the period under consideration appears to have gone primarily into raising the investment rate rather than consumption. Domestic savings in Pakistan remained abysmally low, financing barely half of domestic investment. The high dependency on foreign sources to finance domestic investment has made Pakistan's economic performance highly vulnerable to outside factors. There is little question that this dependency will have to be reduced and domestic savings rate drastically raised if economic growth in Pakistan is to reach levels comparable to the rapidly growing Asian economies. As Rodrik and Subramanian (2008) note, countries that "grow more rapidly are those that rely less and not more on foreign finance; and in turn foreign capital tends to go to countries that experience not high, but low productivity growth" (p. 2).

While the large inflow of external finance into Pakistan cannot be wholly attributed to the country's open capital account, portfolio investment would probably have stayed away in the presence of restrictions on capital movements and rupee convertibility. FDI too was likely encouraged by the rupee convertibility and granting of unrestricted repatriation of profits and gains from the disposal of investments. The rupee convertibility must also have contributed to the quantum jump in workers' remittances and other private transfers, although other factors were also important (see Haque, 2010).

The 2008 Crisis

Pakistan lost about USD6 billion dollars in foreign exchange reserves in the fiscal year (FY) 2008 and continued to lose for the next several months, reaching a precariously low level in November. This was a sharp turnaround from the situation in the preceding five years, when the country had accumulated sizable foreign exchange reserves. Taking into account the increase in reserves of USD4 billion in FY2007, the net change in the reserve position between the two years amounted close to USD10 billion.

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[8] The year 2008 was an exception when the savings rate fell to under 7 percent on account of the economic crisis.

There were widespread reports of massive capital flight during the crisis (a figure of USD5 billion was often mentioned) but there is no hard evidence to substantiate them.[9] Some observers privately surmise that the capital flight took the form of Pakistani rupees being taken out of the country in hard cash and then converted into dollars or other currencies in foreign markets, notably Dubai. It is not clear what foreign buyers intended to do with the purchased rupees, but this is a terrain of conspiracy theories. The fact, however, is that the official balance of payments data throws little light on this phenomenon. Undocumented capital movements normally show up under "errors and omissions," but this item was quite small and positive in the official accounts in FY2008 (see Table 6). All the same, it does not appear that the capital outflow was a major reason for the decline in the reserves, and this is for three reasons.[10]

Table 6: Changes in FY2008 Balance of Payments

	Change FY2008 over FY2007 (USD million)	**Change as a Percentage of FY2007 GDP**
Current account balance	**-7,158**	**-5**
Trade balance	-5,584	-3.9
Exports f.o.b.	2,844	2
Imports f.o.b.	-8,428	-5.9
Services (net)	-2,464	-1.7
Current transfers net	890	0.6
of which: Workers' remittances	957	0.7
Public borrowing and other capital flows (net)	-1,618	-1.1
Private medium and long-term (net)	-1,408	-1
of which: FDI	52	0
Portfolio investment	-1,800	-1.3
Other capital (including errors and omissions)	544	0.4
Change in foreign exchange reserves*	9,640	6.7

* The (-) sign implies an *increase* in reserves and a (+) sign implies a *decrease*.
FDI = foreign direct investment, FY = fiscal year, GDP = gross domestic product.
Source: Calculations from: I. Haque. (2010). *Pakistan: Causes and management of the 2008 economic crisis* (Global Economic Series No. 22). Penang, Malaysia: Third World Network.

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[9] The SBP's data reports a net fall of only USD51 million in FCAs during 2008, compared to an increase of about USD450 million in the preceding years (see Table 1).

[10] The nature and causes of the 2008 crisis is the subject of Haque (2010); here, the objective is to dispel some common misperceptions.

One way of establishing what caused the decline in reserves is to examine the components of change in the balance of payments between FY2007 and FY2008 (see Table 6). On the capital account side, there was a sharp decline in portfolio investment (a net change of USD1.8 billion) while the level of FDI remained virtually unchanged. Net foreign loan inflows also declined, contributing USD1.6 billion to the deterioration in the balance of payments. On the positive side, workers' remittances rose by about USD1 billion. Taken together, the total decline in resource inflows to Pakistan amounted to about USD2 billion, or one third of the decline in foreign exchange reserves.

Thus, it was the trade deficit—rather than the decline in capital flows—that was by far the bigger cause for the loss of foreign exchange reserves during the crisis. The trade deficit rose to 14 percent of GDP in 2008, representing a 3-percentage point increase over the preceding year, and the surge in imports was the main factor, amounting to an increase of USD8.4 billion or 30 percent. Although the spike in the prices of oil and other imports was a major contributing factor, the import volume alone increased by more than 10 percent—a growth rate some 40 percent higher than the overall growth of the economy.

The deterioration in the trade balance, however, was not a sudden development. Imports had been rising much faster than exports for several years, and it had become apparent quite early that these were not sustainable trends and that the balance of payments would become untenable as soon as the resource inflows slowed down. Pakistan's net international investment position (i.e., foreign assets net of liabilities) had already sharply worsened in 2007, by some USD15 billion or almost 9 percent of GDP

The relative stability of the Pakistani rupee during the crisis is the second factor suggesting that capital movements were not the main culprit. Although the rupee depreciated by one third between March and November 2008, it happened gradually over several months. Despite pervasive and persistent fears about the rupee value, there was no large-scale panic selling or a collapse of the currency, as is usual when capital flight results in a sharp fall in foreign exchange reserves. The SBP did take steps to curb speculative activity,[11] but judging from the experience of other central banks in similar situations, these measures could not have

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[11] These included an increase in the percentage of foreign remittances surrendered to the SBP and new restrictions on advance payment for imports (SBP, 2008a).

withstood a speculator onslaught. In any case, such capital flight as did occur seems to have been offset by flows in the opposite direction.

Finally, the fact that the domestic banking sector managed to avoid undue stress and remained generally solvent would also suggest that the genesis of the crisis did not lie in the financial sector. The IMF's (2009a) assessment was that the banking system had remained adequately capitalized and liquid, even as the deteriorating economic situation and tightened monetary policy had hurt bank profitability and asset quality (p. 10) There was a rise in the ratio of nonperforming loans to banking assets on account of loans to private consumers and the textile sector, while medium and smaller banks also faced distress. All the same, direct exposure of the banking system to currency depreciation or indirect exposure through unhedged operations remained limited.

While capital movements were not found to be a major cause of the loss of foreign exchange reserves, they were probably consequential in other ways. The withdrawal of portfolio investment in 2008 was by no means insignificant and it would have been even larger—and the drop in the stock market steeper—had floor limits on stock trading not been imposed to prevent that from happening. To put it differently, if matters had been left entirely to the market, the financial crisis could have been far more severe. This suggests that, even under an open capital account, government measures can be important in damage control.

A related fact is that the large capital inflows in the years preceding the crisis had made the economy more susceptible to a financial crisis. This happened in two ways. First, foreign financing helped to sustain the rapidly increasing import bill, which was itself a consequence of the expenditure-enhancing growth policies that did little to improve competitiveness of the tradable sectors (Haque, 2010). Second, foreign capital inflows fed the boom in the stock market and real estate, which had made Pakistan increasingly vulnerable to speculators' expectations. At the peak of the boom in 2007, foreign portfolio investment accounted for over 10 percent of the market capitalization of the KSE. This may not be a large figure but it was evidently significant enough to create "irrational exuberance" in an otherwise quite thin market. With regard to the real estate market, the actual magnitude of foreign investments is not known, but there were widespread reports that these too were large and causing sharp increases in real estate prices (Adil, 2006).

In short, capital flight might not have triggered the 2008 crisis but there can be little doubt that large capital inflows during the 2000s contributed to creating conditions that ultimately led to the crisis. This is not to question the usefulness of foreign capital, but rather to point out that it could have been utilized to lay the foundations of long-term sustainable growth through appropriate public policy and investment rather than to creating an illusion of wealth.

4.   Macroeconomic Policy Challenges

Pakistan proceeded early and quite far in opening up the capital account and making the rupee convertible, but this was more or less an ad hoc process driven primarily by a need to access foreign exchange, not part of a coherent national economic strategy. However, its actual integration into the global economy in foreign trade and capital markets remained limited as compared to other emerging market economies. Nevertheless, capital account liberalization had important consequences for Pakistan. In particular, financial globalization made macroeconomic management—notably, exchange rate management—more complicated, while unrestricted fund transfers made tax evasion easier. Foreign portfolio investment contributed to the stock market bubble of 2007, and while its benefits for the overall economy are not certain, it entailed real costs that need to be considered. Each of these three areas— macroeconomic management, the problem of tax evasion, and management of portfolio inflows—presents a range of challenges for Pakistan's policymakers.

Macroeconomic Management

It is axiomatic that macroeconomic policy in an economy with an open capital account is additionally constrained. Apart from the usual domestic political pressures, policymakers in a setting of internationally mobile finance and convertible currencies must also anticipate the response of foreign[12] players to their actions or inactions. A loss of confidence in economic management or simply a delay in policy announcement can play havoc with the country's currency value and foreign exchange reserves. A sharp fall in the exchange rate can wipe out overnight the balance sheets of banks with high exposure in foreign currencies, resulting in a freeze-up of the entire financial system.

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[12] The term "foreign," when finance flows freely, should be taken to include residents with foreign accounts and investment interests. Their motivations and behavior are indistinguishable from those of the strictly foreign money movers.

That Pakistan avoided getting caught in a similar situation is partly because much of its resource inflows were in the form of workers' remittances and other private transfers, but also because the country, for a variety of reasons, remained more or less insulated from the upheavals in the world's financial markets. Thus, it was not the Great Recession but rather domestic policy failures that brought on Pakistan's 2008 economic crisis (Haque, 2010). In a perverse fashion, the heightened insecurity, political unrest, and serious economic difficulties have also shielded it from hot money flows that have put serious strains on a number of other emerging market economies. Adversity can have a bright side.

The core macroeconomic challenge for policymakers in an open economy is to maintain satisfactory economic growth while keeping the balance of payments manageable. Mobile finance, driven by international arbitrage, is liable to pull the exchange rate in one direction while a desired reduction in the trade deficit may require adjustment in the opposite direction. Thus, for example, the authorities may maintain high interest rates to curb domestic inflation, but this could encourage foreign inflows and bring about a currency appreciation, creating difficulties for exporters. Several emerging market economies—notably, Brazil, India, and Russia—face such a situation. Conversely, the authorities might be impelled to reduce interest rates to promote economic growth and discourage unwanted foreign capital, but this is liable to feed domestic inflation. Very broadly, this situation prevailed in Pakistan around 2003–04.

Managing the exchange rate while pursuing economic growth and stability under an open capital account regime is a daunting task. The problem is that the economic benefits of capital mobility depend on investors seeking *real* returns, not speculative gains, which is difficult when exchange rates fluctuate. On the other hand, for the exchange rate to be an effective policy tool, it needs to be shielded from speculative capital movements (see Haque, 2001, for this and related issues). Economic theory holds that a country cannot simultaneously have an independent monetary policy and stable exchange rate while maintaining an open capital account. This has been labeled in the literature as the "impossible trinity," i.e., a country must give up one of the three policy pillars (see Zaidi, 2006, for a discussion on this issue in Pakistan's context).

However, policy choices in practice are seldom so stark, and policymakers tend to just muddle through. Pakistan provides a good example of that. It is a country with an ambiguous exchange rate policy, where the rupee is notionally free and convertible but in reality remains

pegged to the US dollar. Adjustments in the exchange rate are made from time to time but are driven by multiple objectives, i.e., keeping exports competitive, ensuring a satisfactory level of foreign exchange reserves, and restraining speculation. However, this policy has not been particularly successful on any front (Janjua, 2007).

In the aftermath of 9/11, Pakistan received large inflows of foreign money, initially mostly workers' remittances and other transfers but later also private foreign investment. The rapid build up of foreign exchange reserves consequent to these inflows presented the authorities with the dual challenge of keeping inflation under control (dictated also by the IMF) while maintaining a competitive rupee value. But there was also another policy imperative: to stimulate economic growth. Despite the easing of the resource constraint, private domestic investment had remained hesitant and the economy was stuck in sluggish growth. This was at a time when India—Pakistan's principal rival—had embarked on a trajectory of rapid growth and was attracting a great deal of foreign investor interest (Haque, 2010).

Policymakers in Pakistan had little room for maneuver in stimulating economic growth through public expenditures because of commitments to the IMF to reduce the large fiscal deficit. It is at that juncture that the SBP—backed by the executive and finance ministry—dramatically loosened monetary policy while continuing to pursue economic liberalization (see SBP, 2003). Interest rates over a span of a few months were drastically reduced for all types of credit, including consumer loans. The choice made was that, instead of sterilizing foreign exchange reserves, an expansionary monetary policy would prevent the rupee from appreciating.

This was a risky policy for many reasons. For one thing, it was based on a misdiagnosis: the Pakistan economy at that point was not demand-constrained that it required easy finance. For another, Pakistani borrowers had a poor record of loan repayment and there was no assurance that cheap credit would stimulate investment rather than consumption. In fact, consumer loans just financed private consumption. The result was that the rapidly rising demand, while lifting economic growth a little, spilled into imports and increased the trade deficit, which laid the basis for the subsequent balance of payments crisis. At the same time, the loose monetary policy combined with rising foreign inflows fed the bubbles in the stock market and real estate. This could only make a bad situation worse.

In the aftermath of the 2008 crisis, the economic management has been tasked to bring down the fiscal deficit and inflation, in pursuant to its undertakings to the IMF. Apart from fiscal measures, this has entailed a sharp increase in interest rates and a restraint over monetary expansion. Since the large depreciation of 2008, however, the Pakistani rupee has moved only a little: from about PKR80 for a US dollar to the current rate (July 2011) of PKR85. Because of the prevailing high domestic inflation, real interest rates are not unduly high (some are actually negative), but a foreign investor is primarily concerned with the risk of rupee depreciation (leaving aside the country risk). The high nominal interest rates with a virtually unchanged exchange rate have yielded exceptionally high real returns in terms of the leading foreign currencies. The magnitude of carry trade—as this phenomenon is called—in Pakistan is not known, but anecdotal evidence suggests that financial arbitrage is not insignificant. Some surmise that the recent surge in remittances may also have something to do with it. At any rate, it is the Pakistani nation that ultimately bears the cost of the gains—which have little to with the real economy—captured by investors (who could be residents or nonresidents).

Pakistan's competitiveness in trade is also a critical policy issue because long-term economic growth hinges on it. A number of leading Pakistani economists blame the large trade deficits on an overvalued exchange rate and argue for an aggressive exchange rate adjustment to deal with the problem (see, for example, Government of Pakistan, 2008).

This is, however, unlikely to be either practical or particularly useful. There is little evidence that the rupee was seriously overvalued in the pre-crisis period. According to the IMF's *International financial statistics* (2009b), the "real effective exchange rate" of the rupee had appreciated by about 7 percent by 2008 compared to its value in 2000. The overvaluation actually reached its highest level in 2004, when it stood at 10 percent, which suggests that, during the years of the rapidly rising trade deficits, the real effective exchange rate had, if anything, declined. The IMF too, in its first report after the 2008 crisis, took a rather benign view of the competitiveness of the Pakistani rupee.

It is also not clear what a regime of active exchange rate management would involve. A consensus on a "competitive" real exchange rate is unlikely and its actual attainment, with freely moving finance, would be well nigh impossible. However, such a policy—while doing little to improve the trade balance—could invite the charge of currency manipulation by the trading partners, with associated penalties.

More fundamentally, international competitiveness depends not so much on the exchange rate—which can shift the cost advantage in a country's favor only temporarily—but on the growth of labor productivity. Thus, economic management could more usefully be directed toward defining an approach to improving productivity in the tradable sectors.

It is difficult to outline in abstract what a sound macroeconomic policy should be in an open economy. Economic policy is contextual, and there cannot be standard rules regarding the size of what may be considered sustainable budget or trade deficits[13] or regarding sound monetary policy. A policy can be judged "sound" only ex post, by its results. With freely moving capital, a country's policies must be credible not only to the domestic constituencies but, more crucially, to foreign investors, whose disapproval can bring any economy to its knees. Obviously, a country's economic performance must be "good" in terms of growth and stability, but that may not be enough to attract foreign finance. Investors must also be convinced that the performance will remain good in the future too. A slight slippage in policy can spell major economic and financial disaster in open economies. As Rodrik and Subramanian (2008) put it rather pessimistically: "No matter how much you do, there is still more left to do—and there is always bad luck" (p. 9).

Tax Evasion

The FCA scheme as applied in the 1990s was costly not just in terms of the tax forgone on interest payments to depositors but also because the accounts were protected against the exchange risk. Domestic banks held their assets in rupees but were given "forward cover" by the SBP on their foreign exchange liabilities, i.e., foreign currency deposits. In other words, it was the central bank that bore the cost of rupee depreciation, which was often considerable. The "no-questions-asked" policy entailed even more serious costs to the country. As a result of this policy, there was a phenomenal growth in foreign currency deposits during the 1990s, reaching USD10 billion in 1998 (amounting to slightly less than six times the level of foreign exchange reserves or about the same magnitude as the value of imports) just before the accounts were frozen (Mirakhor & Zaidi, 2004). As a way to evade tax, this policy made FCAs particularly popular with Pakistani residents, who came to account for about 80 percent of the holdings. According to one observer, "no-

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[13] Thus, for example, India's budget deficit is not too different from Pakistan's and its trade deficit is also sizable, but that is not considered troublesome, at least for the present.

questions-asked foreign currency deposits were a haven for tax evaders and under-filers … that could now 'whiten' their ill-gotten income with no taxation and no fear of detection" (Ahmed, 2011, p. 176).

Another peculiarity of the FCAs was that they were not treated as the nation's external debt (underwritten by the SBP), but put under the current account as private transfers, similar to workers' remittances. Thus, interest payments on these accounts were not treated as foreign obligations but were protected against rupee depreciation. This too entailed significant cost for the SBP and the country.

Although by the early 2000s, these problems had been largely resolved, and the spiriting away of tax-free earnings was now more difficult, the culture of tax evasion had become endemic. There are still reports that Pakistani residents are given to converting their rupee earnings from domestic activities into hard currencies (without paying tax) either in an overseas market or through the still existing informal channels of exchange. The funds are then brought back into the country as foreign currency deposits with no trace of their source.

Clearly, something is needed to eliminate or at least minimize these costs. More rigorous application of the existing rules governing rupee exports could help, but given enforcement failures in other areas, this may not amount to much. The existing limit on the amount of rupees a traveler may take is absurdly low (PKR3,000 per traveler) and makes mockery of the regulation itself. For better enforcement of the regulation, the limit will have to be raised to a more realistic level. A more effective deterrent to tax evasion would be the imposition of rigorous reporting requirements on fund transfers, as is done in many developed countries. For example, the US requires that money transfers exceeding USD10,000 be reported whether they are coming into or going out of the country, and US taxpayers are required to declare their foreign accounts at the time of tax filing. Some European countries require a declaration from the recipient that tax has been paid on the incoming funds in an identified jurisdiction.

Portfolio Investment

Portfolio investment presents challenges for policymakers in developing countries rather similar to the problem of carry trade. Where there are few or no restrictions on capital mobility, foreign portfolio investment is in the nature of hot money: it comes in and goes out of the country with the slightest shift in market sentiment. In thin capital

markets—as in Pakistan—foreign inflows can be particularly disruptive. Although the country is still struggling with the aftermath of the economic crisis and other disasters, the KSE has once again started to register impressive gains, as a sharp contrast to the state of the rest of the economy.

According to a recent investors' guide (Mobius, 2011), the KSE-100 (the principal index) rose by 28 percent (26 percent in terms of US dollars) in 2010, with profits rising by 14 percent and dividend yields of 5 percent. This was a much better performance than Mumbai, which rose by 17 percent, or Shanghai, which registered a sharp decline. Increased institutional investors' purchases were held to be a major factor in the market's rise. The same guide stated that, at a price-earnings ratio of 8— compared to 10 in Shanghai or Manila and 20 in Mumbai—the Karachi exchange was an excellent place to invest. The report even found a silver lining in the 2010 floods because they had caused company valuations to fall while creating the prospect of sizable investments in infrastructure.

The point, however, is not that the above assessment can be taken as reliable for investment decisions, but rather that it illustrates well how market expectations are formed and investors lured into uncharted waters that ultimately cause stock market blowouts. That this may happen again in Pakistan should be considered highly probable.

The benefits of portfolio investment to Pakistan are far from clear or certain. While the KSE's performance might create a buzz among international money centers, in the absence of real economic performance, the capture of gains by some would be, by and large, losses of others. The loss would be for the country if the gainers happen to be mostly foreign speculators and short-term investors. It is probably difficult in Pakistan to re-impose restrictions on capital movements but some means must be devised to curb short-term inflows, which invariably cause more harm than good. Although countries (notably, Brazil) that have imposed such a special tax on short-term capital inflows have not been fully successful, the policy has had some moderating influence.

5. Concluding Observations

Over the past two decades, financial globalization has swept the developing world even though its promised benefits remain elusive. Although it was ultimately a national choice by the countries concerned, advisors from international financial institutions and their ilk may have been unduly insistent on the step. The IMF—as an institution and at the

staff level—has always been favorably disposed to open capital accounts and it had aspired some time ago to have capital account liberalization incorporated into its *Articles of agreement*. The East Asian crisis, however, intervened to push the issue to the background.

Pakistan today is, for all practical purposes, an open, exposed economy but, as for other countries, the benefits and costs of liberalization measures cannot be weighed with any degree of confidence. It is not possible—and it would be useless—to attempt constructing a counterfactual to which the consequences of Pakistan not adopting the opening-up measures and policies could be traced. In any case, the choice is seldom between staying closed and opening up, but rather in devising a blend of policies optimally suited to the country and its requirements. The reality is that in the present-day economic environment and policy thinking, the country probably had little choice but to swim with the tide. There is little question that, given the difficulties Pakistan faces in enforcing laws and regulations, controls on capital movements and currency convertibility would not have been any more effective.

Capital account liberalization is probably here to stay. Pakistanis have come to enjoy the ease of exchange convertibility, and the reaction in world capital markets to a re-imposition of controls on capital would be quite adverse, at least in the short term. At any rate, tightening de jure controls on capital movements are unlikely to halt disruptive money flows, which continue through a variety of creative channels. Nevertheless, the Great Recession and the experience of other countries have demonstrated that free markets do need to be regulated and unbridled speculation controlled. The regulation of the financial sector and supervision of stock market activities are domains of public policy, but one important test of policy is that financiers—domestic or foreign— are not allowed to become the ultimate judges of its soundness.

References

Adil, A. (2006, September 21). *Pakistan's post-9/11 boom*. Lahore, Pakistan: BBC News.

Ahmed, M. (2011). An economic crisis state? In M. Lodhi (Ed.), *Pakistan: Beyond the 'crisis state.'* Karachi, Pakistan: Oxford University Press.

Dollar, D., & Kraay, A. (2001). *Trade, growth, and poverty*. Washington, DC: World Bank.

Edison, H. J., Klein, M. W., Ricci, L. A., & Sløk, T. (2004). Capital account liberalization and economic performance: Survey and synthesis. *International Monetary Fund Staff Papers*, *51*(2), 220–256.

Eichengreen, B., Gullapalli, R., & Panizza, U. (2009). *Capital account liberalization, financial development and industry growth: A synthetic view* (Mimeo). United Nations Conference on Trade and Development and University of California, Berkeley.

Gallagher, K., & Ocampo, J. A. (2011, April 6). The IMF's welcome rethink on capital controls. *The Guardian*.

Government of Pakistan. (2008). *Economic stabilization with a human face*. Islamabad: Author.

Haque, I. (2001). Capital flows, trade in widgets and the exchange rate. *Lahore Journal of Economics*, *6*(1), 1–19.

Haque, I. (2010). *Pakistan: Causes and management of the 2008 economic crisis* (Global Economic Series No. 22). Penang, Malaysia: Third World Network.

Henry, P. B. (2007). Capital account liberalization: Theory, evidence, and speculation. *Journal of Economic Literature*, *65*(December), 887–935.

International Monetary Fund. (2008). Pakistan. In *Annual report on exchange arrangements and exchange restrictions* (pp. 1061–1075). Washington, DC: Author.

International Monetary Fund. (2009a). Pakistan: 2009, Article IV consultation, staff report. In *IMF country report no. 09/123*. Washington, DC: Author.

International Monetary Fund. (2009b). *International financial statistics yearbook, 2009*. Washington, DC: Author.

Janjua, A. (2007). Pakistan's external trade: Does exchange rate misalignment matter for Pakistan? [Special Edition] *Lahore Journal of Economics*, September.

Kose, A., & Prasad, E. (2004). Liberalizing capital. *Finance and Development*, September, 50–51.

Lane, P. R., & Milesi-Ferretti, G. M. (2007). The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970–2004. *Journal of International Economics*, 73(2), 223–250.

Mirakhor, A., & Zaidi, I. (2004). *Foreign currency deposits and international liquidity shortages in Pakistan* (Working Paper No. 04/167). Washington, DC: International Monetary Fund.

Mobius, M. (2011, January 29). Will foreign capital inflows buoy KSE-100 in 2011? *South Asia Investor Review*. Retrieved from http://southasiainvestor.blogspot.com/2011/01/will-foreign-capital-inflows-buoy-kse.html

Prasad, E. S. (2009). *India's approach to capital account liberalization* (Discussion Paper No. 3927). Bonn, Germany: Institute for the Study of Labor.

Reinhart, C. M., & Rogoff, K. S. (2008). *This time is different: A panoramic view of eight centuries of financial crises* (Working Paper No. 13882). Cambridge, MA: National Bureau of Economic Research.

Rodrik, D., & Subramanian, A. (2008). *Why did financial liberalization disappoint?* (Mimeo). Harvard University and Peterson Institute for International Economics.

State Bank of Pakistan. (2003). Monetary and exchange rate policies. Retrieved from http://www.sbp.org.pk/publications/apr/Monetary_Exchange.pdf

World Bank. (2010). *World development indicators 2010*. Washington, DC: Author.

Zaidi, I. M. (2006). Exchange rate flexibility and the monetary policy framework in Pakistan. *State Bank of Pakistan Research Bulletin*, 2(1), 115–140.

A Qualitative Analysis of Pakistan's External and
Internal Debt

Eatzaz Ahmad[*]

Abstract

This paper discusses how poor debt management combined with the policies of donor agencies (particularly the IMF) have brought on the present domestic and foreign debt crises. The paper presents a qualitative account of the debt in Pakistan and then analyzes the debt data using various debt burden indicators. After the analysis of the economic and social costs of debt overhang in Pakistan, it is found that net foreign resource flows to the private and public sectors tended to crowd out private and public savings respectively and that public savings is crowded out by resource flows from the private sector to the public sector. Finally, the results of the paper find that the resource allocation between development and non-development expenditure did not depend on whether government expenditure was financed by revenues or government borrowing and that more resources are directed towards development activity when government expenditure is financed by foreign resource flows rather than domestic resource flows.

Keywords: Debt Burden, Savings, Development Expenditure, Pakistan.

JEL Classification: H63, H68.

1. Introduction

The current state of Pakistan's economy is characterized by low gross domestic product (GDP) growth, high inflation, lack of investment, economic mismanagement—especially in the energy sector—and continuing corruption. The general perception of other economic indicators is, by and large, also pessimistic. For example, it is often claimed that the burden of both foreign and domestic debt has increased above the levels that prevailed during the debt crisis of the 1990s. If we look at the relevant data, we find that, while the absolute volumes of

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foreign and domestic debt have increased considerably in the last few years, it has yet to be determined terms whether Pakistan's capacity to sustain debt has worsened.

It appears as though, after a decade of calm, Pakistan is again on the brink of debt crises both on the foreign and domestic fronts. While the quantitative burden of external debt, as measured by the debt-to-GDP ratio has registered a significant increase from 58.57 percent in 2006/07 to 65.19 percent in 2010, the country's repayment capacity in terms of foreign exchange earnings and capital inflows does not present an alarming picture.

The debt crisis of the 1990s had several serious implications, the most important being the slowdown of economic activity as indicated by the GDP growth rate.[1] This was accompanied by consistent budget and balance of payments deficits, which in turn narrowed the range of fiscal options available to economic managers. Since a large portion of government revenues was used to service debts, little room was left to undertake development activities in the public sector, with the result that public expenditure on education, health, and social welfare declined even in absolute terms. Poverty and the unequal distribution of income, which were almost forgotten, returned to occupy central stage in economic analyses.

If a debt crisis of the same magnitude as that of the 1990s should reoccur, the burden of its economic and social costs on citizens would be more severe this time. The already existing circular debt in the energy sector, which has choked economic activity flows, would add fuel to the fire. Additional complications would arise, especially for the poor and middle-income classes, due to deteriorating public infrastructure and high food prices. The balance of payments account, which appears in relatively good shape due to an unprecedented increase in foreign remittances, would be likely to deteriorate because of the expected increase in future debt servicing costs.

The unfolding economic scenario indicates the need to realign socioeconomic goals and make major changes to the policy framework. The social cost of these changes is expected to be high in the short run. The Ricardian equivalence argument does not apply for a number of

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[1] The annual compound growth rate of real GDP during the five-year period from 1995/96 to 1999/2000 was 2.76 percent, which was even lower than the growth rate achieved in any five-year period in Pakistan's history.

reasons. First, a large percentage of households cannot afford to work out lifetime planning because they are too poor to generate savings. Second, capital markets are highly distorted both in terms of economic and administrative efficiency, and no proper pension schemes exist, except for government employees. Third, government economic policies are uncertain and often abruptly announced. The announcement of the annual budget has become almost futile because policies continue to change throughout the year. Many well-publicized policies often fall victim to public pressure and political considerations.

Although a preliminary analysis of the data shows indications of rising trends in debt ratios, the debt situation in Pakistan is not yet as poor as it was during the 1990s. Pakistan does not fall in the domain of an unsustainable debt scenario, and there appears to be some space in which to reverse the trend through deliberate efforts. However, moderately unfavorable external shocks such as a decrease in the flow of foreign remittances could bring debt into focus among professional economists and policymakers.

Since the trends in debt ratios are not consistent enough to forecast future trends with a reasonable degree of precision, this is postponed for future analysis when the picture is likely to become clearer. Instead, this study focuses on two tasks. First, it analyzes the composition of Pakistan's debt-related data, both foreign and domestic, in order to explore alternative ways of measuring the amount and burden of debt. This exercise provides useful information on the nature and size of the debt burden. The second part of the analysis attempts to trace the effects of foreign and domestic borrowing on domestic savings and on the allocation of the government budget between development and nondevelopment expenditures.

The paper is organized as follows. Section 2 presents a qualitative account of issues in debt management in Pakistan. Section 3 presents and analyzes debt data with the help of various debt burden indicators. The effects of debt and borrowing on savings and budget allocation are analyzed in Section 4. Finally, Section 5 concludes the study.

2. Issues in Debt Management

The responsibility for debt management in Pakistan lies mainly with the Ministry of Finance. Its subsections, namely the Economic Affairs Division (EAD) and Finance Division (FD), maintain relevant information on almost all aspects of debt management. The EAD

monitors aid inflows, debt servicing, and the allocation of funds received in aid, grants, and borrowings. It also manages the technical assistance (training and infrastructure development) necessary to implement various aid programs. The FD is responsible for policymaking with regard to debt. Its Export Finance Wing plays a key role in designing medium- to long-term policies, keeping in view the inter-linkages between debt-related variables (e.g., borrowings and debt servicing) and the current and capital accounts of the balance of payments. Thus, the EAD performs the tasks of implementation, monitoring, and record keeping within the policy framework designed by the FD.

The State Bank of Pakistan (SBP) also maintains debt-related data, while the Central Directorate of National Savings records all information on domestic public debt raised by the government's National Savings Schemes (NSS). Debt management, planning, and policies at the Ministry of Finance are coordinated with the SBP in order to look into the financial side of the matter, and with the Planning Commission to seek economic advice.

Debt management in Pakistan is lacking in many respects, such as poor coordination across debt management agencies, lack of feasibility analysis and long-term planning, and a piecemeal approach to the problem. Donor agencies might also be blamed for imposing unrealistic conditionalities and for following their agenda without fully appreciating the ground realities.

As noted in the report by the Debt Reduction and Management Committee (Government of Pakistan, 2001), in practice debt management is segmented into many departments with poor coordination and information flows. The data management systems that are used are mostly outdated. Computer access across departments is not available. Although the use of computers to keep records has increased quite rapidly in recent years, the systems being used are upgraded with long time-lags because staff are not fully trained to keep pace with new innovations in information systems.

The situation at the EAD and SBP has improved in recent years as a result of generous technical assistance and training programs funded by the Asian Development Bank. The SBP has also implemented a well-planned reform program and inducted fresh staff who are more familiar with and better oriented and able to adjust to advancements in finance and information technology. However, the use of modern information systems in debt management, accounting, and auditing practices in government departments, is by and large in its infancy.

Economic problems in Pakistan, including the debt issue, are often addressed in crisis-like situations, and project feasibility and long-term planning are almost entirely confined to file work. As a result, solution strategies often seek quick results that, in most cases, are infeasible. Decision-making occurs mainly on whims and personal inclinations rather than objective analysis. Political motives and vested interests stand above socioeconomic considerations. Since political factors in Pakistan are volatile, long-term plans and feasibility reports, even when they exist, are given the least priority at the level of policymaking and implementation. The state of poor management in the energy, transport, and communication sectors—especially with reference to inter-organizational financial transactions, foreign direct investment, and privatization—is a glaring example of the state of affairs.

Another shortcoming of current debt management practices that is seldom highlighted in policymaking circles in Pakistan is the weak coordination between domestic and foreign debt. Again, the reason for such a piecemeal approach is the preoccupation with the most urgent task at hand. Confronted with the need to find ways and means to service foreign debt and minimize the associated default risk, debt management agencies tend to relegate domestic debt management to routine work. Even academic studies, with the exception of Ahmad (1996, 1997, 1999, 2000), and Ahmad and Ahmed (1998), tend to analyze foreign debt as an issue unrelated to domestic debt. Simulation exercises in Ahmad (1999) and Ahmad (2000) demonstrate how closely the two forms of debt are inter-linked. For example, a startling finding of this study is that attempts to retire external debt through privatization sales to foreign investors are most likely to end up retiring domestic debt, with little change in the size of foreign debt.

Statistics show that the burden of domestic debt is almost as large as that of foreign debt, both in terms of size and debt servicing costs. However, the foreign debt problem has turned into a crisis due to Pakistan's inability to accumulate the foreign exchange required for interest and principal payments, and the difficulty in rolling over the debt. Besides, common citizens, who have to pay a high price in terms of tough conditionalities imposed by the International Monetary Fund (IMF) for further loans, are far more informed about foreign debt than about domestic debt. Nevertheless, while Pakistan has never faced serious difficulty in rolling over domestic debt denominated in domestic currency, rising interest costs could potentially create a debt crisis on the domestic front as well.

Along with poor debt management problems within Pakistan, donor agencies, particularly the IMF, have also had a share in aggravating the crisis. Despite all the apparent emphasis of the World Bank and IMF on poverty and the social sector, Pakistan experienced adverse trends on both accounts during the debt crisis of the 1990s. One reason for this was that the conditionalities attached to aid packages tended to neutralize the intended outcomes. Most IMF conditionalities, particularly on energy pricing, subsidies, and taxation, are based on hardcore neoclassical economics and lack a human touch. The primary focus of the conditionalities has been on resource generation through direct fiscal measures irrespective of their effects on the economy's capacity to sustain the debt burden. The most visible effect of the drive to reduce the budget deficit has been a sharp decline in public sector development expenditure.

Since the emergence of the debt crisis in the early 1990s, various initiatives have been taken to formulate debt management and reduction strategies. However, except for the attempt by the Debt Reduction and Management Committee (Government of Pakistan, 2001), the outcomes of the task forces have remained disappointing. For example, the well-publicized National Debt Retirement Program launched in February 1997 could not produce any worthwhile impact although it resulted in an additional USD142.6 million worth of domestic debt in the form of US dollar bonds. The Committee's report brought into focus major weaknesses in debt management and measurement practices, and proposed some reforms to the system. The report recommended a number of qualitative and quantitative measures to achieve the above objectives. The solution strategy emphasized the following intermediate objectives.

- To improve the savings rate in the public sector.

- To improve total factor productivity in the public sector with better efficiency, better governance, and downsizing.

- To improve productivity in the private sector, especially in agriculture, manufacturing, and information technology.

- To improve the growth rate of real GDP.

- To privatize and downsize public assets and public services in education and health.

- To build economic confidence and promote economic stability.

- To reschedule medium-term debt to avoid the immediate risk of debt default.

- To monitor the debt situation and implement a debt reduction strategy.

The report also recognized that the debt problem cannot be studied in isolation from the major components of the overall macroeconomic picture, and emphasized internal consistency, coherence, and sustainability of the policy framework. Most components of the solution strategy make good economic sense, but it is not clear how the debt problem should be integrated with other parts of the economic picture in quantitative terms and incorporated in the policy framework.

In response to the Committee's recommendations, the government agreed to set up a debt policy coordinating office in the Ministry of Finance to coordinate debt management issues across debt management agencies and to offer economic and financial advice.[2] Although there were initial indications that some of the measures proposed in the report would be implemented, the proposal was later put in cold storage due to inter-departmental tussles.

To sum up, debt management in Pakistan is part of the larger problem of governance inefficiency. It was hoped that the democratically elected government would change the trend, but the old patterns of governance have reemerged. Institutional building is still a far cry from being realized. Governance inefficiency is addressed by creating duplicate institutions, while the existing institutions are left to disintegrate. Although the practice of hiring highly paid part-time consultants with little threat of accountability has been curtailed to some extent, it appears that we have not learnt our lesson as far as general management in the public sector is concerned.

Within the context of debt management, Pakistan is currently not under much pressure to show progress because of the windfall gains from 9/11. The success of debt management hinges on the ability of debt managers to acquire management autonomy from the bureaucratic mindset prevalent in government departments. Weak background analysis, the lack of political will, moral corruption, and bureaucratic inertia are the most common hurdles. The question of governance inefficiency is too well known and documented even in the reports of government task forces, but

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[2] This information is based on a handout issued by the Ministry of Finance on 14 March 2001.

there are always vested interests to disrupt the implementation of otherwise worthy proposals. The greatest fear raised in the report of the Debt Reduction and Management Committee (Government of Pakistan, 2001) was that its findings would never reach the implementation stage, and there are strong indications that confirm this fear.

It is also worth noting that donor agencies have time and again praised the policy framework of various governments, while the major source of disagreement has been on the implementation side. The point that is being missed is that slippage in targets occurs not because of shirking on the government's part but due to institutional weaknesses. The question of governance and institutional building needs to be brought into direct focus as intermediate targets with the ultimate aim of achieving the prescribed economic goals.

There is urgent need to relieve the government from such economic activities where there is no strong case of market failure. The financial sector, especially the banking, manufacturing, energy, and services sectors, need to be privatized on an urgent basis. Privatization is required not so much as to use the proceeds to retire debt as to improve economic efficiency and thereby to curtail the need for further borrowing. The debt problem needs to be linked to the question of sustainability rather than size. In other words, the focus needs to be placed on debt management rather than debt retirement.

3. The Size and Burden of Debt

3.1. Data Availability

Most data sources in Pakistan (particularly the *Pakistan Economic Survey* and *Annual Report*), which are also used in this study, have traditionally reported debt-related data meticulously for years until recently.[3] The debt crisis of the 1990s and the subsequent need for data analysis by various task forces and committees forced data management agencies to think of more informative ways to report data. Although the information flow has improved considerably, additional data has been made available only for the last 16 years. The magnitude of debt reported by various data sources varies mainly due to differences in definition, while the debt burden estimates reported in various reports and

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[3] The author would like to thank his MPhil Student, Misbah Aslam, for her invaluable assistance in data collection.

academic studies differ additionally because of the different data sources being used. The main sources of disagreement are domestic debt in foreign currency (US$ bonds and US$ bearer certificates), foreign currency deposits in financial institutions by residents and nonresidents (mostly expatriates) and foreign currency deposits in the SBP by some Middle East countries.

Previously inaccessible information on military and private debts is now available. Previously unreported debt raised by certain debt instruments is now reported mainly because these instruments have gained importance in terms of the amount of debt raised and the associated risk due to their short-term nature.

3.2. *Aggregation Issues and Measurement of Debt and Liability*

Pakistan faces the twin problems of foreign and domestic debt, and most of its foreign debt is public or publicly guaranteed. However, alternative measures of debt can be derived depending on the nature of debt burden to be estimated. The measurement and classification of debt depends crucially on the ownership of debt or liabilities, debt instruments (e.g., loans, bonds, or deposits), the currency of denomination, the involvement of the public sector (e.g., public ownership or public guarantee), and maturity structure. Table 1 provides detailed information on various components of the country's debt and public liabilities for the last six years.

Table 1: Foreign and Domestic Debt and Liabilities

Identification	Ownership	Debt Instruments	Denomination Currency	Nature	Nature of Liability	Maturity	Amount (USD billion)						
							1989–92	1992–95	1995–98	1998–2001	2001–04	2004–07	2007–10
Multilateral and bilateral	IFIs, foreign countries	Loans	Foreign	PPG	Debt	LMT	15.85	20.49	22.55	26.32	29.47	34.76	48.01
Euro bonds	Foreign FIs	Bonds	Foreign	PPG	Debt	LMT		0.15	0.56	0.63	0.65	1.94	2.12
Military loans	Foreign countries	Loans/credit	Foreign	PPG	Debt	LMT		2.13	1.29	0.99	0.43	0.13	0.14
Multilateral (IMF, IDB)	IFIs	Loans	Foreign	PPG	Debt	ST	0.93	1.56	1.64	1.81	2.06	1.66	5.57
Commercial debt	Foreign FIs	Loans/credit	Foreign	PPG	Debt	ST	0.56	0.89	1.13	1.12	0.25	0.15	0.15
Private debt	Foreign banks	Loans/credit	Foreign	Private	Debt	ST	0.40	1.33	2.75	2.91	1.97	1.11	2.04
Central bank deposits	Middle East countries	Savings deposits	Foreign	PPG	Deposits	LMT		0.14	0.76	1.14	0.72	0.70	1.17
FCDs in FIs	Nonresident FIs	Savings deposits	Foreign	PPG	Deposits	ST		1.20	1.90	1.33	2.36	3.53	4.19
FCDs in FIs	Nonresident individuals	Savings deposits	Foreign	PPG	Deposits	ST		1.99	2.26	0.75	0.34	0.37	0.33
FCDs in FIs	Resident individuals	Savings deposits	Foreign	PPG	Deposits	ST		3.38	5.52	1.58	0.39	0.08	0.04
Permanent debt	Resident individuals	Bonds	Foreign	PPG	Debt	LMT		0.59	0.41	1.10	0.30	0.29	0.28
Permanent debt	Domestic FIs, citizens	Bonds	PKR	PPG	Debt	LMT	6.37	9.21	7.58	6.35	8.28	8.91	9.42
Unfunded debt	Citizens	Savings certificates	PKR	PPG	Debt	LMT	7.14	8.80	10.95	12.38	9.11	15.7	26.31
Floating debt	Domestic FIs	T-bills	PKR	PPG	Debt	ST	6.21	6.48	8.89	12.48	14.78	14.98	16.67

FCD = foreign currency deposit, FI = financial institution, IFI = international financial institution, IMF = International Monetary Fund, LMT = long- and medium-term, PPG = public and publicly guaranteed, ST = short-term.

Sources: Government of Pakistan. (n.d.). *Fifty years of Pakistan in statistics* (Various issues). Islamabad: Federal Bureau of Statistics; Government of Pakistan. (n.d.). *Pakistan economic survey* (Various issues). Islamabad: Economic Adviser's Wing; Government of Pakistan. (n.d.). *Statistical supplements* (Various issues). Islamabad: Economic Adviser's Wing.

The table shows that the volume of the main component of debt, which has traditionally been the focus of analysis, has increased continuously in absolute dollar terms over the last 16 years. The other important debt component, short-term multilateral debt, has followed more or less the same trend. Furthermore, the rate of increase appears to have been quite sharp over the last three years (2007/08 to 2009/10), especially for short-term debt.

This picture is, however, incomplete unless we relate the debt volumes to the size of the economy. Since the rate of inflation in Pakistan has been much higher than the rate of depreciation of the Pakistan rupee against the US dollar, the rate of growth in nominal GDP has exceeded the rate of growth in debt in nominal Pakistan rupees. As a result, the debt-to-GDP ratio has registered a net decline. Further discussion on this is taken up later.

How an aggregate measure of debt or liabilities is formed depends on how we measure debt to foreigners or debt in foreign currency, debt in foreign currency or total liabilities in foreign currency, and public foreign debt or total (public plus private) foreign debt. However, care needs to be taken in lumping together all foreign currency liabilities on the public and private sectors on the basis that the central bank has to provide foreign currency to repay the latter in order to keep the banking system and foreign exchange market afloat. While liabilities in foreign currency may tighten the foreign exchange constraint, public debt constrains the overall financial position of the public sector; the two constraints do not always overlap.

Private liabilities in foreign currency do not constitute a net financial burden on the public sector, although pressure to repay on account of such liabilities may force the public sector to change the composition of its debt. At the time of repayment of such liabilities, especially when they are large, the central bank may deplete its foreign exchange reserves. Assuming that the government perseveres with its ongoing monetary and fiscal policies, the local currency thus collected can be converted into government securities to help retire public debt in local currency.

In accounting terms, the net liabilities/assets of the government or central bank remain unchanged. In economic terms, this amounts to retiring public debt in local currency by resorting to the central bank's foreign

exchange reserves.[4] In the past, this option was barely available in Pakistan while the central bank's reserves remained below USD2 billion. Although the reserves position has improved considerably over the last seven years, if the central bank chooses to raise foreign debt to restore its reserves position, the domestic debt in local currency will be replaced by foreign debt.

A third possibility is to let the private sector buy foreign currency from the open market.[5] This would also leave the real burden of public debt unchanged, although the nominal burden might rise due to the depreciation of local currency and the associated inflation, assuming that the full Fisher effect is operative. Needless to say that in case depreciation does not fully translate into inflation, the real burden of foreign debt will rise, while if the interest rate on domestic debt does not adjust fully for inflation, the real burden of domestic debt will decline.

Apart from the considerations above, a meaningful aggregation of debt requires that the group of debtors and group of creditors do not overlap. Alternatively, while calculating the debt on a group of entities, the debt across entities within the group must be set equal to zero as it does not impose the net debt burden on the collective group. The same principle applies to nondebt liabilities. We could, for example, add public and private debt (or all liabilities) to foreigners to measure the debt (or overall liabilities) that a country—rather than its public sector—owes to foreign creditors. We cannot, however, add public and private debts (or all liabilities) in terms of foreign currency if the public debt (or liabilities) in foreign currencies includes debts (or liabilities) to residents because in the resulting aggregate domestic residents are counted both as debtors and creditors.

Table 1 identifies a number of important characteristics of debts and liabilities on the basis of which an aggregate measure of debt can be formed. Estimates of some of these aggregates for the last 16 years are shown in Table 2. As of June 2010, the total outstanding public debt in Pakistan was USD108.67 billion, a little more than half of which is denominated in foreign currency and a little more than half of which is foreign debt. This amount is close to 70 percent of the annual GDP, coming down from more than 95 percent of the GDP in 2000/01. Thus, foreign and domestic debt each constitute about a third of the annual GDP.

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[4] In case the local currency sold by the private sector is absorbed in reducing the supply of high-powered money, the government's budget as well as the central bank's balance sheet will again show an unchanged net balance, and the public debt position will remain unchanged.
[5] This is equivalent to the central bank providing foreign currency to the private sector and restoring its balance through an open market purchase of foreign currency.

Table 2: Measures of Debt and Liability Aggregates
(USD billion and Percentage of GDP)

Debt and Liability Aggregates	Amount (USD billion)					
	1992–95	1995–98	1998–2001	2001–04	2004–07	2007–10
Public debt	50.30	55.00	63.18	65.33	78.52	108.67
Long- and medium-term	41.37	43.34	47.77	48.24	61.73	86.28
Short-term	8.93	11.66	15.41	17.09	16.79	22.39
Public debt in foreign currencies	25.81	27.58	31.97	33.16	38.93	56.27
Long- and medium-term	23.36	24.81	29.04	30.85	37.12	50.55
Short-term	2.45	2.77	2.93	2.31	1.81	5.72
Public debt in local currency	24.49	27.42	31.21	32.17	39.59	52.40
Long- and medium-term	18.01	18.53	18.73	17.39	24.61	35.73
Short-term	6.48	8.89	12.48	14.78	14.98	16.67
Foreign public debt	25.22	27.17	30.87	32.86	38.64	55.99
Long- and medium-term	22.77	24.40	27.94	30.55	36.83	50.27
Short-term	2.45	2.77	2.93	2.31	1.81	5.72
Domestic public debt	25.08	27.83	32.31	32.47	39.88	52.68
Long- and medium-term	18.60	18.94	19.83	17.69	24.90	36.01
Short-term	6.48	8.89	12.48	14.78	14.98	16.67
Foreign liabilities on Pakistan	29.88	34.84	37.00	38.25	44.35	63.72
Long- and medium-term	22.91	25.16	29.08	31.27	37.53	51.44
Short-term	6.97	9.68	7.92	6.98	6.82	12.28
Foreign public liabilities	25.36	27.93	32.01	33.58	39.34	57.16
Long- and medium-term	22.91	25.16	29.08	31.27	37.53	51.44
Short-term	2.45	2.77	2.93	2.31	1.81	5.72
Foreign private liabilities (short-term)	4.52	6.91	4.99	4.67	5.01	6.56

GDP = gross domestic product.

Sources: Government of Pakistan. (n.d.). *Fifty years of Pakistan in statistics* (Various issues). Islamabad: Federal Bureau of Statistics; Government of Pakistan. (n.d.). *Pakistan economic survey* (Various issues). Islamabad: Economic Adviser's Wing; Government of Pakistan. (n.d.). *Statistical supplements* (Various issues). Islamabad: Economic Adviser's Wing.

Looking at this from another angle, about four fifths of public debt is long- or medium-term, while the remaining fifth is short-term. Most of the short-term debt is domestic and is denominated in local currency. The short-term foreign debt is close to USD6 billion, which is about 5 percent of total debt and 10 percent of total foreign debt.

If other liabilities in foreign currency—such as private debt and foreign currency deposits by foreigners at the central bank and domestic financial institutions—are added to Pakistan's foreign debt, the country's total foreign currency liabilities stand at about USD73 billion or about 47 percent of the annual GDP. The private sector's foreign liabilities—mainly the foreign currency deposits of foreign financial institutions in domestic financial institutions and direct private debt—have remained more or less stable at USD6.5 billion.

3.3. *Trends in and Composition of Debt Burden*

The burden of foreign and domestic debt can be measured by expressing the volume of debt in terms of percentage of GDP. For this purpose, all magnitudes must be expressed in a common unit and indexed, if at all, similarly. The simplest approach is to measure debts as a percentage of GDP with both denominated in the local currency at current prices. Figure 1 shows the time profile of Pakistan's total, foreign, and domestic public debts as percentages of GDP.

Figure 1: Composition of Pakistan's Debt
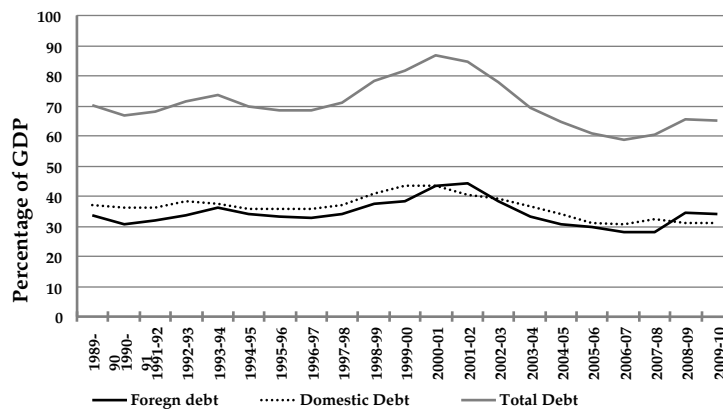
GDP = gross domestic product.
Sources: Government of Pakistan. (n.d.). *Fifty years of Pakistan in statistics* (Various issues). Islamabad: Federal Bureau of Statistics.
Government of Pakistan. (n.d.). *Pakistan economic survey* (Various issues). Islamabad: Economic Adviser's Wing.
Government of Pakistan. (n.d.). *Statistical supplements* (Various issues). Islamabad: Economic Adviser's Wing.

The figure shows that all three indicators of debt burden took a turn for the worse somewhere around 2007/08. However, the debt burden did not increase sharply and even flattened in the fiscal year 2009/10. This means that the rising trend in debt burden may not necessarily continue, and that there is a need to draw attention to other

economic fundamentals and to study data more deeply before making any serious predictions about the debt scenario in the near future.

The sharp increase in Pakistan's total outstanding debt in 1998/99 was triggered mainly by the freeze on foreign currency deposits in May 1998, after the country had conducted a series of nuclear tests. The frozen accounts were later opened for withdrawal in local currency at the official exchange rate, while the open market rate had gone up by more than 20 percent in response to the unprecedented increase in demand for foreign currencies, especially the US dollar. Many depositors perceived the freeze as a lost opportunity to have made capital gains and for a while remained reluctant to withdraw their holdings in local currency. Nevertheless, the frozen accounts were gradually channeled into savings deposits in NSS or commercial banks. A small amount was also converted into US$ bonds and bearer certificates.

The largest component of external debt is, by far, multilateral and bilateral long- and medium-term debt. Most of this debt is owed to international financial institutions and developed countries such as Japan and the US. The magnitudes of short-term public foreign debt and private foreign debt are relatively small and stable.

This trend was reversed in favor of Pakistan after 2001 when curbs were imposed on informal channels of international financial flows and Pakistan took a key position in the "war against terror." The continuously growing inflow of foreign remittances, which reached the USD1 billion mark per month, coupled with the rescheduling and writing off of its foreign debt eased the pressure on Pakistan's current account. This enabled the country to expand its foreign exchange reserves at the SBP and let the rupee appreciate in real terms by about 30 percent from 2001/02 to 2009/10.

Figure 2 shows the trends in and composition of the burden of Pakistan's total foreign exchange liabilities over the last several years. The figure reveals that, by far, the burden's largest component has been long-/medium-term public debt. However, during the mid- to late 1990s, "other public foreign exchange liabilities"—consisting mostly of foreign currency deposits in the SBP and especially commercial banks—also contributed significantly to the overall burden. This component of the foreign debt burden has gradually decreased after a sharp decline in the late 1990s due to the freeze on foreign currency deposits.

Figure-2: Composition of Pakistan's Foreign Exchange Liabilities
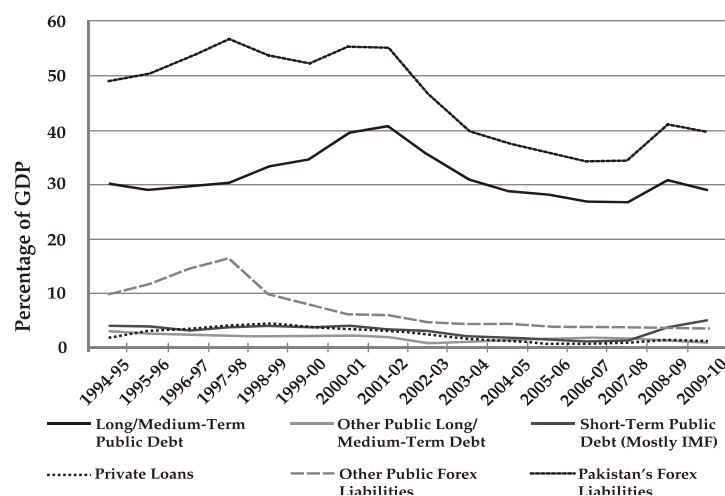
GDP = gross domestic product, IMF = International Monetary Fund.
Sources: Government of Pakistan. (n.d.). *Fifty years of Pakistan in statistics* (Various issues).
        Islamabad: Federal Bureau of Statistics.
        Government of Pakistan. (n.d.). *Pakistan economic survey* (Various issues).
        Islamabad: Economic Adviser's Wing.
        Government of Pakistan. (n.d.). *Statistical supplements* (Various issues).
   Islamabad: Economic Adviser's Wing.

The most recent trend indicates that the burdens of long-/medium-term debt and, hence, of the overall debt are mixed. After a sharp increase in 2008/09, the debt burden seems to have declined. On the other hand, the burden of short-term debt has continued to increase over the last three years mainly on account of borrowing from the IMF. The other components of the foreign debt burden appear small and less worrying.

Another way of classifying the burden of foreign exchange liabilities is to split it into public debt and nondebt foreign exchange liabilities. Figure 3 shows that the overall size of the burden is driven mainly by public debt, although the nondebt component had assumed an alarming position by the late 1990s.

Yet another way of classifying the burden of foreign exchange liabilities is to split it into long-/medium-term and short-term liabilities (Figure 4). Short-term foreign exchange liabilities consist of short-term public debt (mainly from the IMF), private loans from abroad, foreign currency deposits in commercial banks by residents and nonresidents, and foreign currency deposits in the SBP. The figure shows that the short-term liabilities, which had assumed an alarming position toward the late

1990s, have increased consistently over the last three years. The short-term debt burden has risen to close to 10 percent of GDP, which seems to be a serious threat to Pakistan's debt sustainability.

Figure-3: Pakistan's Foreign Public Debt and Other Foreign Exchange Liabilities
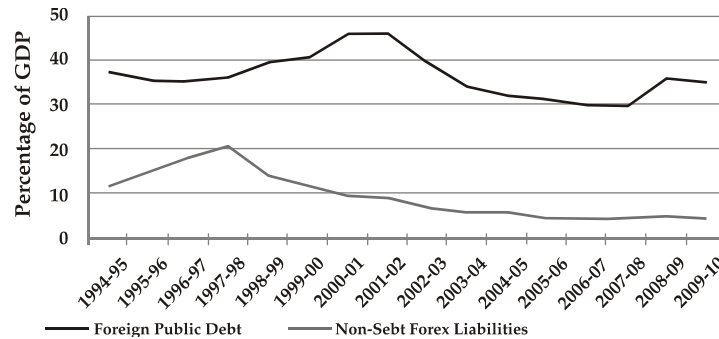
GDP = gross domestic product.

Sources: Government of Pakistan. (n.d.). *Fifty years of Pakistan in statistics* (Various issues). Islamabad: Federal Bureau of Statistics.

Government of Pakistan. (n.d.). *Pakistan economic survey* (Various issues). Islamabad: Economic Adviser's Wing.

Government of Pakistan. (n.d.). *Statistical supplements* (Various issues). Islamabad: Economic Adviser's Wing.

Figure-4: Pakistan's Long and Short Term Foreign Exchange Liabilities
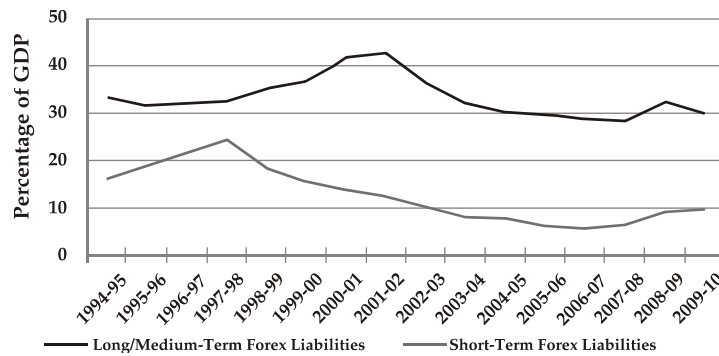
GDP = gross domestic product.

Sources: Government of Pakistan. (n.d.). *Fifty years of Pakistan in statistics* (Various issues). Islamabad: Federal Bureau of Statistics.

Government of Pakistan. (n.d.). *Pakistan economic survey* (Various issues). Islamabad: Economic Adviser's Wing.

Government of Pakistan. (n.d.). *Statistical supplements* (Various issues). Islamabad: Economic Adviser's Wing.

Figure 5 shows that the burden of foreign debt comprises mainly public debt, while the size of private debt, which was somewhat visible in the late 1990s and early 2000s, has become relatively negligible (a little more than 1 percent of GDP).

Figure-5: Pakistan's Public and Private Foreign Exchange Liabilities
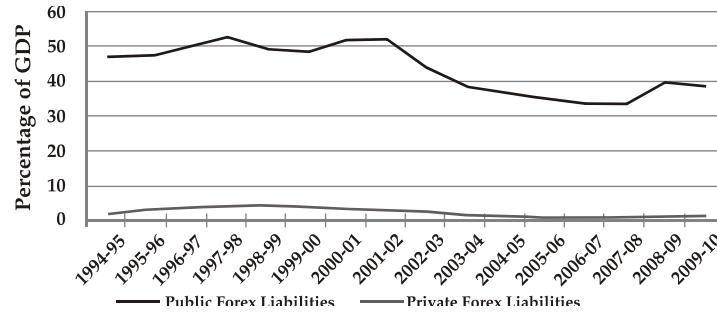
GDP = gross domestic product.
Sources: Government of Pakistan. (n.d.). *Fifty years of Pakistan in statistics* (Various issues). Islamabad: Federal Bureau of Statistics.
Government of Pakistan. (n.d.). *Pakistan economic survey* (Various issues). Islamabad: Economic Adviser's Wing.
Government of Pakistan. (n.d.). *Statistical supplements* (Various issues). Islamabad: Economic Adviser's Wing.

In order to highlight the importance of an increase in the burden of short-term foreign exchange liabilities, the time path of these liabilities (expressed as percentage of export earnings) is shown in Figure 6. The burden of short-term debt appears to be high not so much because of an increase in the absolute volume of these liabilities but because of the stagnation in export earnings over the last three years. The figure shows that short-term foreign exchange liabilities are close to 100 percent of export earnings. This percentage hovered around 200 during the late 1990s and came down to as low as 45.5 percent in 2006/07. Nevertheless, it is important to keep a close watch on this indicator in the near future.

Figure-6: Composition of Pakistan's Domestic Debt
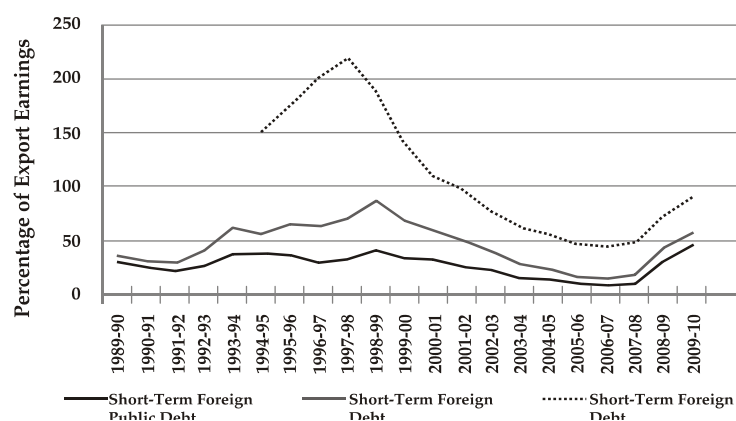
Sources: Government of Pakistan. (n.d.). *Fifty years of Pakistan in statistics* (Various issues). Islamabad: Federal Bureau of Statistics.

Government of Pakistan. (n.d.). *Pakistan economic survey* (Various issues). Islamabad: Economic Adviser's Wing.

Government of Pakistan. (n.d.). *Statistical supplements* (Various issues). Islamabad: Economic Adviser's Wing.

Pakistan's domestic debt is classified as (i) permanent debt (medium and long-term), (ii) floating debt (short-term), or unfunded debt (nonbank or direct public borrowing). Permanent debt is resolved mostly by issuing long-term bonds with a maturity period of 3 to 10 years and prize bonds with no fixed maturity and a periodic distribution of interest to lottery winners.6 Floating debt is truly short-term debt, payment of which is raised by treasury bills. Finally, unfunded debt is based entirely on the NSS.

The Central Directorate of National Savings issues loan certificates directly to individual investors. The maturity period varies from 3 to 10 years with the exception of (unpopular) running savings accounts. Defense savings certificates, special savings certificates, and regular income certificates with maturity periods of 10, 3, and 5 years, respectively, are by far the most popular schemes. In this respect, unfunded debt is usually long-term.

Figure 7 shows that, during the past 40 years, the composition of domestic debt has changed quite substantially. Attractive real rates of return on the NSS with the added advantage of being tax-exempt resulted in a sharp rise in unfunded debt to bring it at par with floating debt till the early 2000s when the inflation rate remained low. Later, however, with the

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[6] In the 1980s, the government also borrowed through bonds with a maturity period of up to 15 years.

increase in the inflation rate and boom in property prices, NSS certificates became less attractive to investors to a large extent. Although the nominal volume of unfunded debt continued to show an increasing trend, the burden in terms of percentage of GDP registered a persistent decrease.

As a whole, the burden of domestic debt has declined considerably from its peak level of 43 percent at the turn of the century and stabilized at about 31 percent over the last five years. Thus, like foreign debt, the position of domestic debt is not as alarming as perceived or as it was during the 1990s.

Figure-7: Composition of Pakistan's Domestic Debt
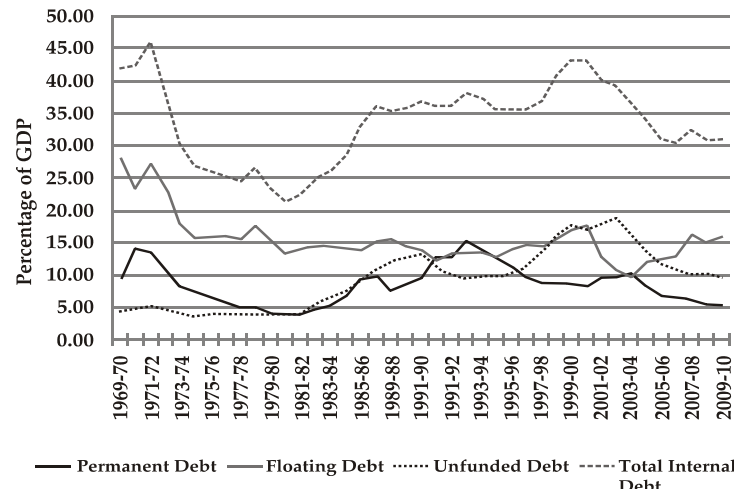
GDP = gross domestic product.
Sources: Government of Pakistan. (n.d.). *Fifty years of Pakistan in statistics* (Various issues). Islamabad: Federal Bureau of Statistics.
Government of Pakistan. (n.d.). *Pakistan economic survey* (Various issues). Islamabad: Economic Adviser's Wing.
Government of Pakistan. (n.d.). *Statistical supplements* (Various issues). Islamabad: Economic Adviser's Wing.

The financial pressure on the government to reduce the rates of return and withdraw tax exemptions on the NSS has eased due to high inflation. If the inflation rate continues to remain high, the government will have to raise interest rates on various savings instruments in the NSS. Presently, the government has no formal pension schemes for the public, and the NSS is considered the closest substitute offered by the public sector. Since these schemes operate on a fully-funded (rather than pay-as-you-go) basis, they are very much like private savings schemes, except that they offer better rates of return.

Although no official documentation is available, it is generally perceived that elderly persons, mostly retired, hold a significant portion of funds invested in these schemes. Income on most popular schemes is tax-exempt, although 2.5 percent annual *zakat* levy on the principal value is deducted at the time of withdrawal. Since *zakat* is also deducted from all savings accounts in commercial banks and other financial institutions, it does not affect the relative attractiveness of the NSS vis-à-vis other available savings instruments.

The NSS gained popularity in the 1970s and has remained popular to date. This is explained partly by the increase in retirement savings due to improvements in life expectancy. The main reason, however, is that NSS certificates are considered safe assets as the rate of return has remained stable and there has never been any incidence of mismanagement or misappropriation of funds. It is encouraging to note that, despite operating a wide network of national saving centers, the Central Directorate of National Savings has been able to keep its operating costs low and shown a high degree of management efficiency— a rare attribute in the public sector. As a result, the NSS has also proved to be the safest form of debt for the government.

Since these schemes have attributes similar to those of pension funds, there is ample room to expand their scope not only to help minimize the debt default risk, but to also provide the retired/elderly population with a safety net. At present, the Central Directorate of National Savings does not appear to have any effective marketing strategy to counter the aggressive marketing campaign run by commercial banks, and no innovative savings instruments have been introduced in a long time.

One could view this approach as pragmatic, because modernizing the schemes would add to their operating costs. Nevertheless, the scheme does not maximize its savings potential, and its scope could be expanded in many directions. For example, there is no scheme in which expatriate Pakistanis or even residents can accumulate retirement savings in foreign currency. This would certainly be an attractive way of restructuring at least a portion of foreign debt into retirement savings. Other savings instruments that could be introduced include a regular savings scheme for retirement income and a home ownership saving scheme.

4. Economic and Social Costs of Debt Overhang

While estimating the explicit current cost of debt in terms of interest and principal payments is a straightforward process, it is not as easy to determine the real cost that an indebted country/government has to bear as a result of the resource reallocation necessary to service the outstanding debt. This paper focuses on the second aspect: to consider the consequences of debt servicing costs for resource allocation, in particular between consumption and savings and between development and nondevelopment activities within the public sector.

Several studies analyze the direct relationship between economic growth and external debt, while implicitly considering the channel of savings and, hence, investment (see, for example, Amoateng & Amoako-Adu, 1996; Cohen, 1993; Elbadawi, Ndulu, & Ndungu, 1997; Pattillo, Poirson, & Ricci, 2002). Only a few studies (Clements, Bhattacharaya, & Nguyen, 2003; Pattillo, Poirson, & Ricci, 2004) take explicit account of the effects of debt on savings and/or investment. We now consider a relatively broader framework within which to analyze the effects of debt flows and debt servicing on the public and public savings, and the allocation of government expenditure toward development and nondevelopment activities.

Let us first consider savings. In the national income accounts, national savings are defined as domestic savings plus net factor income from abroad. This definition gives the impression that all net factor income from abroad is saved, while domestic savings appear to be underestimated. For economic analysis, one has to consider how national savings are generated rather than how they are accounted by statisticians. To understand the underlying savings behavior in Pakistan, we propose the following savings functions for the private and public sectors:

$$S_p = a_1 + a_2 (Y - T) + a_3 U + a_4 FRP \qquad (1)$$

$$S_g = b_1 + b_2 T + b_3 FRG + b_4 DRG \qquad (2)$$

S_p, S_g, Y, T, U, FRP, FRG, and DRG denote private and public savings, GDP, tax plus nontax revenue/payments, private unrequited transfers from abroad, net foreign resource flows to the private and public sectors, and net resource flows from the private to public sector, respectively. Note that all the net resource flows to any particular sector are expressed

in terms of its borrowings net of the interest payments on the corresponding outstanding debt (i.e., accumulated borrowings).

We expect private savings to be positively related to disposable income, while unrequited transfers and the marginal savings rate out of unrequited transfers is higher than that out of domestic disposable income. Furthermore, foreign resource flows to the private sector are expected to adversely affect private savings. Likewise, savings in the public sector are most likely to be directly related to government revenue and inversely related to foreign and domestic resource flows to the public sector.

Moving now to budget allocation in the public sector, there are many ways of classifying government expenditure. Based on the type of data available, we consider the allocation between current and development expenditures. The expenditure on interest payments on public debt—which is part of current expenditure—is given as it depends on the maturity structure of the debt, and the remaining balance is allocated to development and noninterest current expenditures. We denote noninterest total, current expenditure, development expenditure, government revenue, and net domestic and foreign resource flows to the public sector by G, CE, DE, T, DRG, and FRG, respectively. The government budget constraint can be written as

$$G = CE + DE = T + DRG + FRG \qquad (3)$$

Although in an accounting sense current and development expenditures met through revenue and capital receipts are specified separately, this allocation is artificial because the actual allocation is generally affected by how the government budget is raised. For example, borrowing may force the government to cut its development expenditure from other sources, while on paper most of the development expenditure might be financed using borrowed funds. Furthermore, since external finance is expressed in terms of foreign currency, it can also affect the allocation depending on the foreign exchange requirements of current and development expenditures. In order to add behavioral content to the government budget, we postulate that the allocation of noninterest government expenditure between development and current expenditures depends on the composition of government resources and the burden of debt measured by the debt servicing (denoted by DS) to government revenue ratio. That is:

$$DE/G = \alpha_1 \, T/G + \beta_1 \, DRG/G + \delta_1 \, FRG/G + \phi_1 \, DS/T + \varepsilon_1 \qquad (4)$$

$$CE/G = \alpha_2\, T/G + \beta_2\, DRG/G + \delta_2\, FRG/G + \phi_2\, DS/T + \varepsilon_2 \qquad (5)$$

It follows from the budget constraint (3) that the regression parameters and random error terms satisfy the conditions

$$\alpha_1 + \alpha_2 = \beta_1 + \beta_2 = \delta_1 + \delta_2 = 1,\ \phi_1 + \phi_2 = 0,\ \varepsilon_1 + \varepsilon_2 = 0 \qquad (6)$$

The budget constraint (3) also implies that the first three variables on the right-hand side of the above equations cannot move freely. For example, an increase in the T/G ratio must be offset by appropriate changes in DRG/G, FRG/G, or both. There are various ways of imposing the government budget constraint on the behavioral equations depending on the type of changes in government resources that are to be analyzed. The relationships above can be written alternatively as

$$DE/G = \alpha_1 + (\beta_1 - \alpha_1)\, DRG/G + (\delta_1 - \alpha_1)\, FRG/G + \phi_1\, DS/T + \varepsilon_1 \qquad (4a)$$

$$CE/G = \alpha_2 + (\beta_2 - \alpha_2)\, DRG/G + (\delta_2 - \alpha_2)\, FRG/G + \phi_2\, DS/T + \varepsilon_2 \qquad (5a)$$

$$DE/G = (\alpha_1 - \beta_1)\, T/G + \beta_1 + (\delta_1 - \beta_1)\, FRG/G + \phi_1\, DS/T + \varepsilon_1 \qquad (4b)$$

$$CE/G = (\alpha_2 - \beta_2)\, T/G + \beta_2 + (\delta_2 - \beta_2)\, FRG/G + \phi_2\, DS/T + \varepsilon_2 \qquad (5b)$$

$$DE/G = (\alpha_1 - \delta_1)\, T/G + (\beta_1 - \delta_1)\, DRG/G + \delta_1 + \phi_1\, DS/T + \varepsilon_1 \qquad (4c)$$

$$CE/G = (\alpha_2 - \delta_2)\, T/G + (\beta_2 - \delta_2)\, DRG/G + \delta_2 + \phi_2\, DS/T + \varepsilon_2 \qquad (5c)$$

It follows from the above that α_1 and α_2 measure the proportions of government noninterest expenditure allocated to development and noninterest current expenditures when the net domestic and foreign resource flows, and debt servicing cost are zero. This implies that the government budget is in balance, interest payments on debt for the current period are rescheduled, and debt volumes are constant.

The parameters β_1 and β_2 (δ_1 and δ_2) measure the proportions of government noninterest expenditure allocated to development and noninterest current expenditures when the entire budget is financed by net domestic (foreign) resource flows; tax revenue, net foreign (domestic) resource flows, and debt servicing costs are zero. This is possible if all debt servicing (domestic as well as foreign) for the current period is rescheduled and net foreign (domestic) borrowing is zero.

The scenarios above are unrealistic in practice. A better interpretation is based on the differences in parameters $\alpha_i - \beta_i$, $\alpha_i - \delta_i$, $\beta_i - \delta_i$, etc. Thus, for example, $\alpha_1 - \beta_1$ and $\alpha_2 - \beta_2$ measure the sensitivity of budget allocation between development and noninterest current expenditures to the replacement of net domestic resource flows by equal government revenues. The other combinations listed in (4b) to (5c) can be interpreted likewise.

Table 3 presents estimates of the savings functions. Before discussing these results, it is important to note that the data on savings in Pakistan is not very reliable, and that figures in different sources vary substantially.[7] Thus, one cannot be overly confident of the level of statistical confidence shown by the computed t-statistics, and the results might be better seen in qualitative rather than quantitative terms. Nevertheless, some interesting results follow from the estimates.

If the marginal propensity of public consumption from tax revenue is taken into account, the net impact of each additional rupee of tax on national savings is calculated to be 0.4 of a rupee. Thus, the assumption that Pakistan can reduce its resource deficiency by imposing additional taxes is subject to debate.

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[7] This is not true for all types of data. In particular, debt statistics are quite reliable although the definition of "debt" is debatable. This is because record keeping at the EAD (which maintains all data on debt) and at the SBP is much better than at other government departments.

Table 3: Estimates of Savings Functions

	Private Savings	Public Savings
Intercept	-33.105	-10.305
	(-2.20*)	-0.89
Gross domestic product	0.171	
	(10.48*)	
Tax plus nontax revenue/payment	-0.171	0.57
	(-10.48*)	(10.51*)
Private unrequited transfers	0.482	
	(1.70**)	
Net foreign resource flows to private sector	-0.445	
	(-2.73*)	
Net foreign resource flows to public sector		-0.636
		(-1.54)
Net resource flows from private to public sector		-0.815
		(-5.03*)
R2	0.883	0.929
DW statistics	2.43	2.10
Mean	117.24	70.94

The t-statistics significant at 5 and 10 percent are marked * and **, respectively.

The results also support the hypothesis that the marginal private savings rate out of unrequited transfers from abroad is higher than that out of domestic disposable income. This result is at least plausible because studies show that investment activity is much higher among households that receive remittances as compared to the average household. One reason for this trend is that, in many cases, migrants have a lifetime opportunity to earn a large income for a contract period overseas or that they do not want to remain separated from their families back home beyond a certain period. Therefore, they have to count their temporarily large incomes in a lifecycle context.

The net foreign resource flows to the private and public sectors are found to crowd out private and public savings, respectively. Furthermore, public savings are also crowded out by resource flows from the private to public sector. This indicates that public domestic or foreign borrowings as well as private borrowing adversely affect domestic saving efforts and the loss in savings is quite large.

Parameter estimates for the budget allocation model (Equations 4 and 5) are presented in Table 4.[8] As can be seen, the overall fit of the model is good and there is no strong incidence of autocorrelation. The results show that if all the government expenditure is met through government revenues and there is no burden of debt servicing, the development and current expenditure components of the government budget will be 42.3 and 57.7 percent, respectively.

Comparing these proportions with the actual sample means (31.6 and 68.4 percent, respectively), one can see that the expenditure allocated to development activities would be higher under the hypothetical scenario, and that the difference is statistically significant.

The t-statistic for the difference between the projected proportion of development or current expenditure and the corresponding mean proportion in the sample is found to be 2.36, which is significant at 5 percent. In the case where all government expenditure is met through domestic or, in particular, foreign resource flows and debt servicing is zero, the expenditure allocated to development activities will be even higher.

In all these cases, debt servicing is assumed to be zero, so it follows that the burden of debt servicing on development expenditure will be disproportionately higher. This pattern is evident from the sign and significance of the coefficient on debt servicing, which indicates that, for example, an increase in debt servicing by 10 percent of government revenue would shrink the share of development expenditure by 3.07 percent of total government expenditure.

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[8] The parameter estimates of the budget allocation model can be obtained using any one of the three specifications (4a and 5a, 4b and 5b, or 4c and 5c) to yield identical results. Furthermore, parametric restrictions imposed by the government budget constraint imply that the parameters of any one equation can be derived from the estimated parameters of the other equations within each of the budget allocation models.

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Table 4: Estimate of Model of Allocation between Development and Noninterest Current Expenditures

Variable (Parameter)	Development Expenditure	Current Expenditure
Government revenue to government expenditure ratio (α_i)	0.423 (9.31*)	0.577 (12.69*)
Net domestic resource flow to government expenditure ratio (β_i)	0.479 (6.81*)	0.521 (7.40*)
Net foreign resource flow to government expenditure ratio (δ_i)	0.789 (4.60*)	0.211 (-1.23)
Debt servicing to government revenue ratio (ϕ_i)	-0.307 (-3.83*)	0.307 (3.83*)
$\beta_i - \alpha_i$	0.056 (0.51)	-0.056 (-0.51*)
$\delta_i - \alpha_i$	0.366 (1.85**)	-0.366 (-1.85**)
$\alpha_i - \beta_i$	-0.056 (-0.51)	0.056 (0.51)
$\delta_i - \beta_i$	0.310 (2.02**)	-0.310 (-2.02**)
$\alpha_i - \delta_i$	-0.366 (-1.85**)	0.366 (1.85**)
$\beta_i - \delta_i$	-0.310 (-2.02**)	0.310 (2.02**)
R2	0.792	0.987
DW statistic	2.05	2.05
Mean dependent variable	0.316	0.684

The t-statistics significant at 5 and 10 percent are marked * and **, respectively.

Turning to the more interesting part of analysis, the results indicate that replacing domestic or foreign resource flows with government revenue would reduce the government expenditure allocated to development activities. According to the parameter estimates if, for example, domestic or foreign resource flows equal to 10 percent of noninterest government expenditure are replaced with additional government revenue, development expenditure will decrease by 0.56 percent and 3.66 percent of noninterest government expenditure, respectively, with the latter effect significant at 10 percent. The results also show that replacing foreign with domestic resource flows by 10 percent of noninterest government expenditure will significantly squeeze development expenditure by 3.1 percent of noninterest government expenditure.

Three basic results emerge from this statistical analysis: First, resource allocation between development and nondevelopment activities does not depend crucially on whether government expenditure is financed by revenues or domestic borrowing. Second, resource allocation leans more toward development activity when government expenditure is financed by foreign resource flows rather than by revenue or domestic resource flows. Third, the burden of debt servicing falls disproportionately on development activity.

Several implications follow from the above conclusion. The most obvious is that the data does not support the perception that Pakistan has reached its current state because most of its borrowing is used for consumption rather than development—and that aid funds are misused. Although development activity in Pakistan has fallen sharply, particularly during the 1990s, this has been the result of twin factors: shrinking foreign resource flows and rising debt servicing costs. There are many instances of the misappropriation of public resources, and unfortunately such instances tend to overshadow the positive side.

Another conclusion that follows from our statistical results is that the government in Pakistan has not felt sufficiently pressured to use domestically borrowed funds for development activities despite the fact that the volume of domestic debt is almost equal to the volume of foreign debt. A plausible explanation is that domestic borrowing in Pakistan is mostly from individual lenders or financial institutions that lend voluntarily in return for high interest rates and are not organized enough to impose preconditions for lending. On the other hand, most foreign borrowing is directly or indirectly linked to international institutions whose motive for lending is not to earn interest. In order to justify further lending, Pakistan has to satisfy its lenders that the borrowed funds are used productively.

Another conclusion is that noninterest current expenditure in Pakistan is mostly inelastic, with about 45 percent allocated to defense and 25 percent to administration. While there is a general reluctance to reduce the share of defense expenditure unless the armed forces voluntarily agree to a cut, the administrative expenditure is by nature inelastic, keeping in view the rising population. The salaries of government employees and expenditure on agencies that are responsible for law and order cannot be significantly reduced unless large-scale restructuring is carried out. Government employees' salaries were recently adjusted for inflation, and the law and order situation demands even further spending. Other current expenditures on subsidies and

social, economic, and community services are already meager. Thus, the government have little option but to cut development expenditure to make room for debt servicing. However, the options are shrinking rapidly as the share of development expenditure has already been drastically reduced over the last several years.

5. Concluding Remarks

This paper has attempted to understand the nature and size of the debt problem facing Pakistan by considering some of its important dimensions—historical and political economy perspectives, debt measurement issues, debt burden indicators, and the implications of debt for resource allocation. Several interesting conclusions that can be drawn from the study are summarized below.

Definitions of debt measures as reported in various data sources tend to vary. The sources of disagreement include domestic debt in foreign currency (US$ bonds and US$ bearer certificates), foreign currency deposits in financial institutions by residents and nonresidents (mostly expatriates), and foreign currency deposits in the SBP by some Middle East countries. Thus, debt is measured depending on the nature of debt burden to be estimated. The measurement and classification of debt depends crucially on the ownership of debt or liabilities, debt instruments (e.g., loans, bonds, or deposits), the currency of denomination, the involvement of the public sector (e.g., public ownership or public guarantee), and the maturity structure.

In any case, Pakistan's long-term and short-term debts have been continuously increasing in absolute dollar terms over the last 16 years, and the rate of increase has accelerated in the last three years (2007/08 to 2009/10). Since the inflation rate has been much higher than the rate of depreciation of the rupee against the US dollar, the rate of growth in nominal GDP has exceeded the rate of growth in debt in nominal rupees, with the result that the debt-to-GDP ratio has registered a net decline.

Pakistan's current debt burden constitutes about 70 percent of GDP, having come down from more than 95 percent of the GDP in 2000/01. Foreign and domestic debts each comprise about one third of the annual GDP. If other liabilities in foreign currency—such as private debt and foreign currency deposits by foreigners at the central bank and domestic financial institutions—are added to Pakistan's foreign debt, the country's total foreign currency liabilities stand at about 47 percent of the

annual GDP. From another perspective, about four fifths of public debt is long or medium-term, while the remaining one fifth is short-term. Most of the short-term debt is domestic and is denominated in local currency.

By far the largest component of external debt is multilateral and bilateral long and medium-term debt, most of which is owed to international financial institutions and developed countries such as Japan and the US. The burden of short-term liabilities expressed as a percentage of export earnings (Figure 6) appears to be more alarming: the burden is high not so much due to an increase in the absolute volume of these liabilities as because export earnings have stagnated during the last three years. Short-term foreign exchange liabilities are close to 100 percent of export earnings. This percentage hovered around 200 during the late 1990s and came down to as low as 45.5 percent in 2006/07. Keeping a close watch on the indicator in the near future will be important.

Pakistan's domestic debt is classified as permanent debt (medium- and long-term bonds and short-term prize bonds), floating debt (short-term treasury bills), or unfunded debt (mostly medium- and long-term direct public borrowing through the NSS). Although the nominal volume of unfunded debt continues to show an increasing trend, the burden in terms of percentage of GDP has registered a persistent decrease. As a whole, the burden of domestic debt has declined considerably from its peak level of 43 percent at the turn of the century and stabilized at around 31 percent over the last five years. Thus, like foreign debt, the position of domestic debt is not as poor as perceived or as it was during the 1990s.

In the last 40 years, the composition of domestic debt has changed quite substantially. Attractive real rates of return on the NSS (with the added advantage of tax exemption) caused a sharp rise in unfunded debt and brought it at par with floating debt till the early 2000s when the inflation rate was low. Later, however, the increase in the inflation rate and boom in property prices meant that the NSS became a far less attractive option. Since these schemes have many of the attributes of pension funds, there is ample room to expand their scope, not only to minimize the debt default risk, but also to provide the retired/elderly population with a safety net.

At present, the Central Directorate of National Savings does not appear to have any effective marketing strategy to counter the aggressive marketing campaign run by commercial banks, and it has been a long time since any innovative savings instruments were introduced. This approach

is a pragmatic one because modernizing the schemes would add to their operating costs. Nevertheless, they do not maximize their savings potential and there are many directions in which the scope of such schemes could be extended. For example, there is no scheme under which expatriate Pakistanis or even residents can accumulate retirement savings in foreign currency. This would certainly be an attractive way to restructure at least a portion of foreign debt into retirement savings. Other savings instruments that could be introduced include a regular savings scheme for retirement incomes and a home ownership savings scheme.

In terms of the impact of debt-related flows on savings, we have found that the net foreign resource flows to the private and public sectors tend to crowd out private and public savings, respectively. The latter is also crowded out by resource flows from the private to public sector, implying that public domestic or foreign borrowing as well as private borrowing adversely affects domestic saving efforts, and that there is a substantial loss in savings.

We have drawn three important conclusions concerning the implications of foreign and domestic debt for the government's budget allocation decisions: (i) resource allocation between development and nondevelopment activities does not depend crucially on whether government expenditure is financed by revenues or domestic borrowing, (ii) resource allocation leans more toward development activities when government expenditure is financed by foreign resource flows rather than by revenue or domestic resource flows, and (iii) the burden of debt servicing falls disproportionately on development activity.

The perception that most of the borrowing is used for consumption rather than development activities—and that therefore aid funds are misused—does not appear to hold true for Pakistan. Although the level of development activity in Pakistan has fallen sharply, particularly during the 1990s, this has been the result of shrinking foreign resource flows and rising debt servicing costs. There are many instances of the misappropriation of public resources, and unfortunately such instances appear to overshadow the positive side.

That said, successive governments in Pakistan do not seem to have used domestically borrowed funds for productive purposes even though the volume of domestic debt is almost equal to the volume of foreign debt. This could be because domestic borrowing in Pakistan is mostly from individual lenders or financial institutions that lend

voluntarily in return for high interest rates and are not organized enough to impose preconditions for lending, as happens in the case of institutional foreign lending. A possible way out would be to impose constitutional limits on the proportion of borrowed funds that can be used for nondevelopment activities.

References

Ahmad, E. (1996). Capital flows and national debt. *Pakistan Development Review*, *35*(4), 943–960.

Ahmad, E. (1997). Dynamics of foreign and domestic borrowing and debt. *Journal of Economic Cooperation among Islamic Countries*, *18*(3), 71–113.

Ahmad, E. (1999). Retiring public debt through privatization. *Pakistan Journal of Applied Economics*, *15*(1-2).

Ahmad, E. (2000). *Getting out of the debt trap: Simulating debt retirement strategies for Pakistan* (Occasional Paper No. 12). Islamabad, Pakistan: LEAD.

Ahmad, E., & Ahmed, A. (1998). A simulation analysis of debt problem in Pakistan. *Pakistan Development Review*, *37*(4), 355–376.

Amoateng, K. A., & Amoako-Adu, B. (1996). Economic growth, exports and external debt causality: The case of African countries. *Applied Economics*, *28*, 21–27.

Burney, N. (1988). Determinants of debt problem in Pakistan and its debt servicing capacity. *Pakistan Development Review*, *27*(4), 805–816.

Chaudhary, M. A. (1988). International debt and foreign dependency: Policy options for Pakistan. *Pakistan Development Review*, *27*(4), 829–836.

Clements, B., Bhattacharaya, R., & Nguyen, T. Q. (2003). *External Debt, Public Investment, and Growth in Low-Income Countries* (Working Paper No. 03/249). Washington, DC: International Monetary Fund.

Cohen, D. (1988). The management of the developing countries' debt: Guidelines and applications to Brazil. *World Bank Economic Review*, *2*(1), 77–103.

Cohen, D. (1993). Low investment and large LDC debt in the 1980s. *American Economic Review*, *83*(3), 437–449.

Crouch, R. L. (1973). Economic development, foreign aid, and neoclassical growth. *Journal of Development Studies*, *9*, 353–364.

Elbadawi, A. I., Ndulu, J. B., & Ndungu, N. (1997, December). *Debt overhang and economic growth in Sub-Saharan Africa*. Paper presented at the International Monetary Fund/World Bank conference on External Debt for Low-Income Countries, Washington, DC.

Government of Pakistan. (2001). *A debt burden reduction and management strategy*. Islamabad, Pakistan: Ministry of Finance.

Government of Pakistan. (n.d.). *Fifty years of Pakistan in statistics* (Various issues). Islamabad: Federal Bureau of Statistics.

Government of Pakistan. (n.d.). *Pakistan economic survey* (Various issues). Islamabad: Economic Adviser's Wing.

Government of Pakistan. (n.d.). *Statistical supplements* (Various issues). Islamabad: Economic Adviser's Wing.

Khan, S. R. (1997). Has aid helped in Pakistan? *Pakistan Development Review*, *36*(4), 853–883.

Pattillo, C., Poirson, H., & Ricci, L. (2002). *External debt and growth* (Working Paper No. 02/69). Washington, DC: International Monetary Fund.

Pattillo, C., Poirson, H., & Ricci, L. (2004). *What are the channels through which external debt affects growth?* (Working Paper No. 04/15). Washington, DC: International Monetary Fund.

State Bank of Pakistan. (n.d.). *Annual report* (Various issues). Karachi.

Government Budget Deficits and the Development of the Bond Market in Pakistan: Issues and Challenges

Jamshed Y. Uppal[*]

Abstract

This article examines how better discipline can be brought to fiscal policy, first, through enhanced institutional checks and balances, and second, through better market discipline. We examine the political institutions and budgetary processes that can affect fiscal policy in Pakistan. A sound fiscal policy feeds bond market development, while the bond market provides signals in relation to the prudent conduct of fiscal policy. A common dimension in this mutual relationship is the governance environment. The article concludes that instilling fiscal discipline will remain intractable unless approached comprehensively. Long-term solutions must be found in the development of political institutions and improved governance. An active and liquid bond market can play a crucial role in bringing about fiscal discipline. The real challenge lies in summoning the political will and raising public awareness to implement the required measures.

Keywords: Budget Deficit, Fiscal Policy, Bond Market, Pakistan.

JEL Classification: E62, H61, H62.

1. Introduction

Pakistan initiated financial sector reforms in the early 1990s and took regulatory and structural measures to liberalize the economy and develop financial markets and institutions. One rationale for these reforms was to institute market discipline in the monetary and fiscal management of the economy. Following the economic liberalization policies, Pakistan's financial sector has experienced remarkable growth and structural development. However, it is debatable whether the financial markets have contributed meaningfully to the execution of sounder macroeconomic management; in particular, control of fiscal deficits remains a challenge.

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Besides being an emerging market, Pakistan is also an *emerging democracy*, or rather a re-emerging democracy whose democratic process has been interrupted a few times. The newly re-established democratic environment poses both a challenge and opportunity to review governmental processes and institutions that would be not only more in tune with a democratic spirit, but also more aligned with public interest. Democratic processes and institutions can provide the right set of checks and balances, not only political, but also in economic management. One important area in which institutions urgently need to be reengineered is the formulation and conduct of fiscal policy.

This article examines how better discipline can be brought to fiscal policy, first, through enhanced institutional checks and balances, and second, through better market discipline. We examine the political institutions and budgetary processes that can affect fiscal policy in the context of Pakistan. We then address the linkages between government fiscal deficits and financial markets, in particular the bond market. Fiscal policy feeds bond market development, while the bond market provides signals in relation to the prudent conduct of fiscal policy. A common dimension in this mutual relationship is the governance environment; an appropriate regulatory and legal environment not only fosters bond market development, but is also conducive to the conduct of sound fiscal policy. These dynamic relations are depicted schematically in Figure 1.

Figure 1: Fiscal Policy, Environment, and Financial Markets
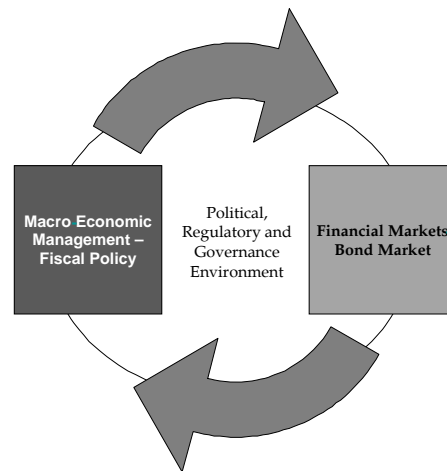
The article is organized as follows. The introduction is followed by a brief background of Pakistan's fiscal position, and explains how the government deficit is financed. Section III surveys the theoretical issues that

arise in the political economics of fiscal policy, and evaluates Pakistan's governance and regulatory environment in light of these theories and empirical evidence from other countries. Section IV discusses the linkages between fiscal deficits and the bond market, surveying the theoretical models and empirical evidence and their relevance to developing countries. Section V outlines the development of the bond market in Pakistan and the challenges it faces in assuming a constructive role in shaping prudent fiscal policies. Section VI summarizes the issues raised, synthesizes the arguments and empirical evidence, and develops policy recommendations.

2. Pakistan's Fiscal Woes

That Pakistan's current fiscal position is in dire straits is acknowledged in all quarters. The State Bank of Pakistan's (2010) most recent *Financial Stability Review* (FSR) notes that, "when viewed in a historical perspective, it comes to light that Pakistan's economy has faced, since inception, perennial and persistent fiscal deficits, varying from as low as 2.9 percent to as high as 12.2 percent of GDP [gross domestic product]" (Figure 2). The FSR explains this as emanating "largely from insufficient revenue generation due to lack of appropriate governance measures which tend to encourage tax evasion and a substantially large and thriving undocumented or parallel economy functioning alongside." Rigidity in expenditures along with "poor fiscal discipline" has been aggravated by weak cash management, in particular by a lack of cash flow forecasting. As a consequence of the fiscal deficits, and given the unpredictability of the financing requirements and availability, the government finds it most feasible to borrow from the banking system, including from the State Bank of Pakistan.

Figure 2: Fiscal Balances as a Percentage of GDP
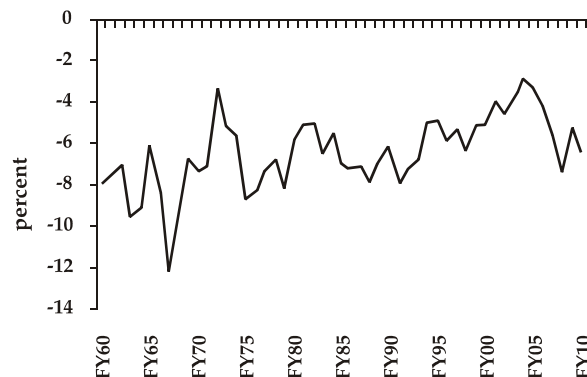
Source: Ministry of Finance
FY = fiscal year, GDP = gross domestic product.

The FSR provides various reasons for the economy's historically weak fiscal performance: (i) sluggish revenue growth, (ii) a narrow tax base and tax incidence that is skewed toward the industrial sector and a small number of return filers, (iii) wide-ranging exemptions and concessions, and tax evasion, and (4) reliance on indirect taxes (State Bank of Pakistan, 2010). On the other hand, the expenditure side is encumbered by defense and interest expenses not amenable to cuts. This is compounded by a fragmented cash management and budgetary system that does not generate reliable cash forecasts and effective control.

The overall deficits and financing sources are summarized in Table 1. Persistent budgetary deficits have pushed the total debt and liability stock to 69.5 percent of GDP, with the ratio increasing by 9 percent in just the last three years. The fiscal year (FY) 2008 saw a large increase in the percentage of the deficit being financed by internal sources, from 61.0 to 80.5 percent, of which the central bank was the main source. This is explained by lower-than-targeted external loan inflows and constrained access to international markets. The increased reliance on internal borrowing continued through FY2010 with heavier contributions from "nonbank" sources, which include prize bonds, treasury bills, and national saving scheme. The bulk of this was raised through the second and third sources in FY2010. The country appears to face constraints to external borrowing as well as long-term domestic borrowing.

Table 1: Overall Deficits and Sources of Finance

Deficit/Financing Sources	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010
Overall deficit (Rs billion)	(217.0)	(325.3)	(377.5)	(777.2)	(680.4)	(929.1)
As a percentage of GDP	-3.3	-4.3	-4.4	-7.6	-5.3	-6.3
Financing of deficit						
External sources	55.5	45.8	39.0	19.5	22.0	20.3
Internal sources	44.5	54.2	61.0	80.5	77.9	79.7
Central bank	70.5	40.7	-15.5	87.1	16.8	4.5
Scheduled banks	-42.7	-18.9	42.6	-20.2	28.0	28.3
Nonbank sources	3.7	2.5	15.1	13.4	32.9	46.9
Privatization proceeds	13.0	29.9	18.9	0.2	0.2	0.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**99.9**	**100.0**

FY = fiscal year, GDP = gross domestic product.

Source: State Bank of Pakistan. (2010). Government borrowing from the banking system: Implications for monetary and financial stability. *Financial Stability Review, 2009-10*. Karachi, Pakistan.

In addition to government borrowing for budgetary support, government borrowing from the banking system includes (i) the provincial governments' borrowing in the form of "ways and means" advances, and (ii) borrowing to meet the *quasi-fiscal deficit* incurred by public sector enterprises for commodity operations and other subsidies. There has been substantial growth in the government's total borrowing over the last six years (Figure 3). A major increase in borrowing from the banking system occurred in FY2008 (64.5 percent) with borrowing from the State Bank of Pakistan increasing by 200 percent. In FY2010, however, borrowing from scheduled banks registered a significant jump of 55.3 percent.

Figure 3: Share in Net Government Borrowing from the Banking System
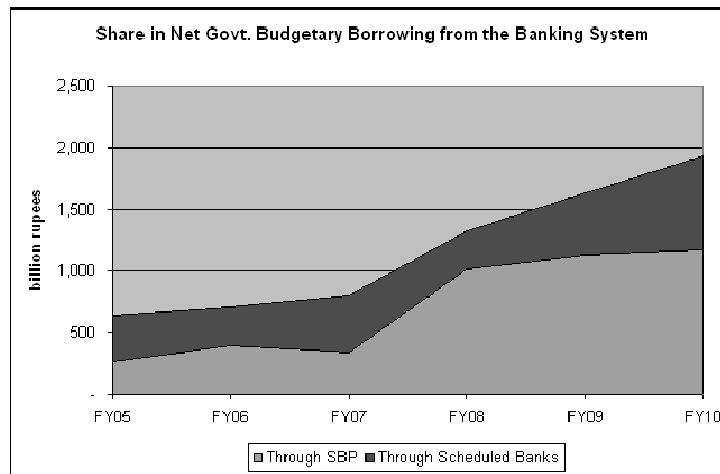
Source: State Bank of Pakistan. (2010). Government borrowing from the banking system: Implications for monetary and financial stability. *Financial Stability Review, 2009-10.* Karachi, Pakistan.

The adverse implications of excessive borrowing from the banking system are well recognized. In addition to its negative impact on inflation, economic growth, and monetary stability, the FSR notes that banks have started to charge a premium on loans to the public sector, despite their being risk-free. The continued pattern of borrowing is likely to distort banks' incentives for commercial lending and the process of financial deepening.

Country Policy and Institutional Assessment

One way of evaluating the country's fiscal and debt policy is with reference to the country policy and institutional assessment (CPIA) ratings developed by the World Bank (2005), which are used to guide the

allocation of International Development Association lending resources. CPIA ratings assess the quality of a country's present policy and institutional framework; here, "quality" refers to how conducive that framework is to fostering poverty reduction, sustainable growth, and the effective use of development assistance. The CPIA consists of a set of criteria representing the different policy and institutional dimensions of an effective poverty reduction and growth strategy.

Figures 4 and 5 show the CPIA fiscal policy and debt policy ratings for a select group of countries for the period 2005–09. Of the six countries compared, only Pakistan's fiscal policy rating deteriorated during this period. The other five countries improved or maintained their ratings. Similarly, only Pakistan's CPIA debt policy rating deteriorated during this time, while that of the rest of the group was either maintained or improved.

Figure 4: CPIA Fiscal Policy Ratings
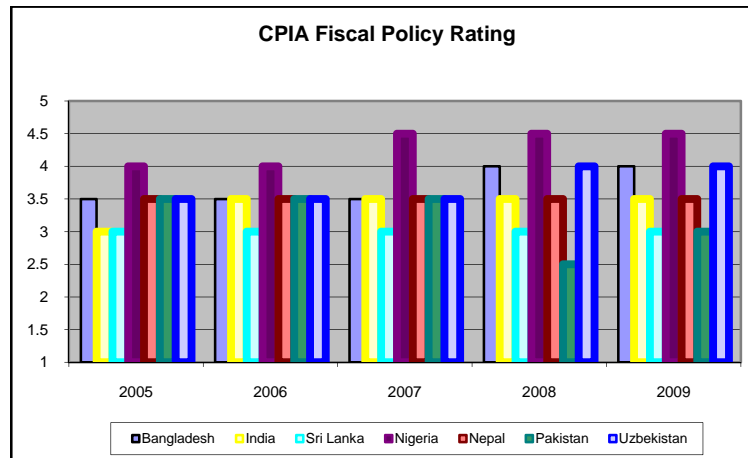
Source: World Bank. (2005). Country policy and institutional assessments: Assessment questionnaire. In *Operations policy and country services*. Washington, DC: Author.

Figure 5: CPIA Debt Policy Ratings
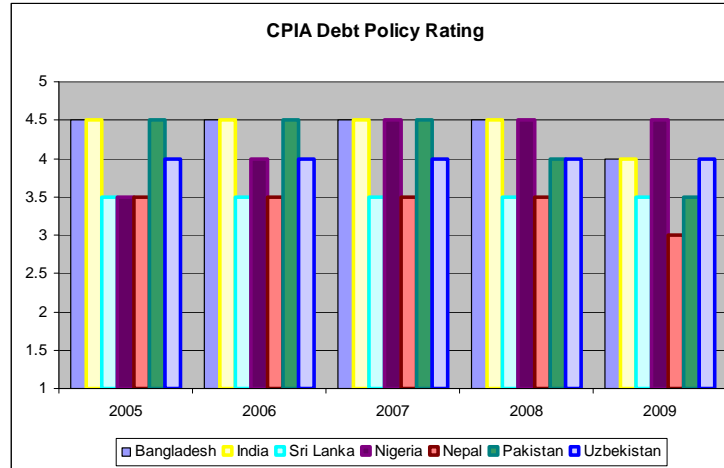
Source: World Bank. (2005). Country policy and institutional assessments: Assessment questionnaire. In *Operations policy and country services*. Washington, DC: Author.

More direct comparisons of Pakistan's fiscal deficits with a number of cohort countries are also unfavorable. Figure 6 depicts fiscal deficits (as a percentage of GDP) for India and Pakistan and shows that, over the 20-year period, India's budget deficits were relatively more contained, and improved dramatically over the last six years.

Figure 6: Budget Surpluses/Deficits as a Percentage of GDP
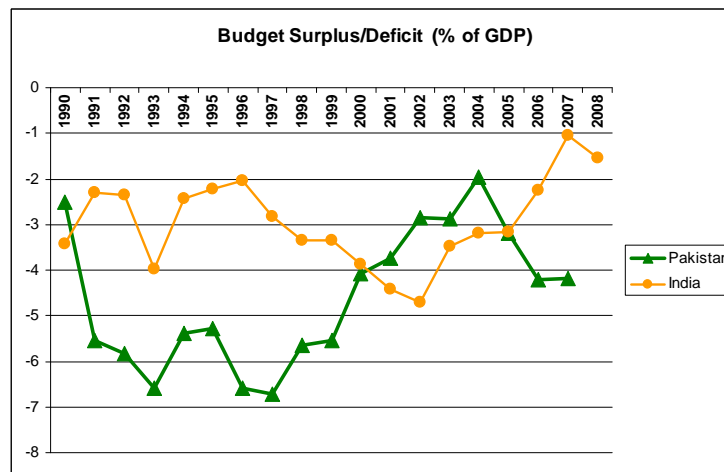
GDP = gross domestic product.
Source: World Bank. (2005). Country policy and institutional assessments: Assessment questionnaire. In *Operations policy and country services*. Washington, DC: Author.

The reasons underlying these persistent fiscal deficits are extensively discussed in the economic literature on Pakistan. Here, we focus on some of the characteristics of the institutional and political environment that generate incentives to reinforce budgetary indiscipline and constrain adjustments and remedies.

3.   The Political Economy of Fiscal Policy

The political economy literature explains why suboptimally high public deficits may be an outcome of the political process. Alesina and Perotti (1995) provide a critical survey of the literature on politico-institutional determinants of the government budget. Eslava (2006) surveys more recent literature on the political economy of fiscal policy, in particular the accumulation of government debt. We draw on both these works to focus on the main themes in the theoretical literature and empirical evidence on the subject.

Alesina and Perotti (1995) start by rejecting the "tax smoothing" model of the government budget, which assumes the government to be a "benevolent social planner" that maximizes the utility of the representative agent. Given the concavity of the utility function and the inter-temporal budget constraint, the policy prescribes a constant tax rate. Budget deficits and surpluses are used as a buffer; deficits occur when spending is temporarily high, and surpluses when it is low. This implies that budget deficits should be observed during "wars" and recessions. Alesina and Perotti note that the model does not explain the experience of Organisation for Economic Co-operation and Development (OECD) economies during 1960–94, and then discuss politico-institutional approaches organized into six models based on

1.   opportunistic policymakers and naive voters with "fiscal illusion,"

2.   intergenerational redistributions,

3.   the use of debt as a strategic variable linking the current government with the next one,

4.   the political dynamics of coalition governments,

5.   geographically dispersed interests, and

6.   the effects of budgetary institutions on fiscal discipline.

Political Opportunism

The "fiscal illusion" argument is that voters do not understand the government's inter-temporal budget constraint, and overestimate the benefits of current expenditures while underestimating the future tax burden. Politicians behave opportunistically by raising government spending beyond taxes to please their voters. A related phenomenon is the observed political business cycle—that politicians follow expansionary policies in election years. Supporting this argument is the tendency of Keynesian stabilization policies to be followed asymmetrically: politicians are more inclined to run deficits in recessions, but not as inclined to run surpluses in post-recession periods. These models imply that it is difficult for the electorate to understand the complexity of the government budget, and that the electorate makes errors with a systematic bias. However, there might be systematic differences across countries in the degree of "illusion," political opportunism, or complexity and noise in the tax structure, especially considering the degrees of development in various countries.

The more recent literature has attempted to explain why even perfectly rational voters may be led to vote for opportunistic politicians who incur deficit spending. Rogoff (1990) and Rogoff and Sibert (1988) argue that voters have only imperfect information about the competence level of each politician. Politicians who provide more government programs are inferred to be more competent and thus attract votes. This in turn leads politicians to expand public spending and incur larger deficits. In this line of explanation, a key link is the inability of voters (or some voters) to observe all the details of the budget and form a view of the incumbent's competence. How transparent the budget is depends on factors such as the government's accounting practices, media development, and the sophistication of voters, which varies across countries.

Alt and Lassen (2006) provide evidence from 19 OECD countries during the 1990s showing that fiscal transparency is systematically related to the levels of deficit and debt. Alesina and Perotti (1999) and Stein, Talvi, and Grisanti (1998) use an index of budget institutions that also captures transparency to find that better budget institutions were related to lower deficits in a sample of 20 Latin American countries during the 1980s and early 1990s. Similar evidence is provided by von Hagen (1992) for eight European countries.

Election-related increases in spending and deficits are documented, particularly for developing countries (Schuknecht, 1994; Shi & Svensson, 2006). Brender and Drazen (2005a) note that these findings reflect the experience of *new democracies* in the first few years after their transition to democratic regimes. They suggest that election cycle-related deficits occur in countries where voters and the media have not yet developed the ability to efficiently monitor fiscal policy. Shi and Svensson (2006) attribute it to the share of voters who are well informed. They also find that higher levels of corruption imply larger deficit increases in election years.

Contrary to the traditional view that voters penalize fiscal adjustments, recent empirical findings suggest that voters' reaction to fiscal conservatism or otherwise depends on the composition of government spending, such as the share of development and infrastructure project expenditure. Voters' opposition to deficits appears to be related to their ability to monitor fiscal choices. Brender and Drazen (2005b) find that deficits over the previous three years reduce an incumbent's re-election chances, but only in established democracies.

Intergenerational Models

The intergenerational models suggest that fiscal deficits are a way to effect intergenerational redistributions. However, in the presence of intergenerational altruism, Ricardian equivalence comes into play (Barro, 1979), implying that the choice of how to finance a given level of spending is irrelevant as changes in public debt are compensated for by changes in private bequests. On the other hand, in a variety of circumstances, Ricardian equivalence does not hold, and since only the current generation votes, a selfish generation could shift the burden of taxation to the future. As long as one group of agents (the altruistic) is indifferent to any debt policy, the other group (the selfish) will favor public debt; the social choice is likely to lead to debt.

Alesina and Perotti (1995), however, do not find the intergenerational approach convincing in the face of the historical public debt patterns and trends that emerged in the OECD countries. Tabellini (1991) explains that intergenerational redistributions interplay with intra-generational redistribution, and shows that, as long as there is an asymmetric preference for default, the political equilibrium implies issuing debt, which is then honored.

Public Debt as a Strategic Variable

Competing political parties can use debt strategically to bind future governments. The party in power can affect the future state of the world inherited by the competing political party through fiscal choices (Alesina & Tabellini, 1990). A fiscal deficit that is financed by raising debt commits future tax revenues to debt servicing, and reduces future governments' spending. Such strategic interaction leads to government borrowing, which is predicted to be larger, the greater the extent of polarization among political parties over the composition of government spending and the greater the likelihood of a change in government. The models also imply that high-debt countries should have more highly polarized political parties and electorates with strong extremist groups. These models are supported by the experience of the OECD countries post-1973 when there was less political and economic stability, and by preliminary evidence based on an index of political stability for OECD countries provided by Alesina (1989). However, other studies have not consistently favored these models. The lack of clear evidence has been attributed to the use of samples consisting of countries with widely different political, legal, and economic environments, and the difficulties in identifying the source of heterogeneity of preferences in the electorate.

Distributional Conflicts

In the *distributional conflicts* and *wars of attrition* models, fiscal deficits are the result of (i) strategic conflicts between political parties or social groups that have an influence on policy decisions *at the same time*, and (ii) the polarization of parties that are members of the same coalition government. Following a permanent shock that disturbs the government budget, causing a deficit to emerge and debt to accumulate, the distributional struggle among social groups delays the adoption of an efficient policy to balance the budget. Stabilization costs can be categorized in two ways: (i) the economic costs of pre-stabilization distortions, and (ii) the political costs of preventing the other group from imposing an undesirable fiscal plan. The more unequal the distribution of stabilization costs, the higher the benefits of waiting, and the longer the time for resolution. Spolaore (1993) shows that a coalition government delays adjustment while a single-party government reacts too much, relative to the optimal. Hence, the accumulation of public debt can be attributed in part to the fragmentation of governments and degree of political cohesion.

The heterogeneity of interests across groups of voters is hypothesized to lead to pervasive deficits; the budget size and deficit is predicted to increase with the number of districts represented in the government, and is termed government "fragmentation." Such "common-pool problems" may explain the pro-cyclicality of fiscal policy in less developed economies where the additional fiscal resources available during booms generate a more intense fight for the common pool of resources—the "voracity effect" (Talvi & Végh, 1996, 2005; Tomell & Lane, 1998).

The distributional conflict models may be more relevant to developing economies (these also exhibit pro-cyclical fiscal policy) for two reasons. First, there is greater macroeconomic volatility and economic booms generate large but short-lived extra revenues, providing greater incentive to fight for a greater share. Second, these countries are characterized by less budgetary transparency and higher levels of corruption. Alesina and Tabellini (2005) show that, in a sample of 87 countries between 1960 and 1999, pro-cyclicality and corruption were indeed positively correlated, but only for democracies. The empirical studies meant to test these hypotheses are, however, hamstrung by the difficulties in differentiating between the related concepts of fragmentation and polarization. However, the studies generally confirm that greater political cohesion and stability accompanies better fiscal discipline. There is less support for a systematic relationship between left-wing or right-wing parties and larger debt accumulation.

Geographically Dispersed Interests

A number of models focus on the geographic base of members of the legislature as leading to "excessive" spending. In the Weingast, Shepsle, and Johnsen (1981) model, representatives with a geographically based constituency overestimate the benefits of public projects in their districts relative to the financing costs, which are distributed nationwide and are not internalized. The aggregate effect is an oversupply of geographically based public projects (so called *pork barrel projects*). Such models underscore the interplay of the geographical distribution of costs, benefits, and decision power affecting the aggregate budget. In particular, these issues are analogous to issues of fiscal federalism.

In Pakistan, local spending decisions are made at the provincial level, but financed by transfers from the federal government, which raises tax revenues. Here, the provincial and the local authorities may not fully

internalize the effects of their spending decisions over the overall budget for the same reasons that geographically elected representatives do not. It is obvious that the incentives for local authorities would be different if they were responsible for both taxing and spending decisions.

Budgetary Institutions

The rules and regulations according to which budgets are drafted, approved, and implemented can potentially impact fiscal deficits and debts. Their impact is significant since budget institutions are more difficult to change and influence the final vote and implementation of the budget. Budgetary procedural rules may specify who holds agenda-setting power and what types of amendments are admissible on the legislature floor. It is suggested that rules that limit *universalism* and *reciprocity* lead to fiscal restraint. "Universalism" refers to a budget that includes "something for everybody." "Reciprocity" means an understanding among legislators not to oppose another representative's proposal in exchange for the same favor.

As in the case of the models presented in the previous section, research in this area has an American focus. American states have varied budgetary institutions. In particular, some states have "hard" balanced budget rules, others have "soft" balanced budget rules, while a few have no such rules. Von Hagen (1991) provides evidence that budget rules have some effect on the level and composition of state debts. Research by Alt and Lowry (1994) and Poterba (1994) shows that American states with harder balanced budget rules react more promptly and more energetically to negative revenue shocks or positive spending shocks. Von Hagen (1992) studies the budgetary institutions of the 12 European Economic Community member countries, and finds support for the hypothesis that "budget procedures lead to greater fiscal discipline if they give strong prerogative to the prime minister or the finance minister; limit universalism, reciprocity and parliamentary amendments; and facilitate strict execution of the budget law." Von Hagen has constructed indices to capture the relevant characteristics of budgetary institutions. These are: (i) the strength of the prime minister's (or finance minister's) position, (ii) the limits to parliamentary amendments, (iii) the type of parliamentary votes, (iv) the timing of parliamentary votes, (v) the degree of transparency of the budget, and (vi) the amount of flexibility in the implementation process.

In Pakistan, the passage of the *Fiscal Responsibility and Debt Limitation Law* has been in the spirit of instituting budget rules, which could help attain both fiscal discipline and transparency. However, the impact of the law has, so far, been limited.

The Role of the Courts

Like any other law, the budget is subject to judicial review, and the judiciary can thus be a potentially important player in the determination of fiscal policy[1] Specific groups affected by fiscal adjustments have incentives to organize and take legal action against these measures. On the other hand, benefits from such adjustments are widespread throughout society and it is hard to organize efforts to defend it. This asymmetry in collective action tends to block necessary fiscal adjustment through legal challenges raised by organized groups. Using a sample of 23 Latin American and Caribbean countries for the period 1996–2003, Eslava (2006) provides evidence that "the degree of involvement of the courts in the design of fiscal policy is a key determinant of the level of deficit." This is consistent with situations in which courts may rule that spending increases are necessary to guarantee a series of constitutional rights.

Corruption and Public Finance

In recent years, there has been growing recognition that the level of corruption exacerbates the problems of fiscal management. International institutions have emphasized that controlling corruption is key to sound governance and economic management. Corruption is likely to be a major factor in poor tax collection.[2] In addition to corruption in the bureaucracy, political corruption by high-ranking state officials and their cronies may increase the incidence of misuse of administrative powers to pursue rent seeking and corrupt practices. Laws and regulation could be written to the advantage of powerful lobbies.

Corruption can affect public expenditure in several different ways due to a lack of transparency and of effective institutional controls. Large public projects are ripe ground for corrupt and rent-seeking officials with discretionary powers in many critical decisions, with the result that public

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[1] The Inter-American Development Bank (2005) documents the role the judiciary plays in determining economic policy.

[2] Tanzi (1999) identifies several factors that increase the scope of corruption on the revenue and expenditure side of public finances.

spending can become distorted, both in size and composition. Many public projects across the world have been carried out specifically to benefit some individuals or political groups. In order to combat corruption, countries are forced to develop complex and costly procedures, which, while reducing corruption, increase the cost of administration and projects, and of the procurement of goods and services. Corruption negatively impacts tax revenue, public spending, and fiscal deficit, and thus leads to poor economic performance. Tanzi (1999) presents a short summary of empirical evidence on the impact of corruption. In particular, one of these studies shows that a one-point increase in the corruption index reduces tax revenue collected by 2.7 percent of GDP.

Corruption not only affects the amount of total domestic investment, it also adversely impacts the amount of foreign direct investment, the size of public investment, and the quality of investment decisions. Interestingly, the unpredictability of corruption has a further negative impact on foreign direct investment. High levels of corruption are also associated with (i) low operation and maintenance expenditure, and (ii) poor-quality infrastructure. Corruption distorts the composition of public expenditure with long-term consequences for economic growth: e.g., countries that are more corrupt spend less on education and health.

A number of policy guidelines are available for countries seeking to reduce corruption (see, for example, Martinez-Vazquez, Arze, & Boex, 2006; Schaeffer, 2002). Tanzi (1999) emphasizes that, to improve governance and reduce corruption, countries need to modify and reduce the state's role in the economy. It is "important to modify the role of the state by reducing its reliance on regulations, authorizations, quasi-fiscal activities, and other activities and tools that lend themselves to abuse by public officials. It is also important to make the state's actions more transparent." Increasing fiscal transparency can help reduce corruption and improve governance. A relevant structured approach would be to adopt and apply the principles embodied in the Code of Good Practices on Fiscal Transparency developed by the International Monetary Fund (IMF) in 1998.

Policy Implications for Pakistan

The literature on the political economy of fiscal policy has important implications for institutional reforms. If fiscal policy is a product of politico-institutional characteristics, then one must address related issues at an institutional level. Many countries, like Pakistan, are struggling with hard fiscal adjustments and reforms. Many developing

countries are building democratic institutions and budgetary institutions that deal with legislative processes as well as more general institutional reforms, such as changes in electoral laws.

The relevance of the various theories bearing on fiscal policy in the context of Pakistan is summarized in Table 2. We can also speculate on the tractability of these factors to indicate some priorities concerning the focus of public effort. It seems that, as an emerging democracy, the political scene is still rife with political opportunism without a strong tradition of accountability either through the polls or the judicial system. The electorate might also be naïve, and entertain some degree of fiscal illusion. Improving this dimension would entail maturing as a democracy. There is not much discussion of intergenerational issues, nor are there many programs with implied intergenerational transfers. We have experienced some budgetary battles where various interest groups have sought to increase their share of common resources and minimize their tax burden. Areas with great promise for improvement seem to be control of corruption and the development of budgetary institutions that support budgetary discipline, such as greater fiscal transparency, an improved system of financial management and control, and audits.

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

Political and Governance Factors in Fiscal Indiscipline	Plausibility and Relevance	Tractability	Indicated Policy Directions
Political opportunism	★★★	★	Introduce transparency in budgets and government accounting, media development, voter awareness
Intergenerational conflicts	-	-	Promote intergenerational altruism, voter awareness
Public debt as a strategic variable	★	★	Lessen political polarization for political and economic stability
Distributional conflicts	★★	★	Lessen fragmentation of government, increase political cohesion, macroeconomic stability
Geographically dispersed interests	★★	★★	Internalize cost of fiscal indiscipline across geographically dispersed government units
Budgetary institutions	★★★	★★	Adopt balanced budget rules and institutions that limit universalism and reciprocity
Corruption and public finance	★★★	★★	Improve rule of law, reduce state's discretionary role, induce transparency in state's actions
The role of the courts	-	-	Reduce scope of judicial review of budgets, and asymmetry in judicial advocacy by organized groups

Governance Environment in Pakistan

In order to assess Pakistan's governance environment in comparison with other countries, we use a set of aggregate governance indicators developed by the World Bank (see Kaufmann, Kraay, & Mastruzzi, 2004, for a detailed discussion). These indicators are:

1. *Voice and accountability:* The extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

2. *Political stability and absence of violence:* Perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including political violence and terrorism.

3. *Government effectiveness:* The quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

4. *Regulatory quality:* The government's ability to formulate and implement sound policies and regulations that permit and promote private sector development.

5. *Rule of law:* The extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence.

6. *Control of corruption:* The extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

The country's rating in terms of these governance indicators is depicted in Figures 7 to 12 in comparison with a selected group of countries for the period 1999–2010. As seen in the figures, Pakistan's governance environment ranks among the bottom of the group. None of the six indicators seem to have improved much over the 20-year period. The indicators for "rule of law" and "political stability and absence of violence" appear to have continuously deteriorated. "Government effectiveness" and "control of corruption" show periods of ups and downs with a somewhat downward trend in the more recent period. "Voice and accountability" and "regulatory quality," however, indicate slight improvements, although compared to other countries there could have been more improvement.

Figure 7: Comparisons of Governance Indicators (Voice and Accountability)
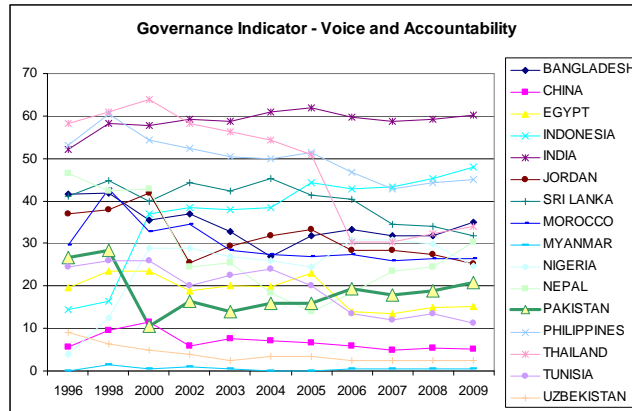
Source: Kaufmann, D., Kraay, A., & Mastruzzi, M. (2004).

Figure 8: Comparisons of Governance Indicators (Government Effectiveness)
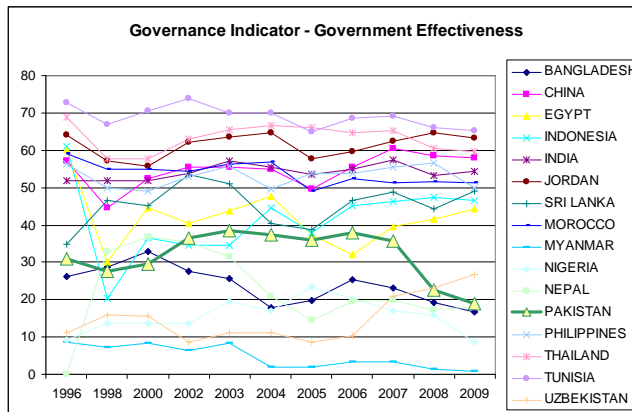
Source: Kaufmann, D., Kraay, A., & Mastruzzi, M. (2004).

Figure 9: Comparisons of Governance Indicators (Political Stability)
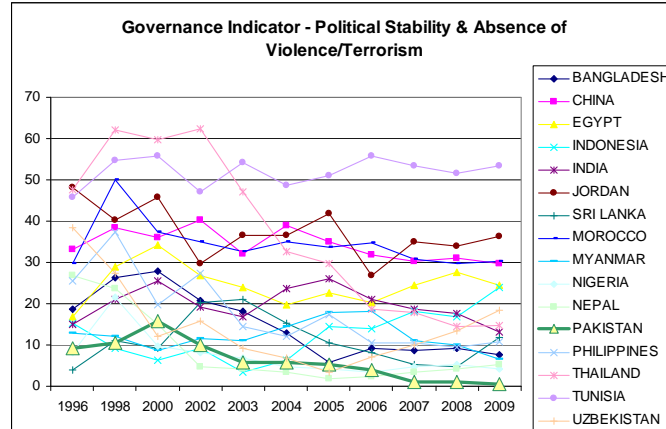
Source: Kaufmann, D., Kraay, A., & Mastruzzi, M. (2004).

Figure 10: Comparisons of Governance Indicators (Rule of Law)
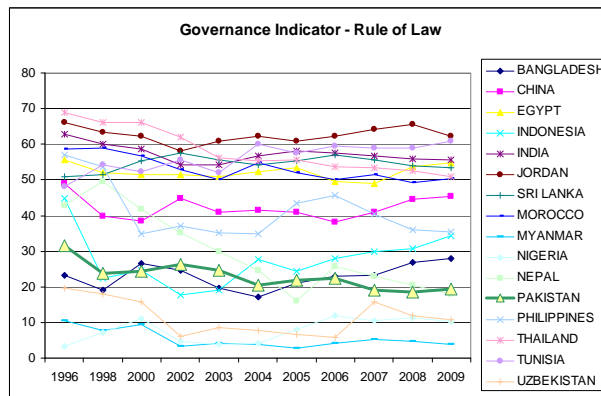
Source: Kaufmann, D., Kraay, A., & Mastruzzi, M. (2004).

Figure 11: Comparisons of Governance Indicators (Regulatory Quality)
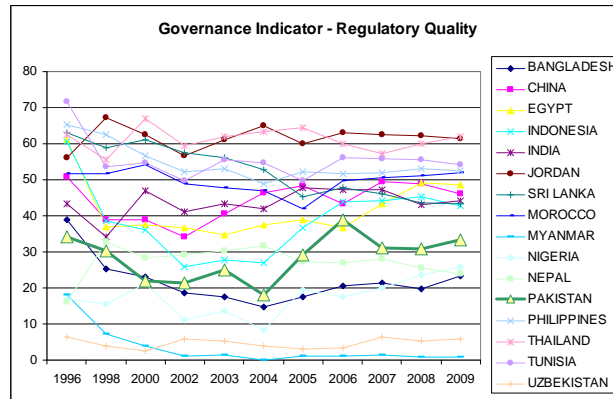
Source: Kaufmann, D., Kraay, A., & Mastruzzi, M. (2004).

Figure 12: Comparisons of Governance Indicators (Control of Corruption)
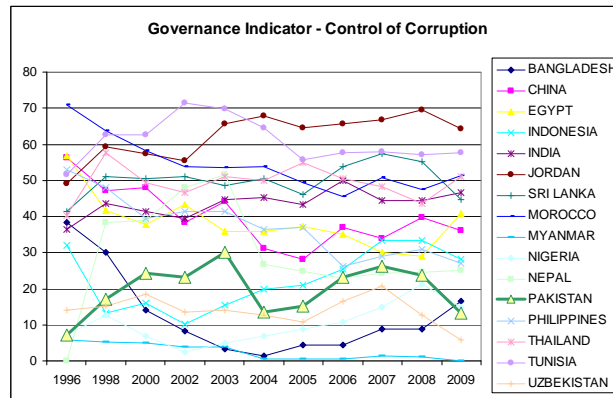
Source: Kaufmann, D., Kraay, A., & Mastruzzi, M. (2004).

IMF Reports on the Observance of Standards and Codes

The IMF's reports on the observance of standards and codes (ROSCs) evaluate the extent to which countries observe certain internationally recognized standards and codes. The ROSC covers 12 areas and associated standards: accounting, auditing, anti-money laundering and countering the financing of terrorism, banking supervision, corporate governance, data dissemination, fiscal transparency, insolvency and creditors' rights, insurance supervision, monetary and financial policy transparency, payments systems, and securities regulation. The reports are used for the operational work of the IMF and World Bank, including policy discussions with national authorities, and in the private sector (including by rating agencies) for risk assessment.

The IMF's 2008 ROSC assigns Pakistan an overall rating of "intent declared" for observing standards in the Code of Good Practices on Transparency in Fiscal Policy. The report acknowledges that there has been much progress, but asserts that more work is needed to fully comply with the code. The report notes that the passage of the Fiscal Responsibility and Debt Limitation Law has been key to the improvements thus far attained in both fiscal discipline and transparency. It also acknowledges that the implementation of the Project for Improvement of Financial Reporting and Auditing and adoption of a new accounting model and chart of accounts have been helpful. However, the ROSC points to the need to build capacity for improving transparency and efficiency. Pakistan's status in terms of the four principles of fiscal transparency is as follows:

1. Clarity of roles and responsibilities   [enacted]
2. Open budget processes   [enacted]
3. Public availability of information   [intent declared]
4. Independent assurances of integrity   [intent declared]

Compared to other developing countries, Pakistan's rating in terms of compliance with the Code of Good Practices on Transparency in Fiscal Policy appears to be unfavorable (Figure 13). Pakistan's rating on fiscal transparency did not improve over 2005–11, while five other countries improved, and one maintained its rating.

Figure 13: Comparisons of Fiscal Transparency Ratings
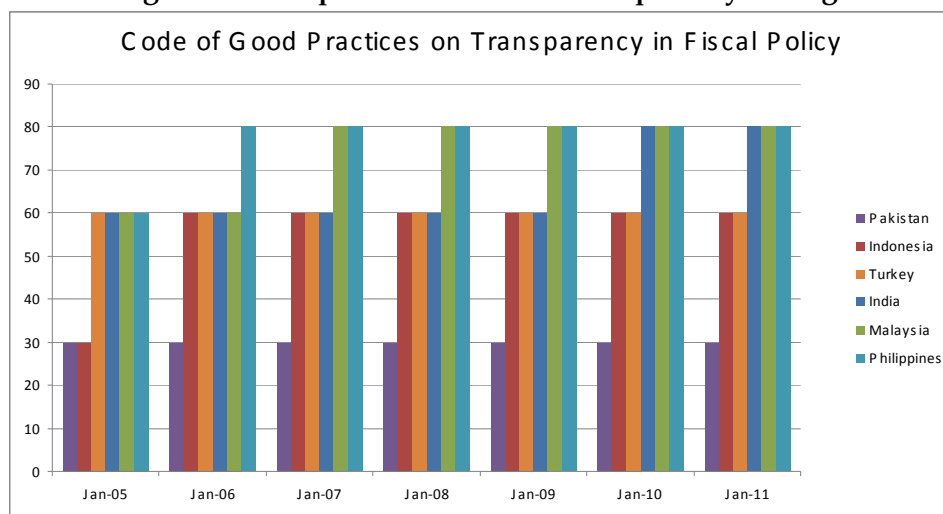
Source: International Monetary Fund. (2008). *Pakistan: Report on observance of standards and codes: Fiscal transparency module: An update.*

The Open Budget Index

The Open Budget Index (2010)—a project of the International Budget Partnership—provides another method of assessing fiscal management in 94 countries. The index rating for Pakistan is at 38 percent. The report notes that there is "minimal" openness in the budget process. Figures 14 to 16 compare Pakistan's rating with a group of selected countries. Figure 14 shows that, except for Pakistan, all these countries improved their overall Open Budget Index rating over the three surveys.

Figure 14: Comparisons of Open Budget Index Ratings
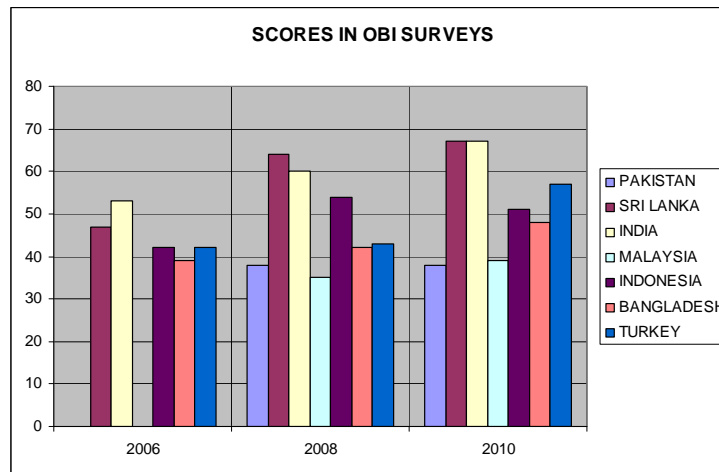
Source: International Monetary Fund. (2008). *Pakistan: Report on observance of standards and codes: Fiscal transparency module: An update.*

Figure 15 provides a similar picture. Apart from Turkey, all countries improved their ratings in "legislative strength;" Pakistan's rating did not change. Figure 16 indicates that Pakistan's rating in the strength of its supreme audit institution (i.e., the auditor general of Pakistan) actually deteriorated over the three surveys. This is rather surprising given that the department has just implemented the Project for Improvement of Financial Reporting and Auditing bankrolled by the World Bank, and that the IMF's ROSC notes it as being helpful in making the budgetary process more transparent, as noted above.

Figure 15: Comparisons of Legislative Strength Ratings
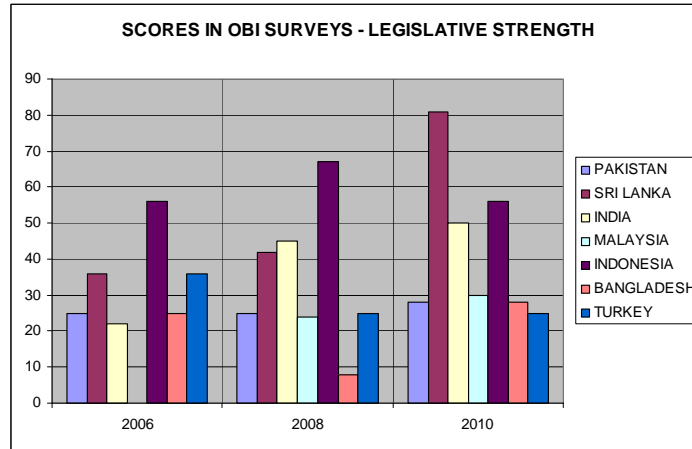
SCORES IN OBI SURVEYS - LEGISLATIVE STRENGTH

Source: International Monetary Fund. (2008). *Pakistan: Report on observance of standards and codes: Fiscal transparency module: An update.*

Figure 16: Comparisons of Supreme Audit Institution Ratings
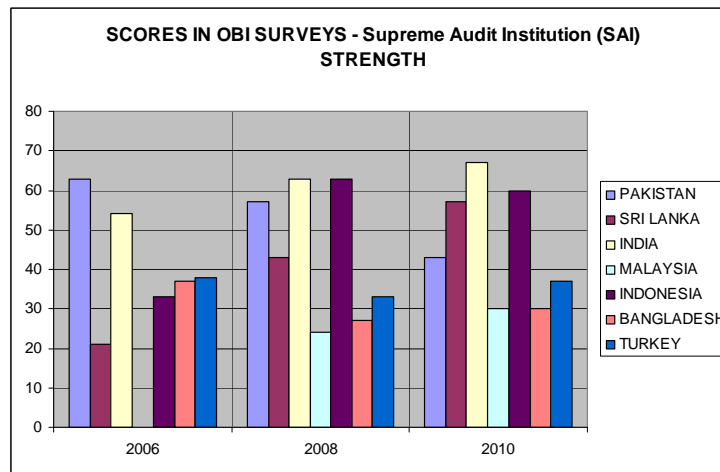
SCORES IN OBI SURVEYS - Supreme Audit Institution (SAI) STRENGTH

Source: International Monetary Fund. (2008). *Pakistan: Report on observance of standards and codes: Fiscal transparency module: An update.*

4.   The Bond Market and Fiscal Deficits

With the rise of financial liberalization and globalization over the last two decades, many emerging economies have had a manifold increase in their bond markets. The public and private sectors have both started to access bond markets to meet their investment and current expenditures.

Governments prefer to issue bonds in their own markets as an attractive alternative to traditional bank borrowing. Prior to financial liberalization, under regulated financial regimes, governments in developing countries could simply force local banks to hold government paper by enforcing demanding reserve requirements and qualitative controls. Thus, for many countries, government deficits were "inflation financed." The option of foreign borrowing also became restrictive with the liberalization of financial markets; under flexible exchange rate regimes and concomitant free capital flows, governments adopted anti-inflationary policies. In this new environment, governments turned increasingly to domestic bond markets to meet their budgetary deficits.

However, the role of bond markets is much broader and of greater consequence than being merely a financing source. Debt markets are critical for a well-balanced financial system in which the government bond market plays a pivotal role. The bond market plays a central role in financial development for the following reasons.

- Debt markets make financial markets more complete, and by determining market interest rates that are commensurate with the opportunity cost of funds for various maturities and levels of risk, they generate market signals for efficient investment and financing decisions and the allocation of financial resources.

- Active bond markets provide liquidity, which reduces the cost of intermediation and makes it possible to hedge maturity risks at lower transaction costs.

- Economies with developed bond markets avoid concentrating intermediation in the banking sector by spreading some corporate risk over their capital markets. Bond markets also offer households and institutions alternatives to bank deposits.

- Bond markets generate important signals for the conduct of macroeconomic policy. Since bond markets react quickly to policy decisions, they generate an immediate signal as to the sustainability of fiscal policies, allowing governments to adjust their policies. When consumer finance and mortgages are linked to bond rates, an increase in bond rates has an immediate political impact that politicians are unlikely to miss. Similarly, bond markets exert a disciplinary influence on monetary policy. Excessive monetary expansion builds up inflation expectations and pushes up long-term rates. Bond yields

respond quickly to policy decisions, and such "messages" usually have a sobering effect on policymakers.

- An active and liquid debt market facilitates the operation of monetary policy. A well-functioning money market smoothly transmits rate changes throughout the financial system, and has a quick impact on the economy.

Access to Bond Markets: "Original Sin"

Most countries are unable to borrow abroad in their own currency, and many cannot borrow in local currency at long maturities and fixed rates even at home. This empirical observation was termed "original sin" by Eichengreen and Hausmann (1999). The lack of financial flexibility creates financial fragility as such countries end up with currency mismatches (because of the debt's currency composition) or maturity mismatches (because of the short-term nature of the domestic currency debt), and are characterized by greater output and capital flow volatility, lower credit rating, and limited ability to manage an independent monetary policy (Eichengreen, Hausmann, & Panizza, 2002).

Hausmann and Panizza (2003) summarize seven theories aimed at explaining the determinants of original sin.

1. *Level of development*. The state of a country's financial institutions and markets.

2. *Monetary credibility.* When monetary credibility is low, domestic currency interest rates will be high, driving firms to borrow in hard currencies.

3. *Fiscal solvency*. Countries with weak public finances have an incentive to debase their currencies. Investors anticipating this withdraw from the long-term debt market, forcing borrowers to dollarize the debt or borrow short-term.

4. *Credit market imperfections or poor contract enforcement*. A positive correlation between default and depreciation risk creates a moral hazard for the borrower who can expropriate his local currency lenders by taking on more foreign currency debt. Under such circumstances, the domestic currency debt market may disappear.

5. *Exchange rate regime*. Countries with fixed exchange rate regimes experience volatile domestic currency interest rates, while countries with floating exchange rates experience exchange rate volatility.

Borrowers are then likely to prefer domestic currency debt in floating rate countries and fixed rate debt in flexible exchange rate countries.

6. *Political economy arguments.* According to this line of reasoning, when foreigners are the main holders of domestic currency debt, governments will have an incentive to debase their currencies. In this sense, international markets in domestic currency can only arise in the presence of a domestic constituency of local currency debt holders.

7. *Role of economies of scale in liquidity.* Larger countries' currencies have an advantage in the international market because their economy size and currency issues make them liquid and stable and, hence, attractive as a component of the world portfolio.

Researchers argue that weaknesses in economic policies and underdeveloped financial institutions exacerbate the problem of original sin. Eichengreen and Hausmann (1999) suggest that emerging markets cannot overcome original sin on their own. Eichengreen et al. (2002) support the idea that original sin is exogenous to developing countries that cannot do much about it, such as improving the rule of law or containing inflation. On the other hand, La Porta, López-de-Silanes, Shleifer, & Vishny (1997) find empirical evidence that a country's legal environment does matter: countries with better rule of law and creditors' rights have larger debt markets (bank debt plus nonfinancial bonds).

Other studies (Eichengreen et al., 2002; Hausmann & Panizza, 2003) find that domestic financial development—in terms of its size relative to GDP or to the presence of foreign lenders—is not robustly correlated with the measure of original sin. Hausmann and Panizza (2003) find a relatively low correlation between the ability to borrow internationally in domestic currency and the ability to do so domestically at long maturities and fixed rates (DSIN2). They note that countries such as Chile, Hungary, India, Israel, the Philippines, the Slovak Republic, and Thailand do not exhibit domestic variants of original sin, but do exhibit the international variety. In their study, the only variable that seems robustly related to the international variant of original sin is the absolute size of the economy, which suggests that the international version of original sin is driven by the presence of economies of scale caused by liquidity or other factors.

In explaining the domestic version of original sin, Hausmann and Panizza (2003) find that neither the size of the economy nor measures of the level of development or institutional quality is associated with the

phenomenon. However, monetary credibility—measured by lower average inflation—the imposition of capital controls, and exchange rate flexibility are associated with a lower level of domestic original sin. Exchange rate flexibility is also negatively correlated with domestic original sin but once capital controls are taken into account, there is no additional explanatory power to the exchange rate regime. They interpret this to mean that, while capital controls may be good for reducing domestic original sin, they may exacerbate international original sin.

The implications of whether original sin is exogenous or endogenous are important. If original sin is exogenous, relief from it can be sought at the level of international organizations. If original sin is endogenous, then the local legal environment and governance should be improved. There is, nevertheless, empirical evidence that "policies aimed at widening the investor base are instrumental to reduce domestic debt riskiness and tilt its composition towards safer, long-term, unindexed, local currency instruments" (Arnaud & Reynaud, 2005).

Market Discipline and the Role of Bond Vigilantes

The extant research finds evidence that financial markets react significantly to changes in the structure or levels of public debt. Evidence on the reaction of fiscal policy to financial market indicators is unclear. However, researchers find that countries reduce their primary deficits as a reaction to high debt servicing costs. Many scholars have examined the magnitude of the impact of fiscal deficits and public debt on long-term interest rates, and the extent to which it is influenced by other factors such as the private savings rate, demographics, the quality of institutions, and international financial integration.

In the neoclassical model, large fiscal deficits create an excess supply of government debt, leading to higher real interest rates. The yield curve also becomes positively sloped in anticipation of continuing large fiscal deficits. If combined with increased economic uncertainty, fiscal deficits could also raise concerns about the government's ability to service its debts and raise credit risk premiums. Higher inflation expectations and concerns about the monetization of debt increase the inflation premiums embodied in the nominal rates. Some factors may weaken the link between fiscal deficits and interest rates. For instance, capital inflows may complement domestic savings in an open economy for some time by leading to real exchange rate appreciation rather than higher real interest rates. For many reasons, the results of many studies remain mixed. Gale

and Orszag (2002) survey almost 60 studies and find in around half of them a "predominantly positive significant" effect of fiscal deficits on interest rates, and in the other half a "mixed" or "predominantly insignificant" effect.

A recent study by Baldacci and Kumar (2010) assesses empirically the impact of fiscal deficits and public debt on long-term interest rates over almost three decades, taking into account a wide range of country-specific factors, for a panel of 31 advanced and emerging market economies. Their key finding is that "the impact of fiscal deterioration on long-term interest rates is significant and robust but nonlinear. Moreover, the magnitude of the impact reflects initial fiscal, institutional and structural conditions, as well as spillovers from global financial markets." Baldacci and Kumar note in particular that "differences in institutional features and domestic private saving rates also play a role in determining the impact of deficits on interest rates. The quality of governance is important, as better institutions signal the credibility of economic policies, thereby reducing risks about policy implementation."

The market discipline hypothesis would suggest, first, that the debt market responds to fiscal deficits by increasing the default risk premium of sovereign governments. Second, sovereign borrowers respond in turn to the increased yields by making fiscal adjustments. Bulut (2009) considers the two aspects of the market discipline hypothesis simultaneously by employing 3SLS to incorporate the contemporaneous feedback effects between primary structural budget balances and country default risk premiums. His results show that financial markets have a disciplinary effect on sovereign governments, and that the latter are more disciplined in countries with floating exchange rate regimes, while countries with fixed exchange rate regimes seem to be irresponsive to the change in the default risk premium posed by the market. Overall, markets seem to respond to changes in fiscal indicators as expected of well-functioning financial markets.

Spiegel (2008) notes that "the literature appears to have reached a consensus that financial globalization has had a 'disciplining effect' on monetary policy, as it has reduced the returns from and hence the temptation for using monetary policy to stabilize output." Cuadra, Sanchez, & Sapriza (2009) explain the pro-cyclicity of fiscal policies in emerging market in terms of their ability to access to foreign debt and the possibility of sovereign default and associated risk premium. Akitoby and Stratmann (2006) find that reductions in public expenditure are a

more powerful tool for reducing spreads than increases in revenues. They also show that debt-financed current spending increases sovereign risk by more than tax-financed current spending.

Evidence from Pakistan

There has been limited research on the impact of fiscal policy on the linkages between fiscal deficits and financial markets in Pakistan. Hakro (2009) demonstrates that the causality link of deficits flows from budget deficits to prices to interest rates to capital flows to exchange rates and to trade deficits. He suggests that reductions in budget deficits might help control the level of prices. An empirical analysis by Agha and Khan (2006) suggests that inflation in Pakistan is not only related to fiscal imbalances but also to the sources of financing fiscal deficit and, therefore, the fiscal sector is dominant in explaining price movements.

5.   Developing Bond Markets

In Pakistan, and similar to many Asian economies, the banking system has tended to dominate the economy while capital markets have been relatively slow to develop. Also, in Pakistan, as in many other countries, the bond market is dominated by government bonds. There are several reasons that explain this pattern: (i) a greater preference for liquid short-term bank deposits, (ii) underdeveloped or nonexistent institutional investors, (iii) few companies that are sufficiently large and reputable to issue bonds, and (iv) the absence of the requisite informational, legal, and judicial infrastructure.

Despite conscious plans to foster the growth of the bond market in Pakistan, the country's experience does not compare favorably with many other developing countries. Figure 17 depicts the size of the total bond market as a percentage of GDP for a selected group of countries. These are domestic bonds, which include government bonds, and bonds issued by financial institutions and corporate issuers.

Figure 17: Selected Countries' Domestic Debt, 1999–2009
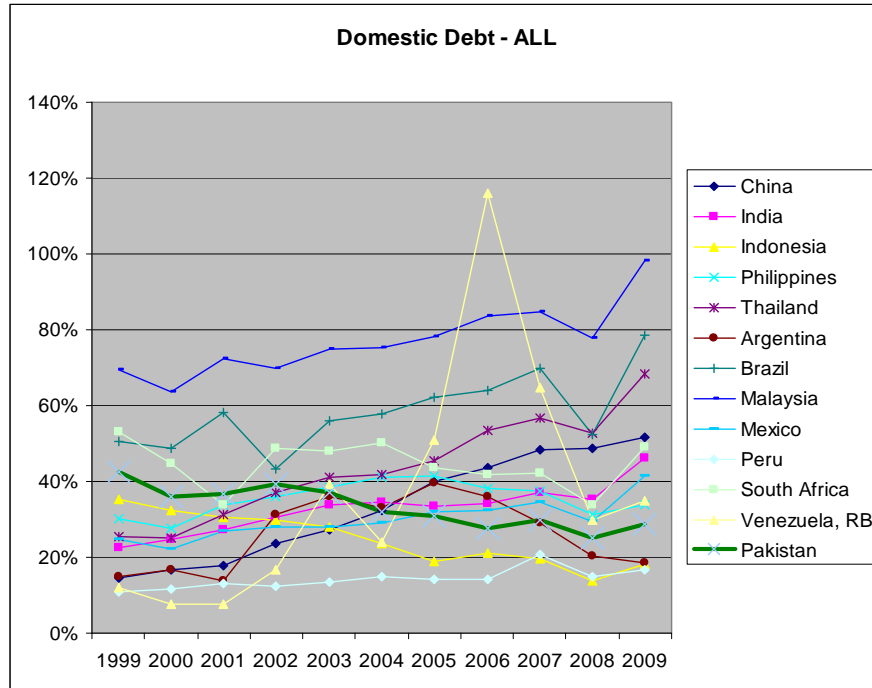
As the figure shows, Pakistan's bond market has followed a negative trend over the last 20 years in contrast to other countries in the group, which have exhibited a steady upward trend. To draw a poignant comparison, we show in Figure 18 a comparison with India. The positive trend followed by the Indian bond market stands in sharp contrast to the market in Pakistan. As the Indian bond market has grown over time, it has also assumed greater depth. This is indicated by the growth in bonds issued by financial institutions and domestic corporations (Figure 19).

Figure 18: Domestic Debt Securities
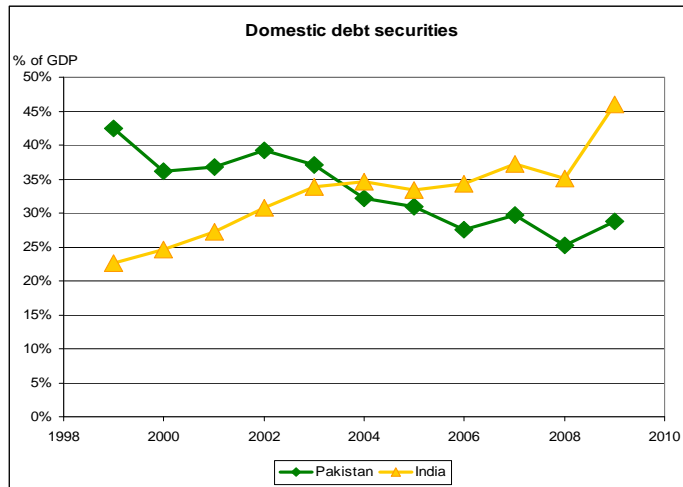
GDP = gross domestic product.
Source: State Bank of Pakistan, 2010.

Figure 19: Domestic Debt Securities as a Percentage of GDP
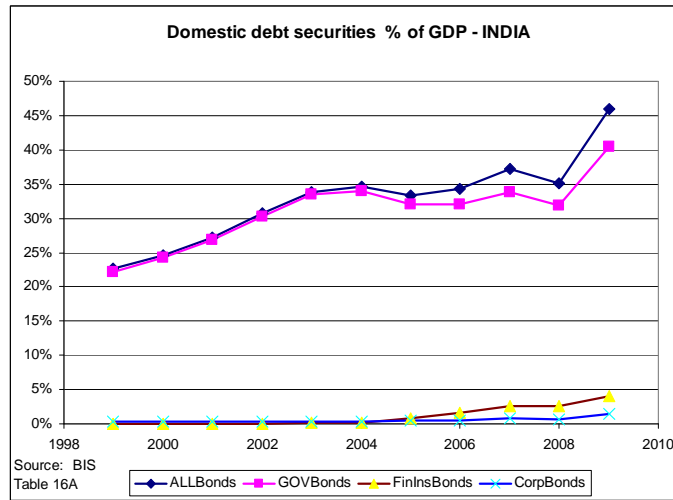
GDP = gross domestic product.
Source: State Bank of Pakistan, 2010.

Impediments to the development of domestic debt markets, particularly the corporate bond market, have been discussed in various papers and reports (see, for example, Arif, 2007; Hameed, 2007; State Bank of Pakistan, 2006, 2010). The typical reasons given include: (i) relatively higher yields available on national saving scheme instruments, (ii) the heavy burden of and aversion to disclosure requirements, (iii) high transaction costs, and (iv) an illiquid secondary market. However, the key to developing a vibrant and functionally efficient bond market may lie in the development of a conducive regulatory and institutional environment.

A study by Burger and Warnock (2006) concludes that policies and laws matter in the development of local currency bond markets and can alleviate the burden of *original sin*. By improving policy performance and strengthening institutions, developing countries can develop bond markets, reduce their currency mismatch, and reduce the likelihood of future crises. Their analysis indicates that both creditor-friendly policies and creditor-friendly laws can play an effective role in bond market development. The empirical evidence shows that countries with better historical inflation performance have more highly developed local bond markets, both private and government, and rely less on foreign currency-denominated bonds. Laws that are "creditor-friendly" make a difference. They point out that the "strong rule of law is associated with deeper local bond markets, whereas countries with better creditor rights are able to issue a higher share of bonds in their local currency." They also show that the conditions necessary for bond market development are very similar to those that foster the development of the banking system. Therefore, it may not be necessary to make a policy choice between developing a bank- or debt market-based financial system.

Uppal (2007) provides evidence that securities laws play an important role in the development of bond markets because they facilitate private contracting rather than public enforcement. The study empirically investigates the features and enforcement of securities laws that may facilitate or constrain the broadening and deepening of the corporate bond market. The study examines bond market development in 49 countries, using corporate governance and securities law indices developed by La Porta, López-de-Silanes, & Shleifer (2006), which include disclosure requirements, liability standards, public and private enforcement, anti-director rights, and the effectiveness of the judiciary. Employing a Tobit estimation procedure to deal with the econometric issues associated with truncated data, the study shows that securities laws play an important role in the development of bond markets just as

they do in the case of stock markets. The study's results further support the argument that securities laws matter because they facilitate private contracting rather than public regulatory enforcement. Contrary to the La Porta et al. (2006) findings with respect to stock market development—that several aspects of public enforcement do not matter—Uppal's results indicate that the supervisor's power to impose criminal sanctions may have a bearing on bond market development.

Fostering the development of bond markets remains a challenge for many developing countries. Turner (2003) offers a number of strategies to develop bond markets, noting that many countries have been successful in developing their own bond markets in terms of market size: "Yet in terms of liquidity the results have been somewhat disappointing." While it might be difficult for a country with a small investor base and few market traders to develop a competitive bond market, the fact that many countries—irrespective of their size—have liquid bond markets suggests that most medium-sized emerging market countries can develop liquid bond markets. However, in order to achieve this goal, policymakers need to examine the totality of governance and institutional environments that might impede the development of bond markets.

6. Conclusion

Instilling fiscal discipline is a multidimensional challenge. Despite the conclusions of economic models exhorting fiscal prudence, the problem will remain intractable unless approached comprehensively and in its entirety. Long-term solutions must be found in the development of political institutions, improved governance, and institutions that are conducive to fiscal discipline. There is abundant of analysis and advice, and there seems to be a consensus on what will likely work. The real challenge may lie in summoning the political will, public awareness, and political energy to implement the required measures.

An active and liquid bond market can play a crucial role in bringing about fiscal discipline. The advocacy for instituting fiscal policy discipline based on rules has been building up following the adoption of rule-based monetary policies by many countries. Wyplosz (2002) points to the notion that fiscal policy is a purely political function that must remain fully subject to the usual process of parliamentary oversight. However, he argues that the fiscal deficit should be a macroeconomic choice. On other hand, the budget structure (size, allocation of

expenditures, and taxes) legitimately falls in the political domain. He concludes that "budget deficits, like interest rates, are best left to non-political bodies which operate in full light and are subject to democratic accountability." Bond markets can be instrumental in rationalizing the policy toward budgetary deficits.

References

Agha, A. I., & Khan, M. S. (2006). An empirical analysis of fiscal imbalances and inflation in Pakistan. *State Bank of Pakistan Research Bulletin*, *2*(2), 343–362.

Akitoby, B., & Stratmann, T. (2006). *Fiscal policy and financial markets* (Working Paper No. 06/16). Washington, DC: International Monetary Fund.

Alesina, A., & Perotti, R. (1994). *The political economy of budget deficits* (Working Paper No. 4637). Cambridge, MA: National Bureau of Economic Research.

Alesina, A., & Perotti, R. (1995). The political economy of budget deficits. *International Monetary Fund Staff Papers*, *42*(1), 1–31.

Alesina, A., & Perotti, R. (1999). Budget deficits and budget institutions. In J. M. Poterba & J. von Hagen (Eds.), *Fiscal institutions and fiscal performance*. Chicago, IL: University of Chicago Press.

Alesina, A., & Tabellini, G. (1990). Voting on the budget deficit. *American Economic Review*, *80*(1), 37–49.

Alesina, A., & Tabellini, G. (2005). *Why is fiscal policy often procyclical?* (Working Paper No. 11600). Cambridge, MA: National Bureau of Economic Research.

Alt, J., & Lassen, D. (2006). Fiscal transparency, political parties, and debt in OECD countries. *European Economic Review*, *50*(6), 1403–1439.

Arif, M. (2007). Developing bond market in Pakistan. *State Bank of Pakistan Research Bulletin*, *3*(1), 129–157.

Baldacci, E., & Kumar, M. S. (2010). *Fiscal deficits, public debt, and sovereign bond yields* (Working Paper No. 10/184). Washington, DC: International Monetary Fund.

Barro, R. (1979). On the determination of the public debt. *Journal of Political Economy*, *87*, 940–947.

Brender, A., & Drazen, A. (2005a). Political budget cycles in new versus established democracies. *Journal of Monetary Economics*, *52*(7), 1271–1295.

Brender, A., & Drazen, A. (2005b). *How do budget deficits and economic performance affect reelection prospects? Evidence from a large cross-section of countries* (Working Paper No. 11862). Cambridge, MA: National Bureau of Economic Research.

Bulut, L. (2011). Market disciplining of the developing countries' sovereign governments [Electronic version]. *Contemporary Economic Policy*, *29*. doi: 10.1111/j.1465-7287.2011.00253.x

Burger, J. D., & Warnock, F. E. (2006). Local currency bond markets. *International Monetary Fund Staff Papers*, *53*(Special Issue), 133–146.

Cuadra, G., Sanchez, J. M., & Sapriza, H. (2009). *Fiscal policy and default risk in emerging markets* (Working Paper No. 09-01). Richmond, VA: Federal Reserve Bank of Richmond.

Drazen, A. (2000). *Political economy in macroeconomics*. Princeton, NJ: Princeton University Press.

Eichengreen, B., Hausmann, R., & Panizza, U. (2002, November). Original sin: The pain, the mystery, and the road to redemption. In *Currency and maturity matchmaking: Redeeming debt from original sin*. Conference conducted by the Inter-American Development Bank, Washington, DC.

Eslava, M. (2006). *The political economy of fiscal policy: Survey* (Working Paper No. 583). Washington, DC: Inter-American Development Bank.

Hakro, A. N. (2009). Twin deficits causality link: Evidence from Pakistan. *International Research Journal of Finance and Economics*, *24*, 54–74.

Hameed, F. (2007). Fostering the corporate bond market in Pakistan. *State Bank of Pakistan Research Bulletin*, *3*(1), 107–128.

Hausmann, R., & Panizza, U. (2003). *The mystery of original sin*. Cambridge, MA: Harvard University Press.

Huther, J., & Shah, A. (1998). *Applying a simple measure of good governance to the debate on fiscal decentralization*. Paper presented at a seminar conducted by the US Agency for International Development, Venezuela.

Inter-American Development Bank. (2005). *Unlocking credit: The quest for deep and stable bank lending*. Washington, DC: Author.

International Monetary Fund. (2008). *Pakistan: Report on observance of standards and codes: Fiscal transparency module: An update* (Country Report No. 08/129). Washington, DC: Author. Retrieved from http://www.imf.org/external/pubs/ft/scr/2008/cr08129.pdf

Kaufmann, D., Kraay, A., & Mastruzzi, M. (2004). Governance matters III: Governance indicators for 1996, 1998, 2000, and 2002. *World Bank Economic Review*, *18*, 253–287.

La Porta, R., López-de-Silanes, F., & Shleifer, A. (2006). What works in securities laws? *Journal of Finance*, *61*(1), 1–32.

La Porta, R., López-de-Silanes, F., Shleifer, A., & Vishny, R. (1997). Legal determinants of external finance. *Journal of Finance*, *52*, 1131–1150.

Martinez-Vazquez, J., Arze, F. J., & Boex, J. (2006). *Corruption, fiscal policy, and fiscal management: Fiscal reform in support of trade liberalization*. Atlanta: Georgia State University.

Mehl, A., & Reynaud, J. (2005). *The determinants of domestic original sin in emerging market economies* (Working Paper No. 560). Frankfurt, Germany: European Central Bank.

Open Budget Initiative. (2010). Open budget index 2010: Pakistan. Retrieved from http://www.openbudgetindex.org/CountrySummaryPakistan.pdf

Poterba, J. M. (1995). Balanced budget rules and fiscal policy: Evidence from the States. *National Tax Journal*, *48*(3), 329–336.

Rogoff, K. (1990). Equilibrium political budget cycles. *American Economic Review*, *80*, 21–36.

Rogoff, K., & Sibert, A. (1988). Elections and macroeconomic policy cycles. *Review of Economic Studies*, *55*, 1–16.

Schaeffer, M. (2002). Corruption and public finance. In *Sectoral perspectives on corruption*. Washington, DC: Management Systems International and USAID.

Schuknecht, L. (1994). *Political business cycles and expenditure policies in developing countries* (Working Paper No. 121). Washington, DC: International Monetary Fund.

Shi, M., & Svensson, J. (2006). Political budget cycles: Do they differ across countries and why? *Journal of Public Economics*, *90* (September), 1367–1389.

Somogyi, F. (2006). *Do financial markets really discipline governments?* Zurich, Switzerland: Swiss Federal Institute of Technology.

Spiegel, M. (2008). *Financial globalization and monetary policy discipline: A survey with new evidence from financial remoteness*. San Francisco, CA: Federal Reserve Bank of San Francisco.

State Bank of Pakistan. (2006). *Financial Stability Review, 2005-06*. Karachi, Pakistan: Author.

State Bank of Pakistan. (2010). Government borrowing from the banking system: Implications for monetary and financial stability. *Financial Stability Review, 2009-10*. Karachi, Pakistan.

State Bank of Pakistan. (2010). Role of government in facilitating development of the bond market. *Financial Stability Review, 2009-10*. Karachi, Pakistan.

Stein, E., Talvi, E., & Grisanti, A. (1998). *Institutional arrangements and fiscal performance: The Latin American experience* (Working Paper No. 6358). Cambridge, MA: National Bureau of Economic Research.

Tanzi, V. (1999). Governance, corruption, and public finance: An overview. In S. Schiavo-Campo (Ed.), *Governance, corruption, and public financial management*. Manila, Philippines: Asian Development Bank.

Turner, P. (2003). Bond market development: What are the policy issues? In *The future of domestic capital markets in developing countries*. Conference conducted by the World Bank, International Monetary Fund, and Brookings Institution, Washington, DC.

Uppal, J. Y. (2007). Role of securities law in the development of domestic corporate bond markets. *State Bank of Pakistan Research Bulletin*, *3*(1), 75–88.

Von Hagen, J. (1992). *Budgeting procedures and fiscal performance in the European Community* (Economic Paper No. 96). Brussels, Belgium: European Commission.

Weingast, B., Shepsle, K., & Johnsen, C. (1981). The political economy of benefits and costs: A neoclassical approach to distributive politics. *Journal of Political Economy*, *89*, 642–664.

World Bank. (2005). Country policy and institutional assessments: Assessment questionnaire. In *Operations policy and country services*. Washington, DC: Author.

Wyplosz, C. (2002). *Fiscal discipline in emerging market countries: How to go about it*. Geneva, Switzerland: Graduate Institute for International Studies and Centre for Economic Policy Research.

The Impact of Monetary Policy on Lending and Deposit Rates in Pakistan: Panel Data Analysis

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Abstract

This study estimates the impact of monetary policy on lending and deposit rates in Pakistan, using bank data for the period November 2001 to March 2011. We find evidence of a long-run relationship between the lending and discount rate, but the deposit rate is not co-integrated, and the pass-through is not complete. The study finds that, overall, banks pass on only 20 percent of the impact of a change in the discount rate to lenders in the first month. There is also a significant difference among various banks' pass-through rates. A short-run analysis reveals that the pass-through of the deposit rate is low at 0.16, which implies that the effectiveness of monetary policy is limited in Pakistan.

Keywords: Monetary Policy, Lending, Deposit Rates, Pakistan.

JEL Classification: E43, E52.

1. Introduction

The interest rate is one of the tools of monetary policy. Pass-through refers to the transmission of the benchmark interest rate—the discount rate in this case—to the lending and deposit rates in the economy. The pass-through is completed when any change in the discount rate is immediately transmitted to the lending and deposit rates (Bernanke & Blinder, 1992; C. Romer & Romer, 1989). The completeness implies that monetary policy is very effective and that the central bank can influence output and consumption without much delay.

Many studies have estimated the degree of pass-through for developed countries, e.g., in Europe, the US, and the UK (see de Bondt, 2002; De Graeve, De Jonghe, & Vander Vennet, 2004; Kleimeier & Sander, 2006; Liu, Margaritis, & Tourani-Rad, 2008; Mojon, 2000; Sørensen & Werner, 2006). However, there is no consensus on the completeness of pass-through. Some studies report completeness in the pass-through

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process with respect to benchmark monetary policy instruments (see Altunbas, Fazylov, & Molyneux, 2002; Bernanke & Gertler, 1995; Cook, 2008; Kashyap & Stein, 2000). Others contradict these findings and provide empirical evidence in favor of the incompleteness of pass-through. They also find heterogeneity across countries, financial institutions, and retail bank products (see de Bondt, 2002; Hofmann & Mizen, 2004; Liu et al., 2008; Mojon, 2000; Ozdemir, 2009). The studies that focus on pass-through in the Euro zone use nonharmonized retail interest rate statistics (see de Bondt, 2002, 2005; Heinemann & Schüller, 2002; Mojon, 2000; Sander & Kleimeier, 2002, 2004; Toolsema, Sturm, & de Haan, 2002). Some studies use individual retail bank data (see Cottarelli, Ferri, & Generale, 1995; De Graeve et al., 2004; Gambacorta, 2004; Weth, 2002).

Ozdemir (2009) estimates pass-through between the money market rate and bank retail rate for Turkey. There is a limited body of literature on developing countries such as Pakistan. Qayyum, Khan, and Khawaja (2005) estimate the pass-through of the treasury bill rate on the call money rate, savings deposit rate, six-month deposit rate, and lending rate. They use data for the six-month deposit rate and lending rate for the period March 1991 to December 2004, while employing the transfer function approach. Mohsin and Rivers (in press) measure the pass-through between the treasury bill rate and retail rate for Pakistan, and find that the degree of pass-through is moderately high although the pass-through is not complete. The State Bank of Pakistan presently uses the discount rate as a monetary policy tool, although it has used various other tools as well.

This study attempts to measure the pass-through between the discount rate and retail rate, using monthly data for the period November 2001 to March 2011. We use data for the weighted average lending and deposit rates for four types of banks, i.e., private domestic, foreign, nationalized, and specialized. A comparison of the pass-through in the case of various categories of banks' retail rates and discount rates will be an interesting extension of ongoing research in Pakistan.

2. Methodology

We use a panel data technique by applying panel unit root tests to check for the stationarity of data, followed by the Pedroni panel co-integration test to check for a long-run relationship between the discount rate and lending and deposit rates. We also apply the Phillips and Loretan (1991) method, which is an extension of Engle and Granger (1988), using cross-section dummies.

2.1. Panel Unit Root Test

We utilize three panel unit root tests to assess the stationary of the data on the discount rate and lending and deposit rates (Hadri, 2000; Im, Pesaran, & Shin, 2003; Levin, Lin, & Chu, 2002).

The Levin-Lin-Chu (LLC) test assumes that persistence parameters remain the same across cross-sections. This means that $\rho_i =$ for all *i*. Alternatively, the Im-Pesaran-Shin test allows to vary across all cross-sections.

The LLC model allows for fixed effects and a unit-specific time trend along with common time effects. The structure of the model is shown below:

$$\Delta y_{it} = \alpha_i + \delta_i t + \theta_t + \rho_i y_{i,t-1} + \xi_{it}, \ i=1,2...N, \ t=1,2...T \qquad (1)$$

The unit-specific fixed effect is important in order to capture heterogeneity since the coefficient of the lagged dependant variable is homogeneous across all cross-sections in Equation 1. Im et al. (2003) extended the LLC framework by allowing heterogeneity in ρ_i under the alternative hypothesis. Hadri's (2000) Lagrange multiplier test has a different null hypothesis from other panel unit root tests. A comparison of the results from all three tests will be interesting and provide stronger evidence (see Banerjee, 1999; Mohsin & Rivers, in press).

2.2. Panel Co-Integration

We use the Pedroni (1999, 2004) panel co-integration test to estimate a long-run relationship between bank and treasury bill rates. Pedroni derived seven tests that are within and between dimensions, and are residual-based, similar to the Engle-Granger test. The slope coefficients vary over cross-section units, thereby allowing heterogeneity within the model. The panel equation is estimated as

$$Y_{it} = \alpha_i + \delta_{it} + \beta_i X_{it} + \varepsilon_{it} \qquad (2)$$

Here, $i = 1, 2.........N$ cross-sectional units, $t = 1, 2..........T$ time periods, and X_{it} represents the column vector, which consists of M independent variables for each *i*th unit. M represents the number of independent variables. The variables Y and X are considered to be nonstationary, I (1).

integrated of order one.   The parameters The residual   will be nonstationary, $I(1)$, under the hypothesis of no co-integration.

The parameters α_i and δ_{it} capture cross-sectional fixed effects and deterministic trends, respectively. The different slope coefficients β_i allow for the possibility that co-integrating vectors are also heterogeneous.

To compute the required panel-co-integrating statistic, we estimate Equation 1 using ordinary least squares (OLS) for every individual cross-section. The within-dimension-based estimates are panel and panel t statistics, and are derived by computing the first difference of all variables.

$$\Delta Y_{it} = \beta_{1t}\Delta X_{1it} + \beta_{2t}\Delta X_{2it} + \cdots\ldots \beta_{mt}\Delta X_{mit} + \pi_{it} \tag{3}$$

2.3. Phillips and Loretan (PL) (1991) Method

The marginal cost-pricing model uses an Engle-Granger-type equation (see de Bondt, 2002, 2005; Rousseas, 1985).

$$Y_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it} \tag{4}$$

i=1,2,…..,N and t = 1,2………T

Where Y_{it} represents bank lending or deposit rate, X_{it}, the monetary policy instrument, discount rate, money market rate, or federal fund rate; and , the residual term, while α_i and measure the markup and long-run degree of pass-through, respectively.

Liu et al. (2008) estimate the following triangular system of equations to model the long-run relationship between the policy rate and market rate:

$$Y_{it} = \alpha_i + \beta X_{it} + U_{it}, \qquad \text{t=1, 2,……, T} \tag{5}$$

$$X_{it} = X_{it-1} + U_{2it} \tag{5a}$$

Where $U_{it} = [U_{1it}, U_{2it}]'$ is a stationary vector.

Estimating Equation 1 requires both interest rates to be nonstationary. If U_{1it} is not stationary, then U_{2it} interest rates will not co-integrate, thereby resulting in a spurious estimate.

Liu et al. (2008) reveal that, even if U_{1it} is stationary, OLS estimates of Equations 1 and 1a do not have a standard distribution when U_{1it} and U_{2it} are correlated. Phillips and Loretan (1991) suggest including leads and lags of the first difference in X_t, ΔX_t. They estimate the following equation:

$$Y_{it} = \alpha_i + \beta_i X_{it} + \sum_{k=1}^{K} d1k\left(Y_{it-k} - \alpha_0 - \beta_i X_{it-k}\right) + \sum_{i=-1}^{L} d2\Delta X_{it-1} + V_{i1t} \qquad (6)$$

The parameter estimates are unbiased asymptotically and normally distributed. Using this model has two additional advantages. First, it considers structural changes, should they occur; and second, it addresses past policy surprises and future policy settings with regard to policy instruments and bank rates.

3. Results

3.1. Long-Run Results

Table 1 provides a summary of the panel unit root tests (individual as well as common process) that have been applied to check for the stationarity of three variables, i.e., weighted average lending, deposit rate, and discount rate (monetary policy instrument). In most cases, we fail to reject the null hypothesis of a unit root at levels since the computed probabilities are greater than 0.05. However, we also reject the hypothesis of unit root at first difference in most cases, which implies that the variables are nonstationary at levels but stationary at first difference, hence integrated of order one. In the case of the Hadri test, we reject the null hypothesis of stationarity for all three variables but fail to reject the null hypothesis at first difference. Now, in order to find evidence of a long-run relationship, we apply a panel co-integration analysis.

Table 1: Panel Unit Root Tests

Method		Null Hypothesis	Lending		Deposit Rate		Discount Rate	
			Stat.	Prob.	Stat.	Prob.	Stat.	Prob.
LLC-t* stat.	Level	Unit root (common process)	-1.19	0.42	-3.03	0.99	-2.70	0.99
	1st diff.		-15.84	0.00	-8.05	0.00	-6.87	0.00
Hadri-Z	Level	Stationary	-6.70	0.00	9.50	0.00	8.67	0.00
	1st diff.		2.64	0.06	-0.87	0.20	-0.73	0.77*
IPS-W stat.	Level	Unit root (individual process)	-1.28	0.10	3.20	0.99	-1.09	0.13
	1st diff.		-16.57	0.00	-7.80	0.00	-10.24	0.00

IPS = Im-Pesaran-Shin, LLC = Levin-Lin-Chu.

* : are significant at 1 percent respectively.
Source: Author's calculations.

Table 2 summarizes the residual-based Pedroni's panel co-integration test applied to the lending rate and discount rate. In the within-dimension test, seven out of eight tests reject the null hypothesis of no co-integration. Similarly, in the between-dimension case, the null hypothesis of no co-integration can be rejected in two out of three cases. The group ADF stat has a probability of 0.06, which is higher than 0.05. Overall, the Pedroni co-integration test yields ample evidence of a long-run relationship between the lending rate and discount rate.

Table 2: Pedroni Residual-Based Panel Co-Integration Test Variables: Lending Rate and Discount Rate

Ho: No Co-Integration				
Ha: Within Dimension	**Statistic**	**Prob.**	**Weighted Stat.**	**Prob.**
Panel V stat.	1.90	0.030**	1.20	0.10***
Panel rho-stat.	-1.80	0.040**	-1.33	0.09***
Panel PP-stat.	-1.90	0.020**	-1.70	0.04**
Panel ADF-stat.	-1.60	0.005**	-1.50	0.00*
Ha: Between Dimensions				
Group rho-stat.	-2.21	0.010*		
Group PP-stat.	-2.22	0.010*		
Group ADF-stat.	-1.50	0.060***		

Note: *, **, and *** are significant at 1, 5, and 10 percent, respectively.
Source: Author's calculations.

Next, we examine the long-run relationship between the deposit rate and discount rate. Table 3 summarizes the Pedroni residual-based panel co-integration tests applied to the deposit rate and discount rate. In eight within-dimension tests, the computed probabilities are estimated to be very high. We fail to reject the null hypothesis of no co-integration in all eight cases. Hence, there is a strong probability of a long-run relationship between the deposit rate and discount rate in the within-dimension tests. Similarly, in the three between-dimension tests, the computed probabilities are more than 0.90, which is much higher than 0.05. Here, too, we fail to reject the null hypothesis of no co-integration. Sørensen and Werner (2006) find similar results for savings deposits in the Euro area, using the Pedroni residual-based test. They argue that there is no co-integration with the market rate possibly because the adjustment in savings deposits is so sluggish.

Table 3: Pedroni Residual-Based Panel Co-Integration Test Variables: Deposit Rate and Discount Rate

Ho: No Co-Integration				
Ha: Within Dimension	**Statistic**	**Prob.**	**Weighted Stat.**	**Prob.**
Panel V stat.	0.28	0.40	0.55	0.30
Panel rho-stat.	1.70	0.95	1.40	0.91
Panel PP-stat.	2.71	0.99	2.24	0.98
Panel ADF-stat.	2.61	0.99	2.13	0.98
Ha: Between Dimensions				
Group rho-stat.	1.30	0.89		
Group PP-stat.	2.44	0.99		
Group ADF-stat.	2.34	0.99		

Note: None of the computed probabilities less than 0.10 are not significant.
Source: Author's calculations.

3.2. PL Estimates with Slopes and Intercept Dummies

Table 4 reports three types of estimated equations for both lending and deposit rates.

Table 4: PL Estimates with Dummy Variables

| | Lending-Deposit Rates | | |
	Eq. 1	Eq. 2	Eq. 3
Cons.	7.80	7.82	8.10
	(9.50)*	(9.80)*	(17.30)*
DR (PL)	0.20	0.10	0.15
	(2.70)**	(1.80)***	(3.20)*
DR-FB		0.15	0.15
		(39.70)*	(43.90)*
DR-NB		0.09	0.24
		(16.20)*	(104.30)*
DR-PB		0.22	0.32
		(37.50)*	(138.20)*
DR-SB			
DDR	0.25	0.25	0.20
	(5.70)*	[5.60]*	(3.05)*
DERL	0.50	0.50	0.50
	(44.60)*	(45.30)*	(262.50)*
C1-FB			-2.40
			(-23.80)*
C2-PB			-3.37
			(-79.10)*
C3-NB			-1.80
			(-24.70)*
C4-SDB			
Chi-sq.		7146431*	
R-sq.	0.97	0.97	0.97
DW	1.80	1.80	1.30

Notes: 1: Chi = sq. pertains to the Wald coefficient restriction test.
DR-FB = slope dummy for foreign banks, DR-NB = slope dummy for domestic nationalized banks, DR-PB = slope dummy for domestic privatized banks, DR-SB = slope dummy for domestic specialized banks. C1-C4 = intercept dummies for 4 cross-section banks. DERL and DERD are the first difference of residual from EG-OLS equation for lending and deposit rates. DERL and DERD are the first difference of residual from EG-OLS equation for lending and deposit rates.
Eq. 1 and 2 estimates with AR(1, 2), Eq. 3 AR(1) only.
Source: Author's calculations.

Equation 1 estimates the PL model without bank-type dummies in an autoregressive of order 2 model to tackle autocorrelation. Equation 2 includes overall slope and bank-type dummies. The Wald test is applied to check whether bank types' pass-through is different from the overall estimated slope. Equation 3 gives slope as well as intercept dummies, in

an autoregressive of order 1 equation. Equation 1 for the lending rate estimates the overall slope to be 0.20, which is far below 1, implying that the pass-through of the discount rate with a weighted average lending rate is not complete.

We note that the overall pass-through parameter decreases with the inclusion of autoregressive terms, but the Durbin-Watson (DW) improves. This means that banks pass on only 20 percent of the impact of a change in the discount rate to lenders immediately, which is very low. The overall pass-through in Equation 2 is estimated at 0.10, implying that banks pass on only 10 percent of the impact of the discount rate to lenders in the first month overall. The estimated slope dummies show that the pass-through is lowest for specialized banks and highest for domestic private banks followed by foreign banks.

The estimated pass-through for private banks is 0.32, followed by foreign banks at 0.25. The estimated pass-through for nationalized banks is 0.19. We apply the Wald test with a coefficient restriction, all slopes being equal. The estimated chi-square value is 7146431 and the probability is 0. The null hypothesis of equality of slopes can be rejected in favor of at least one slope coefficient being different. This implies that there is heterogeneity in the response of the weighted average lending rate change when the discount rate is changed to implement monetary policy. The DW is 1.80 and goodness of fit explains 97 percent of the variation in the model.

Equation 3 for the lending rate estimates the overall pass-through along with slope and intercept dummies. The overall pass-through is 0.15 but the estimated slope parameter for private banks is 0.32, followed by 0.24 for nationalized banks and 0.15 for foreign banks. In this AR (1) model, the DW statistic is 1.3. After the inclusion of AR (2), the results are similar to Equation 2. The study therefore considers Equation 2 to be the final result. The estimated pass-through is low, which implies that Pakistani banks only pass on a marginal impact of a change in the discount rate to lenders. It also implies that the effectiveness of monetary policy is limited in the first month and that the complete impact takes time.

4. Short-Run Analysis of Deposit and Discount Rates

Since the deposit rate and discount rate do not have a long-run relationship, the study extends the analysis to the short run. Table 5 reports the results in the form of three equations. The variables are in first

difference form. Equation 1 estimates a fixed effects model in which the overall pass-through of the discount and deposit rates is estimated in the short run. The pass-through is 0.16 and is found to be statistically significant. This implies that, overall, banks pass on 16 percent of the impact of a change in discount rate in the first month to depositors.

Table 5: Short-Run Analysis of Deposit and Discount Rates

EQ. 1

D (DEP) = -0.002 + 0.16*D(DR)
          (-0.13) (3.5)*
R^2=0.05   F-Stat=3.8   Prob. (F-Stat) =0.002   DW=1.93

EQ. 2

D (DEP) = -0.02*D (DR) + 0.20*D (DNB) + 0.16*D (DPB) + 0.3*D (DFB)
           (-0.4)*   (1.92) **   (1.40)   (1.96) **
R^2=0.05   F-Stat=2.5   Prob. (F-Stat) =0.02   DW=2.3

EQ. 3

D (DEP) = -0.003*D(DR) + 0.20*D(DNB) + 0.2*D(DPB) + 0.3*D(DFB) +
           (-0.04)   (1.9) ***   (1.3)   (2.01) **
AR (1) =-0.14]
(-2.04)*
R^2=0.07   F-Stat=2.98   Prob. (F-Stat) =0.003   DW=1.94

Source: Author's calculations.

Equation 2 adds bank-type-wise slope dummies. The overall slope is 0 but the pass-through for nationalized and foreign banks is found to be 0.2 and 0.3, respectively. The parameter pertaining to privatized banks is 0.16 but is not statistically significant. Furthermore, the goodness-of-fit measure is only 0.05.

Equation 3 estimates the same model with AR (1) since the DW statistic is 2.3 in Equation 2. The overall parameter is not statistically significant from 0, whereas the slope parameters pertaining to nationalized and foreign banks are 0.2 and 0.3, respectively. The goodness-of-fit measure improves slightly to 0.07 and the DW statistic is estimated at 1.94. The study finds an overall pass-through of 0.16 in the short run between the deposit and discount rates. There is evidence of

asymmetry since the pass-through for various bank types is different. Overall, a higher pass-through of 0.3 is estimated for foreign banks and 0.2 for nationalized banks. The pass-through for privatized banks is estimated at 0.20 but is not significant.

5. Conclusion

This study has estimated the impact of the monetary policy instrument, the discount rate, on weighted average lending and deposit rates in Pakistan. We have used bank-type monthly data for the period November 2001 to March 2011. The four bank types are nationalized, privatized, foreign, and specialized. Panel data techniques have been used to estimate results.

The study has found that all three variables are nonstationary at levels and stationary at first differences. The Pedroni panel co-integration technique was applied to estimate a long-run relationship that reveals that the lending rate is co-integrated while deposit rate is not co-integrated with the monetary policy instrument. Since the lending and discount rates are co-integrated, The PL method was applied using bank-type dummies. The results showed that the overall lending rate's pass-through is 0.20, which is very low. However, there is evidence of asymmetry among various bank types since the pass-through for private, foreign, and nationalized banks is 0.32, 0.25, and 0.19, respectively.

A short-run analysis in the case of the deposit and discount rates has shown that, overall, banks pass on 16 percent of the impact of the discount rate to depositors. The pass-through for foreign and nationalized banks is 0.30 and 0.20, respectively. The estimates suggest that the overall effectiveness of monetary policy is limited and that there is a significant lag in its completeness.

References

Altunbas, Y., Fazylov, O., & Molyneux, P. (2002). Evidence on the bank lending channel in Europe. *Journal of Banking and Finance*, *26*(11), 2093–2110.

Baltagi, B. H. (2000). *Nonstationary panels, panel co-integration and dynamic panels: 15* (*Advances in econometrics*). JAI Press.

Banerjee, A. (1999). Panel data unit roots and cointegration: An overview. *Oxford Bulletin of Economics and Statistics*, *61*, 607–629.

Bernanke, B., & Blinder, A. (1992). Credit, money, and aggregate demand. *American Economic Review*, *82*, 901–921.

Bernanke, B., & Gertler, M. (1995). Inside the black box: The credit channel of monetary policy transmission. *Journal of Economic Perspectives*, *9*(4), 27–48.

Bondt, G. de (2002). *Retail bank interest rate pass-through: New evidence at the Euro-area level* (Working Paper No. 136). Frankfurt, Germany: European Central Bank.

Bondt, G. de (2005). Interest rate pass-through: Empirical results for the Euro area. *German Economic Review*, *6*(1), 37–78.

Cook, S. (2008). Econometric analysis of interest rate pass-through. *Applied Financial Economics Letters*, *4*, 249–251.

Cottarelli, C., Ferri, G., & Generale, A. (1995). *Bank lending rates and financial structure in Italy: A case study* (Working Paper No. 95/38). Washington, DC: International Monetary Fund.

Cottarelli, C., & Kourelis, A. (1994). Financial structure, bank lending rates, and the transmission mechanism of monetary policy. *International Monetary Fund Staff Papers*, *41*(4), 587–623.

De Graeve, F., De Jonghe, O., & Vander Vennet, R. (2004). *The determinants of pass-through of market conditions to bank retail interest rates in Belgium* (Working Paper No. 47). Brussels: National Bank of Belgium.

Donnay, M., & Degryse, H. (2001). *Bank lending rate pass-through and differences in the transmission of a single EMU monetary policy* (Discussion Paper No. 0117). Leuven, Belgium: Katholieke Universiteit, Center for Economic Studies.

Gambacorta, L. (2004). *How do banks set interest rates?* (Working Paper No. 10295). Cambridge, MA: National Bureau of Economic Research.

Gropp, R., Sørensen, C. K., & Lichtenberger, J.-D. (2007). *The dynamics of bank spreads and financial structure* (Working Paper No. 714). Frankfurt. Germany: European Central Bank.

Hadri, K. (2000). Testing for stationarity in heterogeneous panel data. *The Econometrics Journal*, *3*(2)**,** 148–161.

Hannan, T., & Berger, A. (1991). The rigidity of prices: Evidence from the banking industry. *American Economic Review*, *81*(4), 938–945.

Heinemann, F., & Schüller, M. (2002). *Integration benefits on EU retail markets: Evidence from interest rate pass-through* (Discussion Paper No. 02-26). Mannheim, Germany: Zentrum für Europäische Wirtschaftsforschung.

Hofmann, B., & Mizen, P. (2004). Interest rate pass-through and monetary transmission: Evidence from individual financial institutions' retail rates. *Economica*, *71*, 99–123.

Hulsewig, O., Mayer, E., & Wollmershauser, T. (2006). Bank loan supply and monetary policy transmission in Germany: An assessment based on matching impulse responses. *Journal of Banking and Finance*, *30*, 2893–2910.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, *115*, 53–74.

Kashyap, A. K., & Stein, J. (2000). What do a million observations on banks say about the transmission of monetary policy? *American Economic Review*, *86*, 310–314.

Kleimeier, S., & Sander, H. (2006). Expected versus unexpected monetary policy impulses and interest rate pass-through in Eurozone retail banking. *Journal of Banking and Finance*, *30*, 1839–1870.

Levin, A., Lin, C. F., & Chu, C. (2002). Unit root tests in panel data: Asymptotic and finite sample properties. *Journal of Econometrics*, *108*, 1–24.

Liu, M.-H., Margaritis, D., & Tourani-Rad, A. (2008). Monetary policy transparency and pass-through of retail interest rates. *Journal of Banking and Finance*, *32*, 501–511.

Mishkin, F. S. (1995). Symposium on the monetary transmission mechanism. *Journal of Economic Perspectives*, *9*(4), 3–10.

Mohsin, H., & Rivers, P. (in press). Are domestic banks' interest rate pass-throughs higher than foreign banks? Empirical evidence from Pakistan. *International Journal of Economics and Finance,* November.

Mojon, B. (2000). *Financial structure and the interest rate channel of ECB monetary policy* (Working Paper No. 40). Frankfurt, Germany: European Central Bank.

Orsal, D. D. K. (2007). *Comparison of panel cointegration tests* (SFB 649 Discussion Paper No. 029). Berlin, Germany: Humboldt-Universität zu Berlin.

Ozdemir, B. K. (2009). Retail bank interest rate pass-through: The Turkish experience. *International Research Journal of Finance and Economics*, *28*, 7–15.

Pedroni, P. (1999). Critical values for cointegration tests in heterogeneous panels with multiple regressors [Special issue]. *Oxford Bulletin of Economics and Statistics*. November, 653–670.

Pedroni, P. (2004). Panel cointegration: Asymptotic and finite sample properties of pooled time series with an application to the PPP hypothesis. *Econometric Theory*, *20*, 597–625.

Phillips, P. C. B., & Loretan, M. (1991). Estimating long-run equilibria. *Review of Economic Studies*, *58*, 407–436.

Qayyum, A., Khan, S., & Khawaja, M. I. (2005). Interest rate pass-through in Pakistan: Evidence from transfer function approach. *Pakistan Development Review*, *44*(4), 975–1001.

Romer, C., & Romer, D. (1989). Does monetary policy matter? A new test in the spirit of Friedman and Schwartz. *National Bureau of Economic Research Macroeconomic Annual*, *4*, 121–170.

Rousseas, S. (1985). A markup theory of bank loan rates. *Journal of Post Keynesian Economics*, *8*(1), 144–153.

Sander, H., & Kleimeier, S. (2002). Asymmetric adjustment of commercial bank interest rates in the Euro area: An empirical investigation into interest rate pass-through. *Kredit und Kapital*, *35*(2), 161–192.

Sander, H., & Kleimeier, S. (2004). *Interest rate pass-through in an enlarged Europe: The role of banking market structure for monetary policy transmission in transitional countries* (Mimeo). Maastricht, Holland: Maastricht Research School of Economics of Technology and Organization.

Sørensen, C. K., & Werner, T. (2006). *Bank interest rate pass-through in the Euro area: A cross-country comparison* (Working Paper No. 580). Frankfurt, Germany: European Central Bank.

Tieman, A. (2004). *Interest rate pass-through in Romania and other central European economies* (Working Paper No. 04/211). Washington, DC: International Monetary Fund.

Toolsema, L. A., Sturm, J.-E., & Haan, J. de (2002). *Convergence of monetary transmission in EU: New evidence* (Working Paper No. 465). Munich, Germany: CESifo.

Van Leuvensteijn, M., Sørensen, C. K., Bikker, J. A., & Van Rixtel, A. (2008). *Impact of bank competition on the interest rate pass-through in the Euro area* (Working Paper No. 885). Frankfurt, Germany: European Central Bank.

Vega, E., & Rebucci, A. (2003). *Retail bank interest rate pass-through: Is Chile atypical?* (Working Paper No. 03/112). Washington, DC: International Monetary Fund.

Weth, M. A. (2002). *The pass-through from market interest rates to bank lending rates in Germany* (Discussion Paper No. 11/02). Frankfurt, Germany: Deutsche Bundesbank.

The Economics of Inflation, Issues in the Design of Monetary Policy Rule, and Monetary Policy Reaction Function in Pakistan

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Abstract

The objective of this study is to estimate a monetary policy reaction function for Pakistan. To do this, we use data for the period 1992Q4–2010Q2. Our results show that the State Bank of Pakistan reacts to changes in the inflation rate and economic activity in a manner that is consistent with the Taylor (1993) rule, and with the explicit objective of interest rate smoothing and exchange rate management. This policy has remained consistent for most of the sample period, except for the last two years, during which a price hike and the massive depreciation of domestic currency led to a significant change in the parameters of the policy reaction function. We also find evidence of nonlinearity in the reaction function as the response to an inflation rate above 6.4 percent is found to be more aggressive than that in low inflationary episodes.

1. Introduction

The ultimate objective of monetary policy is to maximize society's welfare, which can be achieved by keeping unemployment at its natural rate and prices stable. If some labor is unemployed, output remains below its potential level, which results in lower living standards. If the inflation rate exceeds a certain threshold, it is harmful for economic growth. Price instability is a major source of uncertainty in financial markets since it distorts economic choices for economic agents, thereby causing the economy to perform below its potential level.[1] The stability of certain other

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[1] Note, however, that central banks can reduce unemployment and promote output growth in the long run only through price stability.

economic indicators such as the interest rate and exchange rate also helps achieve the objective of social welfare. Abrupt changes in the interest rate, for instance, destabilize the financial system, resulting in the poor intermediation of loanable funds. Sudden changes in the exchange rate destabilize international trade and discourage foreign investment. Therefore, monetary policy is concerned mostly with keeping output at its potential level while keeping prices, the interest rate, and exchange rate stable. The real challenge for monetary authorities, however, is to resolve the tradeoff among these objectives, especially in the short run. Thus, the art of monetary policy lies in being able to achieve an optimal mix of these variables, in which case policy is said to be optimal.

In designing monetary policy, an important issue is the choice of appropriate variables to target and the numerical targets for those variables. The vector of chosen variables may include the inflation rate, a measure of real activity, the interest rate, and the exchange rate. A zero-output gap may be used as a benchmark for real activity, but the real gross domestic product (GDP) growth rate is also an option. It must be said at the outset, however, that monetary policy alone cannot maintain a high growth rate in the long run. To achieve price stability, which is the primary objective, the threshold rate of inflation (above which inflation is harmful for economic growth) can be considered a target. The nominal exchange rate is adjusted such that the misalignment of the actual real exchange rate from its equilibrium value is minimal. Finally, the interest rate—the policy instrument—is adjusted gradually to avoid abrupt changes.

Monetary authorities achieve these objectives through one of two alternative policy frameworks: rules and discretion. The discretionary framework is more flexible on the part of the policymaker, and so appropriate decisions can be made according to current and expected future economic conditions. However, Kydland and Prescott (1977) argue that even optimal discretionary policies are time-inconsistent. These inconsistent policies create uncertainty in financial markets and even in the labor and goods markets.

A policymaker may lose credibility through policy reversals. Taylor (1993) prescribed a simple, easily verifiable rule for monetary policy according to which the short-term interest rate (the monetary policy instrument) responds to the deviation of the inflation rate from the target and that of output from its potential level. Later, this rule was augmented by incorporating the exchange rate and lagged interest rate. An important issue in this regard is the functional form of the reaction

function. In one setting, the monetary policy instrument is formulated as a linear function of the target variables. At the same time, this would be inappropriate if there were regime shifts in the history of monetary policy, in which case the rule would become nonlinear (Davig & Leeper, 2007; for details on regime shifts, see Hamilton, 1989).

The objective of this study is to compare the monetary policy reaction function in Pakistan with the benchmark Taylor rule. More specifically, we carry out the following. First, we estimate a policy reaction function with the short-term interest rate as the policy instrument and the output gap and inflation rate as target variables. Second, we re-estimate the reaction function by augmenting the vector of the target variables with the lagged interest rate and exchange rate. Third, we use recursive estimates to investigate policy consistency. Fourth, we estimate the threshold rate of inflation, which is the turning point of the monetary authority's degree of leaning against the wind. Fifth, we compare the monetary authority's response to inflation in a high inflationary regime to that in low inflationary episodes. Finally, we carry out all this twice: one for the full sample period 1992Q4–2010Q2 and the other for a subsample 1992Q4–2008Q1. The rationale for this division is the price hike and massive currency depreciation that occurred during the last two years of the sample period. Thus, these years are treated as abnormal.

The rest of the study proceeds as follows. The methodology is explained in Section 2. Detailed results are presented and discussed in Section 3, while Section 4 concludes the study.

2. Methodology and Data

Linear Monetary Policy Reaction Function

We begin the estimation by adopting the static version of the Taylor rule, in which the short-term nominal interest rate is the sum of the equilibrium real interest rate, current inflation rate, and a weighted average of deviation of output from its potential and that of the inflation rate from its target.

The original specification in Taylor (1993) is given as:

$$i_t = r^* + \pi_t + \alpha_y y_t + \alpha_\pi (\pi_t - \pi^*) \tag{1}$$

Here, i is the nominal short-term interest rate (the monetary policy instrument), r^* is the equilibrium real interest rate, π is the current inflation rate, y is the output gap, and π^* is the target inflation rate. α_y and α_π are the response coefficients. As r^* and π^* are assumed to be constant, the equation can be converted into estimable form as:

$$i_t = \beta_0 + \beta_1 y_t + \beta_2 \pi_t + u_t \tag{2}$$

Here, $\beta_0 = r^* - \alpha_\pi \pi^*, \beta_1 = \alpha_y, \beta_2 = 1 + \alpha_\pi$, and u is the error term capturing any deviation from the Taylor rule. The hypothesized values of these parameters are $\beta_1 > 0$, $\beta_2 > 1$, and β_0 may be negative or positive.

The original model is augmented by incorporating the difference of the exchange rate as an additional policy variable, since exchange rate management is one of the important objectives of monetary policy (see, for instance, Lubik & Schorfeide, 2005). This version is to verify whether or not the SBP pursues exchange rate stability:

$$i_t = \beta_0 + \beta_1 y_t + \beta_2 \pi_t + \beta_3 (e_t - e_{t-1}) + u_t \tag{3}$$

Here, e is the nominal direct exchange rate (domestic currency price of one unit of foreign currency), so an increase in e means that the domestic currency has depreciated and $(e_t - e_{t-1})$ is the difference of the exchange rate. β_3 is assumed to be positive since the depreciation of domestic currency calls for an increase in the interest rate to discourage capital outflows.

In the third step, we move to the dynamic version of the rule, under which monetary authorities try to change the interest rate gradually to stabilize the financial system. This implies that most central banks follow the explicit objective of interest rate smoothing. In fact, the earliest function of a central bank was to ensure financial stability. This objective makes the error term in the static version of the Taylor rule serially correlated, in which case the results of this version are subject to a specification bias. Thus, the appropriate model is constructed as:

$$\begin{aligned} i_t &= \beta_0 + \beta_1 y_t + \beta_2 \pi_t + u_t \\ u_t &= \rho u_{t-1} + \xi_t \end{aligned} \tag{4}$$

The error term is assumed to be serially correlated of order 1, where is the autocorrelation coefficient. ξ is an error term with mean 0 and

constant variance, and is serially uncorrelated. This two-equation system can be solved to determine the dynamic version of the Taylor rule as:

$$i_t = \rho i_{t-1} + (1 - \rho)(\beta_0 + \beta_1 y_t + \beta_2 \pi_t) + \xi_t \tag{5}$$

Here, $(1 - \rho)\beta_1$ and $(1 - \rho)\beta_2$ are short-run response coefficients while β_1 and β_2 remain the same in the long run. Finally, we incorporate the exchange rate into the dynamic version to complete the specification.

$$i_t = \rho i_{t-1} + (1 - \rho)(\beta_0 + \beta_1 y_t + \beta_2 \pi_t + \beta_3 (e_t - e_{t-1}) + \xi_t \tag{6}$$

Nonlinear Monetary Policy Reaction Function

The equations above (Taylor rule) specify the interest rate as a linear function of the target variables. However, the policy maker's response to these target variables may change under different regimes, such as during a boom and recession or high and low inflationary episodes. In this study, we estimate the threshold rate of inflation, which is the turning point of the policy response coefficients. For this purpose, we use the following specification:

$$i_t = \rho i_{t-1} + (1 - \rho)(\beta_0 + \beta_1 y_t + \beta_2 \pi_t + \beta_3 (e_t - e_{t-1}) + \beta_4 \pi_t * DUM + \xi_t \tag{7}$$

DUM is a dummy variable with a value of 1 if the inflation rate is above the threshold and 0 otherwise. To estimate the threshold, the data on inflation is arranged in ascending order and 30 percent of the observations with extreme values on either side are excluded. Every remaining value of the rest of the series is considered, in turn, to be the threshold. For each of these values, we construct a dummy variable and estimate Equation (7). The regression with the lowest residual sum of squares yields the threshold rate of inflation (for more details on this estimation procedure, see Enders, 2010).

Data and Variables

We use the three-month t-bill rate as the monetary policy instrument. In Pakistan, the interest rate charged on discount window borrowing is used as the policy rate, whereas the overnight offered rate is the operational target. However, due to data limitations for the sample period, we use the t-bill rate as the policy instrument. Prior to 2009, the State Bank of Pakistan (SBP) would decide on a cut-off yield on the auction of t-bills that was mostly in line with the overall monetary policy stance.

For the output gap, we fit the quadratic trend in constant price GDP and then calculate the percentage deviation of actual output from the trend values. The inflation rate is measured as the percentage difference of the consumer price index (CPI) in the current quarter over the CPI in the corresponding quarter of the previous year. Data on the interest rate, nominal spot exchange rate, and CPI is taken from the SBP bulletin, and data on GDP from Arby (2008).

3.   Results and Discussion

Before embarking on a formal estimation procedure, it is constructive to illustrate the variables used in the study. Figure 1a shows that the short-term interest rate is positively related to the inflation rate, but the turning points show that the latter takes the lead and the interest rate follows.

Figure 1a: Inflation Rate and T-Bill Rate Variables
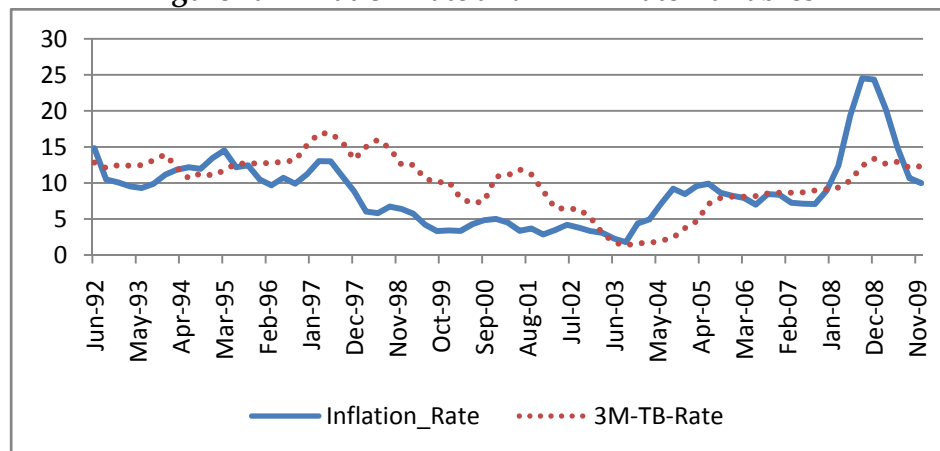
Source: Authors' calculations based on data from the State Bank of Pakistan and Arby (2008).

After the first quarter of 2007/08, the inflation rate begins to accelerate and reaches the historically high level (i.e., for the sample period) of 25 percent. The interest rate, however, does not increase much during this period. The interest rate is also positively related to the output gap, which it largely follows except for the last two years when both series follow almost opposite trends (Figure 1b). The inflation rate was quite high at the time, and the SBP raised the interest rate to curb inflation despite there being an economic downturn.

Changes in the exchange rate seem to be mostly independent of the interest rate. However, both series are strongly correlated in the last two

years of the sample period in which they show an increasing trend. This is when the rupee depreciated against the dollar by almost 38 percent after a long period of overvaluation (of the rupee). To discourage capital outflow, the SBP raised the interest rate.

Figure 1b: Output Gap and T-Bill Rate Variables
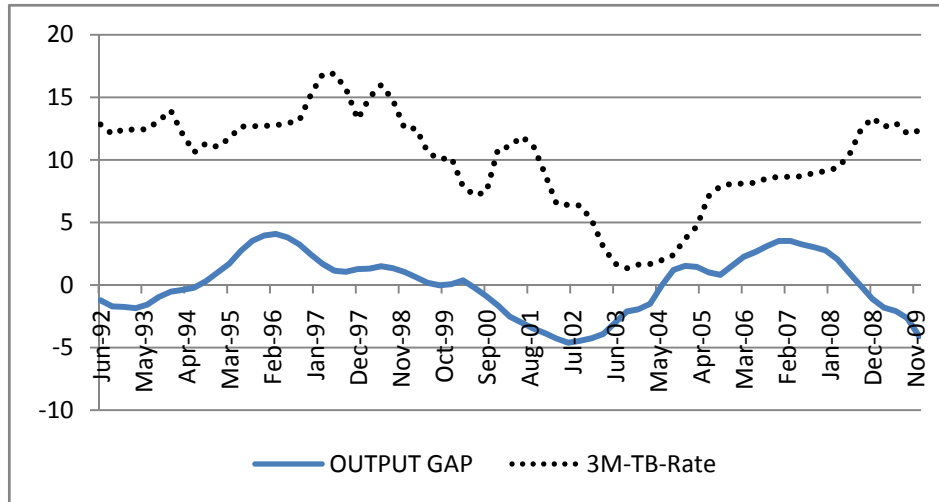
Source: Authors' calculations based on data from the State Bank of Pakistan and Arby (2008).

Figure 1c: Exchange Rate and T-Bill Rate Variables
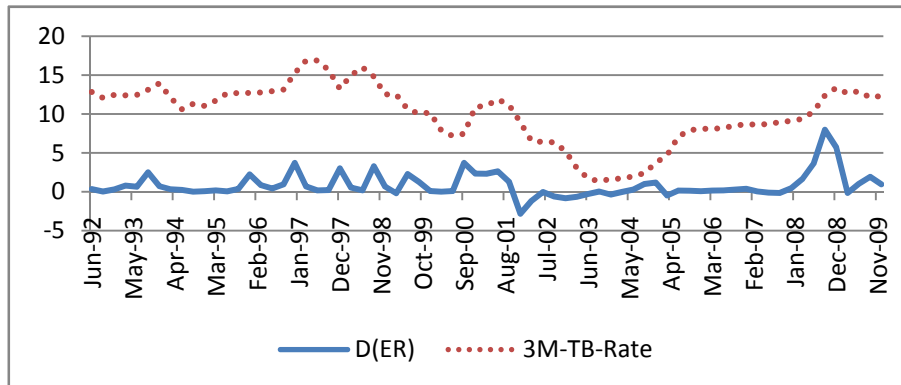
Source: Authors' calculations based on data from the State Bank of Pakistan and Arby (2008).

Estimating the Linear Policy Reaction Function

In the first step toward formally estimating the linear policy reaction function, we estimate four specifications of the Taylor-type reaction function: (i) the static version without the exchange rate, (ii) the static version with the exchange rate, (iii) the dynamic version without the exchange rate, and (iv) the dynamic version with the exchange rate. As Table 1 shows, in the first rule, the coefficient of the inflation rate is significantly greater than 0 but less than 1, and the coefficient of the output gap is not different from 0. However, these results are spurious as the Durbin-Watson (DW) statistic is close to 0, indicating strong positive autocorrelation. This almost perfect autocorrelation is a symptom of missing variables in the rule, especially the lagged interest rate.

The low value of R^2 also indicates the same problem. To augment the reaction function with the objective of stabilizing the exchange rate, we estimate the reaction function with a difference of exchange rate as one of the regressors. Again, the results remain more or less the same—the coefficient of the exchange rate is not different from 0. This points once again to missing variables since both the R^2 and DW statistics are quite low. We then estimate the dynamic version of the policy reaction function, which explicitly considers the central bank's objective of smoothing the interest rate. This time, R^2 is quite high, which indicates a good fit for the model. At the same time, however, we cannot reject the null hypothesis of no autocorrelation with a 95 percent degree of confidence.[2]

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[2] We use the LM statistic to test the presence of autocorrelation as the lagged dependent variable is one of the regressors.

Table 1: Estimation Results for Monetary Policy Reaction Function for Whole Sample

	Rule 1	Rule 2	Rule 3	Rule 4
Constant	6.93	7.19	1.38	2.90
	(0.00)	(0.00)	(0.71)	(0.41)
Output gap	0.24	0.26	1.07	1.08
	(0.19)	(0.16)	(0.05)	(0.03)
Inflation rate	0.35	0.28	0.98	0.61
	(0.00)	(0.01)	(0.00)	(0.04)
Lagged interest rate			0.90	0.89
			(0.00)	(0.00)
Exchange rate difference		0.37		1.89
		(0.23)		(0.03)
Adjusted R-squared	0.22	0.22	0.93	0.93
DW statistic	0.12	0.17		
F-statistic	10.74	7.41	306.79	246.09
	(0.00)	(0.00)	(0.00)	(0.00)
LM statistic			3.75	1.28
			(0.05)	(0.26)

The sample period is 1992:2–2010:2. P-values are given in parentheses.
Source: Authors' calculations.

The policy response coefficients of the output gap and inflation rate and the coefficient of the lagged interest rate are still statistically different from 0. The coefficient of the inflation rate is 1, which fulfills the basic requirement of stability of the system. The coefficient of the output gap is somewhat greater than that of the inflation rate, showing to a greater degree the central bank's concern with real stabilization. The statistical significance and relatively high value of the coefficient of the lagged interest rate confirms the central bank's objective of smoothing the interest rate. We can conclude from the results that only the dynamic version of the Taylor rule fits the Pakistani data well.

Finally, we estimate the dynamic version of the model with the difference of the exchange rate as a regressor. The results in the last column in Table 1 show that the results above remain robust given this change in the model. The only difference is the decrease in magnitude of the coefficient of the inflation rate, which could be due to multicollinearity between the exchange rate and inflation rate. The results also verify that the SBP does focus on exchange rate stabilization.

Results of the Subsample

In the last specification of the policy reaction function, the overall fit of the model was good but of the model itself did not conform to the Taylor principle since the coefficient of the inflation rate was significantly lower than 1. This may have been due to the abnormal inflation rate observed in the last two years of the sample period, during which inflation was a supply-side issue and the economy faced stagflation. Thus, any deflationary policy would have further slowed down economic activity.

As Figures A1 and A2 (see Annexure) show, the benchmark Taylor rule would suggest an interest rate as high as 35 percent. This rate is psychologically too high, and the SBP may not have been able to garner public support for the policy. Instead, it chose to set the interest rate at only about 14 percent during the high-inflationary episode. To avoid this abnormal period, we estimate all four specifications using a subsample that excludes the last two years (see Table 2).

The results of this subsample conform to those in the full sample. The objective of interest rate smoothing is given a high weight in policy design, while the exchange rate plays a role in monetary policy setting. The response coefficients of the inflation rate and output gap are significant only if we eliminate autocorrelation from the model. The only difference in the results is the magnitude of the coefficient of the inflation rate: it is greater than 1 in both specifications of the dynamic version of the rule. Moreover, the magnitude of this coefficient is now greater than that of the output gap, implying that the SBP gives more weight to the inflation rate than to real stabilization when setting the policy instrument. The results of the full sample were, therefore, biased due to the high rate of inflation, which acted as an outlier.

Table 2: Estimation Results for Monetary Policy Reaction Function for Subsample

	Rule 1	Rule 2	Rule 3	Rule 4
Constant	5.46	4.77	-0.04	-0.212
	(0.00)	(0.00)	(0.99)	(0.95)
Output gap	0.16	0.05	0.88	0.49
	(0.48)	(0.84)	(0.20)	(0.36)
Inflation rate	0.56	0.57	1.19	1.06
	(0.00)	(0.00)	(0.02)	(0.00)
Lagged interest rate			0.90	0.87
			(0.00)	(0.00)
Exchange rate difference		1.06		2.38
		(0.01)		(0.00)
Adjusted R-squared	0.22	0.33	0.93	0.94
DW statistic	0.12	0.38		
F-statistic	10.74	10.89	266.07	221.66
	(0.00)	(0.00)	(0.00)	(0.00)
LM statistic			3.70	0.10
			(0.05)	(0.75)

The sample period is 1992:4–2008:1. P-values are given in parentheses.
Source: Authors' calculations.

Consistency of Policy

Next, we investigate the consistency of the monetary authority in setting the monetary policy instrument. For this purpose, we use recursive estimates of the coefficients and their standard errors for the last (fourth) specification of the Taylor rule as applied to the full sample. Figure 2 shows that the only stable parameter is the coefficient of the lagged interest rate, indicating the consistent behavior of policymakers with regard to interest rate smoothing. The coefficients of the other three variables—the inflation rate, output gap, and difference of exchange rate—are not stable throughout the sample period.

It is worth noting that all these coefficients are stable for the period 2001–07. The coefficient of the inflation rate decreases after 2007, which shows a fall in the weight given to price stability. However, this could be attributed to an abnormally high rate of inflation when the monetary authority could not increase the interest rate. At the time that the SBP tried to raise the discount rate, it came under serious criticism

from industry and from academic circles. The interest rate was thus set at a level that was smaller than half of what the benchmark Taylor rule would have prescribed.

Figure 2: Recursive Estimates for Policy Reaction Function
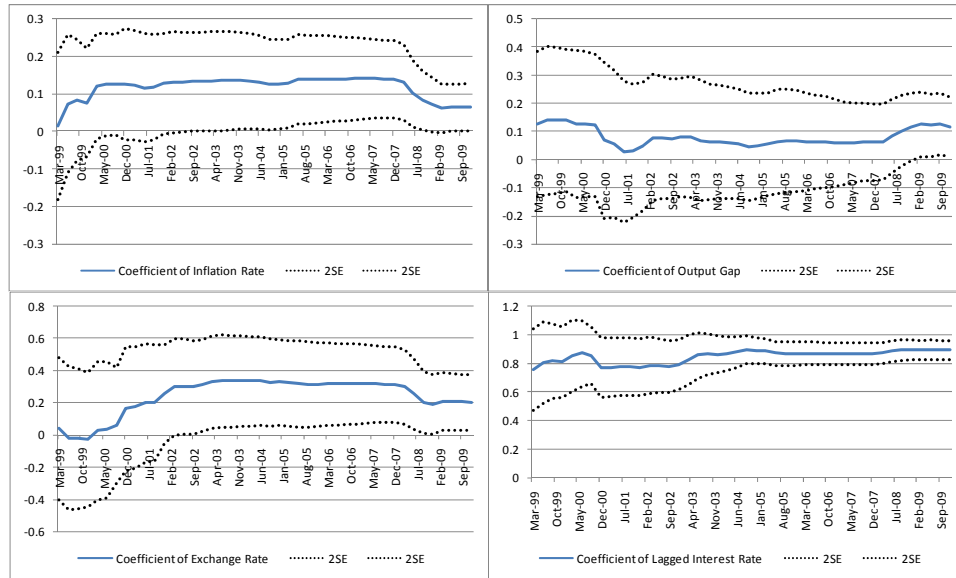
Source: Authors' calculations.

Since economic activity was shrinking at the time, the SBP did not adopt a deflationary policy for fear of further slowing down business activity. This is evident from the upper-right panel of Figure 2 as the coefficient of the output gap begins to rise after 2007. The decline in the coefficient of the exchange rate post-2007 can be similarly interpreted. At the time, domestic currency had depreciated by almost 38 percent, so the SBP tried to raise the interest rate to discourage capital outflow. However, the rise in the interest rate was not comparable with the increase in the exchange rate.

Figure 3: Actual and Simulated Interest Rate
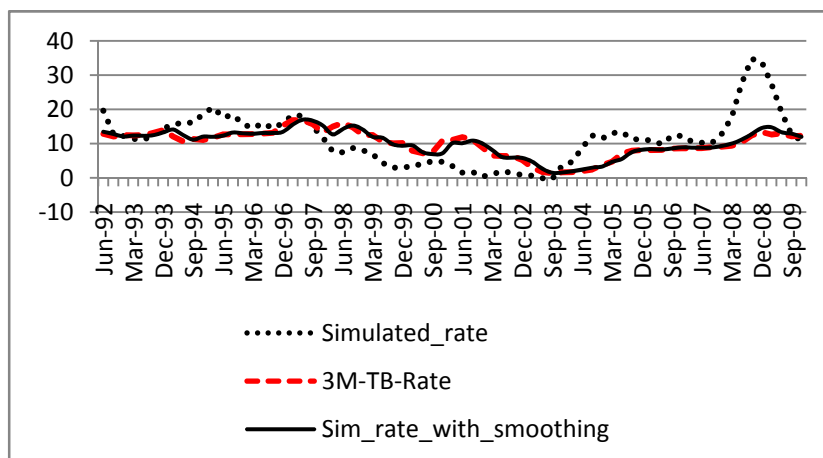
Estimating Nonlinear Policy Reaction Function

Finally, we estimate the threshold inflation rate in order to identify different policy responses to high and low inflationary regimes. To do this, we use the methodology outlined in Section 3, i.e., we use the dynamic version of the Taylor rule with price stability, real stabilization, exchange rate stability, and interest rate smoothing as policy goals. This is carried out both for the whole and subsamples (see Table 3).

Table 3: Estimation of Nonlinear Taylor Rule

	Coefficient	P-Value	Coefficient	P-Value
	Sample: 1992:2–2010:2		Sample: 1992:2–2008:1	
Constant	-3.27	(0.42)	-8.13	(0.01)
Output gap	1.45	(0.00)	0.81	(0.04)
Inflation rate above threshold	2.91	(0.00)	3.75	(0.00)
Inflation rate below threshold	1.09	(0.00)	1.69	(0.00)
Lagged interest rate	0.89	(0.00)	0.84	(0.00)
Exchange rate difference	1.27	(0.10)	1.81	(0.00)
Threshold inflation rate	6.37		6.37	
Adjusted R-squared	0.94		0.95	
F-statistic	216.19		228.24	
	(0.00)		(0.00)	

The threshold inflation rate is found to be 6.4 percent. Thus, in terms of the monetary authority's reaction to a price hike, the period marked by an inflation rate above this threshold rate is considered a high inflationary period. Moreover, we find that the SBP gives more weight to price stability when the economy falls under a high inflationary regime. Again, the results of the subsample confirm that the relatively high response coefficient of the output gap is due to the high inflation rate prevailing in the last two years of the sample.

4.   Summary Findings and Concluding Remarks

The study's objective was to estimate a monetary policy reaction function for Pakistan for the sample period 1992Q4–2010Q2. We have estimated both static and dynamic versions of the Taylor rule with exchange rate stabilization as a monetary policy objective. The results have shown that the dynamic version of the rule fits the data fairly well but the static version does not. The SBP focuses on price stability along with some real stabilization and exchange rate management, but its most significant objective is to smooth the interest rate in order to protect the financial system from abrupt changes.

The response of the interest rate to the target variables is significantly different for the period 2008Q1–2101Q2 compared to other sample periods. The inflation rate jumped to 25 percent during this period, economic activity slowed down, and the rupee depreciated by almost 38 percent. Given the high inflation rate and massive depreciation of domestic currency in the last two years of the period, the benchmark Taylor rule would have suggested setting an interest rate as high as 35 percent, whereas the SBP faced serious criticism at the time and increased the discount rate to 15 percent. We have also found that the threshold rate of inflation is 6.4 percent, above which the SBP reacts more strongly to inflation.

The different responses of policy in the last two years of the sample period raise some issues that need further discussion. First, the SBP faces a great deal of pressure from politicians, industry, the media, and even academia when it raises the interest rate. This may be due to lobbying by rent seekers who enjoy a handsome rent through low interest rates. Second, central banks make only gradual changes to the interest rate in order to stabilize financial markets. Third, central banks face serious trouble in periods of stagflation. Raising the interest rate to curb inflation could cause economic activity to slow down. In the last two years of the sample period, prices and the exchange rate increased

along with the negative output gap, and so the SBP did not take the tight stance that it would otherwise have taken.[3] Finally, most contemporary central banks in the world are forward-looking, so any price hike that is expected to be short-lived, does not call for changes in the policy instrument.

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[3] The SBP raised its policy rate at the time, but the increase was smaller than the growth rate of prices, which reduced the real cost of borrowing.

References

Arby, M. F. (2008). *Some issues in the national income accounts of Pakistan (Rebasing quarterly and provincial accounts and growth accounting)*. Islamabad: Pakistan Institute of Development Economics.

Ball, L. (1999). Policy rules for open economies. In J. B. Taylor (Ed.), *Monetary policy rules*. Chicago, IL: University of Chicago Press.

Barro, R., & Gordon, D. (1983a). A positive theory of monetary policy in a natural rate model. *Journal of Political Economy*, *91*, 589–610.

Barro, R., & Gordon, D. (1983b). Rules, discretion, and reputation in a model monetary policy. *Journal of Monetary Economics*, *12*(1), 101–121.

Caputo, R., & Liendo, F. (2005). *Monetary policy, exchange rate and inflation inertia in Chile: A structural approach* (Working Paper No. 352/2005). Santiago: Central Bank of Chile.

Davig, C. H., & Leeper, E. (2007). Monetary and fiscal policy switching. *Journal of Money, Credit and Banking*, *39*, 809–842.

Clarida, R., Gali, J., & Gertler, M. (1999). Monetary policy rules in practice: Some international evidence. *European Economic Review*, *42*, 1033–1067.

Enders, W. (2010). *Applied econometric time series* (3rd ed.). Hoboken, NJ: John Wiley & Sons.

Ftiti, Z. (2008). Taylor rule and inflation targeting: Evidence from New Zealand. *International Business and Economics Research Journal*, *7*(1), 131–150.

Hamilton, J. D. (1989). A new approach to the economics of nonstationary time series and the business cycle. *Econometrica*, *57*, 357–384.

Hamilton, J. D. (2005). Regime-switching models. In S. N. Durlauf & L. E. Blume (Eds.), *Palgrave dictionary of economics*. Basingstoke, UK: Palgrave Macmillan.

Kydland, F. E., & Prescott, E. C. (1977). Rules rather than discretion: The inconsistency of optimal plans. *Journal of Political Economy*, *85*, 473–492.

Lubik, T., & Schorfheide, F. (2005). *Do central banks respond to exchange rate fluctuations? A structural investigation* [Mimeo]. Philadelphia: University of Pennsylvania.

Malik, W. S., & Ahmed, A. M. (2010). Taylor rule and macroeconomic performance. *Pakistan Development Review*, *49*(1), 37–56.

Svensson, L. E. O. (2000). Open-economy inflation targeting. *Journal of International Economics*, *50*(1), 155–183.

Taylor, J. B. (1993). Discretion versus policy rules in practice. *Carnegie-Rochester Conference Series on Public Policy*, *39*, 195–214.

Taylor, J. B. (1999). A historical analysis of monetary policy rules. In J. B. Taylor (Ed.), *Monetary policy rules*. Chicago, IL: University of Chicago Press.

Taylor, J. B. (2000). Alternative views of the monetary transmission mechanism: What difference do they make for monetary policy? *Oxford Review of Economic Policy*, *16*(4), 60–73.

Taylor, J. B. (2001). The role of the exchange rate in monetary policy rules. *American Economic Review*, *91*, 263–267.
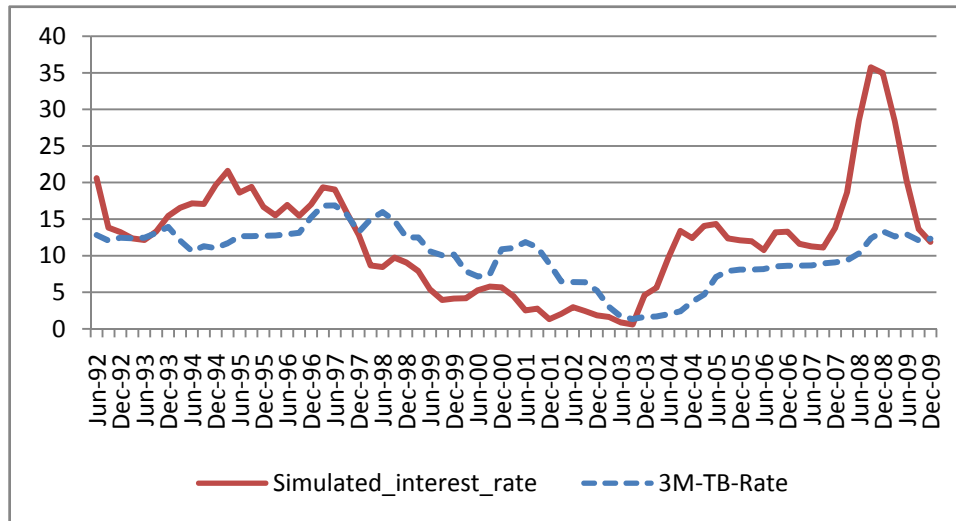
Annexure

Figure: A1

Figure: A2
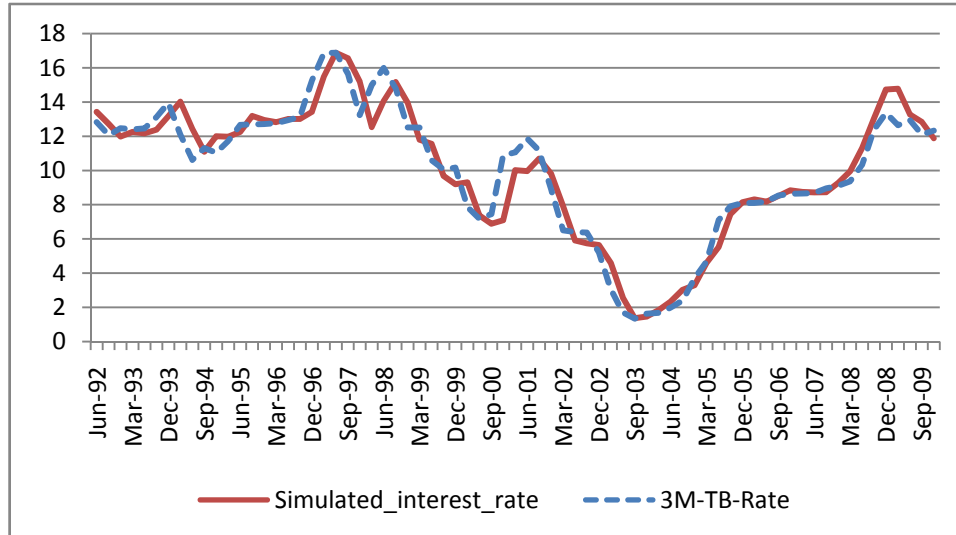
Editors' Introduction

The Center for Research in Economics and Business (CREB) of the Lahore School of Economics, hosted the Seventh Annual Conference on the Management of the Pakistan Economy from May 4th – May 6th, 2011 and the theme of this year's conference was 'Financial Sector Development and Management'. Since Pakistan has undergone significant economic and financial changes over the last decade, the objective of the conference was to present an overview of the Pakistan economy and then focus on financial sector management and monetary management issues facing Pakistan.

The topics and papers covered in the conference were:

Session I: Macroeconomic Management in Pakistan

Over the last few years, Pakistan has been confronted with a host of macroeconomic challenges. Keeping this in mind, the conference began with an overview of the issues facing the Pakistan economy over the last few years and recommendations on how to address the key macroeconomic challenges. Shahid Amjad Chaudhry's[1] paper, 'Pakistan 2011: Policy Measures for the Economic Challenges Ahead', discussed the balance of payments and public finance related issues facing the Pakistan economy. The author argued that these issues can be addressed without resorting to a new IMF programme if certain critical policy changes are made. His key policy recommendations were: (i) allowing the orderly depreciation of the exchange rate in the foreign exchange interbank market by about 5–15 percent or to PKR90–100/US dollar, (ii) imposing import surcharges of 10–20 percent on nonessential imports, (iii) re-imposing measures originally imposed to increase the cost of import letters of credit, (iv) gradually reducing the State Bank of Pakistan's policy rate by 300 basis points in the fiscal year (FY) 2012 from its present level of 13.5 percent, thereby reducing the interest burden on public debt, (v) utilizing these savings to restart the stalled public sector infrastructure development program, (vi)increasing the sales tax rate from its present 16 percent to 18 percent, (vii) increasing custom duties by 10–20 percent on nonessential imports (as also recommended for the balance of payments, and (ix) increasing regulatory and excise duties and restoring their original (FY2011) coverage.

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[1] Rector, Lahore School of Economics and Former Deputy Chairman of the Planning Commission, Government of Pakistan.

The paper by Rashid Amjad[2] Musleh ud Din[3] and Abdul Qayyum[4], 'Pakistan: Breaking-Out of Stagflation into Sustained Growth', also examined the macroeconomic challenges facing Pakistan. The authors discuss that the underlying cause of the macroeconomic problems facing Pakistan today are a series of supply shocks that have constrained output growth. The authors go on to argue that while the current debate has solely focused on government expenditures and revenues, it is critical to also address the acute energy shortages that are constraining supply. The authors then present four recommendations for breaking out of the present stagflation: (i) prudent macroeconomic management, (ii) reviving the role of the government in development while restoring fiscal balance, (iii) loosening monetary policy in order to spur the private sector, and (iv) improving social safety nets.

Inayat Ullah Mangla's[5] paper, 'Reconstructing the Performance of Pakistan's Political Economy: Another Paradigm', looked at the major factors limiting economic growth in Pakistan. The author then analyzed the structural problems faced by Pakistan today and went on to the challenges facing monetary policy makers in Pakistan as well as the problem of the 'twin deficits', budget and trade deficits. The author concluded with a discussion on the key institutional changes needed in Pakistan.

The last paper in this session was presented by Matthew McCartney[6]: 'Pakistan, Growth Dependency and Crisis'. The author addressed the notion that Pakistan was an economy that was dependent on external factors such as trade, financial flows and foreign asset markets, and found that the evidence was far from convincing. The author went on to present a new methodology to test dependency, that of case studies of growth and stagflation, and concluded that the results of this analysis found that growth in Pakistan was primarily driven by the dynamics of the domestic economy.

Session II: Capital Account Convertibility and Debt in Pakistan

Over the last decade, Pakistan and other South Asian countries have aggressively pursued policies aimed at developing capital markets.

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[2] Vice-Chancellor, Pakistan Institute of Development Economics (P.I.D.E), Islamabad.

[3] Joint Director, Pakistan Institute of Development Economics (P.I.D.E), Islamabad.

[4] Registrar, Pakistan Institute of Development Economics (P.I.D.E), Islamabad.

[5] Professor of Finance, Department of Finance & Commercial Law, Haworth College of Business, Western Michigan University.

[6] Lecturer in Economics (South Asia), School of Oriental and African Studies (SOAS), University of London.

In order to understand these policies in the Pakistani context, the second session focused on capital account convertibility, external and internal debt and the issue of bond market development in Pakistan. The first paper in the session was presented by Irfan ul Haque[7]: 'The Capital Account and Pakistani Rupee Convertibility: Macroeconomic Policy Challenges'. The author looked at the history of capital account liberalization in Pakistan over the last two decades and concluded that the Pakistani capital account is effectively free of restrictions. The author then discussed how the open capital account and rupee convertibility have made Pakistan more vulnerable to external shocks. The author then focused on three major challenges facing the Pakistan's economic policy makers: macroeconomic management, controlling tax evasion (which has been made easier by rupee convertibility) and minimizing the real cost of portfolio investment into Pakistan. The author concluded his paper by offering ideas on how these challenges could be met.

The next paper in this session was presented by Eatzaz Ahmad[8]: 'A Quantitative Analysis of Pakistan's External and Internal Debt'. The author discussed how poor debt management combined with the policies of donor agencies (particularly the IMF) have brought on the present domestic and foreign debt crises. The author presented a qualitative account of the debt in Pakistan and then analyzed the debt data using various debt burden indicators. The author then went on to analyze the economic and social costs of debt overhang in Pakistan and found that net foreign resource flows to the private and public sectors tended to crowd out private and public savings respectively and that public savings is crowded out by resource flows from the private sector to the public sector. Finally, the author found that the resource allocation between development and non-development expenditures did not depend on whether government expenditure was financed by revenues or government borrowing and that more resources are directed towards development activity when government expenditure is financed by foreign resource flows rather than domestic resource flows.

The final paper in this session was presented by Jamshed Uppal[9]: 'Government Budget Deficits and the Development of the Bond Market in Pakistan: Issues and Challenges'. The author discussed how greater fiscal

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[7] Special Advisor Financing for Development, South Centre, Geneva.
[8] Professor of Economics and Dean of the Faculty of Social Sciences, Quaid-i-Azam University, Islamabad.
[9] Associate Professor of Finance at the Department of Business and Economics, Catholic University of America, Washington, DC.

discipline could be achieved through enhanced institutional checks and balances as well as through better market discipline. The author went on to look at how bond market development is dependent on sound fiscal policy and how bond markets can, in turn, provide signals on how prudent fiscal policy is.   The author concluded that a liquid bond market can play a crucial role in improving fiscal discipline though fiscal discipline can only be achieved through a comprehensive strategy.

Session III: Monetary Policy in Pakistan

In the face of double digit inflation, the monetary authorities in Pakistan have been forced to take aggressive measures, the impact of which was examined in the third session.   The first paper was presented by Hasan Muhammad Mohsin[10]: 'The Impact of Monetary Policy on Banks' Lending and Deposit Rates in Pakistan: Empirical Evidence from Pakistan'. The author estimated the impact of monetary policy on lending and deposit rates in Pakistan using data from 2001 to 2011. Though the author found a long run relationship between the lending and discount rates, he did not find a significant relationship between deposit rates and discount rates, which implies that monetary policy pass-through is not complete. The author found that banks only pass on 20 percent of the impact of a change in the discount rate to lenders in the first month and that this pass-through varied across banks. Finally the author performed a short-run analysis and found a pass-through of only 0.16, implying that monetary policy effectiveness is limited in Pakistan.

The second paper in this session was presented by Ather Maqsood Ahmed[11] and Wasim Shahid Malik[12]: 'Macroeconomic Activity and Economics of Inflation: Rules vs. Discretion'. The objective of the paper was to estimate a monetary policy reaction function for Pakistan using data over the period 1992 – 2010. The authors found that the State Bank of Pakistan (SBP) reacts to changes in the inflation rate and economic activity in a way consistent with the Taylor (1993) rule with an explicit objective of interest rate smoothing and exchange rate management. Moreover, they found that for most of the sample period, except for the last two years, policy remained consistent. However during the last two years (a time of significant price hikes and massive depreciation of the

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[11] Professor of Economics, NUST Business School, National University of Sciences and Technology, Islamabad.
[12] Assistant Professor of Economics, Quaid-i-Azam University, Islamabad.

rupee), there was a significant change in the parameters of the State Bank's policy reaction function. Finally, the authors found evidence of nonlinearity in the State Bank's reaction function since the response to inflation rates above 6.4 percent was found to be more aggressive compared to low inflationary episodes.

Session IV: The Banking Sector, Capital Markets and Governance in Pakistan

Though Pakistan has tried to pursue financial sector, capital market and governance reforms, there is a lack of consensus on the effectiveness of these reforms. The final session looked at important banking sector, capital markets and governance issues in Pakistan. The first paper in this session was presented by Ayesha Afzal[13] and Nawazish Mirza[14]: 'Market Discipline in Commercial Banking: Evidence from the Market for Bank Equity'. The authors looked at market discipline in the Pakistani banking sector using stock prices from 2004-2009. They found a significant relationship between risk variables (including market risk, value at risk, size and value premiums, default likelihood indicators and relative prices) and GDP growth. The authors also found a significant relationship between their risk indicators and the cost of deposits, implying that banks align direct compensation with their risk perception. Finally, they did not find any link between the market perception of risk and deposit switching.

The second paper in the session was presented by Idrees Khwaja[15]: 'Interest Margins and Banks' Asset-Liability Composition'. The author looked at the determinants of the interest rate margins of Pakistani banks and found that short-term government bonds and the larger share of interest rate insensitive deposits held by banks are the key determinants of interest margins. This result is in contrast to the generally held belief that the market power of banks contributes to high interest margins. The author concludes that while behavioral shifts may reduce the share of interest insensitive deposits, government debt depends on macroeconomic management, implying that containing interest rate margins will be a tall order.

The third paper in the session was presented by Abid Burki[16] and Shabbir Ahmad[17]: 'The Impact of Bank Governance on Bank Performance

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in Pakistan'. The authors looked at the impact of changes in bank governance on bank performance in Pakistan and they found that the cost efficiency of banks improved with changes in bank governance. The authors also found that these governance changes improved the total factor productivity (TFP) of banks that had not themselves undergone governance changes. Finally, the authors found that bank selection for governance changes had a mixed impact on TFP change while bank consolidation seemed to be more effective in improving TFP changes.

The fourth paper in the session was presented by Mahreen Mahmud[18] and Nawazish Mirza: 'An Evaluation of Mutual Fund Performance in an Emerging Economy: The Case of Pakistan'. The authors examined the performance of mutual funds between 2006-2010 and found the most pronounced growth in Pakistani Islamic funds, despite their lackluster performance. The authors also found that income funds appeared to have suffered as a consequence of underdeveloped bond markets and high t-bill rates. The results also show that stock funds in Pakistan consistently hold large cap stocks but not value-oriented stocks. Finally, the authors find no fund manages to outperform the market as all of them exhibit consistently negative or insignificant alphas.

The next paper was by Hamna Ahmed[19] and Naved Hamid[20]: 'Financing Constraints; Determinants and Implications for Firm Growth in Pakistan'. The authors looked at the extent to which firm level growth is constrained by financial constraints and also examined the determinants of financial access in Pakistan. Using data from the World Bank's 2007 Investment Climate Assessment Survey, the authors found that finance is a binding constraint in Pakistan and that access to finance is better where there is a greater penetration of financial infrastructure. Finally, the authors found that a range of internal factors, ranging from size to export status, quality of human capital and organizational form, are important determinants of external financial access in Pakistan.

The final paper was presented by Theresa Thompson Chaudhry[21]: 'Norms of Cooperation, Trust, Altruism, and Fairness: Evidence from Lab Experiments on Pakistani Students'. The author presented results on a

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series of behavioral experiments conducted with students from a university in Lahore, including the prisoner's dilemma, trust game, dictator game, and ultimatum game. The results indicate similar behavior to student subjects in other countries, particularly in the dictator and ultimatum games. The student sample exhibited lower levels of trust and reciprocity compared to both other student and non-student populations. Women behaved similarly to men in the dictator and ultimatum games, exhibited greater tendencies toward cooperation in the prisoner's dilemma game, but lower trust and trustworthiness in the trust game.

The papers presented in the annual conference were aimed at academics, policy makers and the general public. To conclude, we, the editors, hope that this Special Edition of the Lahore Journal of Economics can help to inform the policy debates taking place nationally and internationally regarding economic planning and development in Pakistan.

We would also like to offer special thanks to Inayat Ullah Mangla for his efforts in designing the conference program and organizing the participation of the Speakers.

Market Discipline in Commercial Banking: Evidence from the Market for Bank Equity

Ayesha Afzal[*] and Nawazish Mirza[**]

Abstract

This study presents empirical evidence of market discipline, using a panel dataset of listed banks on the Karachi Stock Exchange. We construct multiple risk-based measures from the stock prices between 2004 and 2009 to determine whether an increase in the risk profile results in an increase in compensation for depositors and other creditors. The risk variables used include market risk, value at risk, size and value premium, default likelihood indicator, price relatives, and a control variable representing gross domestic product growth. We find a significant relationship between our risk factors and cost of deposits, indicating that banks align deposit compensation with their risk perception. However, we cannot find a link between the market perception of risk and deposit switching. These findings have important implications for policymakers as market discipline could complement the state's regulatory role and lower the cost of supervision. Our estimations of value at risk and the default likelihood indicator using stochastic simulations is a methodological contribution that could be used for effective risk management practices.

Keywords: Market Discipline, Karachi Stock Exchange, Value at Risk, Default Likelihood Indicator.

JEL Classification: G20, G21.

1. Introduction

Financial markets facilitate capital allocation (and reallocation) from surplus to deficit units by direct financing, and thus contribute substantially to economic growth. Market-based financing is preferred when there are fewer market frictions emanating from various factors including (but not limited to) informational asymmetries, high flotation costs, extreme volatility, speculative behavior, and agency problems. Not

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surprisingly—given their weak economic systems and inefficient regulatory controls—these inefficiencies are recurrent in almost all emerging economies. Therefore, in many developing countries, indirect financing or financing through a financial intermediary is common as banks, given their expertise, are expected to minimize transaction costs (search and monitoring), adverse selection, and moral hazard problems.

The main disadvantage of indirect financing is that financial intermediaries tend to take excessive risks, which, in an extreme situation, may lead to the systemic failure of the financial system. Commercial banks' probability of failure warrants a prudent supervisory and governance role on the part of the central bank. The financial sector's vulnerability to various risks—credit, market, liquidity, operational, off-balance sheet risks, and others—is critical both for the economy and related stakeholders (depositors, creditors, shareholders, and the government). Systemic risk can have a devastating impact on the financial system, as is evident in almost all banking crises. To safeguard the interests of all related participants, the financial sector is strongly regulated in all economies. This involves monitoring banks' risk activities and ensuring an adequate risk absorption capacity through the functioning of regulatory and monetary authorities who employ various instruments of control, such as capital adequacy, statutory liquidity reserve requirements, and minimum paid-up capital.

Despite the importance of indirect financing, we cannot undermine the need to develop a strong stock market, not only to facilitate the emergence and growth of new firms, but also because they play a disciplinary role. The stock price is the discounted contingent claim on a firm's future prospects. Mathematically, price $P_{(t+1)}$ is a function of discounted cash flows, given the information set Φ available at time t.

$$P_{t+1} = \sum_{i=1}^{\infty} \frac{CF_i | \varphi_t}{(1+r)^i}$$

The stock price formation process reflects investors' perceptions of the future of a firm by evaluating its manager's current actions. If market participants anticipate managerial efficiency, they will place a higher value on the firm; if not, they will penalize the firm for its inefficiencies by requiring higher compensation.

To subordinate the historic onus of state supervision of the financial sector, Pillar III of the Basel Accord II (2001) introduced the concept of market discipline to promote the disciplinary role of private agents: depositors, bondholders, and shareholders. To ensure transparency, investors evaluate bank conditions, and banks make substantial disclosures of risk-related information in their financial statements. Based on this disclosure, stakeholders are expected to evaluate a bank's risk level and align their preferences accordingly. In case of an increase in the risk level, they should either demand a higher risk premium or else diversify their portfolios to manage their risk appetite. Therefore, market discipline comprises two mutually independent aspects. The first aspect is stakeholders' ability to monitor and identify any changes in a bank's fundamentals, and the second is stakeholders' power to influence the actions of the bank's management by manipulating their required rate of returns. The empirical literature suggests three possible sources through which to test for the presence of market discipline: (i) markets for uninsured liabilities, (ii) markets for subordinate debt, and (iii) markets for bank equity. The focus of this study is on markets for bank equity; we discuss the market discipline imposed by uninsured liabilities in a subsequent study.

In Pakistan, capital market reforms were introduced to enhance the efficiency and transparency of capital markets to provide a meaningful medium through which to raise long-term capital. Surprisingly, despite these reforms—aimed at eliminating market imperfections by reducing information asymmetries, moral hazard, and speculative trading—the last decade witnessed a limited number of initial public offerings or seasoned offerings.[1] Likewise, bond markets have remained underdeveloped with very few publicly placed term finance certificates leaving banking and nonbanking financial institutions as a major source of short- and long-term capital. Yet, despite the tremendous increase in market activity over the last decade with notable trading volumes and upsurges in index value, the failure of stock markets as a platform from which to raise capital can be partly attributed to the high volatility and speculative component[2] that hinders businesses from raising capital through a turbulent source. Table 1 summarizes the statistics of the Karachi Stock Exchange (KSE) for the last five years. The

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[1] The initial public offerings or seasoned offerings that took place between 2001 and 2010 were either a move toward increasing outside shareholdings in public sector firms, or to enhance the regulatory capital base (banks) under the Basel II framework.
[2] For more on speculative bubbles in the Karachi Stock Exchange, see Mirza and Afzal (2009).

number of new listings for both debt and equity instruments per year clearly represents the lack of market activity in terms of raising capital.

Given this sort of market activity, we cannot expect a strong form of market discipline. However, another unique feature of the KSE is the high turnover of banking stocks—unlike in most other developed and emerging markets where financial stocks are subject to nonsynchronous trading (Lieven et al., 2007) and firm-specific variables dominate the pricing of banking stocks[3]—and active trading. If complemented by bank fundamentals, they may help enforce market discipline. Table 2 presents the average (five years) turnover for various KSE sectors. The banking sector is the most active, contributing approximately 46 percent of the average shares traded in the last five years. Thus, it is interesting to observe whether capital markets impose some sort of market discipline on the volume-leading sector.

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[3] Mirza and Alexandre (2009) provide evidence that asset quality specific to commercial banks measured as the ratio of nonperforming loans to gross loans is a systematic risk factor that is priced in European financial stocks.

Table 1: The Karachi Stock Exchange at a Glance

	2006	2007	2008	2009	2010
Equities					
Listed companies	651	654	653	651	644
Listed capital (PKR million)	515,029.54	671,269.47	750,477.55	814,478.74	919,161.26
Market capitalization (PKR million)	2,766,583.84	4,329,909.79	1,858,698.90	2,705,879.83	3,268,948.59
New companies listed	9	14	10	4	6
Listed capital (PKR million)	14,789.76	57,239.93	15,312.12	8,755.74	33,438.45
Debt Instruments					
New debt instruments listed	3	3	7	1	4
Amount listed (PKR million)	3,400.00	6,500.00	25,256.97	3,000.00	5,650.18
KSE-100 Index					
High	12273.77	14814.85	15676.34	9845.74	12031.46
Low	8766.98	10066.32	5865.01	4815.34	9229.6
Year's end	10040.5	14075.83	5865.01	9386.92	12022.46
KSE-30 Index					
High	14020.56	18083.15	18996.33	10508.35	11588.97
Low	12248.93	12550.26	5485.33	4428.1	9104.25
Year's end	12521.54	16717.1	5485.33	9849.92	11588.24
Turnover of Shares					
Total shares (PKR million)	63,046.52	65,956.89	36,527.96	44,446.88	33,529.72
Average daily turnover (million)	260.69	268.23	146.55	179.88	132.64

Source: Karachi Stock Exchange.

Table 2: Turnover Contribution by Sector (Five-Year Average)

Sector	Turnover Contribution (%)
Banks	45.99
Chemicals	24.88
Oil and gas	4.70
Equity investment instruments	3.05
Construction and materials	2.42
Others (29 sectors)	18.96
Total	**100.00**

Source: Karachi Stock Exchange.

In Pakistan, the Pillar III disclosure requirements for market discipline were completed by December 2005; all financial institutions in the country now follow a standard format for the dissemination of financial statements (State Bank of Pakistan, BSD Circular No. 3, 31 March 2005). The implementation of Basel II, Pillars I, II, and III was to be completed in two phases with the adoption of standardized risk management approaches by January 2008 and an internal rating-based approach by January 2010 (State Bank of Pakistan, BSD Circular No. 1, 1 January 2008). Surprisingly, despite these financial reforms and the adoption of Basel II, there is no empirical research to establish the presence of market discipline in Pakistan. This study is therefore primary research analyzing the dynamics of market discipline in a post-reform period.

Using an unbalanced panel of listed banks over a period of six years, we find some evidence of market discipline in Pakistan's commercial banking sector. We find support for the notion that stock prices reveal important risk-related information and that banks offer compensation when they are perceived as risky. Since banks provide a premium for high risk, we find no evidence that an increase in risk might result in deposit switching. These findings provide some preliminary insight into the dynamics of market discipline in Pakistan. We also contribute to the field by suggesting sophisticated quantitative procedures for risk estimation that financial institutions could use to adopt an internal rating-based approach. The rest of the article is organized as follows. Section 2 provides a brief literature review, Section 3 builds on the methodology used, Section 4 presents our empirical findings, and Section 5 concludes the study.

2. Literature Review

Shimizu (2009) analyzes the discipline imposed by depositors, using stock market information. He argues that informed participants in the stock market base their investment decisions on analytical information that is not disclosed in banks' financial statements. This is not directly observable by the uninformed depositors so they rely on stock market information to assess a bank's financial health. He uses a sample of Japanese banks to study the determinants of variations in the deposit base: bank-specific variables (profitability, capital adequacy, etc.), the contagion variable of growth in stock prices, and some important macro-variables. He finds evidence of a significant relationship between a fall in price and withdrawal of deposits, concluding that a fall in share prices signals a higher probability of bank failure and will result in a higher withdrawal rate.

Gropp, Vesala, and Vulpes (2006) study the impact of stock and bond market information on bank fragility for a sample of 103 US banks between 1991 and 2003. The KMV distance to default is the lead indicator for equity markets while spread on subordinated debt is the proxy for debt markets. Bank fragility is measured as a downgrade to a speculative rating of C or below by FITCH ratings. The results show that both distance to default and spread on subordinated debts are able to predict bank fragility, with distance to default predicting a crisis at least 18 months in advance and spread predicting one only 12 months in advance. They conclude that equity market data provides participants with more valuable information to forecast and differentiate between good banks and weak banks.

Bremer and Pettway (2002) address the issue of market discipline from a different point of view. They study the impact of a ratings downgrade on share prices and managers' reactions to this decline. The credit ratings reflect a bank's capacity to service its obligations and a downgrade signals a reduction in creditworthiness. They use various event windows to estimate the reaction of stock prices to a downgrade announcement. The sample constitutes 73 announcements for 49 Japanese banks spanning the period between 1986 and 1998. The results provide weak evidence for market discipline, showing the significant sensitivity of stock prices to credit ratings and that market participants are able to differentiate between strong and weak banks and penalize the former. However, the management's reaction to this penalty is nonexistent. This lack of managerial response to market discipline is consistent with the results of Anderson and Campbell (2000), which relate managerial inefficiencies in Japanese banks to corporate governance. Bremer and Pettway (2002) identify the lack of supervision in the Japanese financial system and conclude that Basel disclosure requirements are not sufficient to impose rigorous discipline.

Bongini, Laeven, and Majnoni (2002) compare the extent of information that can be extracted from a set of variables to indicate bank fragility. Their sample comprises East Asian banks between 1996 and 1998, and the variables' sources include balance sheet data (CAMEL ratings), stock market prices, and credit ratings. Their research is based on both ex post and forecasted ex ante estimates. The results show unique patterns of information from the three sets of variables. The ex post balance sheet variables provide significant information discriminating between banks of varying financial health. The stock price and rating variables do not provide any information that can be used by investors to impose market discipline. The ex ante estimates favor the equity market

variables followed by balance sheet sources, while the rating variable remains insignificant. They conclude that multiple sources of public information are likely to provide variable signals, and that investors in less developed financial systems should rely on multiple indicators of bank fragility to enforce market discipline.

3. Data and Methodology

3.1. Sample Criteria

This study employs panel data on various equity market variables to examine empirically whether stock prices reveal any relevant information that can be used to impose market discipline in Pakistan's commercial banking sector. The sample has been selected based on following criteria:

1. The sample period spans the post-financial reform period from 2004 to 2009, and the period during which commercial banks were adopting the disclosure requirements proposed under Pillar III of the Basel Accord.

2. Only publicly listed banks with data available on balance sheets, income statements, and stock prices are included.

3. The survivorship bias is addressed by excluding merged or delisted banks.

Based on these criteria, our final sample consists of an unbalanced panel. The number of banks in each sample year is as follows.

Sample Distribution 2004–09

Year	2009	2008	2007	2006	2005	2004
No. of banks	25	25	25	24	21	21

The information on bank fundamental variables on an annual basis has been extracted from the yearly financial reports of the respective banks, while capital market data has been extracted from the KSE website.

3.2. Estimating Market Discipline

As mentioned earlier, the literature on market discipline identifies three types of markets that can be examined to ascertain market

discipline. In Pakistan's case, only two of these three are relevant: (i) the market for uninsured liabilities, and (ii) the market for bank equity. This is mainly because of the significant presence of deposits and shareholders' equity in banks' capital structure. Subordinated debt is not an important source of financing in Pakistan's commercial banks, given the negligible existence of debt markets.

3.2.1. Dependent Variables

Financial economic theory presents two main rationales in the risk-and-return relationship. First, risk and return should be correlated, and an increase in risk level should increase the required rate of return. If markets exhibit some discipline, depositors should be able to differentiate between high- and low-risk banks, and penalize excessive risk-taking by augmenting the cost of deposits/funds (requiring a high return). The cost of funds is estimated as, $c_{it} = \left(\frac{IE_{it}}{IntLiab_{it}}\right)$, where c_{it} represents the percentage cost of capital, IE_{it} represents the interest paid to depositors, and $IntLiab_{it}$ reflects all interest-bearing liabilities for bank i at time t.

The second aspect relates to participants' risk tolerance. Every investor has their own utility function of risk and will not choose assets that are beyond their risk limits even if such assets offer a high risk premium. In the presence of market discipline, this phenomenon for banks generally results in deposit switching from high- to low-risk banks. A switch in deposits is estimated as a year-on-year change on deposits. Mathematically, this variable is represented as $\Delta D_t = \lambda_{it} = \frac{\Delta D_{it}}{D_{it-1}}$, with λ_{it} indicating a switch in depositors, ΔD_{it} the deposits of bank i in year t, and $D_{it\text{ -}1}$ as the deposits of bank i in year $t – 1$.

3.2.2. Independent Variables—Market for Bank Equity

The primary advantage of stock market information is that, unlike accounting variables—which reflect past transactions—stock prices are forward looking. Moreover, informed traders, fund managers, and financial analysts in these markets have greater information and superior capacity for analyzing this information. Therefore, the discipline of imposing a higher cost of funds or penalizing weak banks by switching deposits can be based on information extracted from stock prices. The fixed effect regression models are:

$$c_{it} = \alpha_i + \beta_1\delta_{it} + \beta_2 VAR_{it} + \beta_3 DLI_{it} + \beta_4 B/M_{it} + \beta_5 Ln(MV_{it}) + \beta_6 \frac{\Delta P_t}{P_{t-1}}$$

$$+ \beta_6 \Delta gdp_t + \varepsilon_{it} \cdots\cdots \tag{1}$$

$$\frac{\Delta D_{it}}{D_{it-1}} = \alpha_i + \beta_1\delta_{it} + \beta_2 VAR_{it} + \beta_3 DLI_{it} + \beta_4 B/M_{it} + \beta_5 Ln(MV_{it}) + \beta_6 \frac{\Delta P_t}{P_{t-1}}$$

$$+ \beta_6 \Delta gdp_t + \varepsilon_{it} \cdots\cdots \tag{2}$$

Where δ_{it} is systematic risk, VAR_{it} is the value at risk, DLI_{it} is the default likelihood indicator, B/M_{it} is the book-to-market value, MV_{it} is the market value (size), and $\Delta P_t/P_{t-1}$ is the stock return (price relatives).

Systematic Risk δ_{it}

A firm's systematic risk reflects its sensitivity to the stock market as a whole. Firms with higher systematic risk will experience shocks to equity, and a negative shock is expected to erode the buffer against losses since, in the financial sector, equity acts more as a source of risk absorption capacity rather than a means of financing. Hamada (1969) and Breen and Lerner (1973) provide theoretical analyses that suggest that differences in the "beta" of each firm should be related to differences in their risk and financial management activities. Therefore, one would expect the estimated beta to reflect each firm's risk-and-return characteristics. Since beta is not directly observable, we estimate it using the Sharpe (1964) single-index model. The daily returns of each year are regressed on the index returns to obtain an estimate of nondiversifiable risk. This takes the form $R_{it} = \alpha_i + \delta_i R_{mt} + \varepsilon_t$, with R_{it} as the return on an individual stock, and R_{mt} as the return on the market index. To account for possible autocorrelation and heteroscedasticity of unknown form, beta is estimated using the generalized method of moments approach since it does not require the distribution of the disturbance term. The market return is represented using the return on the KSE-100 index as a proxy, but we feel that KSE-100 might not be representative, so we also create a synthetic value-weighted bank index (based on all listed banking stocks and weights rebalanced every six months) to provide a robust estimate of systematic risk. Depositors would perceive a high coefficient on systematic risk as negative, and this would result in the increased cost of deposits and a high possibility of switching.

Value at Risk (VAR)

In order to estimate total risk, we use a more sophisticated tool, VAR, to analyze its impact on the cost of funds. VAR refers to the maximum loss expected in a given investment horizon. Ex post volatility ignores the direction of an investment movement. Observed volatility might be high if historical prices undergo an abnormal increase, which is not an indication of distress. VAR is considered a more appropriate measure of risk because—unlike standard deviation or volatility—it only considers the left tail of returns. To estimate VAR, we deploy Monte Carlo simulation to predict ex ante stock prices using a geometric Brownian motion (GBM) approach, and calculate the returns to estimate the worst-case loss with a 99 percent confidence interval. This process is repeated for each bank in the sample for every year, and the estimated VAR is used in our panel regression. The simulation process for price estimation is as follows.

Assuming price P for bank i, and following the GBM approach, this stochastic process can be expressed as:

$$dP = \alpha Pdt + \sigma Pdz$$

dz is the Wiener increment of $\varepsilon dt^{0.5}$, ε follows a normal distribution, α represents drift (or price differential), and σ represents volatility in price P. To estimate the growth in prices, we use total investment returns μ as a function of capital gains α and dividend yield δ. Mathematically, this is written as:

$$\mu = \alpha + \delta$$

μ is also the risk-adjusted discount rate for price P. The stochastic expression is written as:

$$dP = (\mu - \delta)\, Pdt + \sigma Pdz \quad \dots\dots\dots\dots\dots\dots \quad (3)$$

Assuming a risk-neutral world, we can replace μ with risk-free rate r and the risk-neutral price formation process will be:

$$dP = (r - \delta)\, Pdt + \sigma Pdz \quad \dots\dots\dots\dots\dots\dots \quad (4)$$

Equations 3 and 4 represent the risk-adjusted and risk-neutral versions of the price formation process, respectively. Applying a log normal transformation and combining with Ito's lemma, we derive the

following simulation equations for risk-adjusted (Equation 5) and risk-neutral equations (Equation 6).

$$P_t = P \exp\left[(\alpha - 0.5\sigma^2)\Delta t + \sigma N(0,1)\sqrt{\Delta t}\right] \quad \ldots\ldots\ldots\ldots\ldots (5)$$

$$P_t = P \exp\left[(r - \delta - 0.5\sigma^2)\Delta t + \sigma N(0,1)\sqrt{\Delta t}\right] \ldots\ldots\ldots\ldots\ldots (6)$$

Simulating Equations 5 and 6 gives us stock price P_t at any future interval t with normal distribution $N\sim(0, 1)$. Once the expected prices have been estimated, we back-test for significance; the t statistics in mean difference suggest that the risk-adjusted equation provides a better estimate of ex ante prices. For every bank in the sample, we simulate future prices using a daily frequency. Once P_t has been estimated, we estimate daily logarithmic returns to calculate the daily VAR at a 99 percent significance level. This daily VAR is then annualized using continuous compounding for yearly estimation in panel regressions.

Default Likelihood Indicator (DLI)

Traditional measures of default risk take into account the volatility of the book value of assets. However, in the extreme case of default, only the market value (MV) of assets matters. The latter (and related volatility) per se is not evident because while the MV of equity is observable, not all liabilities are marked to market. Merton (1974) proposed an asset value model to extract credit information embedded in equity markets using the Black and Scholes (1973) option pricing framework.

The asset value model treats the firm's equity as a call option (European) on the firm's assets with a maturity period equal to the maturity of its debt and strike price equal to the amount paid to the creditors. The firm will be distant from default as long as the MV of its assets exceeds the amount of liabilities to be repaid. In the option pricing framework, the MV of a bank's assets follow a GBM of the form:

$$dV_A = \mu V_A dt + \sigma_A V_A dW$$

V_A is the bank's asset value, with drift μ and volatility σ_A in a standard Wiener process W. The equity of the bank V_E with liabilities X of maturity T, a risk-free rate of r, and a cumulative density function N with a normal standard distribution, can be modeled as

$$V_E = V_A N(d_1) - Xe^{-rT} N(d_2)$$

with $d_1 = \dfrac{\ln\left(V_A/X\right) + (r + {}^1/_2 \sigma_A^2)T}{\sigma_A \sqrt{T}}$, and $d_2 = d_1 - \sigma_A \sqrt{T}$

It is possible to estimate V_A from the above equation if the value of σ_A is known. To calculate σ_A, we use the iterative process proposed by Vassalou and Xing (2004).[4] Initially, the past 12 months' daily prices for every bank are used to estimate the volatility of equity σ_E. This estimate is used as a proxy for σ_A and daily V_A is calculated given V_E. In the next step, the standard deviation of V_A is estimated and used as σ_A for the next iteration. This process is repeated till both estimates of σ_A and σ_E converge within 0.0001. Once the converged value is obtained, we re-estimate V_A for every bank and calculate drift μ as the log of V_A. Xi refers to liabilities maturing within T (one year) and r is the daily yield from one-year t-bills. Once all these variables are in place, the DLI (distance to default) can be estimated as

$$DLI_{it} = 1 - N\left[\frac{\ln\left(V_{Ai}/X_i\right) + (r + {}^1/_2 \sigma_{Ai}^2)T}{\sigma_{Ai}\sqrt{T}}\right]$$

The lower DLI would imply a low level of default risk; banks that are distant from default are expected to have a low cost of funds.

Book-to-Market and Size (Market Cap)

Fama and French (1992) proposed an extension of the CAPM by adding two more factors. They noted that two classes of stocks perform better than the market as a whole: (i) stocks with small market capitalization, and (ii) stocks with a high book value per share to price (MV) ratio. Since these stocks yield a higher return than the market, the authors explain the phenomenon through the existence of a **size** as well as **value** premium in addition to the market risk premium of systematic risk. High book-to-market value ratio stocks are termed "value stocks" while low book-to-market value ratio stocks are termed "growth stocks." The size factor measures the additional returns that investors receive for participating in stocks with comparatively small market capitalization. Stocks with a high book-to-market value and low market cap are considered to be risky, and depositors should demand higher interest rates as risk compensation.

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[4] A similar iterative process is used by Moody's KMV to estimate the expected default frequency.

Stock Returns/Price Relatives

A firm's equity represents shareholders' contingent claims on the firm's assets and future cash flows. Therefore, stock market prices are expected to reflect the value that investors would place on the firm's future prospects. The price formation process is also a strong reflection of the expectations of informed investors (including insider information) who have better skills with which to analyze the bank's fundamentals. Consequently, stocks are expected to be fairly priced and depositors are able to deduce valuable information about the bank's perceived financial position.

We estimate average intraday price relatives for bank equity, which are used as an explanatory variable for the cost of funds and deposit switching. Large price relatives indicate a proportional increase in prices representing investors' confidence about the bank's future; in the presence of market discipline, depositors should require a low rate of return. Similarly, banks with high price relatives are not expected to experience a high variation in deposits. Finally, we use gross domestic product (GDP) as a macroeconomic variable to control for factors that may cause broad movements in the availability of deposits to the banking system.

4. Empirical Results

The average descriptive statistics for dependent and independent variables are reported in Table 3. The cost of funds for the sample banks increase over the years with a minimum of 3.26 percent in 2005 and 6.83 percent in 2009, representing an overall increase in the cost of borrowing. Systematic risk, measured by the beta coefficient (both for the KSE-100 and bank-specific index), also increases, showing a rise in the risk perception of stock market participants. A similar pattern is observed for VAR and the DLI. The information extracted from stock price data reflects an overall increase in the risk perception, and the increase in the cost of funds is likely compensation for the incremental risk.

Table 3: Average Descriptive Statistics for Dependent and Independent Variables

	2004	2005	2006	2007	2008	2009
Cost of funds (%)	4.550	3.262	4.924	5.465	6.468	6.833
Beta (bank index)	0.912	0.871	0.903	0.815	1.239	1.513
Beta (KSE-100)	0.610	0.638	0.766	0.734	1.027	1.130
VAR (%)	8.220	5.957	9.698	6.382	9.687	9.378
DLI (%)	0.070	0.810	1.950	1.350	0.990	0.890
B/M	0.852	1.103	0.717	0.624	0.615	1.199
ΔP (%)	0.140	0.290	0.016	0.116	-0.602	-0.007

DLI = default likelihood indicator, KSE = Karachi Stock Exchange, VAR = value at risk.
Source: Authors' calculations.

The fixed effect regression results for the cost of funds using the KSE-100 index are reported in Table 4. We find a highly significant negative coefficient on the size variable, suggesting that banks with a strong equity base are likely to face a lower cost of funds. This is expected because a strong capital base provides substantial risk absorption capacity against unforeseen losses.

Table 4: Regression Results Using KSE-100 Index

Dependent variable: Cost of deposits/borrowing

Variable	Coefficient	Std. Error	t ratio	p value	Significance
Beta (systematic risk) with KSE-100	0.0094	0.0055	1.7067	0.0914	*
VAR	0.0685	0.0336	2.0349	0.0447	**
Book-to-market (value)	0.0096	0.0050	1.9097	0.0606	*
Size (MV of equity)	-0.0061	0.0023	-2.6424	0.0097	***
DLI (KMV, Merton)	0.0982	0.0477	2.0574	0.0426	**
Price	-0.0045	0.0045	-0.9991	0.3204	
Growth in GDP	-0.0763	0.0274	-2.7874	0.0065	***
Constant	-0.0056	0.0062	-0.8953	0.3730	
R-squared	0.5613				
Adj. R-squared	0.5280				
F statistic	16.8181				
p value (F)	0.0000				

DLI = default likelihood indicator, GDP = gross domestic product, KSE = Karachi Stock Exchange, MV = market value, VAR = value at risk.
*** represents significance at 99, ** at 95, and * at 90 percent.
Source: Authors' calculations.

Both the DLI and VAR are significant and positive, demonstrating a direct relation between the two risk variables and the cost of funds; an increase in these variables is likely to impose a higher cost of borrowing. The control variable of GDP growth is negative, suggesting that an increase in economic activity would result in an increase in surplus units, enabling banks to mobilize deposits at a low cost. The book-to-market variable is moderately significant with a positive sign, suggesting a direct relation between value stocks and the cost of deposits. Value stocks are perceived as riskier, and banks with a high book-to-market ratio are expected to compensate their depositors with higher returns.

The variable for systematic risk yields some interesting results. When beta was estimated using the KSE-100 index, the variable was significant at 10 percent with a positive coefficient. However, the results in Table 5 suggest that, when beta is estimated using a more representative market index (in this case bank-specific), the variable is highly significant and positive, implying that an increase in market risk would be compensated for by higher returns to depositors and creditors. It is also interesting to note that, in the presence of more representative market risk, the two other risk measures—VAR and DLI—lose their explanatory power.

Table 5: Regression Results Using Bank-Specific Index

Dependent variable: Cost of deposits/borrowing

Variable	Coefficient	Std. Error	t ratio	p value	Significance
Beta (systematic risk) with bank index	0.14956	0.01834	8.1533	0.00000	***
VAR	0.00940	0.00550	1.7067	0.09140	*
Book-to-market (value)	0.08907	0.04634	1.9220	0.05770	*
Size (MV of equity)	-0.06940	0.03440	-2.0182	0.04660	***
DLI (KMV, Merton)	0.08579	0.04383	1.9572	0.05699	*
Price	-0.00560	0.00620	-0.8953	0.37300	
Growth in GDP	-0.00830	0.00160	-5.1309	0.00000	***
Constant	-0.00110	0.00250	-0.4374	0.66280	
R-squared	0.58440				
Adj. R-squared	0.55270				
F statistic	18.4785				
p value (F)	0.00000				

DLI = default likelihood indicator, GDP = gross domestic product, MV = market value, VAR = value at risk.
*** represents significance at 99, and * at 90 percent.
Source: Authors' calculations.

This would mean that VAR and DLI also explain, in part, market risk, which is captured by beta if an appropriate stock market index is used. There is no change in size, and the GDP growth variable remains negative and highly significant. We find no evidence in support of incremental price changes. The overall model fit is satisfactory with an adjusted R^2 of 52.8 percent when the KSE-100 index is used to estimate the proxy for market risk. This rises marginally to 55.2 percent when we employ our synthetic bank to estimate beta. The results support the presence of market discipline, albeit a moderate degree, as about 55 percent of the variation in cost of funds is explained by our market-based risk measures. The significance of these variables also suggests that stock market prices reveal important information that can be useful in assessing the risk profile of banking firms.

It is worthwhile to mention that the significance of the size factor could ultimately lead to moral hazard. Since banks with a strong equity base are likely to be big banks and assumed to have an adequate cushion to absorb losses, the "too big to fail" fallacy could result in additional risk-taking without compensating the stakeholders. These incremental risks could lead to a "black swan" event, resulting in a transition from "too big to fail" to "too big to save."

We attempt to study deposit-switching behavior using price-based risk measures, but do not find substantial evidence to support it. The macroeconomic control variable of GDP growth and size based on the MV of equity was significant and negative, providing a rationale for the presence of strong equity. All other variables are insignificant and, therefore, the overall explanatory power of the results for deposit switching is low, with an adjusted R^2 of 29.3 percent (Table 6).

Table 6: Regression Results for Deposit Switching

Dependent variable: Deposit switching

Variable	Coefficient	Std. Error	t ratio	p value	Significance
Beta (systematic risk) with bank index	0.185645	0.6907970	0.2687	0.78875	
VAR	0.031006	0.3132000	0.1010	0.91980	
Book-to-market (value)	0.011600	0.0072000	1.6130	0.11010	
Size (MV of equity)	-0.080760	0.0333293	-2.4231	0.01741	**
DLI (KMV, Merton)	0.027200	0.1215000	0.2239	0.82360	
Price	-0.043947	0.0903355	-0.4865	0.62782	
Growth in GDP	-0.078147	0.0273829	-2.8539	0.00532	***
Constant	0.027700	0.0471000	0.5883	0.55830	
R-squared	0.343375				
Adj. R-squared	0.293414				
F statistic	6.872901				
p value (F)	0.000000				

DLI = default likelihood indicator, GDP = gross domestic product, MV = market value, VAR = value at risk.
*** represents significance at 99, and ** at 95 percent.
Source: Authors' calculations.

There could be plausible reasons for the inadequacy of our results for deposit switching. One possible explanation is that, with an increase in the risk profile as perceived by the financial market, banks offer higher returns to satiate the risk appetite of depositors so that they and other creditors have no motivation to switch banks. To test this rationale, we augment our model for deposit switching with the cost of deposits. Table 7 presents the regression results attained when the cost of deposits is used as an explanatory variable for deposit switching along with our market-based variables.

Although the overall goodness of fit does not increase, the cost of deposits is highly significant and negative, suggesting that banks could retain their clients by compensating them for the incremental risks.[5] However, we do not stress this hypothesis because it is a weaker explanation, and we strongly feel that deposit-switching behavior should be examined in greater depth beyond the notion of market discipline.[6]

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[5] Afzal and Mirza (2010) present evidence that Pakistan's banking deposits are interest rate-sensitive.
[6] These results remain robust when we use quarterly and semi-annual data frequencies, and historical, variance-covariance, and mean-reverting approach for VAR and SMB and HML factors for size and value, respectively.

Table 7: Regression Results

Dependent variable: Deposit switching

Variable	Coefficient	Std. Error	t ratio	p value	Significance
Cost of deposits	-0.0633	0.0192	-3.2995	0.0014	***
Beta (systematic risk) with bank index	0.3640	0.3563	1.0220	0.3096	
VAR	0.0817	0.0805	1.0150	0.3139	
Book to market (value)	0.0510	0.1468	0.3470	0.7297	
Size (MV of equity)	-0.0961	0.0320	-2.9990	0.0035	***
DLI (KMV, Merton)	0.0276	0.7860	0.0351	0.9721	
Price	-0.0577	0.1493	-0.3862	0.7044	
Growth in GDP	-0.0629	0.0195	-3.2320	0.0017	***
Constant	0.0391	0.0819	0.4773	0.6343	
R-squared	0.3575				
Adj. R-squared	0.3010				
F statistic	6.3284				
p value (F)	0.0000				

DLI = default likelihood indicator, GDP = gross domestic product, MV = market value, VAR = value at risk.
*** represents significance at 99 percent.
Source: Authors' calculations.

5. Conclusion

The aim of this study was twofold. First, we wanted to examine the evidence for market discipline in a post-reform period. Second, we wanted to provide robust estimation procedures for different risk measures proposed by Basel for risk management. Using a sample of Pakistan's listed commercial banks, we estimated various market-based risk factors to analyze their impact on the cost of deposits.

Our findings support the presence of market discipline, indicated by significant coefficients on our risk factors. Although the sample period was relatively short, this primary evidence supports the argument that the market for bank equity could impose some discipline, and that stock prices reveal relevant information about a bank's risk profile. This is the first study to provide comprehensive estimation procedures for VAR and DLIs, using a dataset for Pakistan. These variables are critical for the internal rating-based approach under the Basel framework, and our empirical contribution can be used to adapt the appropriate risk management tools.

The presence of market discipline can be beneficial in at least three ways. First, with market discipline in place, banks that indulge in excessive risk-taking activities are likely to pay a higher risk premium to depositors. The increased cost on deposits acts as a penalty for risk-taking banks and moderates their risk-taking behavior. Second, a market discipline mechanism ensures that the cost of bank supervision will be low since government regulation is complemented by market participants. Third, market discipline in the banking sector enhances efficiency by forcing inefficient institutions to become efficient or else exit the system.

It is worth mentioning that the disciplinary feature of capital markets could be increased by making subordinate debt mandatory in order to support regulatory capital. At present, the subordinated debt is used merely to offset the impact of revaluation deficits on Tier-II capital or smaller banks with restricted access to equity markets. Subordinated debts are junior claimants and therefore exposed to the maximum potential loss. Such investors have the greatest motivation to discipline (Pillar 3) banks as compared to depositors (primary claim, contractual guarantees, insurance) and shareholders (limited liability). Based on this argument, many researchers contend in favor of a mandatory subordinated debt policy for commercial banks albeit in developing economies (see Ahmed, 2009; Hamalainen, Howcroft, & Hall, 2010). This will not only facilitate the development of debt markets in Pakistan, it will also enhance the monitoring function of capital markets, thus curbing the excessive risk appetite of commercial banks and ensuring that the Basel framework is implemented in its true sense.

References

Afzal, A., & Mirza, N. (2010). *The determinants of interest rate spreads in Pakistan's commercial banking sector* (Working Paper No. 01-10). Lahore, Pakistan: Centre for Research in Economics and Business.

Ahmed, K. (2009). The role of an explicit subordinated debt policy in the smooth transition to Basel II: Developing economy perspective. *Journal of Banking Regulation*, *10*(3), 221–233.

Bank for International Settlements. (2001). *Basel II: The New Basel Capital Accord, second consultative paper*. Basel, Switzerland: Basel Committee on Banking Supervision.

Black, F., & Scholes, M. (1973). The pricing of options and corporate liabilities. *Journal of Political Economy*, *81*, 637–659.

Bongini, P., Laeven, L., & Majnoni, G. (2002). How good is the market at assessing bank fragility? A horse race between different indicators. *Journal of Banking and Finance*, *26*, 1011–1028.

Breen, J., & Lerner, E. (1973). Corporate financial strategies and market measures of risk and return. *Journal of Finance*, *28*, 339–351.

Bremer, M., & Pettway, R. (2002). Information and the market's perceptions of Japanese bank risk: Regulation, environment and disclosure. *Pacific Basin Finance Journal*, *10*, 119–139.

Fama, E., & French, K. (1992). The cross-section of expected stock returns. *Journal of Finance*, *47*, 427–465.

Gropp, R., Vesala, J., & Vulpes, G. (2006). Equity and bond market signals as leading indicators of bank fragility. *Journal of Money, Credit, and Banking*, *38*, 399–428.

Hamada, S. (1969). Portfolio analysis, market equilibrium and corporation finance. *Journal of Finance*, *24*, 13–31.

Hamalainen, P., Howcroft, B., & Hall, M. (2010). Should a mandatory subordinated debt policy be introduced in the United Kingdom? Evidence from the issuance activity of banks and building societies. *Contemporary Economic Policy*, *28*(2), 240–263.

Merton, R. C. (1974). On the pricing of corporate debt: The risk structure of interest rates. *Journal of Finance*, *29*, 449–470.

Mirza, N., & Afzal, A. (2009). *Speculative bubbles in Karachi Stock Exchange* (Working Paper No. 02-09). Lahore, Pakistan: Centre for Research in Economics and Business.

Mirza, N., & Alexandre, H. (2009). *Size, value and asset quality premium in European banking stocks* [Working paper]. Paris, France: University of Paris Dauphine. Retrieved from http://ssrn.com/abstract=1411757

Sharpe, W. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance*, *19*(3), 425–442.

Shimizu, K. (2009). Is the information produced in the stock market useful for depositors? *Finance Research Letters*, *6*, 34–39.

Vassalou, M., & Xing, Y. (2004). Default risk and equity returns. *Journal of Finance*, *59*(2), 831–868.

Interest Margins and Banks' Asset-Liability Composition

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Abstract

This article examines the determinants of banks' interest margins. The results suggest that short-term government bonds (floating debt) and the large share of interest-insensitive deposits held by banks are the key determinants of the interest margin. This is in contrast to the popular perception that the market power of the oligopolistic industry contributes to banks' high interest margins. While a behavioral change—a greater inclination to save and an increase in output—might reduce the share of interest-insensitive deposits, the reduction in government debt depends on the state of certain macro-variables and macroeconomic management. Given these determinants and the possible ways of containing margins, the containment process is a tall order. The study also implicitly confirms that government borrowing is crowding out private investment.

Keywords: Interest Margin, Banks, Pakistan.

JEL Classification: G21, G12.

1. Introduction

The rather high interest margin of banks has been a recent cause for concern for the authorities in Pakistan. This prompted the central bank (State Bank of Pakistan) to fix a mandatory floor rate on savings deposits (the features of which are more or less similar to a remunerative checking account) in January 2008. However, the interest margin did not decline despite the mandatory floor; rather, based on the coupon rate, the margin on fresh loans and deposits increased from 5.14 percent in December 2007 to 7.15 percent in March 2011. It is worth mentioning here that we consider the savings deposit to be largely insensitive to the rate of return offered. Therefore, even though the increase in returns on savings deposits may increase the income of the existing depositors, the floor rate on savings deposits may not serve to encourage savings and investment.

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In recent years, the government's domestic debt has increased enormously. The government's frenzy to borrow on the back of high interest rates has provided banks with an attractive investment avenue—one that is more attractive than lending. The higher return on government paper, if not passed on to the deposit and lending rate, serves to raise banks' interest margin. Although the implications of domestic debt have been studied extensively, the variable has not been examined as a determinant of the interest margin.

The forgoing discussion looks afresh at the determinants of the interest margin in order to inform policymaking.[1] A high interest margin has several adverse implications for the economy: it discourages savings and investments (Khawaja & Din, 2007); misallocates resources; and mal-distributes income. What is of greater concern to the authorities is that the high interest margin constrains the effectiveness of the interest rate channel of monetary policy, as the changes in the policy rate are not fully transmitted to the lending and deposit rates.[2] Over time, the banking industry in Pakistan has changed from public to private, with a large chunk of banking assets being held by the private sector by 2002. The determinants of the interest margin could be different under the private sector and public sector: while only the profit motive would motivate the private sector, the public sector might care about agents' welfare. Moreover, while public sector banks enjoy preferential access to low-cost government funds, they might well have to become involved in preferential and low-yield lending to the government and state-owned enterprises. The relatively smaller risk attached to deposits held by public sector banks might also allow them to tap into a larger market share. This is the first study to examine the determinants of the interest margin, with a data span (2002–09) selected such that around 80 percent of banking operations are in the private sector.

The study is organized as follows. Section 2 presents a brief review of the literature. The methodology, which emphasizes the rationale for the variables included in the model, is discussed in Section 3. Section 4 explains data construction, and Section 5 presents the results followed by interpretation and analysis. Some further discussion of the results follows in Section 6, and Section 7 concludes the study.

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[1] This study extends Khawaja and Din (2007) on the determinants of interest spread. Here, we include short-term government debt in the model, which has become salient, given the government's huge domestic borrowings. We also examine separately the determinants of individual components (i.e., assets and liabilities) of the margin.

[2] For a discussion and empirical evidence on the impact of monetary policy at the level of real economic activity, see Bernanke and Blinder (1992), Friedman and Schwartz (1963), and Romer and Romer (1989).

2. Literature Review

The determinants of the interest margin have been explored by a vast body of literature. The concentration of the industry is the most examined variable. The industrial organization literature predicts that an oligopolistic market structure may contribute to a higher interest margin (Samuel & Valderrama, 2006). Broadly, the salient determinants of the margin include: (i) the industry's market structure, (ii) bank-specific variables, (iii) macroeconomic variables, and (iv) financial regulations. Bain's (1951) structure-conduct-performance (SCP) hypothesis holds that firms in a concentrated market are able to collude to pay relatively less on their liabilities and charge more on their assets, thereby increasing the margin. Ho and Saunders (1981) view the bank as "a dealer" that demands depositors and suppliers of loans, and argue that the bank's interest margin depends on four factors: the degree of the bank management's risk aversion, the market structure of the industry, the average size of bank transactions, and the variance of interest rates. In addition, the authors reckon that a number of imperfections and regulatory restrictions have an impact on spread, and consider the probability that loan defaults and the opportunity cost of holding mandatory reserves are additional variables that influence the spread. Neumark and Sharpe (1992) implicitly confirm the SCP hypothesis for the US. They find that banks in concentrated markets are slower to raise deposit rates in response to rising market interest rates, but faster to reduce these in response to declining market rates, thereby maintaining higher spreads.

Corvoisier and Gropp (2001) examine the hypothesis for Euro-area countries, and confirm that the SCP hypothesis holds for loan and demand deposit rates, but not for savings and time deposit rates. Hannan and Liang (1993) and Barajas, Steiner, and Salazar (1999), using data for the US and Colombia, also suggest that industry concentration might lead to a higher spread. Prager and Hannan (1998) examine the price effects of US bank mergers that led to a substantial increase in local market concentration, and find that, during 1991–94, the deposit rates offered in local markets where mergers took place declined proportionately more than in markets without mergers. Sapienza (2002) examines the effect of banking consolidation on banks' credit policies in Italy, and reports that, in the case of in-market mergers, the interest rates charged by consolidated banks decrease if the merger involves the acquisition of banks with a small market share. However, as the local market share of the acquired bank increases, the decline is offset by market power. Edwards (1965) examines the impact of concentration and competition in

the US banking industry, and finds that mergers have a greater negative impact on performance in less concentrated markets. Regulators should, therefore, be wary of mergers in less concentrated markets as much as they are in more concentrated markets.

3. Methodology and Data

We draw on the dealership model of the interest margin used by Martinez-Peria and Mody (2004) to specify a model to examine the determinants of the interest margin in Pakistan. The model predicts that the market structure of the banking sector, its operating cost, the cost of regulating the sector, and various macroeconomic variables may affect the interest margin. Here, we also include the short-term government debt held by banks as a determinant of the interest margin, which previous studies have not done.

The motivation is that banks find it beneficial to invest in government paper on several counts: investment in government paper is less risky, it does not entail a large administrative and analytical cost to make an investment decision, and above all, if the monetary stance is tight, the return on government paper might be such that the investment becomes an attractive opportunity on its own. The cost of investing in government paper is smaller and the return relatively larger; such investment is likely to raise the margin if banks do not pass on the higher returns to their customers, i.e., borrowers and depositors. The inclusion of government bonds in the model is all the more important given the anecdotal evidence that government bonds crowd out lending to the private sector.

Taking our lead from Khawaja and Din (2007), we also include in our model the share of interest-insensitive deposits held by banks. The rationale is that banks need not offer a higher return on such deposits, the flows of which are insensitive to the interest rate offered. Thus, a larger share of interest-insensitive deposits could lower the overall cost of funds for banks, and thereby raise the interest margin. Around 50 percent of the business volume—both deposits and lending—is held by five or six major banks. Given that a significant portion of these deposits, which we term interest-insensitive deposits, comes to the bank on its own (i.e., without any effort on the bank's part), the cost to the bank of deposit mobilization is likely to be rather low. For example, government departments bank mostly with the state-owned National Bank of Pakistan, while the armed forces bank only with Askari, which is owned by the Army Welfare Trust that was set up to promote the welfare of retired army employees.

Similarly, many people deposit money in banks for the sole purpose of safety, and are not concerned about the rate of return. Deposit products typically offered by banks in Pakistan include current deposits, savings deposits, and fixed deposits. Deposits held in current accounts are zero-rated, i.e., they do not earn any interest and are therefore insensitive to changes in the interest rate. We treat the deposits held in savings accounts as interest-insensitive because they are held typically by small depositors and salaried persons who maintain these accounts to fulfill everyday banking needs rather than to earn interest. The category of "other deposit accounts" constitutes a negligible percentage of total deposits, and its inclusion on either side is not likely to influence results. These deposits are also interest-insensitive. Theoretically, changes in the policy rate—proxied here by the six-month treasury-bill rate—should be passed on, in a competitive environment, one for one, to deposit rates. However, interest-insensitive deposits enable a bank to keep to itself all or part of a favorable change in interest rates and pass on to agents the entire burden or even more if the change in policy rate is adverse for the bank. Thus, the greater the interest-insensitivity of deposits, the higher is the interest margin. Given that current deposits (checking accounts) and saving deposits, which we consider insensitive, constitute a sizable portion (66 percent) of total industry deposits in 2009, the inclusion of interest-insensitive deposits in the model is all the more important. Our model is written as:

$$Y_{it} = \alpha_0 + \beta X_{it} + e_{it} \qquad (1)$$

Here, y_{it} is the interest margin, defined as the difference between the interest earned on average assets and the interest paid on average liabilities; (α, β) are vectors of parameters, e_{it} is the stochastic error term, and X_{it} is a vector of explanatory variables which includes the following.

Industry variables

    (i) Concentration.

    (ii) Interest-insensitivity of deposits.

Firm (bank) variables

    (i) Market share.

    (ii) Liquidity.

    (iii) Administrative cost.

    (iv) Nonperforming loans.

(v) Equity.

Macro-variables

(i) Short-term debt (the government's floating debt).

(ii) Real output.

(iii) The real interest rate.

The literature on industrial organization offers two competing hypotheses regarding the market structure of the industry. The SCP hypothesis holds that market concentration leads to collusion among firms. With the cost of collusion being smaller in a concentrated market, firms are able to collude and thereby reap rents. Given market power, a bank would earn more on assets than is possible in a competitive market, and pay relatively less on liabilities, thereby raising the interest margin. If the SCP hypothesis holds, then the concentration variable should carry a positive sign.

The efficient-structure hypothesis asserts that the efficient operation of leading firms in the industry drive out the less efficient ones, the market becomes concentrated, and firms earn Ricardian rents. To the extent that efficiency is represented by the lower marginal cost of producing output of a given quality, banks in concentrated markets should find it advantageous to charge lower interest on loans and offer higher interest on deposits, thereby decreasing the margin. Thus, if the efficient-structure hypothesis holds, then the concentration variable should carry a negative sign. Given the conflicting predictions of the two hypotheses, we use an ambiguous sign for the concentration variable. The two hypotheses have been tested extensively for the banking industry (Berger & Hannan, 1989).

Besides industry concentration, the two variables of primary interest are the volume of short-term government bonds (floating debt) and interest-insensitive deposits. We hypothesize that both carry a positive sign. Floating debt is expected to bear a positive sign because, as the debt increases, interest rates are likely to go up, thereby increasing the yield on government paper and advances for banks. *Ceteris paribus*, this raises the margin. Typically, a bank would pay less on interest-insensitive deposits. Therefore, the larger the share of interest-insensitive deposits in a bank's total deposits, the smaller the average cost of funds. This would raise the margin and, therefore, justify the positive sign on interest-

insensitive deposits. The remaining variables in Equation (1) are control variables. The coefficient on liquidity is hypothesized to be negative because liquidity has an opportunity cost, i.e., the cost of not investing in high-yield assets such as "advances." Therefore, the increase in liquidity should make a dent in the interest margin.

The equity held by a bank also carries an opportunity cost. If the bank manages to pass on this cost to its depositors and borrowers, then the spread would vary positively with equity. Failure to do so would decrease the bank's interest margin. Given the conflicting expectations, we posit an ambiguous sign on equity. If the bank has to incur a greater intermediation cost when mobilizing deposits or lending funds, it would attempt to recover the cost by paying less on deposits and charging more on loans. Therefore, the interest margin should vary positively with the intermediation cost.

Nonperforming loans—loans that a bank fails to recover—inflict a cost on the bank, and should cause the margin to shrink. The market share of a bank in the industry reflects the former's market power and influences the margin positively. However, the scale economies that accompany a larger market size may allow the bank to charge its borrowers less and offer its depositors more. If this happens, the margin would vary negatively with market share. This conflict leads us to posit an ambiguous sign on the market share of an individual bank.

The macroeconomic environment has the potential to influence a bank's interest margin. Thus, we control for the impact of real output and the real interest rate on the interest margin. Real output growth captures the impact of a business cycle on the interest margin. In this context, Bernanke and Gertler (1989) argue that a slowdown in economic activity adversely affects borrowers' net worth and hence reduces the interest margin (positive effect). The coefficient on the real interest rate would depend on the extent to which changes in the rate are passed on by the bank to its customers. A one-for-one pass-through would result in a positive sign on the real interest rate coefficient, while a smaller pass-through would result in a different sign.

4. Data

We measure the interest margin as the difference between the return on average assets and the cost of average funds for individual banks. The return on average assets and cost of average funds are

respectively computed as the total interest income to average assets and total interest paid to average funds. Assets comprise advances and liquid assets while borrowed funds include deposits and borrowings. The averages are worked out by taking the average of the balances held at the beginning and end of the year. The Hirschmann-Herfindhal index is used to work out the degree of concentration in the banking industry. Deposit accounts other than deposits of fixed maturity are considered interest-insensitive. For reasons explained earlier, deposits held in current (checking) accounts, savings accounts, and other accounts comprise interest-insensitive deposits.

Each bank's market share constitutes its total deposits as a percentage of the industry's total deposits; nonperforming loans comprise the ratio of provision for bad and doubtful debts to advances; administrative costs represent the cost of administration as a proportion of the bank's total assets; and liquidity is the ratio of liquid assets to total assets. The data on the industry and firm variables has been obtained from the State Bank of Pakistan's annual *Banking Statistics of Pakistan*. The data on macroeconomic variables, i.e., real output growth and the real interest rate, is taken from the State Bank's annual reports.

We use panel data for 22 banks (listed in Annexure 1) for the period 2002–09 in this study. To obtain a balanced panel, we have included only those banks that have existed continuously from 2002 to 2009. We start with 2002 because the kind of ownership—public or private—could have a bearing on the interest margin. Banks in Pakistan were taken over by the government in 1973 and all major banks remained in the public sector from 1973 to 1991. The privatization of banks was initiated in 1990, with two of the five largest banks being privatized in 1990 and 1991, and another two being privatized in 2001 and 2002. One of these banks, the National Bank of Pakistan, still belongs to the public sector. To avoid the problem of regime changes during the period under study, we take 2002 as the starting point of our investigation.

The use of panel data allows us to identify and measure the effects that one could not have observed in a pure cross-section or pure time-series dataset. Models based on panel data can be estimated using either the random effects model or the fixed effects model. The random effects model assumes the exogeneity of all regressors with random individual effects, while the fixed effects model allows for the endogeneity of all regressors with individual effects (Baltagi, 2001). Here, we use the fixed effects model.

5. Empirical Findings

We estimate Equation 1 using the fixed effect model. The results are reported in Table 1 below.

Table 1

Coefficient estimates of Equation (1)

Dependent variable: Interest spread

Sample size: 154 observations covering 22 banks and 7 years

Estimation method: Fixed effect model

White heteroscedasticity-consistent standard errors and covariance

	Coefficients
Concentration	1.32
Inelasticity	1.36**
Floating debt	2.24***
Nonperforming loans	0.009
Market share	-0.12
Liquidity	-0.34
Equity	0.07
Administrative cost	0.33***
GDP growth	0.14**
Real interest rate	-0.51***
R2	0.95

Note: ***, **, * reflect significance at the 1%, 5%, and 10% level, respectively.

The three variables of interest to us are (i) the volume of short-term government debt held by banks, (ii) interest-sensitive deposits, and (iii) market concentration. The results suggest that the strongest and largest influence on the interest margin comes from the short-term debt variable. In recent years, the government has been borrowing heavily, using treasury bills. Table 2 shows that, since 2004, the government's short-term debt as a percentage of gross domestic product (GDP) has shown secular growth. The growth in government debt has been accompanied by growth in the yield on treasury bills. The government's short-term debt is raised typically through treasury bills that are purchased primarily by banks. Thus, the increase in government debt implies that a greater volume is available to banks for investment in

government papers. If banks have to choose between lending to the private sector and investing in government paper, they are likely to choose the latter (treasury bills) on which the return has, over the years, remained higher than the lending rate (Table 2). Given that investment in government paper is risk–free, it becomes preferable compared to the lending option. Moreover, the cost of investing in government paper is substantially smaller than the cost of lending, which further encourages banks to invest in government paper. Therefore, if banks invested more in government paper, the higher yield on government debt would raise the return on investment and, hence, the interest margin, if changes in the yield are not passed on, one for one, to banks' customers. The higher net yield on government paper coupled with the low risk raises the return on investment for banks, causing the interest margin to increase.

The second important determinant of the interest margin is the interest-insensitive deposits variable. Our results show that these deposits exercise a positive impact on the interest margin, i.e., the greater the share of interest-insensitive deposits held by a bank, the larger the interest margin is likely to be. It is evident that the availability of interest-insensitive deposits to banks in large volumes leaves them with little incentive to offer a higher return on deposits or to make vigorous efforts to mobilize interest-bearing deposits. It is apparent from Table 2 that, although the share of interest-insensitive deposits in the industry's total deposits has declined over the years, the share remains rather high.

Table 2

Year	Inelastic Current + Savings	Elastic Deposits of Fixed Maturity	Treasury Bill Rate	Floating Debt/GDP	Lending Rate	Interest Margin
2002	77	23	4.3	13.5	9.95	6.7
2003	85	15	1.6	10.7	5.68	4.3
2004	83	17	3.7	10.3	5.92	4.1
2005	75	25	8.8	12.5	9.53	5.3
2006	71	29	9.0	13.2	11.16	5.6
2007	69	31	9.4	13.4	10.95	5.1
2008	65	35	14.3	16.5	14.33	5.4
2009	66	34	12.1	15.8	13.71	6.3

Source: State Bank of Pakistan, banking statistics and economic data retrieved from www.sbp.org.pk.

Despite the decline in the share of interest-insensitive deposits, the interest margin has not declined. This suggests that other variables—in addition to the share of interest-insensitive deposits—influence the interest margin.

The concentration ratio does not exercise a statistically significant influence on the interest margin. The availability of interest-insensitive deposits in large volumes leaves banks with little incentive to collude or adopt competitive practices, and these deposits fall into their laps. Therefore, the concentration ratio that reflects competitive behavior or the lack thereof fails to exercise any worthwhile influence on the interest margin. However, the industry's oligopolistic market structure allows banks to retain the higher return for themselves. Thus, the concentration of the industry matters implicitly.

Banks' intermediation cost also affects the interest margin significantly, and the positive sign on the estimated coefficient implies that banks are able to pass on changes in the intermediation cost to their customers. Banks' liquidity and equity also fail to have a statistically significant impact on the interest margin. The influence of real output and the real interest rate on the interest margin is positive. This implies that, as income increases, the demand for and therefore the return on loans increases, causing the margin to rise. The real interest rate casts a significant negative influence on the interest margin, implying that banks do not pass on all changes in the real interest rate to their agents. The results reported above are robust given different alternative specifications. We check the robustness by dropping the statistically insignificant coefficients one at a time.

One of the disadvantages of examining the determinants of the margin at the aggregate level is that one has to include such variables in the model that affect only earning assets or liabilities that cost something. For example, the share of interest-insensitive deposits would only influence the cost of funds, but not the return on assets. To take care of this issue, we have examined the robustness of results by estimating the determinants of earning assets and paying liabilities separately by including such variables in the model that are likely to influence its individual components. The results, reported in Annexure 2, show that the share of interest-insensitive deposits is the primary determinant of the cost of funds, and the volume of government debt is one of the major determinants of the return on assets. These findings support the results reported for the interest margin in Table 1 above.

6.   Further Discussion

The question that begs an answer is, what can be done to raise the interest margin? The answer is, not much. However, to answer the question more clearly, one must first ask what the objective of containing the interest margin is. Is it depositors' welfare or an effort to encourage savings and investment? If the former, perhaps continuing with a floor rate on savings deposits would be the correct policy to pursue. However, although the floor rate on savings deposits has yielded greater returns to depositors, the policy has merely raised the return on those deposits that were meant to be in the banking system even if the rate was not enhanced.

Researchers and the authorities must grapple with the question as to how to decrease the interest margin to increase savings and investment, and enhance the effectiveness of the interest rate channel of monetary policy. With the source of a high interest margin being the interest-insensitivity of a significant percentage of depositors and the short-term debt of the government, finding a way to cause a dent in the interest margin in a manner that encourages savings and investment will prove difficult. Curbing the former source calls for a behavioral change— a change in the behavior of depositors, making them more return-conscious. Economic growth might also contribute to increasing the share of interest-sensitive deposits, as there would be more money to save. Tackling the latter—a reduction in government debt—calls for containing the fiscal deficit, which boils down to improving the whole set of macroeconomic variables and macroeconomic management.

7.   Conclusion

Banks' interest margin has remained on the higher side throughout the previous decade. Policy efforts initiated in January 2008 to contain the margin have yet to yield dividends. Moreover, this policy effort seems directed more at improving the welfare of depositors than encouraging savings and investment. The study finds that the (i) government's short-term debt—which is an attractive investment avenue for banks—and (ii) the share of interest-insensitive deposits are the two primary determinants of the high interest margin. Thus, the present structure of banks' assets and liabilities keeps the margin on the higher side. Given the determinants of and the ways in which this margin might be contained, the process is likely to prove a tall order.

References

Bain, J. S. (1951). Relation of profit rate to industry concentration. *Quarterly Journal of Economics*, *65*, 293–324.

Baltagi, B. H. (2001). *Econometric analysis of panel data*. New York, NY: John Wiley & Sons.

Barajas, A., Steiner, R., & Salazar, N. (1999). Interest rate spreads in banking in Colombia, 1974–96. *International Monetary Fund Staff Papers*, *46*, 196–224.

Berger, A. N., & Hannan, T. H. (1989). The price-concentration relationship in banking. *Review of Economics and Statistics*, *71*, 291–299.

Bernanke, B., & Blinder, A. (1992). Credit, money, and aggregate demand. *American Economic Review*, *82*, 901–921.

Bernanke, B., & Gertler, M. (1989). Agency costs, net worth, and business fluctuations. *American Economic Review*, *79*, 14–31.

Corvoisier, S., & Gropp, R. (2001). *Bank concentration and retail interest rates* (Working Paper No. 72). Frankfurt, Germany: European Central Bank.

Edwards, F. R. (1965). Concentration and competition in commercial banking: A statistical study. *Journal of Finance*, *20*(1), 101–102.

Friedman, M., & Schwartz, A. (1963). *A monetary history of the United States, 1867–1960*. Princeton, NJ: Princeton University Press.

Hannan, T., & Liang, J. N. (1993). *Bank commercial lending and the influence of thrift competition* (Finance and Economics Discussion Series 93-39). Washington, DC: US Board of Governors of the Federal Reserve System.

Heggestad, A. A., & Mingo, J. J. (1976). Price, non-prices, and concentration in commercial banking. *Journal of Money, Credit, and Banking*, *8*(1), 107–117.

Ho, T., & Saunders, A. (1981). The determinants of bank interest margins: Theory and empirical evidence. *Journal of Financial and Quantitative Analysis*, *16*, 581–600.

Martinez-Peria, M. S., & Mody, A. (2004). How foreign participation and market concentration impact bank spreads: Evidence from Latin America. *Journal of Money, Credit, and Banking*, *36*(3), 511–537.

Mishkin, F. S. (1995). Symposium on the monetary transmission mechanism. *Journal of Economic Perspectives*, *9*(4), 3–10.

Neumark, D., & Sharpe, S. A. (1992). Market structure and the nature of price rigidity: Evidence from the market for consumer deposits. *Quarterly Journal of Economics*, *107*(2), 657–680.

Prager, R. A., & Hannan, T. H. (1998). Do substantial horizontal mergers generate significant price effects? Evidence from the banking industry. *Journal of Industrial Economics*, *46*, 433–452.

Romer, C., & Romer, D. (1989). Does monetary policy matter? A new test in the spirit of Friedman and Schwartz. *National Bureau of Economic Research Macroeconomic Annual*, *4*, 121–170.

Samuel, W., & Valderrama, L. (2006). *The monetary policy regime and banking spreads in Barbados* (Working Paper No. 06/211). Washington, DC: International Monetary Fund.

Sapienza, P. (2002). The effects of banking mergers on loan contracts. *Journal of Finance*, *57*, 329–367.

Banks Included in Sample

1   National Bank of Pakistan
2   Habib Bank Limited
3   United Bank Limited
4   Muslim Commercial Bank
5   Allied Bank of Pakistan
6   Alfalah Bank Limited
7   Al-Habib Bank Limited
8   Askari Bank Limited
9   Faysal Bank Limited
10   First Women Bank
11   Bank of Punjab
12   Khyber Bank Limited
13   My Bank Limited
14   Habib Metropolitan Bank Limited
15   Soneri Bank Limited
16   Al-Baraka Limited
17   Oman Bank Limited
18   Tokyo Bank
19   Citibank
20   Deutsche Bank
21   Hong Kong-Shanghai Bank
22   Standard Chartered Bank

Annexure-2

Table 3

Dependent variable: Return on earning assets
Sample size: 154 observations covering 22 banks and 7 years
Estimation method: Fixed effect model
White heteroscedasticity-consistent standard errors and covariance

	Coefficients
Concentration	2.26
Short-term government debt	2.39*
Nonperforming loans	-0.03**
Market share	0.26***
Liquidity	-0.53***
Equity	0.003
Administrative cost	0.23***
GDP growth	0.24
Real interest rate	-0.07
Constant	-7.89
R2	0.98

Note: ***, **, * reflect significance at 1%, 5%, and 10% level, respectively.

Table 4

Dependent variable: Cost of funds
Sample size: 154 observations covering 22 banks and 7 years
Estimation method: Fixed effect model
White heteroscedasticity-consistent standard errors and covariance

	Coefficients
Concentration	23.39***
Interest Insensitive Deposits	-18.41***
Market Share	0.19***
Equity	-0.0002
Administrative Cost	0.006
GDP Growth	-0.0007***
Real Interest rate	0.002***
Constant	0.09***
R2	0.98

Note: ***, **, * reflect significance at 1%, 5%, and 10% level, respectively.

The Impact of Bank Governance on Bank Performance in Pakistan

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Abstract

This study attempts to investigate the impact of changes in bank governance on bank performance in Pakistan. Governance changes entail the privatization and restructuring of state-owned banks, and the merger and acquisition of private and foreign banks. Using the concept of frontier efficiency, we adopt an empirical framework that allows us to study the impact of all governance reform variables in the same model. First, we estimate a stochastic cost frontier model using unbalanced panel data on commercial banks for the period 1991–2005. Second, we decompose banks' total factor productivity (TFP) change into its different components, using the estimated frontier. In general, the results show an improvement in banks' cost efficiency following changes in bank governance. We note that governance changes bring about an improvement in banks' TFP vis-à-vis that of banks that did not undergo governance changes. We find a declining trend in TFP change (TFPC), which could be a consequence of the banking industry's increased profitability. We also note that bank selection for governance changes has a mixed effect on TFPC, while bank consolidation seems to be more effective in improving TFPC.

Keywords: Bank Reform, Total Factor Productivity, Stochastic Frontier Model, Pakistan.

JEL Classification: D24, M31, J54.

1. Introduction

During the last two decades, Pakistan's banking sector has undergone structural changes as part of the phased reforms in the financial sector that were initiated in 1990/91. These reforms paid attention to, among other things, prudential regulations that authorized (i) the opening of several new private and foreign banks, (ii) the restructuring and downsizing of state-owned banks before being privatized, and (ii) reforms

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relating to mergers and acquisitions (M&A) that helped consolidate private and foreign banks. These reforms led to a dramatic decrease in the asset share of state-owned banks, from 93 percent in 1990 to only 22 percent in 2004. In the same period, the share of private banks increased from 0 to 67.5 percent, and that of foreign banks increased from 6.7 to 10.4 percent (State Bank of Pakistan, 2004). The reforms also allowed foreign banks to compete freely with domestic banks.

Empirical research on the impact of bank governance on bank performance remains limited, but it does have a wider appeal. The vast body of literature on banking efficiency and productivity provides insights into variables that have significantly affected banks' performance in the past. However, there is little consensus on how the changing structure of the banking industry impacts banking sector performance in different countries. Our goal is to examine the impact of changes in bank governance on bank performance in Pakistan, by looking at four broad areas: (i) the extent to which market liberalization has affected the performance of domestic and foreign banks, as measured by efficiency and total factor productivity (TFP); (ii) the role of privatization in post-privatization efficiency and productivity in the short and long run; (iii) how the restructuring of state-owned banks has affected their performance; and (iv) how M&A reforms have affected post-merger performance. This article extends the results of Burki and Ahmad (2010) by calculating TFP change (TFPC) and decomposing it into its different constituents.

While a large body of literature has documented the comparative efficiency of state-owned, private, and foreign banks in transition and developing countries, it offers mixed results (see, for example, Burki & Ahmad, 2010; Burki & Niazi, 2010; Hauner & Peiris, 2007; Lensink, Meesters, & Naaborg, 2008; Yildrim & Philippatos, 2007). There is convincing evidence that state-owned banks are the least efficient in these countries, but evidence on the relative efficiency of private and foreign banks is, at best, ambiguous (see Berger et al., 2004; Bhattacharya, Lovell, & Sahay, 1997; Isik & Hassan, 2002). The two studies that use data on Pakistani banks also provide mixed results: Patti and Hardy (2005) find that foreign banks in Pakistan are the most profit-efficient, followed by private banks, and then by state-owned banks. However, the average cost-efficiency of these banks appears to be similar, in contrast to the findings of Burki and Niazi (2010) who conclude that foreign banks' cost efficiency is superior to that of private and state-owned banks. Burki and Ahmad (2010) show that private and foreign banks in Pakistan are more cost-efficient than state-owned banks. Empirical evidence on the impact

of privatization on banks' performance in developing countries also fails to provide a clear picture—some studies have suggested that privatization improves performance but evidence from other studies indicates no change in performance (Boubakri, Cosset, & Guedhami, 2005; Clarke, Cull, & Shirley, 2005; Patti & Hardy, 2005; Williams & Nguyen, 2005). Financial liberalization and deregulation have helped diversify bank portfolios, but they have also introduced new challenges to risk management and product quality.

Studies on TFP in the banking sector are confined mostly to nonparametric approaches to computing the Malmquist index of TFPC. However, some studies have used econometric methods to compute TFP change and its components (see, among others, Grifell-Tatjé & Lovell, 1996; Humphrey, 1992; Orea, 2002). Berger and Mester (2001) have reinterpreted the literature by proposing a parametric method to decompose total changes in cost over time into portions due to changes in business conditions and changes in bank productivity. A number of studies have used various econometric model specifications to estimate either TFP growth or technological progress in US banking during the 1980s and 1990s (see Bauer, Berger, & Humphrey, 1993; Humphrey, 1993; Humphrey & Pulley, 1997). Generally, this body of literature has found little evidence of productivity growth, whereas evidence on technological progress has been mixed.

Some studies measure scale and scope economies, and indicate the presence of scale economies in the US banking sector (see Berger, Hanweck, & Humphrey, 1987; Berger & Mester, 1997), while others explore the effects of M&A on US banking (see Berger & Humphrey, 1992; Berger & Mester, 2003; Hughes, Lang, Mester, & Moon, 1999). Studies investigating the efficiency and productivity of the banking industry in Europe include Fries and Taci (2005), Grigorian and Manole (2002), Hasan and Marton (2000), Kraft and Tirtiroglu (1998), Mertens and Urga (2001), and Opiela (2001).

Empirical research measuring the efficiency of banks in developing countries gained momentum only in the late 1990s and early 2000s. Such studies include Bhattacharya et al. (1997) for India; Burki and Niazi (2010), Burki and Ahmad (2010), and Patti and Hardy (2005) for Pakistan; Gilbert and Wilson (1998) for Korea; Isik and Hassan (2002) for Turkey; Leightner and Lovell (1998) for Thailand; and Rezvanian and Mehdian (2002) for Singapore. Some focus on the impact of financial liberalization (see Katib & Mathews, 2000; Okuda & Mieno, 1999), or ownership structure and efficiency (Hao, Hunter, & Yang, 2001; Leightner

& Lovell, 1998). Studies on banking deregulation, such as Gilbert and Wilson (1998), show that it has a positive impact on banking efficiency and productivity.[1]

Most studies on the banking sector emphasize technical efficiency effects, although some also take into account allocative inefficiency. Only a few studies have analyzed TFPCs in the banking sector in developing countries, and decomposed TFP into technical change (TC), and technical and scale efficiency change (SEC) using the Malmquist index. Allocative efficiency change (AEC) becomes important particularly when state control lessens following the deregulation process, along with other governance changes.

In this study, we decompose TFPC into cost efficiency change (CEC), TC, SEC, and AEC by recent bank ownership and governance changes in Pakistan. Against this backdrop, we investigate the impact of changes in bank governance on bank performance. First, we estimate a stochastic cost frontier model using unbalanced panel data on commercial banks in Pakistan for the period 1991–2005. Second, we decompose TFPC into its components, using the estimated stochastic cost frontier model.

Section II presents the methodology used. Section III describes the data and its variables. Section IV considers the estimation results, while Section V examines TFPC and its decomposition. Section VI deals with TFPC by bank governance variables, and Section VII presents the study's conclusions.

2. Methodology

Our measure of technical inefficiency is based on the stochastic cost frontier model for unbalanced panel data that allows time-varying bank effects (see Battese & Coelli, 1995).

The model can be written as

$$\ln C_{it} = C(\, q_{it},\, w_{it},\, \tau,\, \beta\,) + v_{it} + u_{it} \tag{1}$$

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[1] Katib and Mathews (2000) and Williams and Intarachote (2002), however, have concluded that financial liberalization affects banking efficiency negatively as operational costs increase. They have emphasized that elements of competitiveness and liberalization are important in developing countries because of the concentrated ownership of banks and the state support for them.

The subscript n indexes a sample bank ($n = 1,...,N$), and t indexes time period ($t = 1,...,T$).[2] C_{nt} is the observed total cost of production for the nth sample bank in the tth time period; q_{nt} is a vector of bank outputs; w_{nt} is a vector of input prices of known functions of cost and other explanatory variables linked with the nth bank in the tth time period; τ is the time trend; $C(q_{nt}, w_{nt}, \tau, \beta)$ is the assumed functional form; and β is a vector of unknown parameters to be estimated. As usual in the frontier literature, the stochastic composite error term in Equation (1) is decomposed into v_{nt} and u_{nt} where v_{nt} represents the stochastic random error component that captures the effects of exogenous shocks to the cost function due to factors beyond the bank's control, and is assumed to be iid $N(0, \sigma_v^2)$. Moreover, v_{nt} is independently distributed of u_{nt}.

The technical inefficiency term, u_{nt}, is a nonnegative random variable that captures the bank- and time-specific cost-inefficiency effects and reflects the extent to which the cost of the nth bank in the tth time period exceeds the minimum cost defined by the frontier. A higher value for u indicates an increase in technical inefficiency. When u equals 0, the bank is fully technically efficient because it is on the cost frontier. We further assume that u_{nt} is independently distributed, such that u_{nt} is obtained by truncation at 0. In effect, the technical inefficiency variable, u_{nt}, for each bank in Equation (1) could be replaced by a linear function of explanatory variables reflecting firm- and time-specific characteristics specified by:

$$u_{nt} = \phi z_{nt} + \varepsilon_{nt} \tag{2}$$

Here, ϕ is a vector of unknown bank- and time-specific parameter estimates associated with banks' technical inefficiency and ε_{nt} is an unobservable random variable obtained by truncating the normal distribution with mean 0 and variance σ^2. The point of truncation occurs at $-\phi z_{nt}$ or $\varepsilon_{nt} \geq -\phi z_{nt}$.[3]

The functional form employed in the empirical analysis is the stochastic frontier translog cost for the panel data, and is written as

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[2] Not all the banks in our sample are observed for all T time periods in this model.

[3] The maximum likelihood function is given in the appendix to Battese and Coelli (1993) for the production function. However, the likelihood function for cost specification can be derived merely by altering the signs.

$$\ln C_{nt} = \alpha_0 + \sum_{r=1}^{3} \alpha_r \ln w_{nt} + \sum_{m=1}^{2} \beta_m \ln q_{mnt} + \psi_\tau \tau_{nt} + \psi_{\tau\tau} \tau_{nt}^2 + \sum_{r=1}^{3}\sum_{s=1}^{3} \alpha_{rs} \ln w_{nt} \ln w_{snt} + \frac{1}{2}\sum_{m=1}^{2}\sum_{k=1}^{2} \beta_{nk} \ln q_{mnt} \ln q_{knt}$$

$$+ \sum_{r=1}^{3}\sum_{m=1}^{2} \gamma_{rm} \ln w_{rnt} \ln q_{mnt} + \sum_{r=1}^{3} \delta_{rt} \ln w_{rnt}\tau + \sum_{m=1}^{2} \gamma_{mt} \ln q_{mnt}\tau + v_{nt} + u_{nt} \qquad (3)$$

The subscripts r, s denote factor prices; m, n denote outputs; t refers to the time period; C_{nt} is the total cost; and τ is a time trend variable for the year of observation for each bank, which accounts for the effects of disembodied technological progress in the stochastic frontier model and time-varying inefficiency effects in the inefficiency model.

To test the impact of changes in bank governance on banks' technical inefficiency, we specify a technical inefficiency effects model using a linear function of explanatory variables. We allow the effects of changes in governance by following Berger et al. (2005) and include different types of governance-change attributes given by

$$u_{nt} = \phi_0 + \sum_{j=1}^{2} \phi_j \, \text{STATIC} + \sum_{k=3}^{5} \phi_k \, \text{SELECTION} + \sum_{l=6}^{8} \phi_l \, \text{SR\_DYNAMIC}$$

$$+ \sum_{m=9}^{11} \phi_m \, \text{LR\_DYNAMIC} + \phi_{12} \ln\left(A_{nt-1}\right) + \delta_{13}\left(\tau_{nt}\right) + \varepsilon_{nt} \qquad (4)$$

STATIC refers to static governance change variables: private banks with no governance change (base category), foreign banks with no governance change, and state-owned banks with no governance change. SELECTION is a vector representing three selection variables: (i) selected for privatization, (ii) selected for restructuring, and (iii) selected for M&A. SR_DYNAMIC represents the short-run effects of governance change in terms of banks that underwent privatization, restructuring, or M&A; and LR_DYNAMIC indicates the long-run effects of governance change in terms of years after privatization, years after restructuring, and years after M&A.

We estimate the stochastic frontier model in Equation (3) along with the model for bank-specific time-varying technical inefficiency effects in Equation (4) simultaneously, using the maximum likelihood function given in Battese and Coelli (1993). The parameter estimates of the translog cost frontier are obtained by imposing symmetry conditions on the cross-price and cross-output effects and homogeneity of degree one in input prices, given q_{nt} and τ.

Next, we use parameter estimates for TFP, which can be measured as the ratio of output to input index. This indicates how much output can be achieved using the given input index, $TFP_n = q_{nt}/x_{nt}$, where q_{nt} and x_{nt} are the outputs and inputs of the nth bank, respectively. Thus, the change in TFP is the difference between the growth of output to growth of input index. In other words, it can be written as the ratio of TFP in period 1 to period 0 as follows:

$$TFPC_{n0,n1} = \frac{TFPC_{n1}}{TFPC_{n0}} \tag{5}$$

$TFPC_n$ represents the TFPC of the nth bank between periods 0 and 1. Equation (5) represents TFP in the context of shifts in the cost frontier. This shift in the cost frontier is the result of a change in technology, change in scale economies, and change in cost efficiency. Using the underlying technology, the TFPC measure can be decomposed into CEC, TC, and SEC. Therefore, the change in TFP of the nth bank can be written as:

$$TFPC_n = CEC_n \times TC_n \times SEC_n \tag{6}$$

Since we have used the translog cost frontier in Equation (3) in our estimation, the corresponding Tornqvist TFP index is a convenient representation of the underlying technology. The Tornqvist index of TFPC in two periods can be expressed as:

$$\ln\left(\frac{TFP_{n1}}{TFP_{n0}}\right) = \frac{1}{2}\sum_{m=1}^{M}\left[(r_{mn1} + r_{mn0}) \cdot (q_{mn1} - q_{mn0})\right] + \frac{1}{2}\sum_{k=1}^{K}\left[(s_{kn1} + s_{kn0}) \cdot (x_{kn1} - x_{kn0})\right] \tag{7}$$

Here, r_{mn1} is the revenue share of the mth output of the nth bank in period 1, and s_{kn1} is the share of the kth input for the nth bank in period 1. Since the translog frontier is an approximation of the Tornqvist index, using the translog cost function in Equation (3) yields the following expression for the components of the TFP index:

$$\ln\left(\frac{TFP_{n1}}{TFP_{n0}}\right) = \ln\left(\frac{CE_{n0}}{CE_{n1}}\right) - \frac{1}{2}\left(\frac{\partial C_{n0}}{\partial t}\right) + \left(\frac{\partial C_{n1}}{\partial t}\right) + \frac{1}{2}\sum_{m=1}^{M}\left[(SF_{n0}\eta_{mns} + SF_{n1}\eta_{mn1}) \cdot (q_{mn1} - q_{mn0})\right] \tag{8}$$

$$CE_{nt} = \exp(u_{nt}); \quad \frac{\partial C_{nt}}{\partial t} = \psi_\tau + \psi_{\tau\tau}\tau + \sum_{r=1}^{3}\delta_{rt}\ln w_{rnt} + \sum_{m=1}^{2}\gamma_{mt}\ln q_{mnt}; \quad \text{and} \quad SF_{n0}$$

and SF_{n1} are scale factors for the nth bank in periods 0 and 1, respectively, and are represented by $SF_{mt} = (1 - \eta_{mt})/\eta_{mt}$ at each point in time where

$$\eta_t = \sum_{m=1}^{M} \eta_{mnt}$$ and η_{mt} is the cost elasticity with respect to the *m*th output

given by $\eta_{mnt} = \dfrac{\partial C_{nt}}{\partial y_{mnt}} = \beta_m + \beta_{mn} \ln q_{nnt} + \gamma_{rm} \ln w_{rnt} + \gamma_{mt}\tau$

The difference between the Tornqvist TFP index in Equation (7) and cost-based TFP index in Equation (8) is due to AEC. Therefore, to explain TFPC, it is important to take into account distortions in input and output mixes. AEC is described as follows:

$$AEC = \frac{1}{2}\sum_{n=1}^{N}\Big[\big\{(\pi_{mks}-r_{mks})+(\pi_{mkt}-r_{mkt})\big\}\Big](q_{mkt}-q_{mks})$$

$$+ \ \frac{1}{2}\sum_{n=1}^{N}\Big[\big\{(\theta_{nks}-s_{nks})+(\theta_{nkt}-s_{nkt})\big\}\Big](w_{nkt}-w_{nks}) \qquad (9)$$

where

$$\theta_{knt} = \frac{\partial C_{it}}{\partial w_{kit}} = \alpha_\gamma + \alpha_{rs}\ln w_{rnt} + \gamma_{rm}\ln q_{mnt} + \delta_{rt}\tau \ ;$$

$$\theta_{knt} = \frac{\partial C_{it}}{\partial w_{kit}} = \alpha_\gamma + \alpha_{rs}\ln w_{rnt} + \gamma_{rm}\ln q_{mnt} + \delta_{rt}\tau \ ;$$

$\pi_{nmt} = \eta_{nmt}/\eta_{mt}$, r_{mkt}, and θ_{nkt} and s_{nkt} are the cost-efficient and observed shares of the bank's revenue and cost for the *m*th output and *k*th input, respectively. The first component of (9) accounts for allocative output mix efficiency: it shows the deviation of observed revenue shares, r_{nkt}, from efficient revenue shares. The second component is due to input mix allocative efficiency as the observed cost share deviates from the cost-efficient share. After taking into account the allocative (input, output) mixes efficiency, TFPC can be computed as follows:

$$TFPC_n^* = CEC_n \times TC_n \times SEC_n \times AEC_n \qquad (10)$$

Now (9) becomes

$$\ln(TFP_{n1}/TFP_{n0}) = \ln(CE_{n0}/CE_{n1}) - \frac{1}{2}\left[\left(\partial C_{n0}/\partial t\right) + \left(\partial C_{n1}/\partial t\right)\right]$$

$$+ \frac{1}{2}\sum_{m=1}^{M}\left[\left(SF_{n0}\eta_{mn0} + SF_{n1}\eta_{mn1}\right)\cdot\left(q_{mn1} - q_{mn0}\right)\right] \qquad (11)$$

$$+ \frac{1}{2}\left\{\begin{array}{l} \sum_{m=1}^{M}\left[\left\{\left(\pi_{mk0} - r_{mk0}\right) + \left(\pi_{mk1} - r_{mk1}\right)\right\}\right]\left(q_{mk1} - q_{mk0}\right) \\ \sum_{k=1}^{K}\left[\left\{\left(\theta_{nk0} - s_{nk0}\right) + \left(\theta_{nk1} - s_{nk1}\right)\right\}\right]\left(w_{nk1} - w_{nk0}\right) \end{array}\right\}$$

Equation (11) is different from (7) since we have allowed for allocative inefficiency change by adding the last term of allocative mixes inefficiency if market output shares are not equalized with shadow output shares. Similarly, the second part of the last term is due to allocative input mix efficiency which is nonzero when market input prices are different from shadow prices. However, if both input and output allocative inefficiencies are absent, then our TFP estimates will be the same as those obtained in Equation (7).

3. Data and Variables

We use a 15-year unbalanced panel dataset for 46 Pakistani banks from 1991–2005 for a total of 537 observations. The dataset includes all commercial banks that operated in Pakistan during this period. We adopt the intermediation approach because interest costs account for more than 70 percent of total costs in Pakistani banks. We use two outputs: (i) loans and advances (q_1); and (ii) investments (q_2); and construct three factor prices: (i) price of labor (w_1), (ii) price of deposits, and (iii) price of operating cost (w_3). The total cost of intermediation—as defined by Sealey and Lindley (1977), Drake and Weyman-Jones (1996), and Berger and Humphrey (1997)—includes interest expenses on deposits, subtracting service charges plus expenditures on other purchased inputs. We define these variables in Table 1.

4. Estimation Results

The maximum likelihood parameter estimates of the translog cost frontier and inefficiency effects model are obtained by simultaneously estimating Equation (3) and Equation (4), using FRONTIER 4.1 (see Coelli, 1996). For hypothesis tests regarding functional forms and model

specification, we apply the generalized likelihood ratio test described in Coelli et al. (1998) where the asymptotic distribution of the likelihood ratio test is given by mixed-χ^2 distribution, and the critical values are drawn from Kodde and Palm (1986).

Table 1: Definition of Inputs, Outputs, and Exogenous Variables

Variables	Definition
Cost Function	
Total cost (C)	Wage bill, including directors' fees + depreciation of and repair to bank's property + operating cost + interest paid on deposits and borrowing + operating cost.
Investments (q_1)	Amount of investment made by the bank, consisting of government securities, treasury bills, shares fully paid up, debentures, bonds, and other investments, e.g., NIT and gold.
Loans and advances (q_2)	Value of loans and advances, including loans, cash credits, overdrafts, and bills discounted and purchased.
Price of labor (w_1)	Total expenditure on employees' salaries, including directors' fees, divided by the total number of employees.
Price of financial capital (w_2)	Total interest paid on deposits and borrowing divided by total deposits.
Price of operating cost (w_3)	Total operating cost divided by total assets.
Time trend (τ)	Simple time trend variable indicating the year of observation involved.
Inefficiency Equation	
Static governance variables	
Private bank with no governance change (z_0)	Dummy = 1 for all periods for a private bank if it underwent no governance change during 1991–2005, and = 0 for all periods otherwise.
Foreign bank with no governance change (z_1)	Dummy = 1 for all periods for a foreign bank if it underwent no governance change during 1991–2005, and = 0 for all periods otherwise.
State-owned bank with no governance change (z_2)	Dummy = 1 for all periods for a state-owned bank if it underwent no governance change during 1991–2005, and = 0 for all periods otherwise.
Banks selected for governance change	
Selected for privatization (z_3)	Dummy = 1 for all periods for a bank that was selected for privatization during 1991–2005, and = 0 for all periods otherwise. (Note: If a bank was privatized after restructuring, the variable is set to equal 1 because privatization is considered a dominant event).

Selected for restructuring (z_4)	Dummy = 1 for all periods for a bank that was selected for government restructuring (e.g., downsizing, capital/equity injection, etc.) during 1991–2005, and = 0 for all periods otherwise. (Note: If a bank was privatized after restructuring, the variable is set to equal 0 because privatization is considered a dominant event).
Selected for M&A (z_5)	Dummy = 1 for all periods for a bank that was selected for domestic/foreign acquisition or merger during 1991–2005, and = 0 for all periods otherwise.

Variables measuring short-run effects of governance change

Experienced privatization (z_6)	Dummy = 1 for all periods following privatization of a bank starting in the next year after privatization, and = 0 for the year of privatization and prior to privatization. Banks that did not undergo privatization are set to equal 0 for all periods.
Experienced restructuring (z_7)	Dummy = 1 for all periods following restructuring of a bank starting in the next year after restructuring, and = 0 for the year of restructuring and prior to restructuring. Banks that did not undergo restructuring are set to equal 0 for all periods.
Experienced M&A (z_8)	Dummy = 1 for all periods following M&A of a bank starting in the next year after M&A, and = 0 for the year of M&A and prior to M&A. Banks that did not undergo M&A are set to equal 0 for all periods.

Dynamic governance variables measuring long-run effects of governance change

Years after privatization (z_9)	Number of years since privatization of the bank took place. Set to equal 0 for the year of and years prior to privatization, and starts with 1 for the first year after privatization, 2 for the second year and so on. Banks that did not undergo privatization are set to equal 0 for all periods.
Years after restructuring (z_{10})	Number of years since restructuring of the bank took place. Set to equal 0 for the year of and years prior to restructuring, and starts with 1 for the first year after restructuring, 2 for the second year and so on. Banks that did not undergo restructuring are set to equal 0 for all periods.
Years after M&A (z_{11})	Number of years since M&A of the bank took place. Set to equal 0 for the year of and years prior to M&A, and starts with 1 for the first year after M&A, 2 for the second year and so on. Banks that did not undergo M&A are set to equal 0 for all periods.

Other control variables

Log lagged assets ($ln\ A_{t-1}$)	Natural log of bank assets after taking one-year lag for each bank in constant 1999/2000 Pakistan rupees.
Time trend (τ)	Simple time trend variable indicating the year of observation involved.

Our test results show that the null hypothesis that the correct functional form is Cobb-Douglas is rejected in favor of translog at the 1 percent level of statistical significance. Moreover, a generalized likelihood ratio test for the hypothesis that technical inefficiency effects are absent in our empirical specification $\left(H_0 : \gamma = \delta_0 = ... = \delta_{13} = 0\right)$ is also rejected at the 1 percent level of statistical significance. This test result confirms that most banks in our sample are operating above the cost frontier. Finally, the null hypothesis that $\left(H_0 : \delta_1 = ... = \delta_{13} = 0\right)$ implying that inefficiency variables in the model are jointly zero is also rejected.

Tables 2 and 3 present the estimated coefficients of the translog cost frontier imposing homogeneity and symmetry, along with the correlates of technical inefficiency. Our results are qualitatively similar to those of Burki and Ahmad (2010) even though the sample size and empirical specification is different. The positive signs for all first-order parameters in Table 2 suggest that banking costs rise with increases in the prices of factors and outputs. Next, we interpret the differential impact of bank governance changes on the technical inefficiency of the banks in our sample (see Table 3). Their mean technical inefficiency is 1.35 in the full model (see second-last row in Table 2), which suggests that, on average, bank costs exceed the minimum-level frontier by 35 percent due to technical inefficiency. Since the dependent variable in Equation (4) is technical inefficiency (not efficiency), a negative (positive) sign on the estimated coefficients in Table 3 would indicate a decrease (increase) in technical inefficiency, or increase (decrease) in efficiency. In Table 3, the time trend estimate indicates that, ceteris paribus, banks' technical inefficiency continues to decrease at the rate of 9.6 percent per annum throughout the study period, showing that they are moving closer to their efficient frontier.

Our results suggest that private banks demonstrate the lowest level of cost-inefficiency (or highest level of cost-efficiency) compared with foreign and state-owned banks (see ϕ_1 and ϕ_2). The technical inefficiency of banks selected for privatization is no different from that of private banks. Burki and Ahmad (2010) note that there are two important factors that explain the relatively good performance of selected state-owned banks: first, the selected state-owned banks had undergone a preparatory and restructuring phase before being privatized; and second, relatively better performing banks are put up for sale because poorly performing state-owned banks cannot easily be sold to the private sector. The results in Table 3 further show that privatized banks experience different efficiency trends in the short run and long run, as indicated by changing parameter

values for the ϕ_3, ϕ_6, and ϕ_9 coefficients. Similarly, state-owned banks that were selected for restructuring also experience efficiency losses in the years after restructuring, but this trend is significantly reversed once these banks adjust to market conditions. This pattern can be observed from the magnitude and statistical significance of the parameter values for ϕ_4, ϕ_6, and ϕ_{10}. Our results also indicate that (i) banks selected for M&A are technically more inefficient than private banks, as shown by the positive and statistically significant ϕ_5 coefficient, and (ii) following ownership change, these banks demonstrate lower technical inefficiency (see coefficients ϕ_8 and ϕ_{11}). If these trends continue, this group of banks is expected to hold on to the gains in technical efficiency even in the long run. For robustness checks, we also try alternative empirical specifications to separate the effects of each set of governance variables. The full model includes all governance change variables. We present each set of governance variables in a separate model in columns 2 to 5 of Table 3 for sensitivity analysis. In general, we find that the estimated coefficients of these models are robust across alternative models.

Table 2: Maximum Likelihood Parameter Estimates of Translog Stochastic Cost Frontier

Variables	Parameters	Full Model	Privatization	Restructuring	M&A	Excluding Years After Governance Change
Constant	α_0	0.448***	0.465***	0.456***	0.456***	0.478***
		(11.65)	(13.75)	(14.16)	(14.16)	(13.77)
$\ln y_1$	α_1	0.488***	0.481***	0.489***	0.489***	0.486***
		(15.94)	(15.97)	(16.29)	(16.29)	(16.40)
$\ln y_2$	α_2	0.532***	0.540***	0.534***	0.534***	0.537***
		(17.04)	(17.60)	(17.21)	(17.21)	(17.55)
$\ln w_1$	β_1	0.078***	0.082***	0.078***	0.078***	0.077***
		(2.70)	(2.84)	(2.74)	(2.74)	(2.73)
$\ln w_3$	β_3	0.247***	0.241***	0.247***	0.247***	0.247***
		(8.75)	(8.66)	(8.82)	(8.82)	(8.92)
τ	ϕ_τ	0.017***	0.015**	0.011*	0.010*	0.013**
		(2.82)	(2.50)	(1.80)	(1.80)	(2.20)
τ^2	$\phi_{\tau\tau}$	-0.0002	-0.001	-0.0004	-0.0003	-0.001
		(-0.25)	(-0.76)	(-0.42)	(-0.42)	(-0.64)
$\ln y_1^2$	α_{11}	0.135***	0.130***	0.134***	0.134***	0.133***
		(15.77)	(15.18)	(15.79)	(15.79)	(15.99)
$\ln y_2^2$	α_{22}	0.136***	0.136***	0.136***	0.136***	0.137
		(12.87)	(12.91)	(13.01)	(13.01)	(13.04)

$\ln y_1 \ln y_2$	α_{12}	-0.110***	-0.104***	-0.108***	-0.108***	-0.108***
		(-12.04)	(-11.43)	(-11.81)	(-11.81)	(-12.03)
$\ln w_1^2$	β_{11}	0.008	0.007	0.009	0.009	0.002
		(0.46)	(0.41)	(0.52)	(0.52)	(0.14)
$\ln w_3^2$	β_{33}	-0.026	-0.028	-0.028	-0.028	-0.035
		(-1.18)	(-1.24)	(-1.24)	(-1.24)	(-1.54)
$\ln w_1 \ln w_3$	β_{13}	-0.031	-0.024	-0.030	-0.030	-0.022
		(-1.53)	(-1.21)	(-1.49)	(-1.49)	(-1.09)
$\ln w_1 \ln y_1$	γ_{11}	0.016	0.014	0.013	0.013	0.015
		(1.16)	(1.01)	(0.98)	(0.98)	(1.07)
$\ln w_3 \ln y_1$	γ_{31}	0.005	0.006	0.008	0.008	0.006
		(0.28)	(0.36)	(0.47)	(0.47)	(0.32)
$\ln w_1 \ln y_2$	γ_{12}	-0.063***	-0.064***	-0.062***	-0.062***	-0.064***
		(-3.88)	(-3.94)	(-3.86)	(-3.86)	(3.95)
$\ln w_3 \ln y_2$	γ_{32}	0.014	0.010	0.011	0.011	0.014
		(0.86)	(0.60)	(0.66)	(0.66)	(0.86)
$\ln y_1 \tau$	$\gamma_{1\tau}$	0.003	0.004	0.003	0.003	0.003
		(0.69)	(0.92)	(0.68)	(0.68)	(0.86)
$\ln y_2 \tau$	$\gamma_{2\tau}$	0.009**	0.009**	0.008**	0.008**	0.008**
		(2.01)	(2.07)	(1.98)	(1.98)	(1.96)
$\ln w_1 \tau$	$\delta_{1\tau}$	0.005	0.009*	0.006	0.006	0.007
		(0.10)	(1.65)	(1.12)	(1.13)	(1.31)
$\ln w_3 \tau$	$\delta_{2\tau}$	-0.005	-0.009*	-0.008	-0.008	-0.007
		(0.098)	(-1.72)	(-1.37)	(-1.37)	(-1.31)
$\sigma^2 = \sigma_v^2 + \sigma_\nu^2$	-	0.445***	0.648***	0.477***	0.477***	0.864***
		(6.74)	(4.54)	(5.79)	(5.79)	(5.74)
$\gamma = \sigma_v^2 / (\sigma_v^2 + \sigma_\nu^2)$	-	0.880***	0.911***	0.882***	0.882***	0.935***
		(34.97)	(37.77)	(33.54)	(33.54)	(66.17)
Log likelihood	-	-149.311	-150.615	-152.243	-153.634	-145.981
Mean efficiency	-	1.350	1.329	1.336	1.333	1.320
No. of observations	N	520	520	520	520	520

Note: *, **, and *** indicate statistical significance at the 90 percent, 95 percent, and 99 percent confidence levels, respectively.

Table 3: Maximum Likelihood Parameter Estimates of Inefficiency Effects Model

Bank Types		Full Model	Privatization	Restructuring	M&A	Excluding Years After Governance Change
		(1)	(2)	(3)	(4)	(5)
Constant	ϕ_0	-1.669**	-2.660***	-1.460***	-3.575***	-4.853***
		(-3.58)	(-3.25)	(-3.30)	(-3.32)	(-4.15)
Foreign bank with no governance change	ϕ_1	0.955***	1.082***	0.621***	1.824***	2.520***
		(3.84)	(3.69)	(3.31)	(3.49)	(4.47)
State-owned bank with no governance change	ϕ_2	0.946***	0.983***	0.667***	1.551***	2.653***
		(3.28)	(3.27)	(3.07)	(3.33)	(4.24)
Selected for privatization	ϕ_3	0.461	0.246	-	-	1.641***
		(1.55)	(0.99)	-	-	(3.01)
Selected for restructuring	ϕ_4	-0.301	-	-0.554	-	-1.224***
		(-1.01)	-	(-1.02)	-	(-3.36)
Selected for M&A	ϕ_5	0.698***	-	-	1.427***	2.069***
		(2.86)	-	-	(3.05)	(4.01)
Underwent privatization	ϕ_6	1.390	-0.332	-	-	-2.801**
		(1.20)	(-0.33)	-	-	(-2.16)
Underwent restructuring	ϕ_7	1.290	-	1.187*	-	0.406
		(1.54)	-	(1.92)	-	(0.42)
Underwent M&A	ϕ_8	-0.488	-	-	-1.826*	-0.2937
		(-0.51)	-	-	(-1.72)	(-1.14)
Years after privatization	ϕ_9	0.021	-0.196**	-	-	-
		(0.27)	(-2.12)	-	-	-
Years after restructuring	ϕ_{10}	-0.554**	-	-0.440*	-	-
		(-2.03)	-	(-1.80)	-	-
Years after M&A	ϕ_{11}	-0.006	-	-	-0.057	-
		(-0.02)	-	-	(-0.21)	-
Log lagged assets	ϕ_{12}	0.041	0.008	0.083	0.084**	0.094**
		(1.15)	(0.19)	(1.16)	(2.09)	(2.09)
Time trend	ϕ_{13}	-0.096***	-0.170***	-0.120***	-0.181***	-0.223***
		(-4.09)	(-3.97)	(-3.82)	(-4.33)	(-4.66)

Note: *, **, and *** indicate statistical significance at the 90 percent, 95 percent, and 99 percent confidence levels, respectively.

5.   TFPC and its Decomposition

Next, we decompose TFPC into its components, using parametric estimates of the translog cost frontier in Equation (3). First, we compare the TFP components CEC, TC, and SEC, and then account for AEC. Table 4 provides descriptive statistics for TFPC and its components for the entire bank sample as well as for different types of bank ownership.

Table 4: Mean Values of Average TFP Components

Bank Type	Descriptors	CEC	TC	SEC	TFPC	AEC	TFPC1	CE
All	N	475						
	Mean	0.02	1.36	-0.02	1.37	0.06	1.43	0.792
	Minimum	-1.37	-5.20	-18.02	-16.66	-12.91	-13.79	0.150
	Maximum	2.12	7.15	33.05	36.71	18.40	40.87	0.950
Foreign	N	224						
	Mean	0.03	2.05	0.05	2.14	0.03	2.17	0.787
	Minimum	-1.32	-2.41	-18.02	-16.66	-12.91	-13.79	0.140
	Maximum	2.12	5.82	33.05	36.71	18.40	40.87	0.955
Private	N	160						
	Mean	0.002	1.34	-0.01	1.33	0.11	1.44	0.807
	Minimum	-0.52	-3.11	-13.82	-12.27	-13.82	-13.43	0.380
	Maximum	0.47	7.15	20.11	23.37	20.11	21.63	0.952
Public	N	90						
	Mean	0.17	0.05	-0.20	0.02	0.05	0.07	0.772
	Minimum	-1.37	-5.20	-9.91	-10.60	-3.04	-9.49	0.277
	Maximum	1.50	4.87	13.16	16.55	2.65	15.26	0.952

Note: $TFPC_n = CEC_n + TC_n + SEC_n$; $TFPC_n^* = CEC_n + TC_n + SEC_n + AEC_n$

The results in Table 4 indicate that TFP in the banking sector increased by 1.37 percent during 1992–2005. However, the potential TFP increases to 1.47 percent when we account for AEC over the same period. The major contributing factor in TFPC is the change in technology (TC), which increased by 1.36 percent on average. We also find that CEC remains fairly stable during the entire study period. Surprisingly, scale effects contribute negatively to TFPC, indicating that the banking industry experienced diseconomies of scale during the study period.

The results for TFPC by bank ownership also suggest positive growth where foreign banks show, on average, an annual TFPC of about

2.14 percent. This could have increased further had banks adjusted for allocative efficiency. Foreign banks post the highest average annual TFPC (2.14 percent), followed by private banks (1.33 percent), and then public banks.

The TFPC of foreign banks could have increased further to 2.17 percent by removing distortions in the input and output mix. The productivity growth of private banks is accounted for mostly by changes in technology (1.34 percent). Private banks also remain more successful in overcoming allocative inefficiencies (perhaps due to competition policies introduced during the reforms process), which significantly contribute to TFPC (0.11 percent). While public banks show a modest increase in TFP (0.02 percent), they appear to be catching up to the technological levels of foreign and private banks, as indicated by the 0.17 percent change in cost efficiency, which is significantly higher than that of private and foreign banks. However, new technology and innovations (TC) plays a key role in the TFPC of private and foreign banks, which is not the case for public banks. Scale economies contribute negatively to the TFPC of public and private banks, which could be explained by the large-scale restructuring, downsizing, and branch closure of certain public banks.

Figures 1 and 2 provide further insights into the patterns of TFPC and its components on a year-by-year basis. For example, Figure 1 illustrates the trend followed by TFPC and its components by bank ownership. We note that TFPC remains positive for the study period but presents a volatile trend across different periods. Figure 1(a) portrays the trend followed by TFPC for all banks, where changes in TFP and its components remain positive throughout, but show a declining trend. These fluctuations could be attributed to financial sector reforms.

Figure 1: TFP Decomposition into Components without AEC
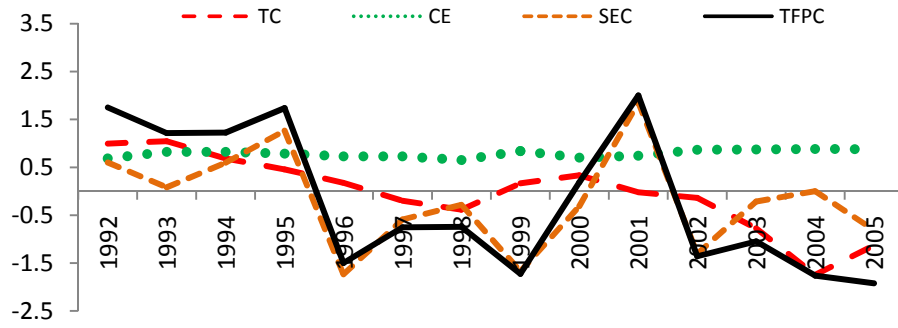
a: All banks

b: Foreign banks

c: Private banks

d: Public banks

Note: AEC = allocative efficiency change, CE = cost efficiency, SEC = scale efficiency change, TC = technical change, TFPC1 = total factor productivity change while accounting for allocative efficiency.

Figure 2: TFP Decomposition into Components with AEC
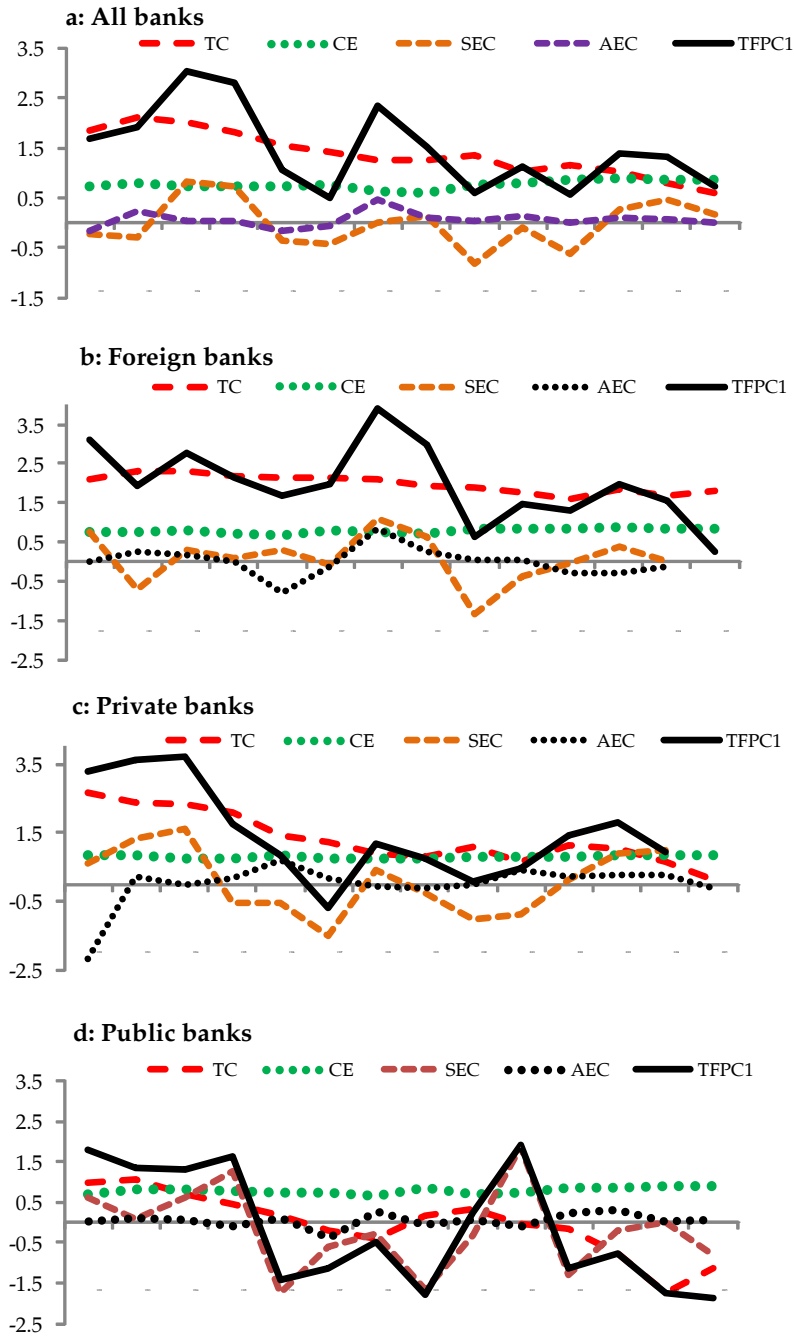
Note: AEC = allocative efficiency change, CE = cost efficiency, SEC = scale efficiency change, TC = technical change, TFPC1 = total factor productivity change without accounting for allocative efficiency.

6.   TFPC by Bank Governance Variables

How have changes in bank governance impacted banks' performance? Table 5 presents patterns for TFPC and its components for our governance change variables. On average, foreign banks that underwent governance change exhibit higher TFP growth vis-à-vis those that did not experience any governance change.[4] For instance, foreign banks with governance change show an average TFP growth rate of 2.31 percent, compared to banks with no governance change (2.05 percent). This change in TFP is explained by changes in technology. TFPC increases further to 2.46 percent when AEC is also accounted for. State-owned banks with no governance change exhibit, on average, a negative growth rate for TFP (-0.37 percent) while those that underwent a governance change show a slight increase in TFP growth (0.18 percent). These results are consistent with the findings reported in Table 3.

Table 5: Decomposition of TFPC for Different Governance Changes

Description	CEC	TC	SEC	TFPC	AEC	TFPC1
Foreign banks with no governance change	0.04	1.64	0.36	2.05	0.01	2.06
Foreign banks with governance change	0.01	2.57	-0.27	2.31	0.14	2.46
Public banks with no governance change	0.02	-0.24	-0.15	-0.37	0.13	-0.24
Public banks with governance change	0.01	0.49	-0.33	0.18	0.05	0.22
Selected for privatization	0.02	-0.70	0.02	-0.66	0.02	-0.64
Selected for restructuring	0.02	-1.00	-0.09	-1.07	-0.02	-1.08
Selected for M&A	0.17	4.54	0.03	4.74	0.50	5.24

We also find that public banks selected for privatization experienced negative TFP growth before they were privatized, as did banks selected for restructuring. However, banks selected for M&A exhibit positive TFP growth: an average of 4.74 percent per annum, driven mostly by technological changes. Both CEC and SEC contribute marginally to the increase in TFP.

Figure 3 illustrates these results by comparing TFPC by governance change variables. Figures 3(a) and 3(b) compare the TFPC of foreign banks, indicating that foreign banks that underwent governance change show an improved TFP compared with banks that did not undergo governance change. The trend followed by state-owned banks also shows that governance change introduced an upward trend in TFPC [Figures 3(c) and

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[4] Since our sample of private banks with governance changes is quite small, and may not accurately represent these changes, we have not computed TFPCs for these banks.

3(d)]. This increase in TFP appears to have taken place after 1999, which could be a result of different steps taken by the government to strengthen these banks, e.g., the liquidation of state-owned banks by injecting more liquidity. Similarly, Figures 4(a) to 4(d) illustrate the effects of governance change on these banks' productivity trends.

Finally, Figures 5(a) to 5(c) depict the pattern of productivity change due to selection effects. Banks selected for privatization and restructuring experienced a negative change in TFP until 2000, and a fluctuating pattern thereafter. However, banks that underwent M&A show an increasing trend in TFPC along with its components [Figure 5(c)].

Figure 3: TFP Decomposition for Banks with and without Governance Change Component without AEC

c: State-owned banks with no governace change

d: State-owned banks with governace change

Figure 4: TFP Decomposition for Banks with and without Governance Change Component without AEC

a: Foreign banks with no governance change

b: Foreign banks with governance change
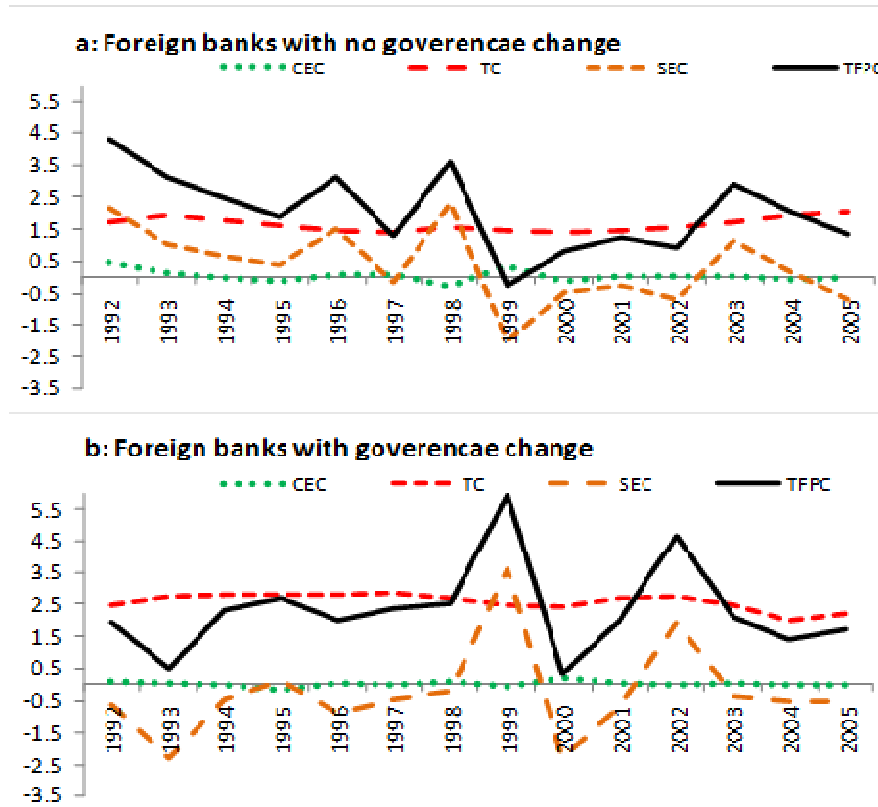
c: State-owned banks with no governance change
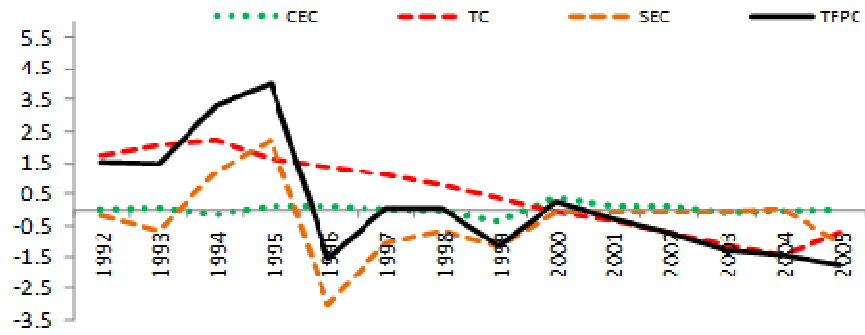
d: State-owned banks with governance change
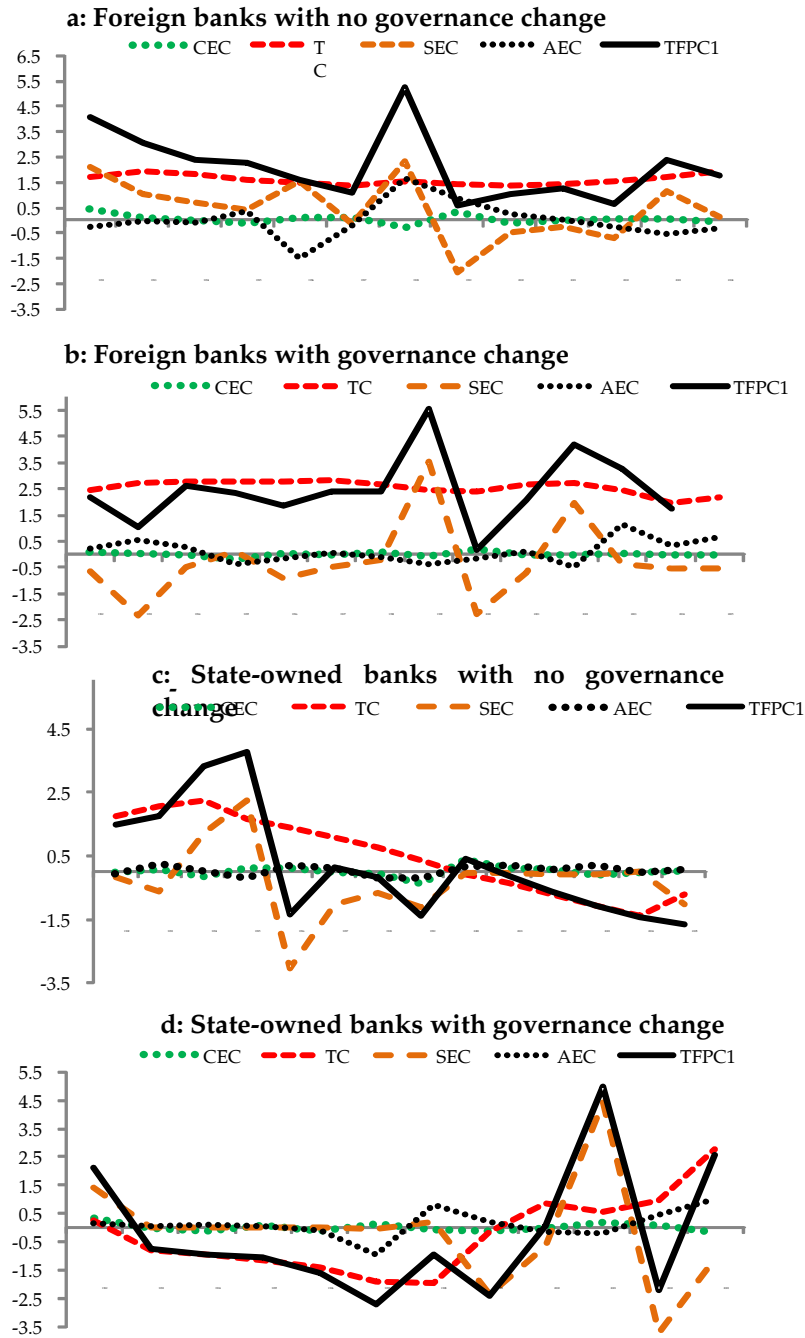
Figure 5: TFP Decomposition for Banks with Selection Effects with AEC

a: Selected for privatization

b: Selected for restructuring

c: Selected for M&A
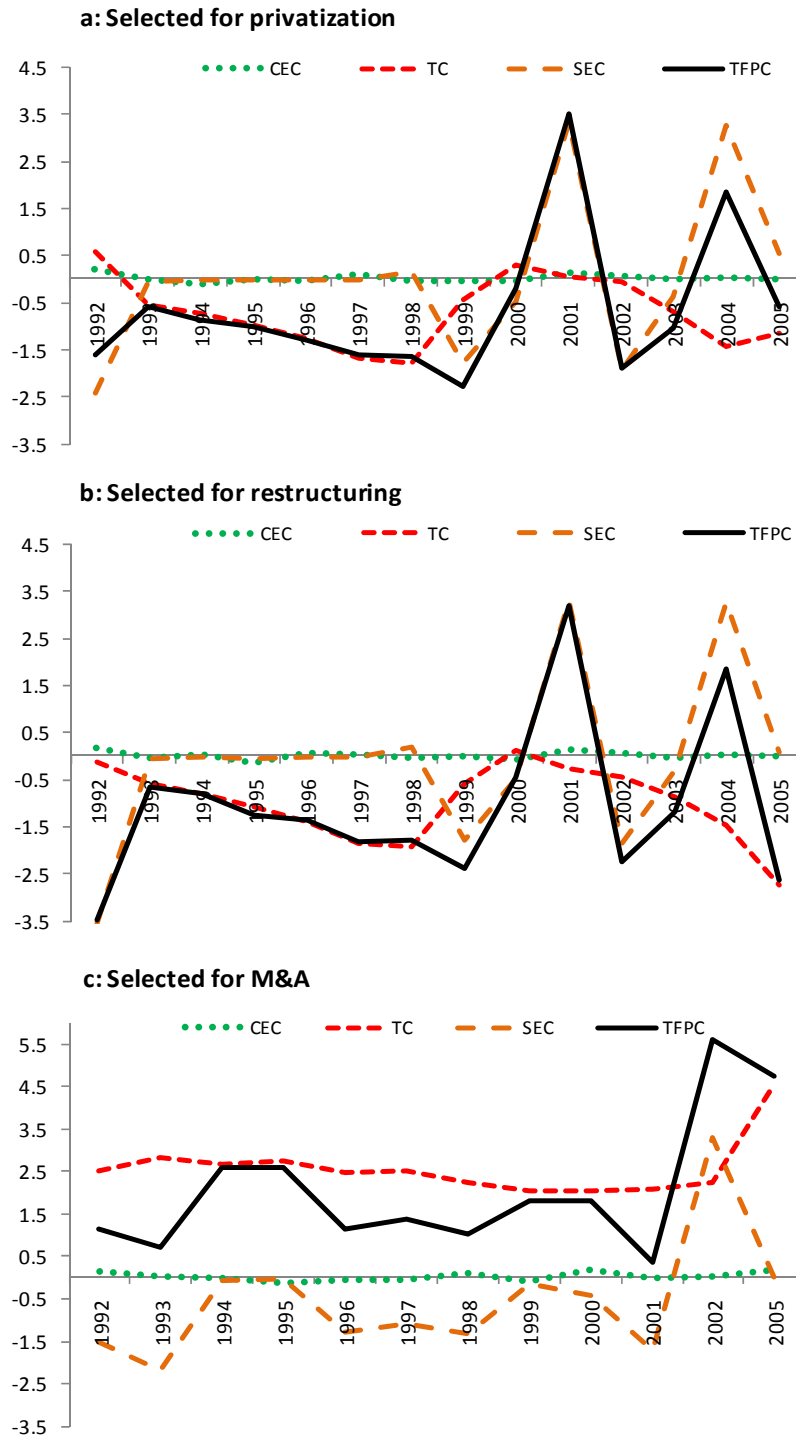
7.   Concluding Observations

This paper has extended the results of Burki and Ahmad (2010) by calculating TFPC and its decompositions by bank ownership and bank governance change indicators. In general, our results have shown that the technical inefficiency of banks was 35 percent during the study period, indicating that the cost of production of these banks exceeded their minimum cost frontier. However, this inefficiency decreased at a rate of 9.6 percent per annum. On average, private banks demonstrated greater technical efficiency than foreign and state-owned banks. The technical inefficiency of banks selected for privatization was not different from that of private banks. Privatized banks experienced different efficiency trends in the short and long run. State-owned banks that were selected for restructuring experienced efficiency losses in the years following restructuring, but this trend was significantly reversed after these banks adjusted to market conditions. Our results have also shown that banks selected for M&A were technically less efficient than private banks, and that, following ownership change, these banks demonstrated improved technical efficiency. If these trends continue, this group of banks is expected to hold on to the gains in technical efficiency even in the long run.

We have also found that most of the TFPC in Pakistan's banking sector was driven by technical change. The declining trend in TFP growth could be an indication of the increasing profitability of the banking sector. Surprisingly, the magnitude of scale effects remain insignificant despite the increased outreach of banking services, which might have been offset by diseconomies of scale since the banking sector was operating on an increasing cost frontier while experiencing different reforms. Banks that underwent a governance change showed an improvement in TFP growth and its components vis-à-vis those banks that were not selected for governance change. Both foreign and state-owned banks that underwent a governance change showed an increasing trend in TFPC as compared to banks that did not experience any governance change. Finally, selection variables brought about partial effects by bank ownership, while the more significant effects were related to bank consolidation.

References

Bauer, P. W., Berger, A. N., & Humphrey, D. B. (1993). Efficiency and productivity growth in US banking. In H. O. Fried, C. A. K. Lovell, & S. S. Schmidt (Eds.), *The measurement of productive efficiency*. New York, NY: Oxford University Press.

Berger, A. N., & Mester, L. J. (1997). Inside the black box: What explains differences in the efficiencies of financial institutions? *Journal of Banking and Finance*, *21*, 895–947.

Berger, A. N., & Mester, L. J. (2003). Explaining the dramatic change in performance of US banks: Technological change, deregulation, and dynamic changes in competition. *Journal of Financial Intermediation*, *12*, 57–95.

Berger, A. N., Clarke, G. R. G., Cull, R., Klapper, L., & Udell, G. F. (2005). Corporate governance and bank performance: A joint analysis of static, selection, and dynamic effects of domestic, foreign and state ownership. *Journal of Banking and Finance*, *29*, 2179–2221.

Berger, A. N., Hanweck, G. A., & Humphrey, D. B. (1987). Competitive viability in banking: Scale, scope, and product mix economies. *Journal of Monetary Economics*, *20*, 501–520.

Berger, A. N., & Humphrey, D. B. (1997). Efficiency of financial institutions: International survey and directions for future research. *European Journal of Operational Research*, *98*, 175–212.

Bhattacharya, A., Lovell, C. A. K., & Sahay, P. (1997). The impact of liberalization on the productive efficiency of Indian commercial banks. *European Journal of Operational Research*, *98*, 332–345.

Boubakri, N., Cosset, J.-C., & Guedhami, O. (2005). Liberalization, corporate governance, and the performance of privatized firms in developing countries. *Journal of Corporate Finance*, *11*, 767–790.

Burki, A. A., & Niazi, G. S. K. (2010). Impact of financial reforms on efficiency of state-owned, private and foreign banks in Pakistan. *Applied Economics*, *42*, 3147–3160.

Burki, A. A., & Ahmad, S. (2010). Bank governance changes in Pakistan: Is there a performance effect? *Journal of Economics and Business*, *62*(2), 129–146.

Clarke, G. R. G., Cull, R., & Shirley, M. M. (2005). Bank privatization in developing countries: A summary of lessons and findings. *Journal of Banking and Finance*, *29*, 1905–1930.

Coelli, T. J. (1996). *A guide to FRONTIER version 4.1: A computer program for stochastic frontier production and cost function estimation* (Working Paper No. 7). Armidale, Australia: Centre for Efficiency and Productivity Analysis, University of New England.

Coelli, T. J., Prasada Rao, D. S., & Battese, G. E. (2005). *An introduction to efficiency and productivity analysis*. Boston, MA: Kluwer Academic Publishers.

Cuesta, R. A., & Orea, L. (2002). Mergers and technical efficiency in Spanish savings banks: A stochastic distance function approach. *Journal of Banking and Finance*, *26*, 2231–2247.

Drake, L., & Weyman-Jones, T. G. (1996). Productive and allocative inefficiencies in UK building societies: A comparison of non-parametric and stochastic frontier techniques. *Manchester School of Economic and Social Studies*, *114*, 22–37.

Fries, S., & Taci, A. (2005). Cost efficiency of banks in transition: Evidence from 289 banks in 15 post-communist countries. *Journal of Banking and Finance*, *29*, 55–81.

Gilbert, R. A., & Wilson, P. W. (1998). Effects of deregulation on the productivity of Korean banks. *Journal of Economics and Business*, *50*, 133–155.

Grifell-Tatjé, E., & Lovell, C. A. K. (1996). Deregulation and productivity decline: The case of Spanish savings banks. *European Economic Review*, *40*, 1281–1303.

Hao, J., Hunter, W. C., & Yang, W. (2001). Deregulation and efficiency: The case of private Korean banks. *Journal of Economics and Business*, *53*(2/3), 237–254.

Hasan, I., & Marton, K. (2003). Development and efficiency of the banking sector in a transitional economy. *Journal of Banking and Finance*, *27*, 2249–2271.

Hughes, J. P., Lang, W., Mester L. J., & Moon, C. (1999). Recovering risky technologies using the almost ideal demand system: An application to US banks. *Journal of Financial Services Research*, *18*, 5–27.

Humphrey, D. B. (1993). Cost and technical change: Effects from bank deregulation. *Journal of Productivity Analysis*, *4*, 9–34.

Humphrey, D. B., & Pulley L. B. (1997). Banks' responses to deregulation: Profits, technology and efficiency. *Journal of Money, Credit and Banking*, *29*, 73–93.

Isik, I., & Hassan, M. K. (2002). Technical, scale and allocative efficiencies of Turkish banking industry. *Journal of Banking and Finance*, *26*, 719–766.

Katib, M. N., & Mathews, K. (2000). A non-parametric approach to efficiency measurement in the Malaysian banking sector. *Singapore Economic Review*, *44*, 89–114.

Kodde, D. A., & Palm, F. C. (1986). Wald criteria for jointly testing equality and inequality restrictions. *Econometrica,* 54, 1243–1248.

Leightner, J. E., & Lovell, C. A. K. (1998). The impact of financial liberalization on the performance of Thai banks. *Journal of Economics and Business*, *50*, 115–131.

Lensink, R., Meesters, A., & Naaborg, I. (2008). Bank efficiency and foreign ownership: Do good institutions matter? *Journal of Banking and Finance*, *32*, 834–844.

Mertens, A., & Urga, G. (2001). Efficiency, scale and scope economies in the Ukrainian banking sector in 1998. *Emerging Markets Review*, *3*(2), 292–308.

Mukherjee, K., Ray, S. C., & Miller, S. M. (2001). Productivity growth in large US commercial banks: The initial post-deregulation experience. *Journal of Banking and Finance*, *25*, 913–939.

Okuda, H., & Mieno, F. (1999). What happened to Thai commercial banks in the pre-Asian crisis period: Microeconomic analysis of Thai banking industry. *Journal of Economics*, *40*, 12–97.

Opiela, T. P. (2001). *Assessing the efficiency of Polish commercial banks* (Working Paper). Warsaw: National Bank of Poland.

Patti, E. B., & Hardy, D. C. (2005). Financial sector liberalization, bank privatization, and efficiency: Evidence from Pakistan. *Journal of Banking and Finance*, *29*, 2381–2406.

Rezvanian, R., & Mehdian, S. (2002). An examination of cost structure and production performance of commercial banks in Singapore. *Journal of Banking and Finance*, *26*, 79–98.

State Bank of Pakistan. (2003). *Pakistan financial sector assessment 1990–2000*. Karachi: State Bank of Pakistan.

State Bank of Pakistan. (2005). *Pakistan financial sector assessment 2004*. Karachi: State Bank of Pakistan.

Sealey, C. W., & Lindley, J. T. (1977). Inputs, outputs, and a theory of production and cost at depository financial institutions. *Journal of Finance*, *32*, 1251–1265.

Williams, J., & Nguyen, N. (2005). Financial liberalization, crisis, and restructuring: A comparative study of bank performance and bank governance in South Asia. *Journal of Banking and Finance*, *29*, 2119–2154.

Williams, J., & Intarachote, T. (2002). *Financial liberalization and profit efficiency in the Thai banking system, 1990–1997: The case of domestic and foreign banks* (Working Paper). Bangor, UK: University of Wales.

Yildrim, S. H., & Philippatos, C. G. (2007). Restructuring and competition in Latin American banking markets. *Journal of Banking and Finance*, *31*, 629–639.

An Evaluation of Mutual Fund Performance in an Emerging Economy: The Case of Pakistan

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Abstract

This article examines the performance of Pakistan's mutual fund industry during 2006–10, a period characterized both by bullish and bearish markets. An analysis of fund types reveals that Islamic funds have shown strong growth in spite of their lackluster performance compared to conventional funds. Income funds appear to have suffered as a consequence of the underdeveloped bond market, and very high t-bill rates have resulted in negative excess returns during the period. For stock funds, market indices and size are significant factors that indicate a preference for large-cap stocks of managers. With consistently negative or insignificant alphas, no fund manages to outperform the market.

Keywords: Mutual Funds, Fund Performance, Pakistan.

JEL Classification: G23, G11.

1. Introduction

The ability of mutual funds to outperform the market has long been the subject of debate in the literature, particularly with reference to the developed world. The debate was fuelled in the 1990s with the phenomenal growth of the mutual fund industry across the developed world, with annual growth rates for mutual fund net assets averaging 22.4 percent in the US and 17.7 percent in the European Union (Klapper, Sulla, & Vittas, 2004). This was seen in the light of the rapid globalization of financial markets and unprecedented growth in market capitalization. A well-developed securities market and an effective regulatory framework are therefore seen as the backbone of growth in the mutual fund industry.

Pakistan's financial sector became more liberalized in the 1990s as private players were allowed to enter the market, but the 2000s saw a

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groundbreaking change. The strong surge in domestic and international investors' interest in Pakistani stocks at the start of the millennium set the stage for the growth of the country's mutual fund industry. Today, mutual funds are the dominant nonbanking finance institutions (NBFIs) in the country. The impetus came as the Investment Corporation of Pakistan was privatized in 2000 and the regulation of NBFIs was handed over to the Securities and Exchange Commission of Pakistan.[1]

Despite its strong growth, the mutual funds industry remains a small part of the stock market—at the end of the fiscal year (FY) 2010, it comprised 6.1 percent of the total market capitalization of the Karachi Stock Exchange (KSE) and less than 5 percent of banking industry deposits (in advanced economies, the size of mutual funds exceeds banking deposits). Its future prospects and place within the country's underdeveloped capital market make it a relevant study subject. Growth in the industry can be indicative of increased investor interest, and raises interesting questions about the impact of more conventional alternatives—particularly depositor behavior in the banking industry—on investor behavior.

Here, we attempt to evaluate the performance of mutual funds in Pakistan. Although there are some studies on the subject, our research adds value in several ways. We analyze primarily the industry's performance in a period that witnessed a rapid rise both in asset management companies (AMCs) and their respective mutual funds. All previous studies span periods prior to 2006, when there were only a few asset managers with a moderate number of funds. Moreover, there has been a significant change in the dynamics of the KSE since 2006. We have witnessed an increase in turnover with periods of extreme volatility. There were periods when bulls dominated the markets, and instances where the KSE was caught in a bear trap. This high volatility was partly responsible for fueling the growth of mutual funds in Pakistan, and presents an opportunity to analyze their performance in both bull and bear markets. The significantly large number of mutual funds makes it possible to carry out a fund-wise analysis, which has not been done before. Lastly, we use more sophisticated empirical and methodological measures to report more robust findings.

The rest of the article is organized as follows. Section 2 briefly examines the mutual fund industry in Pakistan. Section 3 reviews some of

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[1] This is currently regulated under the Non-Banking Finance Companies and Notified Entities Regulations, 2008.

the existing literature on the subject. Section 4 presents the study's data. Section 5 builds an empirical methodology. Our empirical results are reported in Section 6, and Section 7 concludes the study.

2.   Characteristics of the Pakistani Mutual Fund Industry

During FY2001–10, the number of open-ended funds in Pakistan grew to about 30 by FY2005, after which there was a more-than-threefold increase to 105 funds by FY2010 (Mutual Funds Association of Pakistan [MUFAP], 2010) (Figure 1). Even though the number of AMCs has remained stagnant in the last three years, their funds continue to grow rapidly. This comes despite a dramatic drop in the industry's net asset value (NAV) as the worldwide recession hit Pakistan's capital market in 2008. The NAV rose up until 2008 (to PKR278.9 billion) but has since declined dramatically to PKR167.7 billion in 2010. This is indicative of the impact of the financial crisis, which has affected investments in mutual funds and the value of assets held by these funds.

Figure 1: Evolution of AMCs and Funds in Pakistan (FY2001–10)
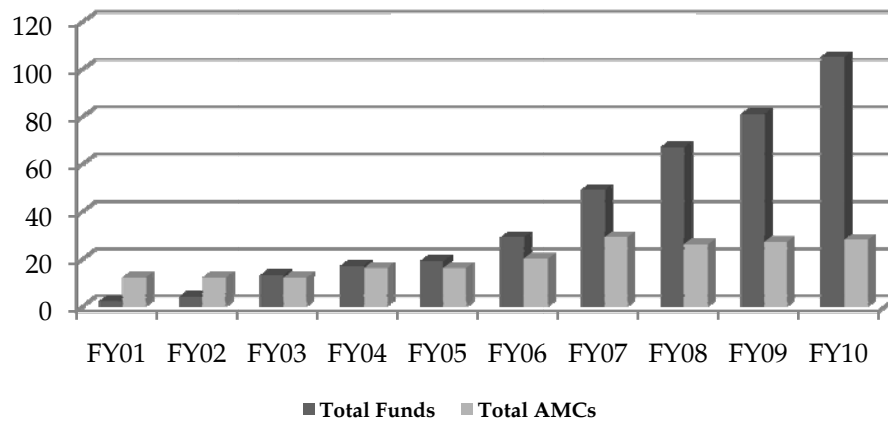
AMC = asset management company, FY = fiscal year.
Source: Mutual Funds Association of Pakistan.

Thus, the last half of FY2001–10 is an interesting period during which the mutual fund industry experienced both a period of particularly high growth as well as the effects of a worldwide recession. This makes it an important period over which to evaluate the industry's performance.

The industry's growth has resulted in the evolution of a variety of funds that specialize in investment styles and cater to various investor needs. A look at how the net asset holding of these funds has evolved in

the past five years gives us an indication of the changing dynamics of the young industry (Figure 2). Islamic funds have consistently and steadily increased in terms of NAV, and the number of Islamic funds in the country has grown phenomenally (its growth averaging 64 percent over a five-year period). The NAV of income funds, which experienced considerable growth up until FY2008, has since declined dramatically. These funds were the most impacted by the devaluation of term finance certificates (TFCs) during the slowdown of 2008 and appear to have been unable to recover from the shock. Interestingly, money market funds—which held a negligible share of the market at the time of the crisis—have since shown tremendous growth, particularly their NAV, which almost equaled that of stock and income funds by December 2010.

Figure 2: Fund–Wise NAV (FY2006–10)
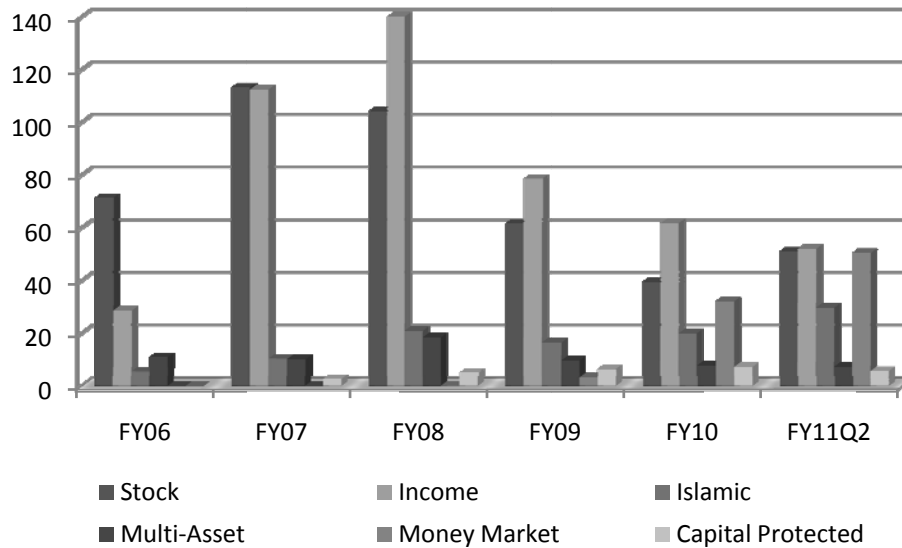
FY = fiscal year, NAV = net asset value.
Source: Mutual Funds Association of Pakistan.

Differences in the risk exposure of different funds (Figure 3) as determined by their investment styles warrants an in-depth look at the performance of each fund separately, an analysis that has not yet been carried out for Pakistan.

Figure 3: Fund-Wise Risk-Return Exposure
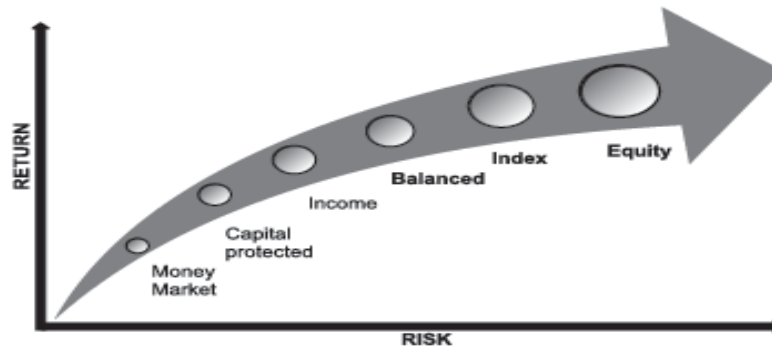
3. Literature Review

There is a plethora of literature on the mutual fund industry of the developed world, where such funds have been an important part of the capital market since the 1960s. The literature on mutual funds can be divided broadly into two streams: (i) one evaluates the performance of mutual fund industries relative to other comparable investment opportunities in the economy, and (ii) the other tries to identify significant fund-specific characteristics that result in these returns. We concentrate on the first category.

Seminal studies evaluating the performance of mutual funds arose as early as the 1960s with Jensen (1968) and Sharpe (1966) who used the Sharpe ratio and the one-factor capital asset pricing model (CAPM) to determine mutual fund underperforming market benchmarks. Recent work in the asset-pricing literature by Fama and French (1993) and Carhart (1997) has expanded the traditional one-factor models to account for varying styles of fund managers investing in the stock market. The common consensus in the literature concerns the mixed ability of funds to outperform the market in the case of the developed world (see Cesari & Panetta, 2002). This has triggered debates about the most effective evaluation techniques. For this reason, Otten and Bams (2004) discuss in detail the relative efficiency of the various traditional techniques employed in the literature, using survivor bias-free data on US equity funds from 1962–2000. They find evidence of the superiority of Carhart's four-factor model in an unconditional setting in explaining mutual fund performance. Recent discussions have extended to using bootstrap simulation techniques in post-estimation evaluations to ascertain whether individual fund managers' skills or luck drive mutual fund performance (see Cuthbertson, Nitzsche, & O'Sullivan, 2008; Fama & French, 2010).

Evidence on emerging countries largely corroborates the findings on the developed world. Using the standard techniques developed in the literature, studies find mixed evidence concerning the developing world but consistently confirm that the four-factor Carhart model adds significant value to understanding mutual fund returns (see Bialkowski & Otten, 2011; Eling & Faust, 2010; Huij & Post, 2011; Lai & Lau, 2010). For Pakistan, specifically, given the small size of the mutual fund industry, it is not surprising that there are only a handful of studies on the country. The latest studies by Afza and Rauf (2009) and Nazir and Nawaz (2010) both concentrate on finding the determinants of mutual fund performance. Afza and Rauf attempt to understand and explain open-ended mutual fund performance for the 1999–2006 period as indicated by a quarterly Sharpe ratio. They find very few factors that appear to be significant, and the results point to the importance of past returns predicting future returns while other factors such as expense ratios or the fund's asset size are not significant. Nazir and Nawaz, on the other hand, focus on a very small sample of 13 mutual funds where there is family or group ownership, and try to identify important factors that determine the growth of the industry. They find that asset size does have a positive impact on performance, as do management fees.

Sipra (2006) and Shah and Hijazi (2005) use KSE-100 as a benchmark to evaluate mutual fund returns up to 2004, and are therefore the most pertinent to our study. Sipra concludes that performance has been quite poor over this period and that only 30 percent of funds could in a subperiod outperform the market portfolio. Shah and Hijazi find evidence of funds outperforming the market but this could be due to the restricted sample of funds employed in their study as compared to Sipra. Since no study has looked at mutual fund performance after the industry's recent phenomenal growth, it would be interesting to see if this trend has been reversed. Several different funds have evolved in Pakistan and, given their number, it is now possible to conduct an evaluation according to fund type. Further, other studies have so far been restricted to the relatively simple Sharpe and Treynor measures for analysis.

4. Data

The sample period spans January 2006 to December 2010, and is characterized both by bullish and bearish markets. We have chosen this sample period given (i) the tremendous growth both in the number of funds in Pakistan and their investment levels, and (ii) that all previous literature on mutual funds in the country is restricted to the pre-2006 period during which

only modest growth occurred. A study evaluating the performance of mutual funds in this new phase of rapid growth is therefore pertinent.

Monthly data on the NAV of each fund was collected from their respective websites. Each fund had been in operation for at least 12 months for our sample period. We thus have 86 funds in our sample distributed among five categories[2] (Table 1). The risk-free rate for the country (three-month t-bill rate) and the benchmark indices KSE-100, KSE-30, and Pakistan investment bonds (PIBs) rate were obtained from the Financial Markets Association of Pakistan (retrieved from http://www.fma.com.pk). To evaluate Islamic funds, the Dow Jones Islamic Market Pakistan Index for the sample period was obtained by request from Dow Jones Indexes. To apply the Fama-French three-factor CAPM, the book-to-market ratio, market value (MV), and price of each listed company was obtained from Thomson Reuters Datastream.

The literature points to the issue of survivorship bias whereby excluding dead funds leads to overestimating the returns (see Carhart, Carpenter, Lynch, & Musto, 2002). This is because the performance of funds that are now dead would have been worse than that of the funds that survived. However, in Pakistan's case, there is no central database that maintains a record of all funds, so it was not possible to obtain data on these funds and we have had to rely on data on the surviving funds alone.

Table 1: Average Annual Returns (%)[a]

	Stock	Islamic	Income	Multi-Asset	Money Market
No. of funds	18	20	28	12	8
2006	-25.64	-7.90	-2.43	-18.15	-
2007	25.56	8.58	4.67	10.61	-
2008	-44.43	-25.92	-9.06	-42.06	0.04
2009	51.87	27.77	8.40	41.16	2.83
2010	-2.17	0.02	-1.16	-8.15	1.11
2006–07	-0.02	0.00	0.01	-0.04	-
2009–10	0.27	0.13	0.03	0.14	0.02
Period average (excl. 2008)	0.12	0.07	0.03	0.05	0.02
Period average (2006–10)	-0.04	-0.01	0.00	-0.07	0.02

[a] Annualized returns are computed as the compounded average monthly return for 12 months.
Source: Authors' calculations.

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[2] We follow the MUFAP classification. Only four capital-protected funds had an inception date prior to December 2009, and were therefore not included as a separate category

All funds managed to register a positive average return for the period if 2008 is excluded, which was undoubtedly a difficult year for an industry still in its infancy (Table 2). It comes as no surprise that stock funds suffered huge losses as the country's premier stock index, the KSE-100, registered a 61 percent loss for the year.[3] The revaluation of TFCs made necessary by high interest rates and liquidity constraints in the banking sector in the last half of 2008 caused further problems for the mutual fund industry as a whole.

5.   Methodology

We analyze the industry by first employing the standardized and simple Sharpe measure to evaluate the performance of the funds, specifically for cross-fund comparison. The Sharpe ratio is a measure of the reward given for the variability in returns or, in other words, the excess return per unit of risk being taken for the investment made.

The next step is to evaluate the performance of the funds relative to a market benchmark, employing the unconditional CAPM models. Otten and Bams (2004) establish the superiority of the conditional over unconditional models, but given the short sample period, this would have resulted in a significant loss of degrees of freedom. Jensen (1968) introduced the alpha in the CAPM to measure the abnormal return on a portfolio over and above that earned by the portfolio given the market conditions and risk of portfolio:

$$R_i - R_f = \alpha_i + \beta_i(R_m - R_f) + u_i$$

Here, R_f is the risk-free rate and $R_i - R_f$ is thus the excess return on the fund i portfolio; $R_m - R_f$ is the excess return on the benchmark market portfolio where the benchmark is according to a specific fund's investment style; α_i is Jensen's alpha, which measures the performance of the fund and the manager's investment ability. The sign and significance of alpha reflect whether mutual funds outperformed the market proxy and vice versa.

Stock and multi-asset fund performance is further evaluated using the Fama-French three-factor model, which accounts for additional risk factors associated with firm size and the book-to-market ratio. This is done by adding the difference in returns on a portfolio that consists of small cap

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[3] The KSE-100 index dropped from 15,676 to 5,865 in just the last eight months of the year.

stocks and those that contain large cap stocks (SMB), and the difference in returns between a portfolio of high book-to-market stocks and a portfolio of low book-to-market stocks (HML)[4] to the CAPM equation:

$$R_i - R_f = \alpha_i + \beta_i(R_m - R_f) + \beta_s SMB_i + \beta_H HML_i + u_i$$

Carhart (1997) extends this model by allowing for momentum-sorted portfolios returns. The model then accounts for four portfolios that might explain the mean return as given by their individual coefficients:

$$R_i - R_f = \alpha_i + \beta_i(R_m - R_f) + \beta_s SMB_i + \beta_H HML_i + \beta_P MOM_i + u_i$$

The additional factor MOM is the difference in returns on a portfolio of past winners and a portfolio of past losers. This is to account for the momentum factor whereby stocks with high returns are bought in anticipation of high returns in the future, and low-return stocks that are sold.

6.   Empirical Results

Our preliminary analysis relies on the Sharpe ratio, which measures the reward for the risk that investors take. Further, equally weighted portfolio returns for each fund type are compared with the relevant benchmark for the investment style particular to that fund.

The worst performing fund turns out to be income funds, which were unable to yield positive excess returns in any year (Table 2). Following the dramatic losses faced during the recessionary period of 2008, 2009 saw strong recovery and the highest ratios for the period. Money market funds are the lowest risk category of funds and rely primarily on short-term investments to ensure guaranteed returns and high liquidity. Therefore, the reward for these funds cannot be evaluated using excess returns, which makes the CAPM unsuitable as a method of evaluation. These funds were able to sustain their performance through the recession and continued to perform strongly. The managers of these funds target the short term, and investors are driven by the incentive of the operational efficiency of these funds, which helps investors quickly change portfolios.

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[4] These are rebalanced semi-annually.

Table 2: Sharpe Ratio (%)

Fund Type	2006	2007	2008	2009	2010	Period Average*
Stock	-0.406	0.093	-0.245	0.460	-0.161	-0.094
Islamic	-0.201	-0.011	-0.559	0.363	-0.346	-0.187
Income	-0.406	-0.182	-0.767	-0.388	-1.019	-0.497
Multi-asset	-0.254	0.017	-0.364	0.622	-0.257	-0.176
Money market	-	-	0.101	5.798	1.060	2.097

Note: Sharpe ratio = $(R_i - R_f)/\sigma_i$ for all funds but money market funds, for which it is R_i/σ_i
Source: Authors' calculations.

In order to present an alternative risk reward comparison, we substitute value at risk (VAR) for total risk. VAR is assumed to be a superior measure of risk because it takes the extreme event on the left tail of the distribution, while the standard deviation could be high even if prices are experiencing exceptionally high growth and in such an instance investors would actually be better off.

The Sharpe ratio modified for VAR present similar results in Table 3.

Table 3: Sharpe Ratio Modified for VAR (%)

Fund Type	2006	2007	2008	2009	2010	Period Average
Stock	-0.390	0.165	-0.554	0.679	-0.184	-0.153
Islamic	-0.196	-0.010	-0.439	0.340	-0.229	-0.160
Income	-0.252	-0.113	-0.408	-0.284	-0.497	-0.287
Multi-asset	-0.288	0.017	-0.515	0.683	-0.244	-0.198
Money market	-	-	0.101	5.798	1.060	2.097

VAR = value at risk.
Source: Authors' calculations.

Next, we carry out a fund-wise analysis using the unconditional CAPM models, which yield varying degrees of goodness of fit. The results (Table 4) show that the alpha term is consistently negative or insignificant or both, pointing to the inability of any fund category to cross its market benchmark. However, the beta term is highly significant and indicates that the chosen benchmarks are important components of the investment portfolios of these funds.

We then compare stock funds that invest entirely in the stock market with the country's most representative index, the KSE-100. Given the small size of the securities market and the number of dormant stocks

even within the top 100, we also make a comparison with a smaller index based on free-float using the KSE-30 and an index constructed for the top ten traded stocks.[5] Not surprisingly, the returns on equity funds move in tandem with movements in the KSE,[6] the country's premier exchange.

Overall, the three-factor model best explains stock fund returns with an SMB factor, showing a significant effect for all benchmarks (Table 4). The momentum and HML factor does not add much to our understanding. This corroborates the evidence found for other developing nations, where these two factors have also proved insignificant (see Bialkowski & Otten, 2011; Lai & Lau, 2010). The KSE-30 used as a benchmark in the Fama-French three-factor model yields the highest R^2, giving us an indication of stock fund managers' investment preference for large cap stocks. This is also supported by the negative and significant β_s coefficient. Managers tilt toward low-risk stocks possibly because the industry is in a nascent stage of development and they want to ensure positive returns even if they are low. Highly traded stocks are also riskier than the safer large cap stocks and therefore the synthetically constructed index of the top ten such stocks at the KSE does not explain much variation in stock fund returns. Individually, about 40 percent of stock funds yield a negative return for the period, but when 2008 is excluded, all funds yield positive returns. As for excess return, close to 70 percent yield negative returns for the period while just three of the 18 yield negative excess returns when 2008 is excluded.

There is no bond index for the country, which makes it difficult to evaluate income funds that invest primarily in fixed income instruments.[7] We try to proxy for it by making use of the three-year PIB rate. The coefficient on the benchmark yields the expected sign where an increase in interest rates causes the debt instruments to decrease in value, and is therefore negatively linked to income fund returns. However, R^2 is very low, indicating that changes in the PIB rate cannot explain the changes in income fund returns very well. As discussed, these funds have faced particular difficulty in registering positive excess returns. Evaluated on a fund-wise basis, 40 percent yield negative excess returns for the sample period and, even if 2008 is excluded, 17 percent yield negative returns. As

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[5] This index is rebalanced semi-annually and is a value-weighted index. For details, see Mahmud and Mirza (2010).

[6] Close to 90 percent correlation of stock fund returns with KSE-100 and KSE-30 returns for the period.

[7] A bond index (PGBI) was launched in 2005 for Pakistan by FMA and Reuters but ceased being reported in the following years.

they are the largest category of funds in the country, this is cause for concern. It could be accounted for by the revaluation of TFCs with rising interest rates—which has had a detrimental impact on the NAV of these funds—and the very high t-bill rate in the country that has made it difficult for these funds to provide a return over and above that rate and attract investment. The national savings scheme certificates issued by the government to the public guarantee very high risk-free streams of income, and are tough competition for income funds.

Finally, we have been able to find a moderate fit for the last two classes of funds. The reason for this is, again, the lack of a representative bond index. Multi-asset funds are hybrid funds and thus often referred to as balanced funds that invest in a mixture of bonds and stocks. Hence, we use the KSE-100, the most representative index of the country, as a benchmark and augment the basic CAPM equation with the yield of PIBs (β_B). The fit of the model deteriorates as we expand to the three- and four-factor variants of the simple CAPM. This could be for two reasons: (i) managers rely on portfolios represented by the benchmark index and do not diversify to small cap or past winner portfolios, and (ii) the part of their portfolio invested in debt instruments may have been misrepresented due to the missing bond index.

Islamic funds are governed by specific regulations and can only invest in the bonds and stocks of Shariah Complaint companies. Given that the country's Islamic bond market is still developing, the only reliable benchmark available for the period of analysis was the Dow Jones Islamic Market Pakistan Index, which we employed as a benchmark for our analysis.[8] These funds were able to weather the recessionary storms better than conventional stock funds, but this also meant that they were unable to yield similarly high returns during the market's bull period. The surge in growth of Islamic funds continued even after the recession of 2008, which could be attributed to a growing religious orientation among people and their aversion to investment in fixed interest-yielding investment options. This category of funds thus occupies a niche that it can tap into and continue to grow.

7.   Conclusion

Pakistan is a classic emerging market, still struggling to develop its capital market and a regulatory framework, and still experimenting to

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[8] KMI-30, which tracks the 30 most liquid Shariah-compliant companies listed on the KSE, is another possible benchmark. However, data on this index is available only for periods after June 2008.

find the right mix. These inefficiencies give managers an opportunity to earn abnormal returns that are not possible in developed markets. We find that all fund types consistently underperform relative to their respective benchmarks, which is not surprising given the evidence from across the world.

The negative Sharpe ratios sharply contradict those of other countries, signaling these funds' difficulty in providing returns over and above the risk-free rate. This can be attributed to the environment of rising interest rates in the country. Further, it would be interesting to evaluate how these alphas fare with management fees charged by the funds accounted for.

We have also found that stock funds in Pakistan consistently hold large cap stocks, but not more value-oriented stocks. The consistently negative or insignificant alphas signal the possible merit of the small number of index tracker funds in the country. However, it is important to consider that these funds will then also have to bear the consequences of extreme negative returns in a bearish market. Islamic funds, the fastest growing fund category and backed by people's religious affiliations are still struggling to find a stronghold and yield a steady return. They are presently a high-risk investment option, but have the potential to tap into a niche in the market. The presence of government-backed schemes that guarantee a constant income stream makes it difficult for other investment funds to compete; nonetheless, Islamic funds might appeal to investors who do not want a fixed return.

Table 4: Fund-Wise Empirical Evidence

(January 2006–December 2010)

	(1) Stock Own10	(2) Stock KSE30	(3) Stock KSE100	(4) Stock FF Own10	(5) Stock FF KSE30	(6) Stock FF KSE100	(7) Stock 4F Own10	(8) Stock 4F KSE30	(9) Stock 4F KSE100	(10) Income	(11) Multi-Asset	(12) Multi-Asset FF	(13) Multi-Asset 4F	(14) Islamic
α	-0.00321	-0.00184	-0.00771	-0.0189**	-0.00881	-0.0120**	-0.0204**	-0.0102	-0.0137**	-0.00915***	0.000750	0.00491	0.00480	-0.00770
	(-0.36)	(-0.35)	(-1.54)	(-2.05)	(-1.44)	(-2.05)	(-2.15)	(-1.60)	(-2.31)	(-4.75)	(0.09)	(0.49)	(0.47)	(-1.95)
β_i	0.231***	0.606***	0.731***	0.213***	0.568***	0.688***	0.211***	0.565***	0.686***	-0.160**	0.417***	0.433***	0.433***	0.273***
	(4.77)	(13.69)	(13.49)	(4.89)	(12.67)	(11.86)	(4.82)	(12.55)	(11.92)	(-2.81)	(7.51)	(7.09)	(7.02)	(6.40)
β_s				-0.323***	-0.140**	-0.116**	-0.318***	-0.137**	-0.110*			-0.0223	-0.0243	
				(3.93)	(2.60)	(2.07)	(3.83)	(2.53)	(1.97)			(-0.36)	(-0.38)	
β_H				0.0123	0.0148	0.0196	0.00776	0.0110	0.0142			0.0192	0.0180	
				(0.28)	(0.54)	(0.70)	(0.17)	(0.40)	(0.51)			(0.65)	(0.60)	
β_P							-0.0987	-0.0712	-0.118				-0.0250	
							(-0.72)	(-0.86)	(-1.38)				(-0.27)	
β_B											-18.39*	-20.23**	-20.54**	
											(-2.00)	(-2.04)	(-2.04)	
Adj. R²	0.289	0.789	0.757	0.422	0.801	0.767	0.417	0.806	0.771	0.107	0.517	0.506	0.497	0.408

KSE = Karachi Stock Exchange.
FF: Fama-French three-factor model, 4F: Carhart model.
*/**/*** indicate significance at the 90/95/99 percent confidence level, respectively, with t statistics in parentheses.
Source: Authors' calculations.

References

Afza, T., & Rauf, A. (2009). Performance evaluation of Pakistani mutual funds. *Pakistan Economic and Social Review*, *47*(2), 199–214.

Białkowski, J., & Otten, R. (2011). Emerging market mutual fund performance: Evidence for Poland. *North American Journal of Economics and Finance*, *22*(2), 118–130.

Carhart, M. (1997). On persistence in mutual fund performance. *Journal of Finance*, *52*(1), 57–82.

Carhart, M., Carpenter, J., Lynch, A., & Musto, D. (2002). Mutual fund survivorship. *Review of Financial Studies*, *15*, 1439–1463.

Cesari, R., & Panetta, F. (2002). The performance of Italian equity funds. *Journal of Banking and Finance*, *26*, 99–126

Cuthbertson, K., Nitzsche, D., & O'Sullivan, N. (2008). UK mutual fund performance: Skill or luck? *Journal of Empirical Finance*, *15*(4), 613–634.

Eling, M., & Faust, R. (2010). The performance of hedge funds and mutual funds in emerging markets. *Journal of Banking and Finance*, *34*, 1993–2009.

Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, *33*(1), 3–56.

Fama, E. F., & French, K. R. (2010). Luck versus skill in the cross-section of mutual fund returns. *Journal of Finance*, *65*(5), 1915–1947.

Huij, J., & Post, T. (2011). On the performance of emerging market equity mutual funds. *Emerging Markets Review*, *12*, 238–249.

Jensen, C. M. (1968). The performance of mutual funds in the period 1945–1964. *Journal of Finance*, *23*(2), 389–416.

Klapper, L., Sulla, V., & Vittas, D. (2004). The development of mutual funds around the world. *Emerging Markets Review*, *5*, 1–38.

Lai, M. M., & Lau, S. H. (2010). Evaluating mutual fund performance in an emerging Asian economy: The Malaysian experience. *Journal of Asian Economics*, *21*(4), 378–390.

Mahmud, M., & Mirza, N. (2010). *Volatility dynamics of Karachi Stock Exchange*. Manuscript submitted for review.

Mutual Funds Association of Pakistan. (2010). *Mutual funds yearbook 2009–10*. Karachi. Author.

Nazir, M. S., & Nawaz, M. M. (2010). The determinants of mutual fund growth in Pakistan. *International Research Journal of Finance and Economics*, *54*, 75–84.

Otten, R., & Bams, D. (2004). How to measure mutual fund performance: Economic versus statistical relevance. *Accounting and Finance*, *44*, 203–222.

Shah, S. M., & Hijazi, S. T. (2005). Performance evaluation of mutual funds in Pakistan. *Pakistan Development Review*, *44*(4), 863–876.

Sharpe, W. F. (1966). Mutual fund performance. *Journal of Business*, *39*, 119–138.

Sipra, N. (2006). *Mutual fund performance in Pakistan, 1995–2004* (Working Paper No. 06-45). Lahore, Pakistan: Centre for Management and Economic Research.

Financing Constraints: Determinants and Implications for Firm Growth in Pakistan

Hamna Ahmed[*] and Naved Hamid[**]

Abstract

This study has a twofold objective: (i) to investigate the determinants of firm growth, specifically the extent to which finance constrains enterprise growth; and (ii) to explore the determinants of external financial access in Pakistan. External financial access is defined as access to credit through institutional sources such as private commercial banks, nonbank financial institutions, and state-owned banks and agencies. The study uses data from the second round of the Investment Climate Assessment Survey conducted by the World Bank in FY 2007. The methodology entails using an instrumental variable approach to estimate the impact of external financial access on firm growth while employing a probit model to explore the determinants of external financial access. The results suggest the following: First, finance is a binding constraint to firm growth in Pakistan—a 10 percent increase in the working capital financed through external sources is predicted to increase the average annual growth rate by 5.6 percentage points. Second, financial depth is important for access—across the country, access is better where there is greater penetration of financial infrastructure. Third, a range of internal factors such as size, export status, quality of human capital, and organizational form emerge as important determinants of external financial access in Pakistan.

Keywords: Financial Access, Firms, Financial Depth, Pakistan.

JEL Classification: 043, C36.

1. Introduction

This study has a twofold objective: (i) to investigate the determinants of firm growth, specifically to study the extent to which finance constrains enterprise growth; and (ii) to explore the determinants of external financial access in Pakistan.

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For the purpose of this study, external financial access is defined as access to credit through institutional sources such as private commercial banks, nonbank financial institutions, and state-owned banks and agencies. Subsequently in this article, the terms "external credit," "formal credit," and "credit through financial institutions" are used interchangeably.

The study uses data from the second round of the Investment Climate Assessment (ICA) Survey conducted by the World Bank in the fiscal year (FY) 2007. The dataset provides detailed information on firm-specific characteristics as well as a wide range of investment climate variables pertaining to infrastructure and services, courts, crime, government-business relations, degree of competition, and factor markets, i.e., land, labor, and finance.

The remainder of the article is organized as follows. Section 2 develops the backdrop and outlines the motivation behind the study. Section 3 provides a brief review of the literature on finance and growth. Section 4 describes the data used and offers some basic statistics for the overall sample and for the determinants of firm growth and external financial access for the sample of firms under study. Section 5 discusses the methodology and empirical framework. Section 6 presents the results, and Section 7 concludes the study.

2. Motivation

Finance is an important pillar of growth. This finding has been corroborated both at the macro and micro-level. The argument that financial development and economic growth are positively correlated dates back to Schumpeter (1911), and has been confirmed by various subsequent studies such as Goldsmith (1969), King and Levine (1993), Levine and Zervos (1998), and Robinson (1952), among others. At the micro-level, financing constraints are predicted to exert a negative influence on firm growth (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2008; Beck, Demirgüç-Kunt, & Maksimovic, 2005). For instance, Beck et al. (2005) find in a cross-country sample that firms that report finance as a major constraint bear a growth penalty of 3 percent compared to firms that do not report finance as an obstacle.

The constraint to financial access and its impact on growth is considered most severe for small and medium enterprises (Beck & Demirgüç-Kunt, 2006; Beck et al., 2005). For a sample of firms in eastern Europe, employment growth was found to be 9 percent higher while

revenue growth was 36 percent higher in firms with access to credit from financial institutions between 2002 to 2005 (World Bank, 2009, p. 91). For Pakistan, a decomposition of total factor productivity reveals that, among different investment climate variables, finance accounts for 17 percent of both average and aggregate productivity.[1]

Financial markets in Pakistan are underdeveloped relative to other developing countries. With credit to the private sector at 23.5 percent of gross domestic product (GDP) in 2009, Pakistan ranks lowest not only compared to other South Asian countries such as India (46.8 percent) and Bangladesh (41.5 percent), but also in comparison with other developing countries (World Bank, 2011) (Figure 1). A look at the sources of working capital finance reveals that a similar trend prevails at the micro-level. The average percentage of working capital financed through commercial banks is extremely low (6.5 percent) compared to other South Asian countries such as Bangladesh (32 percent), Sri Lanka (21 percent), and India (16 percent) (Figure 2).

Figure 1: Financial Depth: Domestic Credit to Private Sector (% of GDP)

Figure 2: Commercial Banks' Share of Working Capital Finance (%)
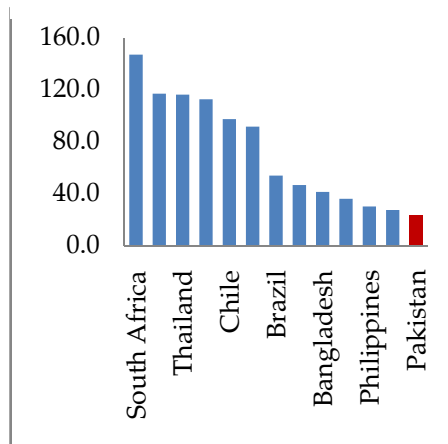
Source: World Bank, World Development Indicators, 2011.
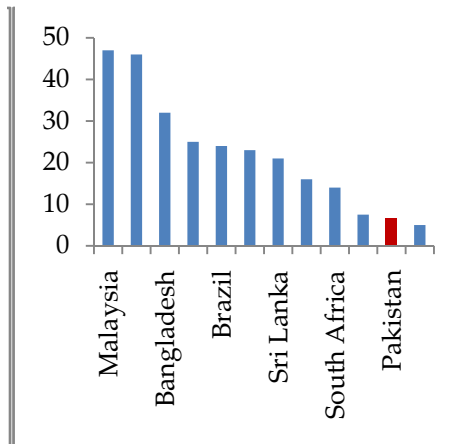
Source: World Bank, Various rounds of Investment Climate Assessment Surveys.

Moreover, within the sample under study, almost 83 percent of working capital is financed through internal funds and retained earnings, while a mere 7 percent is financed through external credit. That financial

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[1] "Average" refers to the sample average productivity, and "aggregate" refers to the weighted average productivity, with weights equal to the share of a firm's sales in the sample.

deepening in Pakistan is low also comes across when comparing perceptions of managers in Pakistan on the severity of finance as a growth constraint vis-à-vis perceptions of managers in other developing countries. Pakistan ranks third-highest with almost 40 percent of firms reporting finance as a major or severe obstacle to growth whereas the number for other developing countries is much lower (Figure 3).

Figure 3: Access to Finance as a Constraint to Firm Growth (%)
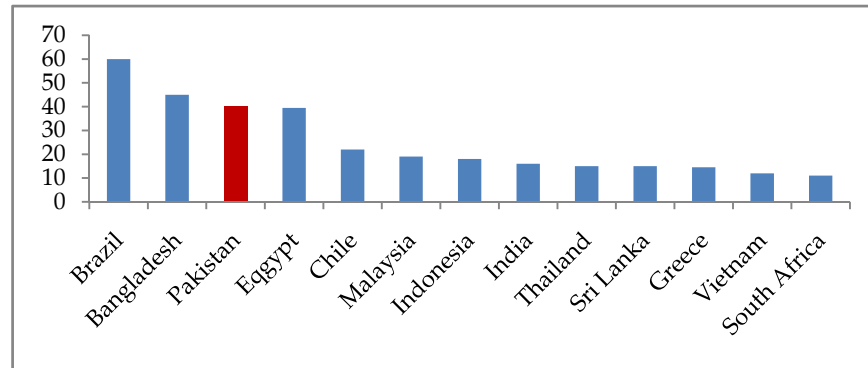
Source: World Bank, Various rounds of Investment Climate Assessment Surveys.

The period covered is interesting for studying the link between finance and firm growth in Pakistan. We examine firm growth between 2003 and 2006, a period marked by abundant credit availability and fairly low interest rates. In other words, 2003–06 can be thought of as a best-case scenario for ease of financial access, and the results on the growth penalty of limited financial access for manufacturing firms can be considered to be at the lower end.

Today, the situation is very different. The economic environment is plagued by uncertainty, rising nonperforming loans, and excessive public sector borrowing, which has crowded out private sector credit. Moreover, with a tight monetary policy to rein in inflation, the severity of the financing constraint for private sector businesses has become magnified. In this context, the study helps shed light on the likely microeconomic consequences of the current macroeconomic policies.

3. Literature Review

The debate on the link between finance and economic growth dates back to Schumpeter (1911), and has both a macro and micro-dimension.

At the macro-level, financial sector development is predicted to have a positive impact on growth and per capita income (Schumpeter, 1911). For a cross-country sample of 35 countries, Goldsmith (1969) finds that financial development is consistent with periods of high economic growth. King and Levine (1993) find that high levels of financial development are associated with rapid economic growth, physical capital accumulation, and improvements in economic efficiency for a cross-country sample spanning over 80 countries. This hypothesis is also confirmed by Levine and Zervos (1998) who argue that the development of financial markets and intermediaries has an important bearing on growth.

While these studies emphasize the statistically significant impact of financial development on growth, there are others that are skeptical of the direction of causality between financial sector health and growth. For instance, Robinson (1952) argues that financial development is a natural consequence of economic acceleration rather than a predictor of growth. Following suit, Lucas (1988) contends that the link between finance and growth is overemphasized.

At the micro-level, the emphasis is on how the lack of finance can hamper enterprise growth. The main intuition underlying the growth-finance link at the micro-level is that greater financial development makes it easier to raise external finance. This, in turn, eases finance constraints, especially for small and medium firms because their ability to raise internal capital is limited. Firms are thus able to invest in profitable growth opportunities. In this manner, greater financial access serves as a catalyst for growth.

Demirgüç-Kunt and Maksimovic (1998) find that market imperfections—such as underdeveloped financial and legal systems—limit a firm's ability to raise long-term external finance. This, in turn, inhibits the firm's investment and growth potential.

Based on a sample of US manufacturing firms, Rajan and Zingales (1998) find that industries that depend more on external finance are likely to grow faster in countries that ex ante have better developed financial markets. This is made possible for two reasons: (i) financial development reduces the cost of raising external finance, and (ii) it creates a disproportionately favorable environment for young firms that would otherwise find it more difficult to raise capital.

Later work by Beck et al. (2005) also supports this claim. For a cross-country sample of firms, they find that financial and legal constraints, as well as corruption, have an adverse impact on firm growth. This relationship, however, varies by firm size. The authors find that the growth of small firms tends to be most severely constrained by financing issues compared to larger firms. The impact of financial and legal constraints on firm growth tends to be strongest for small firms.

Ayyagari et al. (2008) investigate the importance of financing constraints relative to other business environment obstacles to firm growth for a sample of 4,197 firms from 80 different developed and developing countries. The authors find that finance, policy instability, and crime are the only binding constraints to firm growth. All other features of the business environment—corruption, taxes and regulations, judicial efficiency, and anti-competitive practices, etc.—have either an insignificant or indirect impact on growth, which works through the binding constraints channel.

An important channel through which access to finance promotes growth is that of fostering innovation. For a sample of 10,000 firms from 34 developing countries, Ayyagari, Demirgüç-Kunt, & Maksimovic (2007) show that firms with greater access to external finance are also more innovative and dynamic. Innovation is measured by the firm's ability to introduce new products and processes. Dynamism, on the other hand, is defined by activities such as the "opening of a new plant, bringing in-house previously out-sourced activities, and establishing foreign joint ventures and new licensing agreements" (Ayyagari et al., 2007).

This article contributes to the micro-level literature on finance and firm growth. Two main features of this study distinguish it from existing studies on the topic. Recognizing simultaneity in external financial access and firm growth, we employ an instrumental variable approach and construct a unique exogenous measure of access that incorporates both demand and supply-side influences on financial access. Further details on this are discussed in Section 5. In addition, this is the first study to explore simultaneously the determinants of firm growth and external financial access for Pakistan. This will be useful in providing an in-depth and holistic picture of the finance-firm growth nexus for manufacturing firms in Pakistan.

4.   Data

The study uses data from the second round of the Pakistan ICA-II Survey conducted by the World Bank in 2006/07. The ICA-II survey provides detailed information on firm characteristics and various aspects of the business environment in the country. The former includes information on an establishment's sales, employment, and productivity. Key dimensions of the business environment include infrastructure and services, courts, crime, government-business relations, degree of competition, and factor markets (land, labor, and finance).

The sampling frame consists of a stratified random sample of firms drawn from the Census of Manufacturing Industries (2005), the only firm-level survey available in Pakistan and conducted by the Federal Bureau of Statistics. The total sample was based on 1,350 firms of which 1,186 are manufacturing establishments while the rest are service firms. The sample is representative at the national, provincial, and sectoral level. The analysis in this paper is limited to manufacturing firms only.

The surveyed firms are located in 13 cities across the country with a large share coming from big cities such as Karachi, Lahore, Faisalabad, etc. (Figure 4).[2] The firms belong to nine different industries of which a 50 percent come from the textiles, food, and garments industries (Figure 5). Another one third has been grouped together in the "others" category, and consists of firms that produce products such as sports goods, surgical instruments, cutlery, furniture, jewelry, shoes, plastics, and pharmaceutical goods, etc.

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[2] For the rest of the paper, firms in Hub have been pooled with those in Karachi. Hub has not been treated as a separate location for two reasons: (i) in terms of access to finance, conditions are similar to those faced by firms in Karachi because it lies on the outskirts of the city, with most nonproduction staff being based in Karachi; (ii) only six firms out of a total sample of 1,186 have been surveyed from this location.

Figure 4: Distribution of Firms   **Figure 5: Distribution of Firms**
by Location (%)   **by Industry (%)**
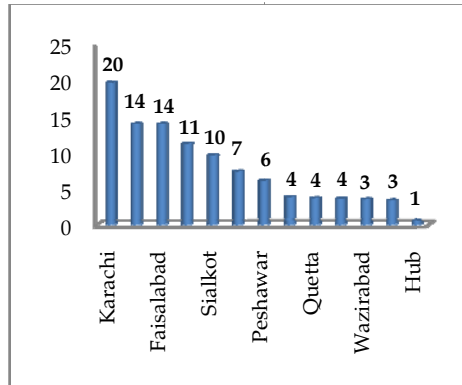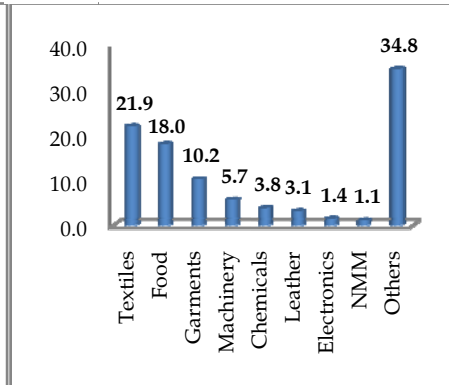
Source: World Bank, Investment Climate Assessment Survey, 2007.

A firm is classified as small if it employs fewer than 20 workers, medium if it employs 20–100 workers, and large if it employs 100 workers or more. About 50 percent of the sample consists of small firms while the rest are either medium or large (Figure 6). Large firms are predominantly located in large cities; Karachi and Lahore alone account for 63.5 percent of all large firms in the sample as compared to 18.6 and 35.3 percent of small and medium firms, respectively. A third of all small firms are located in Sialkot, Gujranwala, and Faisalabad (Table A1 in the Annexure).

The inter-industry size distribution shows that 60 percent of all large firms belong to three industries: textiles, food, and garments. The intra-industry size distribution on the other hand reveals that leather and machinery/equipment manufacturing firms are predominantly small.

One fifth of the surveyed firms export directly. The share of exporting firms increases to 30 percent when indirect exporters are also included (Figure 7).

Figure 6: Distribution of Firms by Size
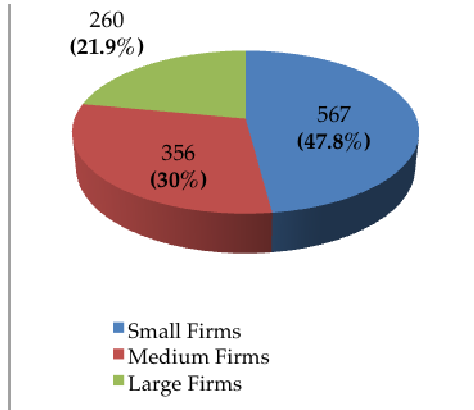
Figure 7: Distribution of Firms by Export Status
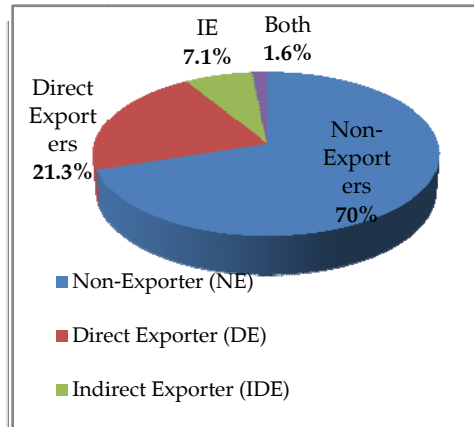
Source: World Bank, Investment Climate Assessment Survey, 2007.

Access to Finance

Of the total sample, only 14.7 percent of the firms have access to external finance. Large firms are six times more likely to have access than small firms (Figure 8). Small firms have easier access to external finance in locations where there are predominantly small or medium firms—such as Wazirabad—and in cities where firms are part of a cluster, such as Sialkot and Gujranwala (Tables A1 and A2 in the Annexure). Being a small firm in metropolitan cities such as Karachi, Lahore, or Faisalabad comes with a penalty; for instance, small firms are 18 times less likely to have access than large firms in Karachi, but only four times less likely to have access in Gujranwala. This could imply either that banks are more likely to lend to small firms when competition from large firms is limited, or that it is easier to access finance when firms are part of a network.

Figure 8: Financial Access by Size (%)
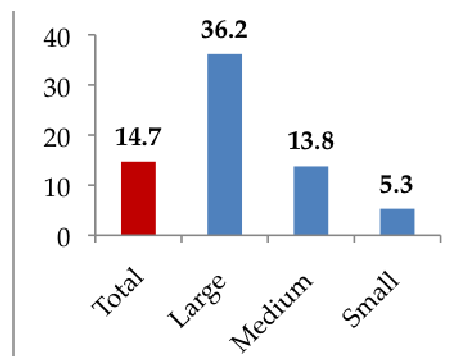
Source: Authors' calculations; World Bank, Investment Climate Assessment Survey, 2007.

The correlation between size and external financing is also evident from intra-industry patterns of financial access (Table A3 in the Annexure). For almost all industries, financial access increases substantially from small to large firms.

Between exporters and nonexporters, direct exporters are more likely to have access. On average, a direct exporter is three times more likely to have access than a nonexporter (Table 1). This is also true for each size category. The advantage of access, however, systematically falls from small to large firms; a small direct exporter is eight times more likely to have access than a small nonexporter while a large exporter is only 1.5 times more likely to have access than its nonexporting counterpart.

This could imply either that, ex ante, more productive firms self-select themselves into becoming exporters, or that, ex post, exporting firms are more productive (Wagner, 2007). Irrespective of which way the causality runs, a firm's export status seems to have a bearing on its ability to access external finance for the sample of firms under study. It is worth noting that being an indirect exporter does not significantly improve access to finance. This is an indication of the lack of documentation in domestic commerce and the failure of government policies aimed at providing indirect exporters with the same incentives as direct exporters.

Table 1: Firms with External Financial Access by Exporting Status

Size	Direct Exporters (%)	Indirect Exporters (%)	Nonexporters (%)
Small	24.0	5.6	3.4
Medium	21.1	10.5	12.1
Large	43.9	33.3	28.6
Total	33.3	14.3	9.3

Source: Authors' calculations; World Bank, Investment Climate Assessment Survey, 2007.

Finally, there are a number of other differences between firms with access and those without access (Table 2). Firms with access are more advanced technologically; twice as many machines are computer-controlled compared to the sample of firms without access. They are three times more likely to innovate by introducing new products and processes than their counterparts without access. Moreover, firms with access have better-quality human capital. In general, the top management in firms with access is more experienced and has attained a higher education level than their counterparts without access. Also, these firms are mostly organized as private limited or publicly listed companies as compared to

firms without access, of whom 78 percent are sole proprietorships or partnerships.

Table 2: Characteristics of Firms by Financial Access

Variable	Firms with Access		Firms without Access	
	N	(%)	N	(%)
Human capital				
Top manager < undergraduate degree	23	13.2	537	53.1
Top manager = undergraduate degree	79	45.4	311	30.7
Top manager = postgraduate degree	72	41.4	161	15.9
Organizational form				
Sole proprietorship/partnership	74	42.5	786	77.7
Private limited	77	44.3	179	17.7
Publicly listed	23	13.2	38	3.8
Innovation				
New product	51	29.3	131	12.9
New process	56	32.2	102	10.1

Source: Authors' calculations; Investment Climate Assessment Survey, 2007.

Growth

On average, firms in the sample grew at 4.3 percent per annum from 2003 to 2006. The growth rate was much higher for firms with access (7 percent) compared to firms without access (3.9 percent) (Figure 9a). Moreover, growth rates are different across cities and across industries (Figures 9b and 9c).

Figure 9: Average Annual Growth Rate, 2003–06 (%)

(a) Overall and by Financial Access	(b) By Industry	(c) By Location
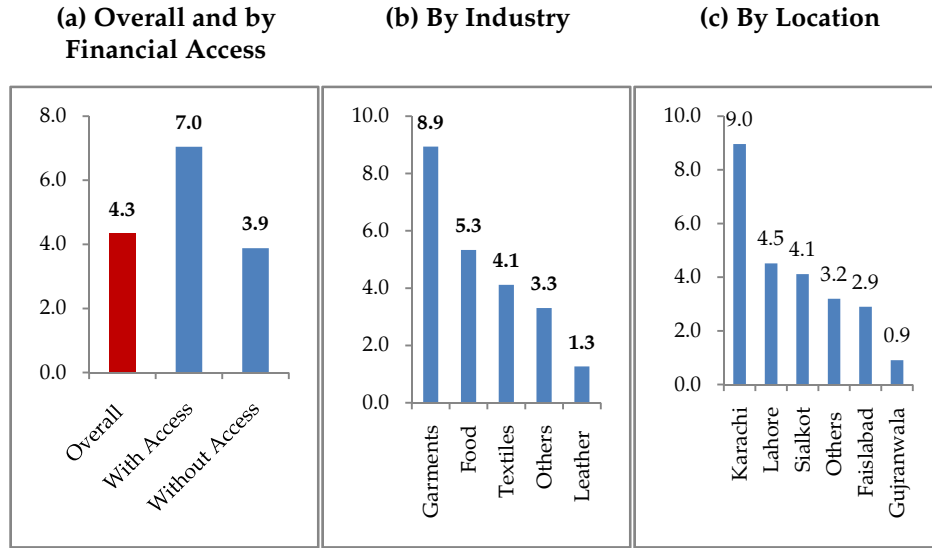
Source: Authors' calculations; World Bank, Investment Climate Assessment Survey, 2007.

In light of these descriptive statistics, we can draw three broad conclusions regarding the determinants of firm growth and external financial access: First, access is a clear divide and that finance is an important aspect of growth. Second, firms with access are inherently different with regard to their organizational form, quality of human capital, and degree of innovation from firms without access. Third, size, export status, industry, and location appear to be important dimensions of access. In what follows, these claims will be tested more rigorously using quantitative techniques.

5. Methodology

5.1. Determinants of Firm Growth

The observations in the last section are based on a casual glance at the data and warrant more rigorous quantitative treatment. To that end, the regression model is specified as follows:

$$GR_{fil} = \gamma + \beta_1 A_{fil} + \sum_{m=2}^{n} X_{fil}\beta_m + \sum_{i=1}^{8} I_i \alpha_i + \sum_{l=1}^{12} L_l \delta_l + \varepsilon_{fil} \qquad (1.1)$$

$$\varepsilon_{fil} = \upsilon_i + \tau_l + \mu_{fil} \qquad (1.2)$$

where GR_{fil} measures the average annual labor growth rate of firm f, industry i, location l between fiscal year 2003 to 2006.

A_{fil}; financial access to formal credit for each firm f in industry i and location l. For the dataset under study, financial access to formal credit could have potentially been measured in three ways: (i) as a percentage of the working capital financed through institutional sources in the past year, (ii) as a percentage of new investments financed through institutional sources in the past year, and (iii) in terms of the firm manager's perceptions of the severity of the "access to finance" constraint (i.e., availability and cost of formal credit, interest rates, fees, and collateral requirements) as an obstacle to the firm's current operations.

The data on item (iii) was noisy because responses were based on perceptions rather than actual availability. For instance, while a firm may be financially constrained, managers might not perceive access to finance as a major obstacle to growth *relative* to other constraints that the firm might face at a particular point in time. Similarly, formal credit may be readily available to a firm, but managers might perceive access to finance as a major obstacle due to a poor working relationship between the establishment's management and that of the financial institution. Using item (ii) as a proxy for financial access was also problematic as only 237 out of a total of 1,168 firms reported having undertaken any new investment over the past year. Using this measure would have thus meant a huge loss in sample size, which would have affected the quality of results. For reasons of data availability, the percentage of working capital financed through institutional sources was used as a proxy for access to formal credit. Institutional sources included private commercial banks, nonbank financial institutions, and state-owned banks or agencies.

Apart from reasons of data availability, the financing of working capital through formal credit serves as a good proxy for financial access (or the lack thereof) in Pakistan's context. This is because the main source of credit in Pakistan is the banking sector, which provides funding largely in the form of working capital. In most cases, even investment (except for green-field projects or major capacity expansion) is financed through lines of credit and short-term loans, which are automatically rolled over on maturity.

X is a vector of firm-specific characteristics. Broadly, these characteristics pertain to four main categories: (i) the *general topography* of the firm as given by its size and export status, (ii) the quality of its *human capital*, (iii) its *organizational form*, and (iv) *degree of innovation*. I *is* a vector of industry dummies while L is a vector of location dummies to account for industry and region fixed effects (see Table A4 in the Annexure for

more details on which variables are included under each head and how they have been constructed). γ,β,α and δ are unknown parameters to be estimated from the regression model. Finally, $\mathcal{E}$ is a normally distributed error term comprising three components as illustrated in Equation 1.2. (μ_{fil}) represents all unobserved firm-specific characteristics that might affect a firm's growth rate.

The key identification condition required to produce an unbiased estimate of the impact of financial access on firm growth using an ordinary least squares (OLS) estimation technique is given by:

$$Cov\ (A,\ \mathcal{E}) = 0 \qquad\qquad\qquad (1.3)$$

This identification condition is, however, violated by the presence of endogeneity bias in the variable of interest, i.e., financial access. Firms with access may find it easier to expand and invest in profitable opportunities, and this will in turn spur growth. However, a firm's growth rate may have an impact on the probability of it being able to access finance, and financial institutions may be more willing to lend to rapidly growing firms with a sound cash-flow position. This reverse causality between financial access and growth leads to endogeneity bias and hence violates the key identification condition outlined in Equation 1.3. Applying the OLS method with an endogenous variable of interest will produce a biased and inconsistent estimate of the impact of financial access on growth.

An Exogenous Measure of Financial Access

We use an instrumental variable approach to account for endogeneity. The degree of financial access available to a firm is likely to be a function of both demand and supply-side factors. For instance, Rajan and Zingales (1998) use an interaction term in which the demand side is captured by calculating each industry's technological demand for external finance while the supply side is measured by the level of financial development in the country. To account for this, we construct an instrumental variable such that it is an interaction term between demand and supply-side variables.

On the demand side, it is argued that some firms may be more dependent on external finance than others. This could be because of differences in the scale of the project, in the product's gestation period, or in the requirement for continuing investment (Rajan & Zingales, 1998).

One possibility is to use a firm-level measure of external financial dependence. For instance, Hyytinen and Toivanen (2005) use profitability-based measures: a firm is classified as dependent on external finance if its return on assets was negative in the last FY or if the entrepreneur responded in the survey that the firm's current profitability was worse than its average performance over the last three years. Poor profitability would imply the availability of a low level of internal finance and hence a greater dependence on external finance. The drawback of using a firm-level measure, however, is that reverse causality would persist between growth and financial dependence, thus biasing the results.

To account for this limitation, the study uses an aggregate measure of external financial dependence at the industry level. To that end, information on bank advances as a ratio of total value added is used as a proxy for an industry's dependence on external finance. To capture the supply side, a distinction is made between "availability" of external financial credit and banks' "willingness" to provide that credit. The level of local financial development—as measured by the number of bank branches in the city in which the firm is located—is used as a proxy for "availability." "Willingness" is measured by the percentage of firms that have access to external finance in a particular firm's size category (see Table A4 in the Annexure for details of data sources for each of these indicators).

For this interaction term to be a valid instrument of firm-level external financial access, the following conditions must hold:

$$Cov\ (I,\ A) \neq 0 \tag{1.4}$$

$$Cov\ (I,\ GR) = 0 \tag{1.5}$$

where I represents the instrumental variable, A is access, and GR is the growth rate, the dependent variable. A fairly high correlation between A and I (27.9 percent) and fairly low correlation between GR and I (0.08 percent) support the use of this interaction term as an appropriate instrument for firm-level external financial access.

If conditions 1.4 and 1.5 are satisfied, Equation 1.1 can be estimated in two stages. The first stage entails specifying a reduced-form equation forwhich is a function of I as well as all other exogenous variables. This equation is given by:

$$A_{fil} = \pi_0 + \pi_1 \left(FD_l * \alpha_{fs} * D_i \right) + \sum_{m=2}^{n} \pi_m Z + \mu_{fil} \tag{1.6}$$

where the term in parenthesis represents the instrumental variable; FD_l is financial depth in location l; α_{fs} represents percentage of firms with external financial access in firms' size category s; while D_i measures industry i's dependence on external finance. Z is a vector of firm specific characteristics, as well as industry and location dummies. The second stage involves estimating (1.1) after replacing *(A)* with its fitted values obtained from (1.6).

The second stage involves estimating Equation 1.1, having replaced with its fitted values obtained from Equation 1.6.

5.2. Determinants of Financial Access

In the next step, we specify the following regression model to explore the determinants of financial access:

$$Prob\left(A_{fil} = 1 \middle| FD, C, GR, X, I, L\right) = \gamma + \beta_1 FD_l + \beta_2 C_f + \beta_3 GR_i +$$
$$\sum_{m=4}^{n} X_{fil}\beta_m + \sum_{i=1}^{\varepsilon} I_i\alpha_i + \sum_{l=1}^{12} L_l\delta_l + \varepsilon_{fil}$$

where A_{fil} is a dummy variable equal to 1 if firm f in industry i and location l has access to external finance and 0 otherwise. FD_l is a measure of financial depth proxied by number of bank branches in city l. C_f is the business climate index based on perceptions of firm f's manager. GR_i is the average annual growth rate between 2003 to 2006 of industry i. Refer to Table 4, Appendix A for more details on how the variables have been constructed. Xi is a vector of firm specific characteristics, I_i a vector of industry dummies while L_i is a vector of location dummies to control for industry and region fixed effects.

6. Results

6.1. Determinants of Firm Growth

Our results reveal that a range of internal and external factors are important determinants of firm growth in Pakistan (Table 3).

Table 3: Determinants of Firm Growth in Pakistan

Variable	Coefficient	P Value
External access	0.56**	0.03
Type of firm		
Small or medium enterprise	-0.02	0.90
Export status	-0.04	0.39
Organizational form		
Private limited	-0.03	0.42
Publicly listed	-0.04	0.56
Innovation		
New process	0.12*	0.01
New product	0.00	0.97
Human capital		
Experience	0.00	0.15
Undergraduate degree	0.01	0.80
Postgraduate degree	0.00	0.97
More than 13 years' education[3]	-0.02	0.86
Business environment		
Business climate index	0.01	0.26
Location dummies		
Sheikhupura	-0.091**	0.02
Faisalabad	-0.085***	0.06
Gujranwala	-0.141*	0.00
Wazirabad	-0.116***	0.08
Sukkur	-0.081**	0.05
Industry dummies		
Chemicals	-0.101**	0.05
Constant	3.538*	0.00
N	1,142	

*** Significant at 1%, ** significant at 5%, * significant at 10%.
^ Only the significant location and industry dummies have been reported.
Source: Authors' calculations.

The impact of financial access on firm growth is positive and statistically significant. The instrumental variable estimate of the impact of financial access suggests that a 10 percent increase in working capital

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[3] The model was also run with the dummy variable equal to 1 if a typical production worker has attained more than six years of education, with no change in results.

financed through external sources will increase a firm's growth rate by 5.6 percentage points, ceteris paribus. Thus, it is evident that the lack of external financial access imposes a substantial growth penalty on Pakistani firms. This finding is in line with the literature, with estimates for the growth penalty ranging from 3 to 9 percent in the studies referred to earlier.

Innovation also turns out to be positively related to growth. Firms that had introduced a new process in the last three years had a 12 percent-higher average annual growth rate. However, one must be wary of causal interpretation given the issue of simultaneity. High-growth firms may have more available resources to undertake research and development, and thus more likely to innovate. This finding is also consistent with the literature on innovation, productivity, and growth. Ranging from early studies by Solow in which technical progress is treated as an exogenous factor—to studies that fall within the ambit of new growth theory—where technical progress or innovation is treated as endogenous — the consensus seems to be that innovation has a significant effect on productivity at the level of the firm, industry, and country.

Other firm-specific characteristics such as size, organizational form, human capital, and export status are not directly related to growth, but they do have an indirect effect that works through the finance channel (see Section 6.2 for further discussion).

The lack of significance of export status for firm growth is a finding that warrants some discussion. The literature predicts a positive relation between exports and productivity either because more productive firms self-select themselves into becoming exporters or because of the learning-by-exporting hypothesis whereby knowledge flows from international buyers and competitors and improves firms' post-entry performance. In Pakistan's case, at least for this particular period, export status seems to have no effect on firm growth. This could partly be because export firms are concentrated in products such as food, garments, and textiles, which rank at the low end of the technology ladder. The possibilities of learning-by-doing and positive spillovers are limited, and most firms may not be accruing the growth benefits of their presence in export markets.

On the external side, a firm's location is significant for its growth. Compared to big cities, firms in smaller cities have lower growth rates.[4] For instance, as Table 3 illustrates, the growth rate differential between firms in Karachi and other smaller cities such as Sheikhupura, Gujranwala, Wazirabad, and Sukkur ranges between 8.1 and 14.1 percent.

Business climate, however, is insignificant for firm growth. This would have been surprising in the case of a cross-country study, but in this study, it is possible that our location dummies capture the impact of the business climate. To explore this further, we estimate the following equation:

$$C_{fil} = \pi_0 + \sum_{l=1}^{12} L_l \, \delta_l + \varepsilon_{fil}$$

where C_f is the business climate index, based on perceptions of firm f's manager in industry i, and location l. The index ranges between 0 and 13, with greater the number of dimensions of business environment that the managers perceive to be major obstacles for firm's operations, higher the value of the index. L_l on the other hand is a vector of location dummies, while ε_{fil} is the error term. The omitted category is Karachi. Results show that it is not that business climate does not matter but, as suspected, the location dummies are picking up differences in business climate across cities. This is evident from the fact that 8 out of 12 locations emerge as statistically significant (Table 4). Also, it is interesting to note is that managers perceive business environment in Lahore to be better than that in Karachi, while in all other cities, managers consider business environment to be worse than Karachi.

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[4] For the results in Table 3, Karachi is used as the omitted category. The finding also holds true when Lahore is made the omitted category. In this case, the growth rate differential between firms in Lahore and other smaller cities ranged between 8 and 20 percent.

Table 4: Business Climate and Location

Dependent variable: Business climate

City	Coefficient	P Value
Lahore	-1.07***	0.00
Sheikhupura	3.97***	0.00
Faisalabad	2.99***	0.00
Gujranwala	1.20***	0.00
Wazirabad	1.67***	0.00
Rawalpindi/Islamabad	3.04***	0.00
Hyderabad	1.58***	0.00
Quetta	1.32***	0.01
Sialkot	0.29	0.32
Sukkur	-0.67	0.25
Peshawar	0.01	0.99

*** Significant at 1%.
Source: Authors' calculations.

6.2. *Determinants of External Financial Access*

The study's results reveal that a range of both internal and external factors are important in determining external financial access in Pakistan (Table 5).

On the external side, the level of financial depth in the city as well as the firm's location is significant, while industrial growth is insignificant for access. A 1 percent increase in the number of bank branches in the firm's city of location increases its probability of access to external finance by 4.9 percent, ceteris paribus. Compared to firms located in metropolitan cities such as Karachi, Lahore as well as those located in export-led hubs such as Sialkot, firms in all other cities have a lower probability of access.[5] The results show that the access differential between firms in Karachi and other smaller cities ranges between 4.9 and 13.1 percent.

An establishment's growth rate, on the other hand, is insignificant for access. To account for reverse causality, the model was also estimated using industry-level growth rate averages, for which the finding continued to hold

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[5] For the results in Table 5, Karachi is used as the omitted category. The model was also run using different omitted categories, i.e., Lahore and Sialkot. The result holds true in each case. With Lahore (Sialkot) as the omitted category, the access differential ranged between 9 and 20 percent (8 to 15 percent).

true. This is not surprising given the nature of bank lending in Pakistan whereby banks prefer short-term securities (State Bank of Pakistan, 2010, p. 15). Thus, lending by financial institutions occurs more on the basis of operating capital rather than because they are forward looking.

On the internal side, a range of firm-specific characteristics such as degree of innovation, size, export status, organizational form, and quality of human capital emerge as important determinants of external financial access. Innovative firms are more likely to have access; firms that have introduced a new process over the last three years have an 8 percent higher probability of access. Small and medium firms are, respectively, 12.2 and 7.4 percent less likely to have access to external finance compared to large firms, ceteris paribus. Exporters are approximately 8 percent more likely to have access than their counterparts who do not export.

Compared to sole proprietors and partnerships, private limited and publicly listed companies are 3.4 and 5.8 percent more likely to have access, respectively. The quality of human capital, as measured by the top manager's level of education and years of experience, is significantly and positively related to probability of access. The more experienced the top manager of the firm, the higher the chances of access. Moreover firms in which the top manager has a bachelors or a post graduate degree have a greater likelihood of access compared to their counterparts in which the top manager is not a graduate.

To conclude, our results on the determinants of access suggest that, broadly, access to formal credit is a function of two main factors: (i) the availability of infrastructure to provide credit, and (ii) lending organizations' risk perception of the borrower. As far as the former is concerned, there is still limited financial outreach. Even where there is greater financial penetration (in big cities such as Karachi, Lahore, etc.), the financial sector is underdeveloped—evident from the fact that most lending occurs based on operations and turnover and is short-term. Thus, banks evaluate an establishment on the basis of its current financial position as reflected by its accounts or turnover.

In this regard, firm-specific characteristics such as export status, organizational form, and quality of human capital provide important information to banks when deciding whether and how much to lend. Limited companies, for instance, have audited accounts, making it easier for banks to assess the former's financial viability. Exporters may not necessarily have audited accounts but with export receipts coming

through bank, financial institutions can make well-informed assessments of firms' size and operation. Finally, the quality of human capital is likely to ease interaction and facilitate negotiations with the bank.

Table 5: Determinants of External Financial Access in Pakistan

Variable	Marginal Effect	P Value
External factors		
Financial depth	0.049***	0.00
Business climate index	0.00	0.20
Average industry growth	0.00	0.20
Internal factors		
Small	-0.122***	0.00
Medium	-0.074***	0.00
Exporting status	0.079***	0.00
Organizational form		
Privately listed	0.034**	0.03
Public limited	0.058***	0.00
Innovation		
New product	-0.04	0.19
New process	0.078**	0.05
Human capital		
Top manager's experience	0.002***	0.01
Top manager's undergraduate education	0.135***	0.00
Top manager's postgraduate education	0.196***	0.00
*Location dummies^*		
Sheikhupura	-0.130***	0.00
Faisalabad	-0.117***	0.00
Gujranwala	-0.049*	0.10
Islamabad/Rawalpindi	-0.107***	0.00
Sukkur	-0.114***	0.01
Hyderabad	-0.078*	0.07
Quetta	-0.131***	0.00
*Industry dummies^*		
Chemicals	0.169***	0.01
Leather and leather products	0.129*	0.07
N	1,102	

*** Significant at 1%, ** significant at 5%, * significant at 10%.
^ Only the significant location and industry dummies have been reported.
Source: Authors' calculations.

7. Conclusions

The study's most important conclusion is that finance is a binding constraint to firm growth in Pakistan. Even during the heyday of external finance, manufacturing firms faced an average annual growth penalty of the order of 5.6 percentage points, ceteris paribus. Within the country, access to formal credit is better in cities where there is greater penetration of financial infrastructure. Furthermore, all other firm-specific characteristics such as size, export status, organizational form, and quality of human capital affect growth indirectly through the binding constraint, i.e., access to finance. This is evident from the fact that these variables are statistically significant in the determinants of access regression but insignificant in the growth regressions. These findings shed light on the pivotal role that finance can play in the development of industry and emphasize the need to overcome existing weaknesses in the sector by moving the country toward greater financial development.

References

Acemoglu, D., Johnson, S., & Robinson, J. (2001). The colonial origins of comparative development: An empirical investigation. *American Economic Review, 91*(5), 1369–1401.

Ayyagari, M., Demirgüç-Kunt, A., & Maksimovic, V. (2007). *Firm innovation in emerging markets: The roles of governance and finance* (Policy Research Working Paper No. 4157). Washington, DC: World Bank.

Ayyagari, M., Demirgüç-Kunt, A., & Maksimovic, V. (2008). How important are financing constraints? The role of finance in the business environment. *World Bank Economic Review, 22*(3), 483–516.

Beck, T., & Demirgüç-Kunt, A. (2006). Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking and Finance, 30*(11), 2931–2943.

Beck, T., Demirgüç-Kunt, A., & Maksimovic, V. (2005). Financial and legal constraints to growth: Does firm size matter? *Journal of Finance, 60*(1), 137–177.

Demirgüç-Kunt, A., & Maksimovic, V. (1998). Law, finance, and firm growth. *Journal of Finance, 53*(6), 2107–2137.

Goldsmith, R. W. (1969). *Financial structure and development*. New Haven, CT: Yale University Press.

Government of Pakistan. (2005). *Census of manufacturing industries, 2005*. Islamabad, Pakistan: Federal Bureau of Statistics.

Government of Pakistan. (2010). *Handbook of statistics on Pakistan economy, 2010*. Karachi: State Bank of Pakistan.

Guiso, L., Sapienza, P., & Zingales, L. (2000). *The role of social capital in financial development* (Unpublished Working Paper No. 7563). Cambridge, MA: National Bureau for Economic Research.

Huang, Y., & Temple, J. R. W. (2005). *Does external trade promote financial development?* (Discussion Paper No. 5150). London, UK: Centre for Economic Policy Research.

Hyytinen, A., & Toivanen, O. (2005). Do financial constraints hold back innovation and growth? Evidence on the role of public policy. *Research Policy*, *34*, 1385–1403.

King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics*, *108*, 717–738.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1997). The legal determinants of external finance. *Journal of Finance*, *52*, 1131–1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy*, *106*, 1113–1155.

Levine, R., & Zervos, S. (1998). Stock markets, banks, and economic growth. *American Economic Review*, *88*, 537–559.

Lucas, R. E., Jr. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, *22*, 3–42.

Rajan, R. G., & Zingales, L. (1998). Financial dependence and growth. *American Economic Review*, *88*(3), 559–586.

Rajan, R. G., & Zingales, L. (2003). The great reversals: The politics of financial development in the twentieth century. *Journal of Financial Economics*, *69*, 5–50.

Robinson, J. (1952). The generalization of the general theory. In *The rate of interest and other essays*. London, UK: Macmillan.

Schumpeter, J. A. (1911). *A theory of economic development*. Cambridge, MA: Harvard University Press.

State Bank of Pakistan. (2010). *Quarterly performance review of the banking system*. Karachi, Pakistan.

Stulz, R. M., & Williamson, R. (2003). Culture, openness, and finance. *Journal of Financial Economics*, *70*, 313–349.

Wagner, J. (2007). Exports and productivity: A survey of the evidence from firm-level data. *The World Economy*, *30*(1), 60–82.

World Bank. (2009). *Pakistan's investment climate: Laying the foundation for renewed growth* (Report No. 46435). Islamabad, Pakistan.

World Bank. (2011). *World development indicators*.

Annexure A

Table A1: Size Distribution of Firms by Location*

City	Small	Medium	Large
Karachi	8.5	19.9	43.1
Lahore	10.1	15.4	20.4
Sheikhupura	5.5	2.2	1.2
Sialkot	10.2	11.5	5.8
Faisalabad	16.2	13.8	9.2
Gujranwala	15.3	10.4	3.1
Wazirabad	5.8	2.0	0.4
Islamabad	7.6	7.6	6.5
Sukkur	5.3	2.0	0.8
Hyderabad	4.9	3.1	2.3
Quetta	6.0	1.7	1.2
Peshawar	4.6	10.1	3.8
Hub	0.0	0.3	1.9

*As a percentage of total number of small, medium, and large firms.
*Source***:   Investment Climate Assessment Survey, 2007.

Table A2: Firms with External Financial Access by Location and Size (%)

City	Small	Medium	Large	Total
Karachi	2.1	11.3	37.5	21.9
Lahore	5.3	10.9	39.6	18.2
Sheikhupura	0.0*	0.0*	33.3	0.6
Sialkot	13.8	17.1	46.7	16.5
Faisalabad	0.0	10.2	25.0	9.6
Gujranwala	10.3	21.6	37.5	24.1
Wazirabad	12.1	14.3	0.0	6.9
Islamabad	0.0	7.4	23.5	13.3
Sukkur	3.3	14.3	0.0	4.7
Hyderabad	3.6	27.3	16.7	11.9
Quetta	0.0	16.7	0.0	2.4
Peshawar	11.5	19.4	50.0	38.5
Hub	N/O^	0.0*	80.0	66.7

^ No small firms located in Hub.
* There were no firms in this category with access to finance.
Source: Authors' calculations; Investment Climate Assessment Survey, 2007.

Table A3: Firms with External Financial Access by Industry and Size (Percent)

Category	Small	Medium	Large	Total
Textiles	4.4	14.3	27.9	12.8
Food	2.0	8.6	42.1	16.3
Garments	2.9	10.8	21.5	10.9
Machinery and equipment	9.3	14.3	20.0	11.9
Chemicals	0.0	22.7	66.7	28.9
Leather and leather products	11.1	14.3	0.0	12.5
Electronics	0.0*	0.0*	0.0*	0.0*
Nonmetallic minerals	10.5	33.3	60.0	25.0
Other manufacturing	6.4	13.0	36.6	13.3

* There were no firms in this category with access to finance.
Source: Authors' calculations; Investment Climate Assessment Survey, 2007.

Table A4: List and Description of Variables

Variable	Description
Firm growth	Average annual employment growth rate of the firm between FY2003 and FY2006.
Endogenous measure of external access	Percentage of working capital financed through institutional sources, including private commercial banks, state-owned banks and agencies, and nonbank financial institutions.
Instrument for external financial access	An interaction term between supply- and demand-side variables.
	Supply side
	Availability of credit: Measured by number of bank branches in the city in which firm is located (Banking Statistics, 2007).
	Willingness to provide credit: Measured by percentage of firms with access to external credit in the firm's respective size category (Investment Climate Assessment Survey, 2007).
	Demand side
	Industry's dependence on external finance: Measured by bank advances as a ratio of total value added by the industry (Census of Manufacturing Industries, 2005; Handbook of Statistics on Pakistan Economy, 2010).
Small	Dummy = 1 if firm is small, 0 otherwise.
Medium	Dummy = 1 if firm is medium, 0 otherwise.
Export status	Dummy = 1 if firm is an exporting firm, 0 otherwise.
Organizational form	
Private limited	Dummy = 1 if firm is a private limited company, 0 otherwise.
Publicly listed	Dummy = 1 if firm is a publicly listed company, 0 otherwise.
Innovation	
New process	Dummy = 1 if firm has introduced a new process during the last three years, 0 otherwise.
New product	Dummy = 1 if firm has introduced a new product during the last three years, 0 otherwise.

Human capital

Experience	Number of years the top manager has been in the field.
Undergraduate degree	Dummy = 1 if the top manager has a BA degree, 0 otherwise.
Postgraduate degree	Dummy = 1 if the top manager has a postgraduate (local or foreign) degree, 0 otherwise.
Education of a typical production worker	Dummy = 1 if a typical production worker has more than 13 years of education, 0 otherwise.
Business climate index	A simple average of 13 different dimensions of the business environment. Responses are based on manager's perception of how much of a constraint each of these factors is in firm's operations and growth.
	The various dimensions include: access to land, power, telecommunications, water supply, crime/theft, transportation, tax administration, tax regulation, licensing and permits, macroeconomic instability, political instability, corruption, labor regulations.

Location dummies

Lahore	Dummy = 1 if firm is located in Lahore, 0 otherwise.
Sheikhupura	Dummy = 1 if firm is located in Sheikhupura, 0 otherwise.
Sialkot	Dummy = 1 if firm is located in Sialkot, 0 otherwise.
Faisalabad	Dummy = 1 if firm is located in Faisalabad, 0 otherwise.
Gujranwala	Dummy = 1 if firm is located in Gujranwala, 0 otherwise.
Wazirabad	Dummy = 1 if firm is located in Wazirabad, 0 otherwise.
Islamabad/ Rawalpindi	Dummy = 1 if firm is located in Islamabad/Rawalpindi, 0 otherwise.
Sukkur	Dummy = 1 if firm is located in Sukkur, 0 otherwise.
Hyderabad	Dummy = 1 if firm is located in Hyderabad, 0 otherwise.
Quetta	Dummy = 1 if firm is located in Quetta, 0 otherwise.
Peshawar	Dummy = 1 if firm is located in Peshawar, 0 otherwise.
Hub	Dummy = 1 if firm is located in Hub, 0 otherwise.

Industry dummies

Garments	Dummy = 1 if firm falls in this industry, 0 otherwise.

Textiles	Dummy = 1 if firm falls in this industry, 0 otherwise.
Machinery and equipment	Dummy = 1 if firm falls in this industry, 0 otherwise.
Chemicals	Dummy = 1 if firm falls in this industry, 0 otherwise.
Electronics	Dummy = 1 if firm falls in this industry, 0 otherwise.
Nonmetallic minerals	Dummy = 1 if firm falls in this industry, 0 otherwise.
Leather and leather products	Dummy = 1 if firm falls in this industry, 0 otherwise.

Norms of Cooperation, Trust, Altruism, and Fairness:

Evidence from Lab Experiments on Pakistani Students

Theresa Thompson Chaudhry[*] and Misha Saleem[**]

Abstract

A rich area of economic research focuses on the role of controlled experiments to understand interactions between agents and agents' own deep-seeded preferences as they pertain to pro-social behavior. Four of the most common games—the prisoner's dilemma, and the trust, ultimatum, and dictator games—have been used both in laboratory and field settings, and with student and nonstudent participants. Cardenas and Carpenter (2008) have compiled evidence for these four games that has been collected from behavioral experiments conducted in the US and a number of developing countries. In this paper, we wish to add to the existing evidence by presenting the results of lab experiments carried out on a population of economics students at a university in Lahore.

Keywords: Behavioral Environment, Games, Lahore, Pakistan.

JEL Classification: C73, C93.

1. Introduction

According to the New Institutional Economics outlined by North (1990), institutions are the "humanly devised constraints that shape human interaction;" in other words, they are the rules of the game in society, constraining behavior and shaping incentives. In the New Institutional Economics literature, institutions affect transaction (exchange) costs and transformation (production) costs, thus impacting economic performance (North, 1990). Institutions may be formal or informal. Examples of formal institutions include federal and provincial statutes, common law, constitutions, and written contracts. Informal constraints can be broadly described as customs, norms, conventions of behavior, morals, and generally accepted codes of conduct.

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Institutions generally change slowly. So even if formal institutions change suddenly (revolution), customs and other informal constraints do not. Therefore, history is important, leading to the notion of "path dependence" in the New Institutional Economics; where a society has been (in terms of its economic and political systems) affects how it changes, and the opportunities for what it becomes in the future. Also implicit in the notion of path dependence is the recognition that societies can diverge on to different paths and end up in different circumstances in terms of the presiding political system, economic relations, and norms of behavior. The importance of both formal and informal institutions on economic development has been demonstrated empirically (Acemoglu et al., 2001; Knack & Keefer, 1997).

The relationship between formal and informal institutions is a complex issue, which we cannot fully explore here. However, it is thought that, in developing countries, where certain formal institutions are weak, informal ones may take their place. (Informal institutions are often more permanent and slow changing than formal ones, playing a prominent role in the path dependence hypothesis.) These include pro-social norms that contribute to the social capital of a society, including cooperation, trust and reciprocity, altruism, and fairness, which are the focus of this paper. *Cooperation* can help enforce agreements when there is an incentive to renege—thereby substituting for contract enforcement—and contribute to public goods to fill in for government provision when public execution is weak. *Trust and reciprocity* help build and maintain relationships (both business and otherwise) and develop informal insurance mechanisms. *Altruism* aids in the protection of the most vulnerable and can help substitute for social safety nets. Norms of *fairness* help adjudicate local disputes, which can be particularly useful when formal enforcement is ineffective.

A number of papers have used evidence from experiments conducted on subjects either in the laboratory or in the field to measure these pro-social norms. Cardenas and Carpenter (2008) compiled the results across a number of countries in order to draw some comparisons between developed and developing countries. Experimental evidence from Pakistan is scarce; therefore this paper aims to contribute to the cross-country evidence on lab experiments regarding social preferences. We focus on four of the experiments covered by Cardenas and Carpenter: (i) the prisoner's dilemma (norms of cooperation), (ii) the dictator game (altruism), (iii) the ultimatum game (fairness), and (iv) the trust game (trust and reciprocity). In each of these games, there is a clear theoretical

prediction for an individual's behavior from noncooperative game theory, based on the assumption of rational payoff maximization. However, as will be discussed later, the harsh predictions of game theory are rarely borne out in actual play in either the field or the lab. The magnitude of the divergence from the predictions of theory is then interpreted as the extent of pro-social norms within the group.

The remainder of the paper proceeds as follows. Section 2 presents a review of the literature. Section 3 describes the rules of the four games. Section 4 describes the framework for the lab experiments performed. Section 5 presents our results based on the games played by Lahore-based students, and Section 6 concludes the study.

2. Literature Review

The literature on experimental economics focusing on understanding human behavior is quite extensive. The experiments carried out in this area of research have tried to explain norms of cooperation, fairness, altruism, and trust. Levitt and List (2006) broadly classify experiments explaining social preferences into two: (i) experiments carried outside the lab, and (ii) experiments carried inside the lab. Given the strengths and weaknesses of each approach, lab experiments are useful in providing qualitative insights as compared to field experiments, which might be more useful for quantitative analysis. Nevertheless, lab experiments appeal to economists as they provide ceteris paribus observations where the investigators can directly control the game's parameters, including budget sets, information sets, and available moves.

Much of the economic models and almost all of game theory begin with an assumption that individuals are both rational and selfish. Theoretically speaking, this would mean that individuals tend to defect, not cooperate, or free-ride in experimental games measuring cooperation. A large amount of experimental evidence however shows that often individuals choose actions that are not in their best interest. Such actions are commonly viewed as individuals' attempts to cooperate (Cooper et al 1996). In this regards, the *prisoner's dilemma game* (PD) and public goods games are two sets of games commonly played.

An abundance of literature has tried to explain when and why individuals cooperate in settings (such as finite repetitions of the PD game) where the prediction of the basic theoretical game is non-cooperation. In this regard, Kreps *et al* (1982) has been amongst the first to

demonstrate that cooperation can be reached in experiments involving finite repetitions of the prisoner's dilemma game. In other words individuals might be observed to not play "defect", even though "defect" is the unique Nash equilibrium at each stage of the finitely repeated PD with complete information. The authors prove how reputation effects due to incomplete information about one or both players' behavior can result in cooperation in equilibrium in early stages of the game. The authors build two main models and show that even a small belief about the plausibility of such behavior by the opposing player can make it rational for an individual to himself cooperate. These are that either i) the opponent is playing a tit-for-tat strategy (i.e. choosing to cooperate, following cooperative behavior by the opponent), or that ii) mutual cooperation may sufficiently raise the utility of the other player.

Andreoni and Miller (1993) test the model posed by Kreps *et al* (1982) to evaluate its predictive power by influencing the participants' beliefs regarding their partners' intentions. In addition to the reputation building, the authors also look at a model based on altruism (also called the warm-glow hypothesis) to explain cooperation in PD. While Kreps et al (1982) only allowed for beliefs regarding altruism in the subjects, the authors in this paper allow altruistic participants to exist in reality. Randomly assigning students at the University of Wisconsin to lab computers, the experiment was run under four different treatments. These treatments were "partners" (anonymous pairings of students re-matched in each period allowing for reputation building), "strangers" (random pairing in each round/iteration to avoid any reputation building), "Computer50" (group instructions same as that for partners with an announced probability that the subjects play against a computer which would play tit-for-tat strategy) and "Computer0" (same as Computer50 except that the probability of playing with the computer reduced to 0.1 percent). The resultswere consistent with the reputation building model (increasing an individual's beliefs about the probability that their opponent is altruistic increases reputation building) but also show that a fraction of the students playing actually appeared to be altruistic (consistent with warm-glow hypothesis that people get additional utility from mutual cooperation).

Cooper *et al* (1996) makes a similar comparison between one-shot games and finitely repeated games by conducting experiments with undergraduate and graduate students of University of Iowa. The authors identify reputation building effects and altruistic players amongst the sample, but neither explanation alone can explain the observed levels of

cooperation. Compared to zero cooperation predicted by standard economic theory in sequential one-shot games, the authors showed that cooperation increases as players interact for a finite number of plays. In the one-shot prisoner dilemma games, the cooperation rates were greater than 20 percent, with cooperation rates starting out higher in the early periods of play and then tapering off. They identify a proportion of altruistic players within the sample at approximately 12-13 percent of the subjects.

Another paper by Frank *et al* (1993) conduct a prisoner's dilemma experiment through questionnaires involving both economics students and non-economics students to examine whether studying economics negatively impacts an individual's natural inclination toward cooperative behavior. The results showed a higher defection rate amongst economic majors of nearly 2/3 as compared to non-majors which had a defection rate of less than 40 percent. The authors also regress the cooperation rates on controls to test for effects of gender, age or experimental condition. Defection rates were higher among male subjects, and were negatively related to years of education.

Bohnet and Frey (1993) show how identification amongst the subjects (even without communication) also induces a higher level of cooperation, as compared to anonymous treatments. The results showed that even silent identification increased cooperation (by 11 percentage points) as compared to the anonymous setting, and communication further boosted the cooperation rate to an astonishing 78 percent.

Hemesath and Pomponio (1998) on the other hand is an attempt to examine how cooperative behavior varies across cultures. Experimenting with Chinese undergraduates and American college students, using random matching of participants, the authors found a 25 percent cooperation rate in the American students as compared to a 54 percent cooperation level amongst Chinese students.

Many economists recognize the importance of *trust* in economic transactions, efficiency, social capital, cooperation within firms, and its link with economic indicators such as the gross domestic product (GDP) growth rate and investment relative to GDP (Fukuyama, 1995; Knack & Keefer, 1997; Kramer & Tyler, 1996; Putnam, 1995, 2000; Zak & Knack, 2001). Often cited is Knack and Keefer (1997), where the authors use trust indicators from World Values Surveys from 29 economies, and suggest that formal institutions for the provision of better mechanisms to fulfill contracts are more important in economies where interpersonal trust is

low. They show that trust norms are stronger in nations with less income inequality and higher literacy rates. The authors show, for example, that an increase of one standard deviation in country-level trust predicts an increase in economic growth of more than one half of a standard deviation.

On an individual level, Berg *et al.* (1995) identify an experimental design in an investment setting with complete anonymity to show that trust can be used for mutual gain. The double blind procedure's intent is to rule out reputation effects in repeated interactions, contractual pre-commitments, and potential punishment threats. The authors show that, 55 out of 60 times, students sent a positive amount of money. Typically in trust games, first players (trustors) lose money or break even, receiving back the same or less than what they passed on to the trustee, even though the amount they sent was tripled by the experimenter.

Burks *et al.* (2003) use a modified trust game to show that informing each student of their dual roles as both trustor and trustee leads to a significant reduction in both trust and reciprocity behaviors. Where many economists believe that trustees return money conditional on the generosity of the trustor's intentions or behavior (Cox & Friedman, 2002; Rabin, 1993), some studies have had difficulty identifying this demand by second movers on the trustor's behavior (Ashraf *et al.*, 2006). Ashraf *et al.* conduct four experimental sessions: two trust (investment) and two dictator game experiments among a heterogeneous sample of male and female college students in Russia, South Africa, and the US. Controlling for risk preferences and expectations of return, the authors show that trust is not just related to expectations of return but also to "unconditional kindness" especially in the case of Russia and South Africa as opposed to the US where reciprocity is more relevant. While over 90 percent of trustors send money, only a minority expects to make a positive return on its investment, stressing the role of kindness.

Many studies have used trust games to measure differences in social preferences due to demographic differences among individuals. Buchan *et al.* (2003) find that women are more trustworthy and less trusting than men by running investment (trust) games with students in the US. Buchan *et al.* (2006) run an investment game with students in China, Korea, Japan, and the US to find that differences in trust, reciprocity, and altruism vary across country of origin, cultural orientation, and social distance among subjects. The study also shows that Chinese participants are more trusting and trustworthy than their counterparts from other countries. Fehr and List (2004) compare the

behavior of Costa Rican students and chief executive officers, and find the familiar result of lower pro-social behavior (trust and trustworthiness) among the student group.

Glaeser (2000) compares measures of trust and reciprocity in surveys with investment (trust) games (similar to those in Berg *et al.*, 1995) played with Harvard undergraduates. The study shows that, if subjects are paired with counterparts from a different race or nationality, they tend to return less money than they receive. Lazzarini *et al.* (2004) replicate Glaeser's study using a sample of Brazilian students. They show that, in comparison to the Glaeser study where 42.6 percent of students showed trust, only 21.7 percent (measured on a World Value Survey scale) of the Brazilian students surveyed trusted their counterparts; despite this, the return ratio of 80 percent was not significantly different from that of Glaeser. Both Glaeser (2000) and Lazzarini et al. (2004) find that surveyed measures of trust are not good indicators of trusting behavior, but rather they indicate trustworthiness.

Experimenters often run *dictator games*[1] in addition to trust games to see what motivates first-movers to transfer their endowment without expecting a return, which is also interpreted as altruism. Carter and Castillo (2002) try to differentiate trust and reciprocity from altruism by conducting three games (where subjects are given the roles of dictator, trustor, or trustee) in 14 South African communities, spanning both urban and rural settings. The authors prove that trust norms are stronger in communities that expect reciprocity in return. On average, trustors sent 53 percent of their endowment, and the average share returned was 38 percent. Over 70 percent of subjects sent an amount between 40 and 60 percent, where the percentage varied across communities. On average, the share sent in the dictator game was found to be 42 percent, showing high levels of altruism.

As already mentioned, Ashraf *et al.* (2005) recognize that some first movers may show trust as a general act of kindness as opposed to being in expectation of reciprocity. (Other first movers have different motivations, and may view the trust game as an investment game with uncertainty.) Such acts of unconditional kindness could be due to social preferences such as altruism. In the dictator and triple dictator games run by the authors, only 14 percent of first movers did not send anything, indicating a lack

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[1] This is done to observe trustors' behavior when no reciprocity is expected. Kahneman et al. (1986) experimented with dictator games for the first time and found that three quarters of the subjects who played opted for an equal split with their counterparts.

selfish behavior by the majority of players. The returns made by trustees are explained better by altruism (or unconditional kindness) than reciprocity. The mean allocation in all three countries (the US, Russia, and South Africa) is close to the standard result of about 20 percent (Camerer, 2003). Holm and Danielson (2005) carried out both a dictator game and a trust game among students in Sweden and Tanzania. They found a strong relationship between the proportion of amount returned in the trust game and contributions in the dictator game. Trustors sent similar amounts on average in both countries (just over 50 percent of the endowment). Trustees in both countries then returned similar amounts of the funds received (a little more than a third). The study rules out pure generosity as the intention of the player in the trustor role. The trustee's behavior, however, is found to be motivated by both reciprocity and charity in both countries.

Carpenter *et al*. (2004) investigate the external validity of ultimatum and dictator games by conducting a field experiment among students at Middlebury College (an elite institution), nontraditional students at a community college in the US state of Kansas, and employees at a distribution center also in Kansas. The authors examine the effect of social framing[2] on the behavior of subjects at the Kansas community college and distribution center by controlling for demographic variables, and the effect of demographics on students at the Kansas community college and Middlebury College by controlling social framing effects. The workers at the Kansas distribution center and college made high offers in both games as compared to Middlebury students. The Kansas college students proposed less generous amounts than the distribution center workers, signaling the importance of social framing. This shows that altruistic norms and preference for sharing gains with co-workers are stronger within a workplace than in a classroom. In the ultimatum game, all offers made by the Kansas community college students were for 50-50 splits, while over 70 percent of the workers at the distribution center also offered the 50-50 split. At Middlebury, less than half the proposers made this offer.

Eckel and Grossman (1996) also show that subjects behave less generously toward anonymous counterparts in a dictator game. Hoffman *et al.* (1994) find that anonymity in dictator games via a double-blind procedure reduces the percentage of subjects (from 46 to 16 percent) that choose to donate 30 percent or more of their endowment. Additionally, the authors show that changing the instructions of the game significantly

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[2] "Subjects beliefs are influenced by the real-life social context… by their relationship to the people they are playing against and to the experimenter and by the set of norms and habits that dominate the cultural life in the institution in which the experiment is carried out" (Carpenter et al., 2004).

changes offers in both games. Carter and Irons (1991) carry out an ultimatum game among economics and non-economics students and find that the former behave more selfishly.

Henrich *et al.* (2001) conducted a large cross-sectional field experiment in 15 small-scale societies by carrying out ultimatum, dictator, and public good games. Their study concludes that behavioral differences across societies stem from differences in economic organization and the degree of integration with outside communities via markets. The authors find that the mean offer in their sample ranges from 26 to 58 percent. Individuals within a group follow strong sharing norms while those outside the group or community tend to be less generous. On a similar pattern, Henrich et al. (2006) conducted ultimatum and third-party punishment games (where a bystander can punish the dictator for low offers), proving that individual differences are less important than community differences. The study shows that while communities punished offers of less than half of the endowment, the willingness to punish was not uniform across communities. In Gowdy *et al*. (2003), first movers in a Nigerian village made similar average offers (of just over 40 percent) in both ultimatum and dictator games. In spite of dire poverty, high levels of altruism among the villagers are attributed to community-level characteristics (rather than differences among individuals) including religious beliefs, local norms of fairness and cooperation, and a high degree of face-to-face social interaction. Cameron (1999) carried out an ultimatum game with students in Indonesia and showed that while the behavior of the first mover does not change with an increase in real money stakes, the willingness to accept by the second mover or responder does respond positively.

Literature on Pakistani Subjects

Delavande and Zafar (2011) carried out trust and dictator games among a sample of university and *madrassa* (seminary) students in Pakistan to examine within- and across-group behavior, finding high levels of trust, trustworthiness, and altruism across and within all groups. Looking at the sample overall, nearly 43 percent of the endowment was given in the dictator games. In their modified trust game (where the trustor could pass all or nothing of their endowment), almost three quarters of the participants passed their endowment, with only 3 percent of trustees giving back nothing in return, resulting in return ratios that were significantly greater than 1. Razzaque (2009) conducted ultimatum games focusing on the role of gender among students in Rawalakot and Lahore, Pakistan, and found first-round offers to be about 39 percent of

the endowment. Despite the offers proposed by male and female players 1 to be nearly the same (male offers were marginally higher), the women's offers were rejected at significantly higher rates.

3. Theoretical Descriptions of the Four Games

In this section, we describe the rules of play for each of the four games played in the lab and the predictions for play, given by the Nash equilibrium, based on noncooperative game theory. These games include the prisoner's dilemma, the trust game, the dictator game, and the ultimatum game.

The Prisoner's Dilemma

The prisoner's dilemma is a one-period, simultaneous-move game, so each player does not observe the other player's action until the game is over. Player 1 has the possible moves "top" and "bottom," and player 2 has the choice between "left" and "right." The combination of the two players' moves determines the payoffs for each player. In each payoff box in Figure 1 (below), the first number refers to the payoff of player 1, and the second number gives the payoff to player 2. For example, if player 1 chooses "bottom" and player 2 chooses "left," player 1 and 2 receive $1.00 and $0.00, respectively.

Figure 1: The Prisoner's Dilemma

		Player (2)	
		Left (USD)	Right (USD)
Player (1)	Top	0.80, 0.80	0.00, 1.00
	Bottom	1.00, 0.00	0.30, 0.30

According to noncooperative game theory, player 1 should always choose "bottom" since "bottom" gives player 1 a higher payoff regardless of player 2's decision ($1.00 > $0.80, $0.30 > $0.00); in other words, "bottom" is payoff-dominant. Likewise, "right" is the payoff-dominant move for player 2. Therefore, players 1 and 2 should rationally choose "bottom" and "right," resulting in a payoff of $0.30 for each. However, the players would have jointly been better off had they cooperated and chosen "top" and "left" for payoffs of $0.80 for each player.

The "rational" (or purely self-interested) player would choose "right" and "bottom" (not cooperate) according to the predictions of game theory, i.e., the Nash equilibrium. However, when these games are put toward ordinary individuals, people's choices often differ from the stark predictions of theory. The share of players choosing "top" and "left" provide us a measure of *cooperation*.

The Trust Game

The trust game takes place over two periods. In period 1, player 1 (the "trustor") starts with an endowment of $10.00 and decides on an amount "D" to pass to player 2 (the "trustee"). The experimenter triples the amount D, so that player 2 receives 3D. If player 1 does not pass anything to player 2, the game ends and player 1 keeps $10.00, and player 2 gets $0.00. If player 2 passes a positive amount, in the second stage player 2 observes 3D and decides on the share "n" to pass back to player 1 out of the 3D they received. Payoffs to player 1 and player 2, respectively, at the end of the second stage are $10.00 − D + 3Dn and $3D(1 − n). See Figure 2 for a depiction of the game.

According to noncooperative game theory, we should solve the game by backward induction, and start by predicting what player 2 will do in the second (last) stage. Rationally, player 2 would maximize payoffs by keeping the full amount, 3D, passed by player 1 and set n = 0. Player 1 should anticipate this in stage 1, and maximize payoffs by not sending any money, setting D = 0, because they know they will not receive anything back in the second stage.

Figure 2: The Trust Game
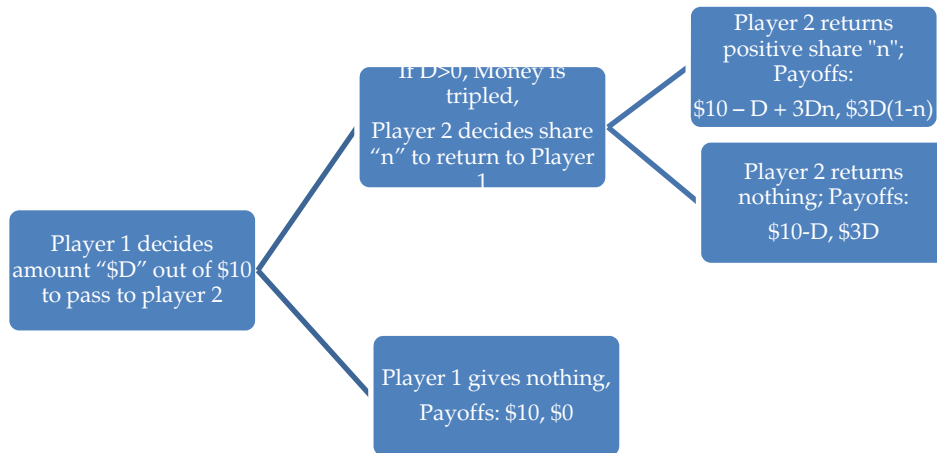
As described in the previous paragraph, in the Nash equilibrium, the "rational" player 1 would keep the entire endowment according to the predictions of game theory, predicting that player 2 would return nothing. However, when these games are put toward ordinary individuals, both players typically give positive amounts. The share returned by player 2 is a measure of "trustworthiness." The share given by player 1 is typically considered to be a combination of altruism and trust; if one is willing to make some strict assumptions about the additivity of preferences, one can subtract the measure of altruism calculated in the dictator game from the share proposed in the trust game to get a measure of "pure trust."

The Dictator Game

The dictator game is a simple one-period game. Player 1 decides on an amount "D" out of an endowment of $10 to give to player 2. Player 2 has no move in this game, and the payoffs are $10 − D and D, respectively, for players 1 and 2 (see Figure 3). Clearly, since the second player has no move, the payoff-maximizing player 1 would keep the entire endowment and set D = 0.

Figure 3: The Dictator Game
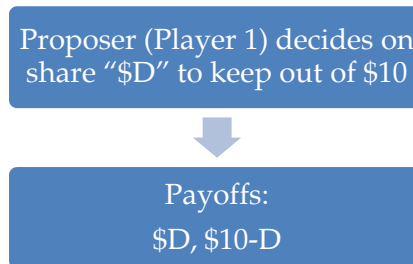
The "rational" proposer would keep the entire endowment according to the predictions of game theory. However, when these games are put toward ordinary individuals, the proposer (player 1) typically donates a positive amount, where the share given provides a measure of "altruism."

The Ultimatum Game

The ultimatum game is a two-period game. In stage 1, player 1 decides on an amount "D" out of a $10-endowment to send to player 2. In stage 2, player 2 observes player 1's offer and decides to accept or reject.

If player 2 accepts, player 2 gets $D and player 1 keeps $10 – D. If player 2 rejects the offer, both players get $0. As in the trust game, in theory we should solve the game by first at player 2's options in the second stage. For player 2, any strictly positive D should be accepted because it gives a higher payoff than rejecting, which results in a payoff of 0. If D = 0, then player 2 should be indifferent between accepting and rejecting player 1's offer. If it is assumed that offers that make player 2 indifferent are accepted, then player 1 will maximize their own payoff by offering D = 0 and the offer will be accepted by player 2. If offers of D = 0 are expected to be rejected, player 1 should offer the smallest D such that D > 0, ensuring acceptance by player 2 and maximizing player 1's payoff.

Figure 4: The Ultimatum Game
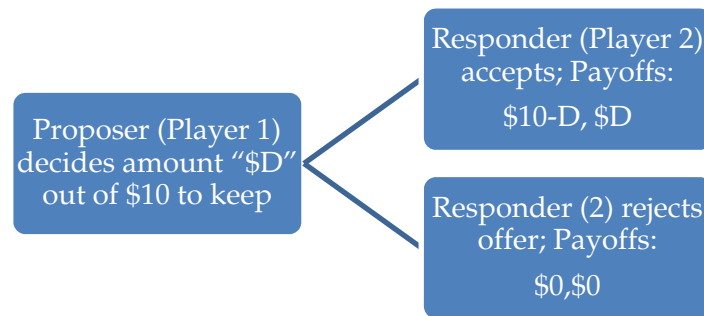
As we have seen, according to noncooperative game theory, the "rational" proposer would keep the entire endowment (or give the smallest positive amount), and the responder should accept. However, when these games are put toward ordinary individuals, responders often reject positive offers that are perceived as too small. The highest share rejected can be interpreted as a measure of "fairness."

4.   Description of Experimental Frame

The games were conducted in the context of an intermediate microeconomics class in four different classes (or "sections") between 2009 and 2011. All students participating were economics majors. As the games were part of a classroom assignment, real money was not transacted. The games were played online using Charles Holt's Vecon Lab Experiment website (http://veconlab.econ.virginia.edu/admin.htm).

In a particular session, there were between 24 and 40 students, all from the same section. The students in the same session know each other,

and take most of their undergraduate coursework together. However, pairings for the games were randomly assigned, and in the vast majority of cases the students did not know exactly with whom they were paired. The pairing was fixed for all rounds of a particular game, but changed with each game played. Each student sat in front of a computer in a large computer lab. All students in the same session were simultaneously in the same computer lab. The decisions in the games took place in real time.

5. Results of the Experiments

In this section, we describe the results for each of the four games from the lab experimental sessions. We examine the behavior overall for all sessions, by round, by session, and breakdowns by gender.

The Prisoner's Dilemma

The experimental results for the prisoner's dilemma are given in Table 1. The mean cooperation in the first round was 35 percent. Women were found to be somewhat more cooperative than men when looking at all results across rounds (33 and 25 percent, respectively). There were also substantial differences across sessions, with mean cooperation ranging from 19 to 34 percent. There is also a clear pattern of learning across the rounds. Over one third cooperate in the first two rounds of play, with cooperation quickly dropping to around one quarter in rounds three through five.

Some results for the prisoner's dilemma games played with students across countries are provided in Table A1 in the annexure. Our results for Pakistan, focusing on the first round of results, which demonstrate the natural inclinations of the participants rather than learning or "gaming," indicate greater levels of cooperation at 35 percent than the US but lower levels than China and South Africa. While these results are limited, when combined with the results of other types of cooperation games, there is roughly an inverse relationship between cooperative behavior and economic development. This implies that cooperation can help to substitute for formal institutions.

Table 1: Results of the Prisoner's Dilemma

Subsample	Mean Cooperation	No. of Observations
All	0.28	700
Women, men	0.33, 0.25	318, 382
Round 1	0.35	132
Round 2	0.39	132
Round 3	0.22	132
Round 4	0.23	132
Round 5	0.27	132
Section 1	0.19	200
Section 2	0.36	240
Section 3	0.24	120
Section 4	0.34	140

Source: Authors' calculations.

The Trust Game

The results from the experimental sessions for the trust game are presented in Tables 2a and 2b. Combining the results of all sessions, in the first round, trustors (player 1) sent 35 percent of their endowment, and trustees sent back just under a quarter of the tripled amount passed to them. On average, trustors lost money in all rounds, with a return ratio (amount received/sent) significantly less than 1. Over all rounds, women trustors sent less than men (23 and 33 percent of endowment, respectively) and also sent back less as second movers (21 versus 26 percent), displaying less trust and trustworthiness. Over the five rounds of play, the amount sent by the first player fell to 25 percent of the endowment. However, one might have expected it to fall more precipitously, given the consistently negative returns on the trustors' investments (Table 2a).

Table 2a: Results of the Trust Game

Subsample	Fraction Sent	Fraction Returned (if Received +)	Return Ratio	No. of Observations
All	0.28	0.24	0.71	366
Women, men	0.23, 0.33	0.21, 0.26	0.64, 0.78	180, 186
Round 1	0.35	0.24	0.73	63
Round 2	0.33	0.22	0.66	61
Round 3	0.27	0.23	0.70	61
Round 4	0.22	0.26	0.79	61
Round 5	0.25	0.24	0.71	61
Section 1	0.21	0.20	0.59	96
Section 2	0.25	0.24	0.73	133
Section 3	0.29	0.21	0.64	78
Section 4	0.48	0.29	0.88	59

Source: Authors' calculations.

In Table 2b, we can see that, in the first round, more than 90 percent of first-movers sent something to the second mover. Even though three quarters of second movers returned money in the first round, the return ratio (return on the investment) was low and the share of first movers that sent nothing jumped up in the second round.

There was a significant amount of variation across sessions. Section 1 was low-trust, with low amounts sent and low amounts returned. Section 4, on the other hand, was relatively high-trust. In section 4, first movers sent 48 percent of endowments and returned 29 percent of the (tripled) amount they received. It was a smaller session and characterized by majorities of first movers sending money and second movers returning positive amounts (Table 2b). Nonetheless, the return ratio was less than 1 (signifying negative returns on the trust investment) even in this session.

Table 2b: Results of the Trust Game (cont'd)

Subsample	Share Send Nothing	Share Return Nothing (if Received +)	No. Of Observations
All	0.29	0.28	366
Women, men	0.33, 0.26	0.29, 0.27	166, 203
Round 1	0.08	0.26	63
Round 2	0.23	0.34	61
Round 3	0.39	0.22	61
Round 4	0.38	0.18	61
Round 5	0.31	0.31	61
Section 1	0.40	0.41	96
Section 2	0.35	0.26	133
Section 3	0.19	0.22	78
Section 4	0.10	0.24	59

Source: Authors' calculations.

When comparing the results we obtained with those from other countries (Tables A2a and A2b in the annexure), our results demonstrate lower levels of trust and trustworthiness than most previous studies. The results from our first round (which represents the participants' natural inclinations rather than learning) indicated that 35 percent of the endowment was sent by first movers (trustors) and 24 percent of the money received was returned by second movers (trustees) with a return ratio of 0.73. These results are very similar to Burns' (2004) results in South Africa. Over all rounds, first movers sent money nearly 70 percent of the time, which is similar to the results obtained by Delavande and Zafar (2011) where 75 percent of first movers passed money.

The Dictator Game

The results of the dictator game experiment are presented in Tables 3a and 3b. In the first round, participants contributed nearly one third of their endowments. Over all rounds, the average contribution was 20 percent of endowments, with men and women contributing nearly equally (Table 3a). There was some variation across sessions, with section 1 contributing a low of 16 percent and section 4 with a high of 24 percent of their endowment.

Table 3a: Results of the Dictator Game

Subsample	Mean Allocation (Share of Endowment)	No. of observations
All	0.20	238
Women, men	0.21, 0.19	134, 104
Round 1	0.32	54
Round 2	0.18	54
Round 3	0.12	54
Round 4	0.17	54
Section 1	0.16	75
Section 2	0.21	76
Section 3	0.21	52
Section 4	0.24	35

Source: Authors' calculations.

Over all rounds and across all sessions, in 47 percent of the interactions, the proposer gave nothing to the recipient (Table 3b). This figure rose over the rounds, since only 29 percent gave nothing in the first round. The share of men who gave nothing was somewhat higher than women (54 percent compared to 42 percent). There was also some clustering around an allocation of half the endowment (15 percent of observations overall, 20 percent in the first round of the game). Overall, less than 10 percent of observations represented a donation of more than half the endowment, down from 16 percent of participants in the first round of play.

Table 3b: Results of the Dictator Game (cont'd)

Allocation (Share of Endowment)	All	Women	Men
0.0	47.06%	42%	54%
0.1	10.92	9.7	12.5
0.2	8.82	13.4	2.9
0.3	5.04	4.5	5.8
0.4	5.88	8.2	2.9
0.5	15.13	15.7	14.4
0.6	2.10	1.5	2.9
0.7	0.84	0.8	1.0
0.8	0.84	0.8	1.0
0.9	1.26	2.2	0.0
1.0	2.10	1.5	2.9
Observations	238	134	104

Source: Authors' calculations.

Looking at previous studies' results for the dictator game (Tables A3a and A3b in the annexure), we can see how the results differ significantly between students and nonstudents, with students offering significantly lower amounts to recipients. Across countries, the mean allocations for student subjects were clustered between 24 and 28 percent of the endowment. In that respect, the allocation of 35 percent obtained in our study was higher than what the average student gave, but lower than the average nonstudent allocation. One should recall, however, that actual money was not transacted in our game, which would likely bias the allocations in our study upward. In comparison, in Delavande and Zafar's (2011) study, students sent 43 percent of their endowment.

The Ultimatum Game

The results of the ultimatum game experiment can be found in Tables 4a and 4b. When the second mover has the option of rejecting the offer made by the first mover (compared to the dictator game where the second mover is silent), the mean offer rises to over 40 percent of the endowment (Table 4a). These results are consistent across rounds and across sessions. In most instances, between one quarter and one third of offers were rejected.

Table 4a: Results of the Ultimatum Game

Subsample	Mean Allocation (Share)	Rejection Rate	No. of observations
All	0.41	0.31	245
Women, men	0.43, 0.38	0.29, 0.33	136, 109
Round 1	0.41	0.26	54
Round 2	0.42	0.33	53
Round 3	0.43	0.33	51
Round 4	0.35	0.37	51
Section 1	0.38	0.28	69
Section 2	0.40	0.28	89
Section 3	0.44	0.42	52
Section 4	0.45	0.26	35

Source: Authors' calculations.

Over all observations, only one quarter of offers was less than 0.4 of the endowment. Two thirds of offers were 0.4 or half of the proposer's endowment. Fewer than 10 percent of proposers offered more than half their endowment (Table 4b).

Table 4b: Results of the Ultimatum Game (cont'd)

Allocation	All	Women	Men
0.0	9%	4.4%	14.5%
0.1	2.5	1.5	3.7
0.2	4.5	3.7	5.5
0.3	9.0	7.4	11.0
0.4	21.2	27.9	12.8
0.5	46.5	48.5	44.0
0.6	3.3	3.7	2.8
0.7	1.2	1.5	0.9
0.8	0.8	0.0	1.8
0.9	0.0	0.0	0.0
1.0	2.0	1.5	2.8
Observations	245	132	107

Source: Authors' calculations.

Fewer than 10 percent of offers of half or more the endowment were rejected, whereas nearly 60 percent of offers of less than half the endowment were turned down (Table 4c). The propensity to reject a proposal by the first mover rose fairly smoothly as the offers fell, demonstrating strong norms of fairness. Even offers of 0.4 of the endowment were rejected in almost half of the interactions. Nearly all offers of 0.0 or 0.1 were rejected. Surprisingly, a non-negligible share of offers of 0.5 and 0.6 were rejected; these may have been strategic moves since the game was repeated (with the same pairings of proposers and responders) over the multiple rounds.

Table 4c: Results of the Ultimatum Game (cont'd)

Mean Allocation	Share of Proposals	Rejection (All)	Rejection (Men)	Rejection (Women)
0.0	9%	85.7%	81.2%	100%
0.1	2.5	83.3	75.0	100.0
0.2	4.5	40.0	50.0	25.0
0.3	9.0	59.0	58.3	60.0
0.4	21.2	43.1	46.2	42.1
0.5	46.5	8.9	4.2	12.5
0.6	3.3	25.0	33.3	20.0
0.7	1.2	0.0	0.0	0.0
0.8	0.8	0.0	0.0	-
0.9	0.0	-	-	-
1.0	2.0	0.0	0.0	0.0

Source: Authors' calculations.

Comparing the results derived from our experimental sessions with previous studies, the mean offer we calculated was nearly identical to other studies with student subjects, and lies within the ranges of nonstudent subjects as well (Tables A4a and A4b in the annexure). The rejection rates in our study were somewhat higher than in other studies, but that may have been due in part to the lack of real money being exchanged in our experiments.

6. Conclusions

This paper has offered some preliminary evidence about pro-social behavior among a sample of students based in Lahore, Pakistan. The results indicate similar behaviors to other student subjects, particularly in the dictator and ultimatum games. Our student sample exhibited lower levels of trust and reciprocity compared to both other student and non-student populations. There were fewer cross-country observations on prisoner's dilemma games; however, the results obtained in the current study appeared comparable.

In our results, we observed the highest levels of pro-social behavior in the initial rounds with deterioration in subsequent rounds. We also observed variation across the sections in which the games were played. One group of students (out of four sections) was an outlier and demonstrated higher levels of pro-social behavior across the board. Women behaved similarly to men in the dictator and ultimatum games, but exhibited greater tendencies toward cooperation in the prisoner's dilemma game, but lower trust and trustworthiness in the trust game. As the games presented here were part of a classroom assignment, real money was not exchanged, which is an important caveat in the interpretation of our results.

References

Acemoglu, D., Johnson, S., & Robinson, (2001). Colonial origins of comparative development: An empirical study. *American Economic Review*, 91(5): 1369-1401.

Andreoni, J., & Miller, J. H. (1993). Rational cooperation in the finitely repeated prisoner s dilemma: Experimental evidence. *The Economic Journal,* 103(418), 570-585.

Ashraf, N., Bohnet, I., & Piankov, N. (2006). Decomposing trust and trustworthiness. *Experimental Economics*, 9(3), 193-208

Berg, J., Dickhaut, J., & McCabe, K. (1995). Trust, reciprocity, and social history. *Games and Economic Behavior,* 10(1), 122-142.

Bohnet, I., & Frey, B. S. (1999). The sound of silence in prisoner's dilemma and dictator games. *Journal of Economic Behavior & Organization,* 38(1), 43-57.

Buchan, N., Croson, R., Solnick, S.S.(2003). Trust and gender: an examination of behavior, biases, and beliefs in the Investment game. Working paper, University of Pennsylvania.

Buchan, N. R., Johnson, E. J., & Croson, R. T. A. (2006). Let's get personal: An international examination of the influence of communication, culture and social distance on other regarding preferences. *Journal of Economic Behavior & Organization,* 60(3), 373-398

Burks, S., Carpenter, J. P., & Verhoogen, E. (2003). Playing both roles in the trust game. *Journal of Economic Behavior & Organization,* 51(2), 195-216.

Cameron, L. A. (1999). Raising the stakes in the ultimatum game: Experimental evidence from Indonesia. *Economic Inquiry,* 37(1), 47-59.

Cardenas, J., & Carpenter, J. (2008). Behavioral development economics: Lessons from field labs in the developing world. *Journal of Development Studies, 44*(3), 337–364.

Carpenter, J., Burks, S., & Verhoogen, E. (2004). Comparing students to workers: The effects of social framing on behavior in distribution games. *Field Experiments in Economics Research in Experimental Economics,* 10(1341), 1-17

Carter, M. R., & Castillo, M. (2002). The Economic Impacts of Altruism, Trust and Reciprocity: An Experimental Approach to Social Capital. mimeo.

Cameror, C. (2003). Behavioral Game Theory. Princeton: Princeton University Press

Carter, J. R., & Irons, M. D. (1991). Are Economists Different, and If So, Why? *The Journal of Economic Perspectives,* 5(2), 171-177

Cooper, R., DeJong, D. V., Forsythe, R., & Ross, T. W. (1996). Cooperation without reputation: Experimental evidence from prisoner s dilemma games. *Games and Economic Behavior,* 12(2), 187-218

Cox, J., Friedman, D., & Gjerstad, S. (2002). A tractable model of reciprocity and fairness. Working Paper, University of Arizona

Cox, J. (2004). How to identify trust and reciprocity. *Games and Economic Behavior,* 46(2), 260-281.

Delavande, A., & Zafar, B. (2011). *Stereotypes and madrassas: Experimental evidence from Pakistan* (Staff Report No. 501). New York, NY: Federal Reserve Bank of New York.

Dufwenberg, M., & Gneezy, U. (2000). Measuring Beliefs in an Experimental Lost Wallet Game. *Games and Economic Behavior,* 30(2), 163-182.

Eckel, R, C. C., & Grossman, P. J. (1996). Altruism in Anonymous Dictator Games. *Games and Economic Behavior,* 16(2), 181-191.

Fehr, E., & List, J. A. (2004). The Hidden Costs and Returns of Incentives-Trust and Trustworthiness Among CEOs. *Journal of the European Economic Association,* 2(5), 743-771.

Frank, R. H., & Regan, D. T. (1993). Does Studying Economics Inhibit Cooperation. *Journal of Economic Perspectives,* 7(2), 159–171.

Forsythe, R., Horowitz, J. L., Savin, N. E., & Sefton, M. (1994). Fairness in Simple Bargaining Games. *Games and Economic Behavior,* 6(3), 347-369

Glaeser, E. L., Laibson, D. I., Scheinkman, J. A., & Soutter, C. L. (2000). Measuring Trust. *Quarterly Journal of Economics,* 115(3), 811-846.

Gowdy, J., Iorgulescu, R., & Onyeiwu, S. (2003). Fairness and retaliation in a rural Nigerian village. *Journal of Economic Behavior and Organization,* 52(4), 469–479.

Harbaugh, W., Krause, K., & Vesterlund, L. (2001). Are adults better behaved than children? Age, experience, and the endowment effect. *Economic Letters,* 70(2), 175-181.

Harbaugh, W. T., Krause, K., Liday, S. G., & Vesterlund, L. (2003). Trust in Children. Trust Reciprocity and Gains from Association Interdisciplinary Lessons from Experimental Research. 303-22. Russell Sage Foundation.

Hemesath, M., & Pomponio, X. (1998). Cooperation and Culture: Students from China and the United States in a Prisoner s Dilemma. *Cross Cultural Research,* 32(2), 171-184.

Henrich, J., Boyd, R., Bowles, S., Camerer, C., Fehr, E., Gintis, H. and McElreath, R. (2001) In search of homo economics: Behavioral experiments in 15 small-scale societies. *American Economic Review,* 91(2), 73-78.

Henrich, J., McElreath, R., Barr, A., Ensminger, J., Barrett, C., Bolyanatz, A., Cardenas, J.C., Gurven, M., Gwako, E., Henrich, N., Lesorogol, C., Marlowe, F., Tracer, D. and Ziker, J. (2006) Costly punishment across human societies. *Science,* 312(23 June 2006), 1767-1770.

Hoffman, E., McCabe, K., Shachat, K., & Smith, V. (1994). Preferences, property rights, and anonymity in bargaining games. *Games and Economic Behavior,* 7(3), 346-380.

Holm, H. and Danielson, A. (2005) Trust in the tropics? Experimental evidence from Tanzania. *The Economic Journal,* 115(503), 505-532.

Kahneman, D., Knetsch, J., & Thaler, R. (1986). Fairness as a constraint on profit seeking: Entitlements in the market." *American Economic Review,* 76(4): 728–41.

Knack, S., & Keefer, P. (1997). Does Social Capital Have An Economic Payoff? A Cross-Country Investigation. *Quarterly Journal of Economics,* 112(4), 1251-1288.

Kreps, D. M., Milgrom, P., Roberts, J., & Wilson, R. (1982). Rational Cooperation in the Finitely Dilemma Repeated Prisoners. *Journal of Economic Theory*, 27(2), 245-252.

Lazzarini, S., Madalozzo, R., Artes, R. and de Oliveira Siqueira, J. (2004) Measuring trust: An experiment in Brazil. Ibmec Working Paper - WPE -2004 - 1.

Levitt, S., & List, J. A. (2006). What do Laboratory Experiments Measuring Social Preferences tell us about the Real World. *Journal of Economic Perspectives*, 21(2), 153-174.

Murnighan, J. K., & Saxon, M. S. (1998). Ultimatum bargaining by children and adults. *Journal of Economic Psychology*, 19(4), 415-445.

Rabin, M. (1993). Incorporating Fairness into Game Theory and Economics. *American Economic Review*, 83(5), 1281-1302.

Razzaque, S. (2009). The ultimatum game and gender effect: Experimental evidence from Pakistan. *Pakistan Development Review*, *48*(1), 23–46.

Annexure

Table A1: Prisoner's Dilemma Results from Other Countries (Student Subjects)

Study	Location	Mean Cooperation
Hemesath and Pomponio (1998)	China	54% cooperate
Tyson et al. (1988)	South Africa	45% cooperate w/black other
Tyson et al. (1988)	South Africa	37% cooperate w/white other
Hemesath and Pomponio (1998)	United States	25% cooperate
Cooper et al. (1996)	United States	22% cooperate

Source: Cardenas and Carpenter (2008).

Table A2a: Trust Game Results from Other Countries (Student Subjects)

Study	Location	Fraction Sent	Fraction Returned	Return Ratio
Buchan et al. (2003)	China	0.73	0.50a	1.51
Buchan et al. (2003)	Japan	0.68	0.50a	1.51
Burks et al. (2003)	United States	0.65	0.40	1.31
Buchan et al. (2003)	United States	0.65	0.45a	1.35
Buchan et al. (2003)	South Korea	0.64	0.49a	1.47
Koford (2001)	Bulgaria	0.63	0.46	1.34
Lazzarini et al. (2004)	Brazil	0.56	0.34	0.80
Holm and Danielson (2005)	Tanzania	0.53	0.37	1.17
Berg et al. (1995)	United States	0.52	0.30	0.90
Holm and Danielson (2005)	Sweden	0.51	0.35	1.05
Cardenas (2003b)	Colombia	0.50	0.41	1.22
Ashraf et al. (2005a)	Russia	0.49	0.29	0.80
Ashraf et al. (2005a)	South Africa	0.43	0.27	0.73
Ashraf et al. (2005a)	United States	0.41	0.23	0.58
Fehr and List (2004)	Costa Rica	0.40	0.32	0.96
Burns (2004b)	South Africa	0.33	0.23	0.70

Source: Cardenas and Carpenter (2008).

Table A2b: Trust Game Results from Other Countries (Nonstudent Subjects)

Study	Location	Fraction Sent	Fraction Returned	Return Ratio
Fehr and List (2004)	Costa Rica	0.59	0.44	1.32
Danielson and Holm (2003)	Tanzania	0.56	0.46	1.40
Carter and Castillo (2002)	South Africa	0.53	0.38	1.14
Wilson and Bahry (2002)	Russia	0.51	0.38	1.15
Castillo and Carter (2003)	Honduras	0.49	0.42	1.26
Mosley and Verschoor (2003)	Uganda	0.49	0.33	0.99
Schechter (2004)	Paraguay	0.47	0.44	1.31
Johansson-Stenman et al. (2004)	Bangladesh	0.46	0.46	1.38
Karlan (2005)	Peru	0.46	0.43	1.12
Ensminger (2000)	Kenya	0.44	0.18	0.54
Barr (2003a)	Zimbabwe	0.43	0.43	1.28
Greig and Bohnet (2005)	Kenya	0.30	0.41	0.82

Source: Cardenas and Carpenter (2008).

Table A3a: Dictator Game Results from Other Countries (Student Subjects)

Study	Location	Mean Allocation
Henrich et al. (2006)	United States	0.32
Holm and Danielson (2005)	Sweden	0.28
Cardenas and Carpenter (2004)	United States	0.27
Ashraf et al. (2005)	Russia	0.26
Burns (2004)	South Africa	0.26
Carpenter et al. (2005)	United States	0.25
Ashraf et al. (2005)	South Africa	0.25
Ashraf et al. (2005)	United States	0.24
Holm and Danielson (2005)	Tanzania	0.24
Cardenas and Carpenter (2004)	Colombia	0.19

Source: Cardenas and Carpenter (2008).

Table A3b: Dictator Game Results from Other Countries (Nonstudent Subjects)

Study	Location	Mean Allocation
Henrich et al. (2006)	United States	0.47
Carpenter et al. (2005a)	United States	0.45
Henrich et al. (2006)	Colombia (Sanquianga)	0.44
Henrich et al. (2006)	Ghana (Accra City)	0.42
Carter and Castillo (2002)	South Africa	0.42
Castillo and Carter (2003)	Honduras	0.42
Gowdy et al. (2003)	Nigeria	0.42
Henrich et al. (2006)	Papua New Guinea (Au, Sursurunga)	0.41
Henrich et al. (2006)	Kenya (Samburu)	0.40
Henrich et al. (2006)	Siberia (Dolgan)	0.37
Henrich et al. (2006)	Tanzania (Isanga)	0.36
Henrich et al. (2006)	Kenya (Maragoli)	0.35
Henrich et al. (2006)	Fiji (Yasawa)	0.35
Henrich et al. (2006)	Ecuador (Shuar)	0.35
Henrich et al. (2006)	Kenya (Gusii)	0.33
Ensminger (2000)	Kenya	0.31
Henrich et al. (2006)	Tanzania (Hadza)	0.26
Henrich et al. (2006)	Bolivia (Tsimane)	0.26

Source: Cardenas and Carpenter (2008).

Table A4a: Ultimatum Game Results from Other Countries – Student Subjects

Study	Location	Mean Proposal	Rejection Rate
Carpenter et al. (2005a)	United States	0.41	0.05
Cameron (1999)	Indonesia	0.42	0.10
Henrich et al. (2006)	United States	0.41	0.42b

Source: Cardenas and Carpenter (2008).
b Strategy method used so we report the probability that the lowest positive offer (10 percent) would be rejected.

Table A4b: Ultimatum Game Results from Other Countries
(Nonstudent Subjects)

Study	Location	Mean Proposal	Rejection Rate
Henrich et al. (2001)	Indonesia (Lamelara)	0.58	0.00
Henrich et al. (2001)	Paraguay (Ache)	0.51	0.00
Henrich et al. (2006)	Papua New Guinea (Sursurunga)	0.51	0.69b
Henrich et al. (2006)	United States	0.48	0.71b
Henrich et al. (2006)	Colombia (Sanquianga)	0.48	0.30b
Carpenter et al. (2005a)	United States	0.45	0.07
Henrich et al. (2001)	Kenya (Orma)	0.44	0.04
Henrich et al. (2006)	Ghana (Accra City)	0.44	0.33b
Henrich et al. (2006)	Papua New Guinea (Au)	0.44	0.43b
Gowdy et al. (2003)	Nigeria	0.43	0.01
Henrich et al. (2006)	Siberia (Dolgan)	0.43	0.35b
Henrich et al. (2001)	Ecuador (Achuar)	0.42	0.00
Henrich et al. (2001)	Zimbabwe	0.41, 0.45	0.10, 0.07
Henrich et al. (2001)	Tanzania (Sangu)	0.41, 0.42	0.25, 0.05
Henrich et al. (2006)	Kenya (Gusii)	0.4	NA
Henrich et al. (2006)	Fiji (Yasawa)	0.4	0.15b
Henrich et al. (2001)	Papua New Guinea (Au)	0.43, 0.38	0.27, 0.40
Henrich et al. (2006)	Tanzania (Isanga)	0.38	0.10b
Henrich et al. (2001)	Bolivia (Tsimane)	0.37	0.00
Henrich et al. (2006)	Ecuador (Shuar)	0.37	0.10b
Henrich et al. (2001)	Mongolia (Torguud)	0.35, 0.36	0.05, a
Henrich et al. (2006)	Kenya (Samburu)	0.35	0.10b
Henrich et al. (2001)	Chile (Mapuche)	0.34	0.07
Henrich et al. (2001)	Tanzania (Hadza)	0.40, 0.27	0.19, 0.28
Henrich et al. (2001)	Ecuador (Quichua)	0.27	0.15
Henrich et al. (2006)	Bolivia (Tsimane)	0.27	0.03b
Henrich et al. (2001)	Peru (Machiguenga)	0.26	0.05
Henrich et al. (2006)	Tanzania (Hadza)	0.26	0.42b
Henrich et al. (2006)	Kenya (Maragoli)	0.25	0.96b

Source: Cardenas and Carpenter (2008).
b Strategy method used so we report the probability that the lowest positive offer (10 percent) would be rejected.

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