

DETERMINANTS OF INVESTMENT IN PAKISTAN

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ABSTRACT

The existence of perfect mobility of capital the saving increase, in one country will increase investment in many other countries. The present study by using co-integration technique with data set of the period from 1970-2009 tests presence of capital mobility and fails to find one to one relation between domestic investment and domestic saving. Trade openness is found to be one of the determinants of investment.

Keywords: Determinants, investment, mobility of capital

INTRODUCTION

Saving and investment play significant role in the stability of economic growth in any country. Investment is the most volatile component of Gross domestic product. Domestic saving nourishes the domestic investment more crucially than any other source of income.

The country makes world wide relations of saving to impede the foreign capital to enter in their country. But for that issue matter is whether economy is close or open. Close economy refers to situation in economy which does not allow for the mobility of capital and vice versa for the open economy. In a closed economy domestic savings is the only stimulus for domestic investment to raise the income level.

The existence of perfect mobility of capital the saving increase in one country will increase investment in many other countries. The domestic savings will leave the home country if it is already a capital exporter and foreign capital will invest in home country if it is a capital importer. In perfect mobility of capital the investor will receive only the net-of –tax return not any pre-tax marginal product of capital. Foreign government collects the additional tax revenue if capital is invested abroad.

Saving and investment relationship can be studied to find out the presence of mobility as Feldstein and Horioka (1980) analyzed that the extent of higher domestic saving in a country associated with the higher domestic investment whether was due to immobility of capital. And with perfect world capital mobility there is no relationship with country's saving and investment.

Despite of the fact that international capital flows are the major influential variable on GNP to our knowledge there are not many studies related to topic is found in Pakistan. Its capital markets are not so crucial to make large investment and saving not even has enough, to allocate in country. So it needs foreign capital mobility. Like many other developing countries it looks for the foreign direct and portfolio investment. But due to many structural and institutional problems foreign investors ignore Pakistan to invest their capital goods here. The less mobilization of domestic capital in foreign and foreign in our country has also some determinants.

The present study will empirically analyze the presence of perfect mobility of capital and domestic saving in Pakistan. The mobility of capital will be checked using aggregate data. The results will be compared by incorporating different variables.

The study has been organized in following order. The second chapter discusses the literature on the topic. Methodology and variables are elaborated briefly in the chapter third. In chapter fourth empirical

results are discussed with reference to the tables given for results variables tested. Conclusions and suggestions are recommended in the last section of the study.

LITERATURE REVIEW

Much attention have been paid in past 40 years to check the relation ship between saving and foreign capital flow, the main purpose of these studies have been whether in less developed countries foreign capital is complementary or substitute. There is a huge controversy on the empirical and theoretical level.

The world supply of capital is internationally mobile. Feldstein and Horioka (1980) by taking sample of 21 OECD countries checked that either these economies are closed or open. They concluded that with perfect world capital mobility, domestic saving has little or no relationship. By extension of the sample period Feldstein (1982) examined relationship between each of the major component of net foreign investment and domestic saving rates. The analysis supported the earlier findings of FH (1980) and stable pattern of net capital flows but reason for stability not found yet.

The ratio of dependency affects the foreign capital inflows and saving rate in Pakistan is a topic of much more attention. Khan et al (1992) focused on factor that effect savings in Pakistan. The paper examined the impact of these factors by using OLS technique and time series data. The paper concluded that there is depressing effect of foreign capital on national savings in Pakistan and empirical findings suggested that a more open economy will raise the saving rate but government would do it.

In 1970's there is declining period in Pakistan but increase in the saving condition of south East Asian countries Hussein (1995) studied the trend of private saving compared with the private saving of south East Asian countries by using co integration technique. The results indicated that financial deepening and development increase the private saving. Other factors wealth and public sector indebtedness with regard to time trend also influenced the long run evolution of saving.

Khan, H (1997) discussed the attitude of developing countries toward foreign direct investment and tried to find out the reasons why Pakistan has not been able to attract FDI despite liberalization measure. The polices for low inflow of foreign direct investment in Pakistan is pointed i-e political stability, economic strength, law and order condition, government economics polices, government bureaucracy, local business environment, infrastructure, labor force, quality of life and welcoming attitude. All of these factors needed to be improved for more foreign direct investment in Pakistan.

In developing country like Pakistan private investment is also playing crucial role. Khan and Khan (2001) attempted to analyze the determinants of private investment by using ARDL co integration technique to check the existence of long run relationship as well as short run dynamics of investment. The results supported the idea of providing suitable environment for markets eg protection of policy rights, enforcement of contracts, and voluntary exchange at market determined prices. Partial support for accelerator principle and crowding out hypothesis (see appendix) is also findings in the case of Pakistan

To determine that whether in less developing countries foreign capital inflows are complementary or substitute. Ahmed and Ahmed (2002) studied the impact of foreign capital on developing countries. The co integration technique is used to time series of 1972-2002. The simple model is chosen to see the long run impact of macroeconomic variables. The substitution thesis hypothesis (see appendix) is supported in conclusion.

The modest attempt to review trend of foreign capital flows to Pakistan and compared with those of other developing countries in Asia Ataullah *et al* (2002) reviews the trend of foreign aid and foreign private investment. For these, trends of all variable are collected for the year 1970-2000 was taken from global development finance (2000). This study finds that insignificant consequences are due to inadequate development of domestic institutional structure, human capital and indigenous entrepreneurship.

Household does most of the saving in poor country like Pakistan. Ahmed and Asghar (2004) analyzed household saving with respect to the characteristics of households. The study analyzed saving function by using the dummy variables approach using HIES 1998/99 showed that saving behavior is influenced by various factors including wealth, employment status, education, age and dependency ratio.

A study of Herwartz and Fang (2006) keeping in view the FH puzzle(see appendix) of saving and investment relation triggered a lively discussion in both theoretical and empirical literature. The data is collected for the period 1971-2002 for various cross sections characterizing the world economy, developing and OECD countries, the EU and euro areas. It is concluded that country dependent saving-investment model is the best performing model.

Joshi (2007) made an attempt that the domestic savings capital account of the balance of payment can be considered as explanatory variables for capital formation in the country. The long run steady state relationship between various component of saving capital account balance and gross domestic capital formation is estimated. It is to be found that inflow increase the capital formation and growth in economy. There is long run relationship of saving and capital account with capital formation.

There is correlation in saving and investment in south Asia Wahid *et al* (2008) includes the panel data for five south Asian countries over the period of 1973-2002 The study finds that there exists low positive correlation between saving and investment in these south Asian countries and such findings disprove FH puzzle.

METHODOLOGY

The presence of one to one relationship between domestic saving and investment gives rise to the idea that if there does not exist the one to one relationship then there is capital flow taking place in the economy the same idea is tested by Feldstein and Horioka (1980) for OECD countries to test the presence of capital flow in these economies.

To investigate saving relationship with domestic investment and with world's capital mobility two equations are used to estimate. The equation for estimating domestic saving and investment is given as

$$RCF = \alpha + \beta (DS) \quad eq (a)$$

This equation shows that capital formation is affected by the change in the domestic saving of a country. Where α is the intercept of the equation. If in any case β will become zero, then α will change the real capital formation. As compared to it β is the coefficient of domestic saving and it is the share of change in the independent value. It occurs that with how much probability the dependent variable will change. The hypothesis is given:

HYPOTHESIS

H_0 : $\beta = 1$ there exist imperfect mobility of capital.

H_1 : $\beta \neq 1$ there exist perfect capital mobility.

The above hypothesis concludes that whether a country is mobile or immobile in the capital.

Higher value of coefficient β will reflect the impact of any third variable. According to life cycle theory of saving, the most important exogenous variable of the aggregate saving rate is the rate of population growth. A higher population growth rate might also increase the rate of investment. But annual growth rate of population had almost no effect on estimated value of β ; the coefficient of growth variable was itself small and statistically quite insignificant Feldstein and Horioka (1980). There may of course some other variables that independently influencing both saving and investment.

Many variables have been used to estimate savings in earlier studies Feldstein and Horioka (1980), Ahmed *et al* (2002). But only equation to estimate openness to economy is chosen. The relationship of investment with trade openness of economy is estimated by the equation given below:

$$RCF = \beta_1 (DSI) + \beta_2 X(S/Y) + \beta_3 TO \quad eq (b)$$

Trade openness is measured by the sum of exports and imports per rupee of GDP. This variable checks the openness or closeness of the economy.

This variable is the product of saving to gdp ratio and exports and it shows the saving ratio and capital (out flows) in the formation of capital in the country. The empirical results of this variable finally determine the country's mobility of capital or its immobility otherwise.

Technique

First of all time series properties of the data is examined using augmented dickey fuller (ADF) test based on the inclusion of the time trend with intercept and trend. As by OLS technique the problem of autocorrelation occurred due to which co integration technique is used.

The empirical methodology is based on *Johnson's multivariate cointegration* (1988).The co integration technique is used to determine the long run relationship between the variables. And parameters were also estimated accordingly. Further results and estimation are given in the next chapter.

Data

Data for the different variables have used to examine the extent of capital mobility in the Pakistan. The variables real capital formation, domestic saving, gross domestic product, trade openness is taken from 1980-2009 and taken from international finance statistics (IFS) and Economic Survey.

EMPIRICAL METHODOLOGY AND RESULTS

With reference to saving investment relationship the capital mobility will be checked in case of Pakistan. After determining the stationarity properties and order of integration, the next step is to examine the long run relationships among the variables concerned. For finding the order of integration of series the ADF test is used the results of which show that all of the variables are integrated of order 1 (see appendix). The next step is to examine the long run relationships among the variables concerned. The multivariate co-integration method due to Johansen (1988) and Johansen & Juselius (1990) has been followed.

Table 5.2 Johansen's Maximum Likelihood Test for Investment function

Eigen-value	<i>A-Trace</i>				<i>A-Max</i>			
	H ₀	H ₁	Trace	5% Critical Value	H ₀	H ₁	Max	5% Critical Value
0.35388	r≤0	r>0	11.1237	15.4947	r≤0	r>0	10.9195	14.2646
0.00813	r≤1	r>1	.20422	3.8414	r≤1	r>1	0.20422	3.8414

Note: A single lag length is used in the VAR. Critical values for trace and maximum likelihood tests are due to Osterwald-Lenum (1992). The model was estimated by assuming only an intercept and no trend in the equation.

(Decision rule: trace and max test should be greater than critical value) for information

Keeping in view the above, the hypothesis of **no** co-integration is **accepted (not rejected)** by the trace and maximum eigen-value statistics at 5 % level. This suggests that there is no long run relationship between both domestic investment and domestic saving. The estimation was carried out by using one lag length.

The estimated long run equation is given by Joshi (2007) Ahmed and Ahmed (2002). We follow the specification proposed by Feldstein and Horioka (1980) given by equation (5.1) .Which showed the reported results when estimation was carried out with intercept and trend

$$RCF = \alpha + \beta (DSI) \tag{5.1}$$

$$-0.021$$

$$(0.00479)^9$$

Further it showed reported results when estimation was carried out with intercept and no trend

$$RCF = \alpha + \beta (DSI) \tag{5.2}$$

$$RCF= -0.777 + 0.022312$$

$$(0.58577) (0.00473)$$

In the above specification, the hypothesis of perfect mobility is accepted at 5% level of significance. The study depicts the smaller impact of domestic savings on investment depicting the presence of some of determinants of investment other than domestic savings. The results found are consistent with the studies of Feldstein (1980). The results of co-integration are shown in Table 5.2.

The inclusion of variables in the model

Next we include the further variables in the equation which can have impact on saving investment relationship. As both variables (trade openness and saving to GDP ratio multiplied with export) are integrated of the order I (1), the next step is to examine the long run relationship between the two variables. The results of Johansen’s Maximum Likelihood test are reported in Table 5.3.

Table 5.3 Johansen’s Maximum Likelihood Test: Both the investment and saving are expressed as %GDP

Eigen-value	<i>A-Trace</i>				<i>A-Max</i>			
	H ₀	H ₁	Trace	5% Critical Value	H ₀	H ₁	Max	5% Critical Value
0.8142	r≤0	r>0	59.4101	47.8561	r≤0	r>0	42.0780	27.58434
0.3935	r≤1	r>1	17.3320	29.7970	r≤1	r>1	12.5013	21.1316
0.1044	r≤2	r>2	4.8307	15.49471	r≤2	r>2	2.7570	14.2646
0.0795	r≤3	r>3	2.0736	3.8414	r≤3	r>3	2.0736	3.8414

⁹ The value in parenthesis is standard error of coefficient.

Note: The lag length of one is used in the VAR. The critical values for trace and maximum likelihood tests are due to Osterwald-Lenum (1992). The estimation was obtained assuming only an intercept and no trend in the co integration equation.

The above results reveal that the null hypothesis of no co-integration among the time series variables is rejected at 5% level of significance by the eigen-value max and trace statistics. The results speak of the existence of one co-integrating vector and confirm the long run relationship among investment saving and trade openness the economy.

In this regards, we tested the model where the reported results are when estimation was carried out with intercept and trend

$$RCF = \beta_1 (DSI) + \beta_2 X(S/Y) + \beta_3 TO$$

$$0.00954 + 0.689 - 23.33$$

$$(0.0046) (3.413) (0.143)$$

From the regression output it is obvious that saving and trade-openness are the significantly affecting the investment trade-openness is negatively affecting the domestic investment of Pakistan as if there is trade open than capital has more chances to flow out of economy.

CONCLUSION

In the paper long run relationship between saving and investment has been tested by co-integration technique. The study finds the absence of long run relationship between domestic saving and investment of Pakistan so there can be numerous reasons for it one of the reason is capital mobility. The study by using data from 1980-2009 accept the hypothesis of perfect capital mobility. Capital mobility is tested to be the determinant of domestic investment when incorporated shows negative relation ship to investment in economy that is when trade is open capital has more chances to flow out of economy .

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APPENDIX

Table 5.1
Tests of Unit root hypothesis

Variables	Level	1 st difference	Conclusion
RCf	-2.971	-3.595*	stationary
DS	-2.976	-3.595*	Stationary
TO	-2.967	-3.632	Non stationary
XS/Y	-2.967	-3.580*	stationary

Note: The ADF test were determined by Schwarz criteria and * indicate significance at 5 percent respectively.

SOME KEY TERMS DEFINITIONS

Marginal product of capital:

It is the additional production produce on utilization of additional capital. See Feldstein and Horioka (1980).

After tax yield:

The total production or the value of product one gets after the deduction of taxes on that product. See Feldstein and Horioka (1980).

Pre tax marginal product of capital:

It is the additional production on utilization of additional capital before the tax paid or tax submission for that product. See Feldstein and Horioka (1980).

Displacement Hypothesis:

In shabbir and mehmoood (1992) displacement hypothesis is that foreign financial inflows may discourage domestic public/private saving behavior and resource mobilization.

Substitution thesis hypothesis:

The hypothesis of substituting one thing exactly same for other. E.g. in article of Ahmed and Ahmed (2002) foreign capital may in fact substitute for domestic saving. The foreign capital works same as domestic savings.

Feldstein-Horioka puzzle:

FH (1980) argue that if capital were mobile, domestic investment would not depend on domestic saving but the world saving, and domestic saving could seek out globally the highest return. Under perfect mobility of capital one would expect a small if any correlation between domestic saving and investment. By contrast, immobility of capital would imply a one-to-one relationship between domestic saving and investment. See Harwartz and Xu (2006).