

WHY PRIVATE INVESTMENT IN PAKISTAN HAS COLLAPSED AND HOW CAN IT BE RESTORED

Kalim Hyder
and
*Qazi Masood Ahmed**

ABSTRACT:

The purpose of this paper is to analyze the decline in private investment and sort out a comprehensive strategy to overcome this problem, which is the main cause of deceleration in the growth momentum of Pakistan's economy. Due to lack of investor confidence, private investment has reached its lowest point in recent economic history of the private sector led growth phase (1978 to 2002) in Pakistan. This paper argues that economic as well as non-economic factors are responsible for this declining investment. Economic policies are formulated in such a manner that the short-term objectives of lowering the fiscal and trade deficits were to some extent achieved but overall economic performance and investment were ignored. In order to control external trade deficits, a policy of devaluation increased the cost of production through an increase in prices of imported raw material especially of plant and machinery. Higher real interest rates due to excessive public borrowing that were due to the failure in reducing fiscal deficits has resulted in financial crowding out and has eaten up the savings that might be used to finance private investment. The unexplained part of the private investment that is not determined by economic factors can be attributed to the non-economic factors, which include internal and external shocks. These shocks start from the sanctions, which were imposed after the nuclear blast. Events following that initial shock like the freezing of foreign currency accounts, the military coup, the harassment of the partially successful accountability drive of the military government, the 9-11 incident, the Afghan war and tensions on the Pak-India border have complemented the shock. A comprehensive program is required to boost private investment and for the restoration of investor confidence. Therefore an economic package is recommended in this paper that consists of incentives that relax the supply side constraints by reducing cost of production as well as demand-enhancing efforts. It is the best time to introduce a strategy to increase investment activities in the economy because of the high level of foreign exchange reserves, the rescheduling of foreign debt and the drastic

* Kalim Hyder is currently completing his M.A. degree in Economics from the University of Calgary. He is also an Economist at the Social Policy and Development Centre, Karachi, Pakistan. Qazi Masood Ahmed is an Associate Professor at the Institute of Business Administration (IBA), Karachi, Pakistan and is a Member of the Advisory Board at the Social Policy and Development Centre, Karachi, Pakistan.

reduction in interest rates which have reduced the debt servicing cost. Investor confidence can be restored by accelerating economic activities through following policies that can reduce the cost of imported raw material, bring down the real interest rates in the economy, increase expenditures on infrastructural development activities and that can also increase the availability of conditional subsidized credit for the export oriented small scale industries so that there is an improvement in the quality of the final product which would make it more competitive in foreign markets.

I INTRODUCTION

The objective of this paper is to analyze the slowdown in private investment that has resulted in a reduction of the growth momentum of the economy from the early 1990's till today. Overall economic growth was above 6% during the decade of 1980s, fell to a mere 4% in the 1990s and further decelerated to 3.8% in the last three fiscal years (1999-00 to 2001-02). This secular decline in the rate of economic activity can be attributed to the fall in total investment to a level much below the requirements of the economy. Total investment was 17.7 % of GDP in 1980s, 17.1% in the first half of the 1990s and further declined to 14.9% in the second half. The decline in total investment is due to a fall in private as well as public investment. Private investment that grew at an average rate of 6.8% in the 1980s declined to 3.8% in the 1990s and grew at only 2.1% in the 2000-02. The average growth of public investment was 4.6% in the 1980s, 0.5% in the 1990s and -0.5% in 2000-02. The investment-GDP ratio in Pakistan compare to the neighboring countries is also very low. For example, gross domestic investment to GDP ratio of India was 9 % higher than in Pakistan and in Bangladesh it was 7.5% higher during 1999-02.

	Decade of 80's	First Half of 90's	Second Half of 90's	2000-01	2001-02
Total Investment	17.7 [5.6]	17.1 [4.3]	14.9 [-1.1]	13.5 [2.9]	12.7 [-1.6]
Private Investment	8.0 [6.8]	8.3 [4.7]	8.6 [2.6]	7.5 [-1.7]	7.4 [3.8]
• Agriculture	1.7 [5.8]	1.3 [-1.2]	0.9 [0.5]	0.9 [-6.4]	0.8 [-15.2]
• Industry	2.1 [11.3]	2.8 [3.7]	1.9 [0.5]	1.7 [2.1]	1.6 [-2.8]
• Services	4.2 [5.5]	4.3 [8.9]	5.7 [4.2]	4.9 [1.7]	5.1 [7.6]
Public Investment	9.7 [4.6]	8.7 [4.0]	6.6 [-2.9]	6.1 [3.1]	5.3 [-9.3]
Source: Pakistan Economic Survey (various issues) <i>Figures in parenthesis are growth rates.</i>					

Few studies have concentrated on the Pakistani economy in analyzing the determinants of private investment. Ahmed (2001) has shown that output, cost of capital and the Public Sector Development Plan (PSDP) determine net investment. He concluded that cost of capital and PSDP are the most significant determinants of private investment in Pakistan. Sakr (1993) has explored the determinants of private investment in Pakistan and concluded that GDP growth,

growth in credit extended to the private sector and government investment are important variables. Further he disaggregated the government investment in two categories: investment in infrastructure and in non-infrastructure projects. The latter has a negative impact while the former has a positive one on private investment. These studies however examined the aggregate private investment and did not explore the determinants of private investment in each sector of the economy. In this study, as an initial attempt, we take private investment in each sector – agriculture, manufacturing and services, to find the determinants of private investment.

This paper is organized in the following way. Section II discusses the determinants of private investment in agriculture, manufacturing and services sectors, and the effect it has in bringing down the growth rate. In section III an economic package for the revival of the growth rate of the Pakistani economy is presented. Section IV brings together all the conclusions emerging from the analysis.

II DETERMINANTS OF PRIVATE INVESTMENT

In Pakistan, GDP growth has decreased and at the same time gross investment in each sector has fallen. Thus an examination of the role of different factors in influencing the level of private investment is necessary. Firstly, we specify a number of factors, which influence private investment in the agriculture, manufacturing and services sectors. Interest rates, relative prices of imported machinery and the stock of infrastructure are hypothesized as the main determinants of private investment. However, sector specific determinants are also incorporated to have a closer examination of investment in each sector¹.

Theoretically, interest rates are the main determinants of investment and have an inverse relationship with the investment. Provision of better infrastructure improves the productivity of capital and hence increases the return on private investment. Increased output is also positively related with investment.

However, in small open economies, external factors also play an important role in determining investment. Prices of imported plant and machinery relative to the prevailing general price level can be hypothesized as a major determinant of private investment. In a similar manner, increased external demand reflected by exports may increase the investment activities.

A) Agriculture

The share of agriculture sector in total private investment declined from 21.4 percent in the decade of 80's, to 14 percent in the first half of 90's and further to 11.2 percent in the second half of 90's. Despite this the agriculture sector consisted of a fourth of GDP value. However its share in total private investment has declined massively. Private investment in the agriculture sector was 1.7 per cent of GDP in the decade of 80's, which declined to 1.0 percent of GDP in the previous decade. The performance for the last three years is also discouraging due to the prevailing drought conditions², as private investment has a negative growth of 10% for this period.

The sample period for this analysis is from 1974 to 1999. The post-1999 data was not taken into consideration since due to the drought the investment series differs widely between the estimated and revised estimates in the economic surveys and therefore to avoid computational errors we avoid using these observations.

We specify a behavioral function for real private investment in the agriculture sector (IPA_t^R) that depend on real remittances (RM_t^R), index of provincial infrastructure (SPI_t^I), nominal interest rate (R_t), and a lagged dependent variable ($IPA_{(t-1)}^R$).

$$IPA_t^R = \beta_0 + \beta_1 RM_t^R + \beta_2 SPI_t^I + \beta_3 R_t + \beta_4 IPA_{(t-1)}^R + \varepsilon_t \quad (1)$$

The results³ also show that in the agriculture sector, productivity depends heavily on the climatic conditions and so the unobserved changes also matters along with the economic determinants. The coefficients and elasticities of real private investment with respect to remittances, economic infrastructure, interest rate and private investment (lagged) are presented in Table 2. Magnitudes of elasticities computed at mean of data demonstrate that a 10 % increase in remittances causes a 1.4 % increase in real private investment and a 10 % improvement in economic infrastructure results in a 5.1 % increase in real private investment. Similarly, a 10 % increase in nominal interest rate will decrease the investment by 9%.

¹ Details about the data sources and variable construction are given in the Appendix

² For details see Stabilization Versus Growth 2001

³ Stationarity tests of the variables and residual are reported in the Appendix

TABLE 2			
PRIVATE INVESTMENT IN THE AGRICULTURE SECTOR			
Dependent Variable: IPA_t^R			
Variables	Coefficients	t-statistics	Elasticities
Constant	4639.78	2.301**	
RM_t^R	0.0405	2.068**	0.14
SPI_t^I	13.101	2.513**	0.51
R_t	-415.847	-2.072**	-0.89
$IPA_{(t-1)}^R$	0.424	2.684**	0.42
R-squared	0.887	Durbin-Watson	1.707
Breusch-Godfrey Serial Correlation LM Test reject serial correlation as F-stat =0.487			
**Shows significant at 5 % level.			

Absolute contribution of the determinants of private investment in the agriculture sector is computed from the estimated coefficients and presented in Table 3. The changes in magnitudes of economic determinants will provide information in understanding the changes over time in private investment in the agriculture sector. The total increase in private investment in the 1980s, 3257 million rupees⁴, was due to the better provision of economic infrastructure that contributed to 1102 million rupees, increasing remittances contributed 62 million rupees, and relative lower interest rate contributed 54 million rupees and a higher level of investment in the previous year contributed to 993 million rupees. An unexplained increase in private investment of 1046 million rupees was also higher, which might be due to the favorable climatic conditions. Private investment in the agriculture sector has declined by only 3 million rupees during the first half of the last decade because the major decline in investment due to increasing nominal interest rates was partly offset by better provision of infrastructure. In the second half of the 90s, all the determinants contributed negatively except infrastructure but non-economic factors pulled investment and resulted in a net increase in of 754 million rupees in investment. A simulation shows the reversal of this situation which is observed during the last three years of 2000-02, as economic factors contributed positively while non-economic factors have caused a massive reduction in investment that dominated the contribution of economic factors.

⁴ The Rupee is the currency of Pakistan. \$1 US is approximately equal to 60 rupees (in 2001).

TABLE 3				
CONTRIBUTION OF DETERMINANTS OF REAL PRIVATE INVESTMENT				
(AGRICULTURE)				
<i>(Million Rupees)</i>				
	1981-90	1991-95	1996-00	2000-02
$\Delta (IPA_t^R)$	3257	-3	746	-1479
Determined by				
RM_t^R	62	24	-190	624
SPI_t^I	1102	847	195	203
R_t	54	-1015	-142	607
$IPA^R_{(t-1)}$	993	-563	-360	565
ε_t	1046	704	1243	-3478

The agriculture sector is characterized with randomness so we have more unexplained variation here⁵. Increasing nominal interest rates and declining remittances have resulted in lower investment during the 1990s, but a major part of investment remained unexplained. However drought conditions caused a severe loss and reduced the investment during the last three years.

B) Manufacturing

Private investment in the manufacturing sector grew at an average rate of 11.3 % in the 80's, but then decreased to 3.7 % in the first half of the 90's and to 0.5 % in the second half. As a percent of GDP, private investment in this sector increased in the first half of the 90's to a peak of 2.8 percent. Policy makers attribute this increase in private investment to the policy of deregulation and the liberalization regime adopted in that era. But this level of private investment was not sustained and declined to 1.9 % in the second half of the 90's. This decelerating trend continued and private investment in manufacturing went down to 1.7% and 1.6% in 2000-01 and 2001-02 respectively.

⁵ For detail see Hafiz A. Pasha et al (2002)

We specify a behavioral function for the real private investment in manufacturing sector (IPM_t^R), which depends on the real interest rate (r_t), capacity utilization in manufacturing sector (CU_t^I), the relative prices of imported machinery (RP_t^M) and the exports of goods (XG_t^R).

$$IPM_t^R = \beta_0 + \beta_1 r_{t-1} + \beta_2 CU_t^I + RP_{t-1}^M + \beta_3 XG_t^R + \beta_4 DUM_{1994} + \varepsilon_t$$

TABLE 4			
PRIVATE INVESTMENT IN MANUFACTURING SECTOR			
Dependent Variable: IPM_t^R			
Variable	Coefficient	t-statistics	Elasticities
Constant	-13080.89	-4.759*	
r_{t-1}	-189.39	-2.87*	-0.067
CU_t^I	22296.91	5.816*	1.539
RP_{t-1}^M	-1700.07	-2.40**	-0.327
XG_t^R	0.208	8.841*	1.176
DUM_{1994}	3522.168	3.448*	
R-squared	0.956	Durbin-Watson	1.53
<i>Breusch-Godfrey Serial Correlation LM Test reject serial correlation as F-stat = 1.51</i>			
* and ** show significant at 1% and 5% levels respectively.			

The econometric results⁶ show that the lagged real interest rate (r_{t-1}), capacity utilization in the manufacturing sector (CU_t^I), lagged relative prices of imported machinery (RP_{t-1}^M) and exports of goods (XG_t^R) are significant determinants of investment. The elasticities of explanatory variables demonstrate that a 10% increase in real interest rate reduces next period investment by 0.67% and a 10% increase in relative prices of capital goods cause a reduction of 3.27% in next year private investment. However a 10% increase in capacity utilization increases investment by 15.4% and a 10% increase in exports of goods results in an increase of 11.76% in private investment in the manufacturing sector.

A study of the determinants of investment in this sector shows that an increase in real interest rates and the relative prices of imported capital goods during the 1980s, reduced investment

⁶ Stationarity tests of the variables and residual are reported in the Appendix.

but higher growth in capacity utilization and increasing exports overcame the exacerbating impacts and resulted in positive growth of 6834 million rupees in private investment. But in the first half of the 90s private investment declined by 215 million rupees, which was mainly due to a decline in capacity utilization and unexplained factors. However, declining real interest rates and relative prices of capital goods along with positive growth in exports of goods have enhanced private investment. Afterwards, poor performance of the manufacturing sector was reflected by lower capacity utilization and an increase in real interest rates resulted in a massive decline in real private investment. However, during the last three years (2000-02), higher real interest rates, increasing relative prices of imported capital and declining capacity utilization worsened the negative impact on growth of private investment, which has fallen by 95 million rupees. Higher exports of goods have played an important role in enhancing investment in the manufacturing sector throughout the 80s and 90s. Changes in private investment in the manufacturing sector are explained by the changes in its determinants such as a movement in interest rates, capacity utilization and external factors. But a reduction in interest rate and a better export performance seems insufficient to offset the decline in investment in the last three years (2000-02). The role of non-economic factors is evident in decreasing the private investment in the last three years.

	1981-90	1991-95	1996-00	2000-02
$\Delta(IPM_t^R)$	6834	-215	-1581	-95
Determined by				
r_{t-1}	-145	699	-1743	185
CU_t^I	3155	-2331	-913	-669
RP_{t-1}^M	-3082	706	-744	-1003
XG_t^R	5393	2342	747	4842
ε_t	1513	-1631	1072	-3450

C) Services⁷

Contrary to the trends in the commodity sectors, the services sector performs relatively better. Higher growth in the value added of the services sector attracted more private investment. Private investment in services were 4.2% of total investment that went up to 4.3% in the first half of the 1990s and to 5.7% in the second half of the decade. In 2001-02, this increased to 7.9%. But the increase in private investment in this sector was not sufficient to recover the overall decline.

We specify a behavioral function for the real private investment in the other sectors (IPO_t^R) that depend on the real interest rate (r_t), value added in services sectors (YSO_t^R), relative prices of imported machinery (RP_t^M) and the lag of the dependent variable (IPO_{t-1}^R) along with the dummy for the massive inflow of Independent Power Projects (IPP) investment (DUM_{IPP}).

$$IPO_t^R = \beta_0 + \beta_1 r_{t-1} + \beta_2 RP_{t-1}^M + \beta_3 YSO_{t-1}^R + \beta_4 IPO_{t-2}^R + \beta_5 DUM_{IPP} + \varepsilon_t$$

TABLE 6			
PRIVATE INVESTMENT IN SERVICES SECTOR			
Dependent Variable: (IPO_t^R)			
Variable	Coefficient	t-stat	Elasticities
C	242.89	0.358	
(RP_{t-1}^M)	-1762.78	-2.81*	0.155
(r_{t-1})	-155.70	-1.876***	0.025
(YSO_{t-1}^R)	0.101	9.131*	1.05
(IPO_{t-2}^R)	0.067	0.88	0.0596
(DUM_{IPP})	12031.80	9.83*	
R-squared	0.99	Durbin-Watson	1.78
<i>Breusch-Godfrey Serial Correlation LM Test reject serial correlation as F-stat = 0.143</i>			
* Significant at 1% level, ** significant at 5 % level, *** significant at 10%			

An econometric investigation⁸ of the factors that determine private investment in the services sectors show that lagged value of relative prices of imported machinery and real interest rates

⁷ All other sectors are added in the services sector due to unavailability of disaggregated data for each sector.

are inversely related while lagged value of value added in services is directly related to private investment. The coefficients of the estimated equation along with the elasticities are reported in Table 6. Further, elasticities of the explanatory variables demonstrate that a 10% increase in relative prices of imported capital cause a reduction of 1.55% in the private investment. A 10% increase in real interest rate cause a 0.25% decline in investment. However, the accelerator impact is very strong that is reflected by a 10% increase in real value added in this sector, which results in an increase of 10.5% in private investment.

	1981-90	1991-95	1996-00	2000-02
$\Delta(IPO_t^R)$	7358	9028	1687	3291
Determined by				
(r_{t-1})	-120	574	-1433	152
(YSO_{t-1}^R)	10320	5565	5132	2655
(RP_{t-1}^M)	-3195	732	-771	-1040
(IPO_{t-2}^R)	500	289	1357	-596
ε_t	-147	1868	-2598	2120

Absolute contribution shows that in the services sectors, income effect is quite strong and has maintained private investment in the services sectors. However, the movements in the real interest rates and relative prices of imported capital goods also have a significant impact on the real private investment in the services sector.

IV Economic Package

A detailed analysis of the determinants of private investment in the various sectors leads us to construct an economic package for restoring investor confidence in Pakistan. This is the best time to introduce such a strategy, which would be used to convert the recent external sector development into real sector growth through investment-oriented policies. Foreign exchange

⁸ Stationarity tests of the variables and residual are reported in the Appendix

reserves can be properly utilized in constructing a growth-oriented strategy to increase social and economic welfare. This approach entails the removal of supply side bottlenecks and will enhance demand to boost private investment in the economy. The important features of the economic package are as follows:

- Duty free import of Plant and Machinery
- Reduction in real interest rate
- Public sector investment in infrastructure
- Subsidized credit for Small and Medium Enterprises (SMEs)
- Tax incentives for Term Finance Certificates (TFCs)

In the past, governments have used a policy of devaluation in order to enhance export demand, which has resulted in an increase in the prices of imports especially in those of imported plant and machinery. On the one side, export oriented exchange rate policies have increased industrial investment but on the other side have also discouraged investment through higher cost of imported machinery. Further, an effort to reduce the prices of imported machinery can be made by allowing for duty free imports of the machinery and plants with careful consideration of the domestic capital producing industries. This type of policy will not only restore investor confidence, which would result in new investment but would also reduce the replacement costs of the existing plants (sick industries). Therefore to enhance private investment, an incentive such as duty free imports of machinery would open the avenue for new investment opportunities and would increase the margin of return in the industries that are below break even.

In recent years, the inflation rate in Pakistan has decreased considerably. This has resulted in the lowering of interest rates by the State Bank of Pakistan, which has had a direct effect on the domestic debt servicing in that the cost of debt has been reduced. Lower real interest rates will encourage new investment by reducing the cost of capital.

Private investment in the agriculture sector depends on the provision of infrastructure such as irrigation facilities and communications facilities. But lower growth in the provision of infrastructure has resulted in a declining contribution. Therefore the initiative of the public sector to provide better infrastructure would enhance investment in this subsistent sector.

Export oriented small scale industries are facing the problem of provision of better quality products as compared to the other competitive countries. To improve the quality of the products of these industries there is an acute need of capital in order to make these industries competitive, and to improve the quality of their products to the level of their international competitors. A credit facility should be introduced and subsidized loans for those industries should be provided, which must be conditional on the improvement of the quality of their products.

Since the last two years, a new instrument in the secondary debt market has emerged, called the Term Finance Certificates. The development of such a secondary debt market is encouraging for investment activities in the economy. Thus tax incentives given to these secondary debt markets will ultimately improve investment. Further, instruments will be developed due to such incentives.

V CONCLUSION

A consistently declining investment and economic growth rate is the major problem that the Pakistani economy is facing for the last decade. An in-depth analysis of the determinants of private investment in different sectors of the economy is quite helpful in designing a revival plan for the Pakistani economy. Interest rates emerge as the significant determinants of the investment in all the sectors. Nominal interest rates and infrastructure are important in the case of agriculture only, while relative prices of imported machinery and real interest rates are significant in the manufacturing and services sectors. Unexplained variation in private investment is observed in all the sectors, which might be due to the different external and internal shocks to the economy. The proposed economic package will not only be helpful in increasing private investment but will also play an important role in restoring investor confidence that has eroded due to the shocks.

REFERENCES

- Ahmed, M. (1994) 'The Effects of Government Budget Deficits on the Interest Rates: A Case Study of a Small Open Economy.' *Economia Internazionale*, 1, 1-6.
- Ahmed, Qazi Masood (2001) 'The Influence of Tax Expenditures on Non-residential Investment,' *Journal of development economics* 65, 477-489.
- Ahmed, Qazi Masood (1997) 'The Influence of Tax Expenditures on Non-residential Investment,' *Unpublished Ph.D Dissertation*, University of Bath.
- Clark, Peter, K. (1979). 'Investment in the 1970s: Theory Performance and Prediction,' *Brookings Paper on Economic Activity* 1, 73-113.
- Dickey, D. A. and Fuller, W. A. (1979) 'Distribution of the estimators for autoregressive time series with a unit root,' *Journal of American Statistical Association*, 75, 427-831.
- Dickey, D. A. and Fuller, W. A. (1981) 'Likelihood Ratio Statistics For Autoregressive Time Series With A Unit Root,' *Econometrica*, 49, 1057-72.
- Enders, W. (1995) *Applied Econometric Time Series* [John Wiley & Sons, INC.]
- Engle, R. E and Granger, C. W. J. (1987) 'Cointegration and Error Correction: Representation, Estimation and Testing,' *Econometrica*, 55, 251-76.
- Government of Pakistan, *Fifty Years of Pakistan*. [Islamabad: Federal Bureau of Statistics].
- Government of Pakistan, *Economic Survey (various issues)*. [Islamabad: Economic Advisor's Wing, Ministry of Finance].
- Government of Pakistan, *National Income Accounts (various issues)*. [Islamabad: Federal Bureau of Statistics].
- Granger, C. W. J. (1986) 'Development in the Study of Cointegrated Economic Variables,' *Oxford Bulletin of Economics and Statistics*, 48, 213-28.
- Granger, C. W. J. (1988) 'Some Recent Developments in the Concept of Causality,' *Journal of Econometrics*, 39, 199-211.
- Hendry, D. F. (1986) 'Econometric Modeling with Cointegrated Variables: An Overview,' *Oxford-Bulletin-of-Economics-and-Statistics*, 48, 201-12.
- Haq, N. U. and Montial P. J. (1993) 'Fiscal Adjustment in Pakistan: Some Simulation Results,' *International Monetary Fund Staff Papers*, 40, 471-80.
- Hafiz A. Pasha and Aisha-Ghaus Pasha and Kalim Hyder (2002) 'The Slowing Down of the Growth of Total Factor Productivity in Pakistan,' *Research Report No.44*.
- Jorgenson, Dale, W. (1963) 'Capital Theory and Investment Behavior,' *The American Economic Review*, LIII (2).

- Jorgenson, Dale, W. and Robert, E. Hall (1967) 'Tax Policy and Investment Behaviour,' *The American Economic Review*, LVII (3).
- Jorgenson, D.W. and C.D. Siebrt (1968) 'Theories of Corporate Investment Behavior,' *The American Economic Review*, LVIII (4).
- Jorgenson, Dale, W. (1971) 'Econometric Studies of Investment Behavior: A Survey,' *Journal of Economic Literature*, IX (4).
- Kalim Hyder (2002) 'Crowding-out Hypothesis in a Vector Error Correction Framework: A Case Study of Pakistan,' *The Pakistan Development Review*, 41, 633-650.
- Khaled Sakr (1993) 'Determinants of private investment in Pakistan,' *IMF working Papers* 30.
- Khan, Ashfaq Hassan, (1997) 'FDI in Pakistan: Policies and Trends,' *The Pakistan Development Review*, 36(4), Part II.
- Khan, A. H. and Iqbal, Z. (1991) 'Fiscal deficit and private sector activities in Pakistan,' *Economia Internazionale*, 2-3, 182-90.
- Khan, A H. (1988) 'Macroeconomic Policy and Private Investment in Pakistan,' *The Pakistan Development Review*, 27[3], 277-91.
- Ljung, G. and G. Box (1979) 'On a Measure of Lack of Fit in Time Series Models,' *Biometrika*, 66, 265-270.
- Maddala, G.S. and Kim, In-Moo (1998) *Unit roots, Cointegration and structural Change* [Cambridge University press].
- Philips, P. C. B. and Perron, P. (1988) 'Testing for a Unit Root in Time Series Regression,' *Biometrika*, 75, 335-46.
- Shah, Zahir (2002). 'Taxation policy and the determinants of Foreign Direct Investment in Pakistan: An Empirical Investigation,' Unpublished M.Phil Dissertation, University of Karachi, Pakistan.
- Social Policy and Development Centre (2001) *Stabilization Versus Growth* Research Report No. 40.
- Social Policy and Development Centre (1995) *Integrated Social Policy and Macro Economic Planning Model for Pakistan*, Research Report No. 7.
- Wai, Tun, U. And Chorng-huey Wong, (1982) 'Determinants of Private Investment in Developing Countries,' *The Journal of Development Studies*, 19(1).
- Wang, Zhen Quan and Nigel, Swain, (1997) 'Determinants of Inflow of FDI in Hungary and China: Time Series Approach,' *Journal of International Development*, 9(5).

APPENDIX

The detail of the variables along with the units and sources is presented in the Table below.

TABLE 8	
VARIABLES DESCRIPTION	
Variables	Description
IPA_t^R	Private Investment in Agriculture Sector in Real Terms (Million of Rupees). Data is collected from the various issues of Pakistan Economic Survey.
IPM_t^R	Private Investment in Manufacturing Sector in Real Terms (Million of Rupees). Data is collected from the various issues of Pakistan Economic Survey.
IPO_t^R	Private Investment in Other Sectors in Real Terms (Million of Rupees). Data is collected from the various issues of Pakistan Economic Survey.
RM_t^R	Total Remittances in real terms (Million of Rupees). Data is collected from the various issues of Pakistan Economic Survey.
SPI_t^I	Index of Stock of provincial Public Infrastructure the data is collected from the various issues of Provincial Budget Documents
R_t	Interest Rate on Advances and data is collected from various issues of Statistical Bulletin of State Bank of Pakistan
CU_t^I	The index of capacity utilization is constructed covering five major manufacturing industries Namely textile, vegetable ghee/cooking oil, fertilizer, cement and sugar. Only the data is available for those industries. Data is collected from the various issues of Pakistan economic surveys.
XG_t^R	Exports of Goods in real term (Million of Rupees). Data is collected from the various issues of Pakistan Economic Survey.
YSO_t^R	The data on value added in Other sectors at factor cost (Million of Rupees). Data is collected from the various issues of Pakistan Economic Survey.
RP_t^M	Price index of imported plant and equipment divided by the index of domestic price level. Data is collected from the various issues of Pakistan Economic Survey.
P_t^I	GDP deflator is collected from the various issues of Pakistan economic surveys

If the linear combination of the I(1) variables is stationary or I(0), then the variables are said to be cointegrated (Granger 1981) and the regression makes sense. In the case of the linear combination is not stationary then regression will be spurious. Below, we have reported the results of stationary test for the estimated three regressions. Ljung-Box Q-stat (**Ljung Box**

1979) in the column 2 of Tables shows that all the variables are I(1). However residual of the estimated regression are I(0) that are reported in the last row of each table. Hence proving the existence of long run relationship (co-integration). The Dickey Fuller (Dickey, D. A. and Fuller, W. A. 1981) and P-P (Philips and Perron 1988) test also proves the same situation in the column 3 and 4 of the three tables below.

Variables	Q-STAT	ADF	P-P
IPA_t^R	19.85*	.086	0.0309
$\Delta (IPA_t^R)$	0.065	-3.76*	-4.233*
RM_t^R	21.12*	-1.96	1.66
$\Delta (RM_t^R)$	0.547	3.34**	4.02*
SPI_t^I	27.942*	0.83	-1.80
$\Delta(SPI_t^I)$.0140	-4.472*	-5.102*
R_t	23.954*	0.975	1.804
$\Delta (R_t)$	0.3195	2.74**	6.054*
ε_t	0.281	5.53*	4.33*

VARIABLES	Q-STAT	ADF	P-P
IPM_t^R	26.74	1.182	1.149
$\Delta(IPM_t^R)$	0.0001	-3.578*	-5.316*
r_t	8.68	0.97	-2.52
$\Delta(r_t)$.0140	-3.741*	-6.142*
CU_t^I	20.57	0.96	0.61
$\Delta(CU_t^I)$	0.007	3.16*	5.235*
RP_t^M	24.79*	0.107	0.152
$\Delta(RP_t^M)$	1.93	2.50**	3.41*
XG_t^R	26.43	0.768	0.377
$\Delta(XG_t^R)$	0.893	2.87	4.22
ε_t	0.281	5.53*	4.33*

VARIABLES	Q-STAT	ADF	PP
IPO_t^R	23.35*	-0.177	-0.067
$\Delta(IPO_t^R)$	0.001	-2.80***	3.06*
r_t	8.68	0.97	-2.52
$\Delta(r_t)$	0.0140	-3.741*	-6.142*
YSO_t^R	24.16*	2.70	2.48
$\Delta(YSO_t^R)$	5.54*	4.55*	3.94**
RP_t^M	24.79*	0.107	0.152
$\Delta(RP_t^M)$	1.93	2.50**	3.41*
ε_t	0.154	3.02**	3.80*

**WHY PRIVATE INVESTMENT IN PAKISTAN
HAS COLLAPSED AND
HOW CAN IT BE RESTORED**

By

*Kalim Hyder
and
Qazi Masood Ahmed*

August, 2003