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Determinants of Investment in Pakistan in Pakistan (1992-1973)

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Abstract
Investment is considered to be an important indicator for economic growth in developing countries. The main purpose of the study was to find the economic determinants of investment for Pakistan by empirical method using data from the year 1972 to 2013. The ARDL approach was used to check short and long run relationship among dependent and explanatory variables. In short run the results showed that the relationship of real interest rate (R) and terrorism (TER) is negative and statistically insignificant. External Debt (EXD) has also negative relationship but it was weakly significant while the relation of Tariff duty (TAR) with dependent variable capital formation (K) was found significant with positive relationship. In long run the result was same as in short run because real interest rate (R) was found with in negative relationship with terrorism and the relation was statistically insignificant. External debt (EXD) had also significant negative relationship with Real Interest Rate (R). Tariff duty was found to have positive and significant relationship with dependent variable. The government should focus on law and order situation in order to overcome terrorist activities. Strong monitory policies needed to be implemented in the country. Revenue and expenditure must be regulated by the authorities concerned.
Keywords: Investment, ARDL Approach, terrorism, External debt, Tariff duty, Real Interest Rate

INTRODUCTION

Investment is the most crucial factor of an economic growth. It is well documented for both developing and developed countries in literature. The investment especially the foreign direct investment has grown at least twice as rapidly as trade in both developing and developed countries (Meyer, 2003). As we know that in developing countries there is abundant of labor, the marginal productivity of labor in these countries is very high, which mean in developing countries there is incentive for investment. Investment in capital goods plays a very important role in both short and long run performance of an economy. It is the main components of aggregate demand which can lead to economic growth in long run. Capital accumulation is the main factor/determinants in economic growth literature. The literature on economic growth proves that investment in capital goods is the most important determinants of a country growth rate. This type of statement is based on Neo classical theory of economic growth that forces on investment in both physical and human capital in the production process. The question is that why most of the societies tend to change more quickly than others? The answer to this question is that its shifts the attention on economic factors to social determinants and culture which provide a "motivating environment". It forces on the providing an institutional environment which normally supportive of markets. Protection of copy rights, enforcements of contracts, and voluntary exchange at market determined prices. Good quality institutions are very important for investment otherwise there will be very little investment.

In 1980s, decline in investment was observed in developing countries provides us a new idea for a research that what determines the investment. Other than this the institutional and structural characteristics of capital formation in developing economics (repressed credit market), strong government hold, foreign currency dependency and instability both kind of economic and political cause the interest in this area of thesis. Investment and specially the private investment is an important factor to achieve the economic growth, it become more important in the opening of new reforms and political changes. This is why investment has given the prime importance in developing countries.

Investment especially foreign direct investment (FDI) is very important for developing as well as developed countries. Now day's governments are changing their policies to attract more FDI. There is competitive pressure in different industries to improve their competition by expanding operations in the fast growing markets of emerging economies to increases scale, and adopting new methods to achieve economies of scale and low production unit cost. Rich natural resources like minerals and oil which have high prices attract more FDI to host country (Aqeel and Nishat, 2004)

As we know that Pakistan is rich country in term of resources but utilization of these resources is impossible because of scarcity of capital in Pakistan. The rate of return on investment of FDI in Pakistan is higher among other countries in Asia. The average rate of return of the world is 5.5, developing countries 4.2, china 5.8, Indonesia 5.4, and Pakistan have the highest which is 7.0 (UNCTAD 2003). But Pakistan has been able to get only US$632.5 million in 2004-05, which is less than India US$39 billion, China US$60 to US$63.8 billion, Korea US$12,795.59 million, Malaysia US$ 4,624 million, and Hong Kong US$60 billion (Hafez et al., 2009).

As we know the importance of investment, it is necessary to inquire those factors which effects investment decisions in an economy. Huge literature is focusing on investment process theoretically as well as empirically.

The literature suggest us that for FDI it is the locational advantages of host countries such as market size, income level, skill, infrastructure and political and macroeconomics stability that determine FDI for a country (Aqeel & Nishat, 2004). The economic determinants of private investment are mainly level of domestic output, the real interest rate, public investment, and credit available for investment, size of external debt, the exchange rate and macroeconomics stability. In addition to that there is also some other important factors which can accelerate investment in a country, this include the good governance, quality institutions and entrepreneurial skills these are the effect which can effect investment decisions (Hafez et al., 2009).

Objectives of the Study

1. To find out determinants of investment in Pakistan.
2. To analyze the impact of fiscal and monetary policies on investment behavior in Pakistan.

Literature review

Charkrabarti (2001) states that market size hypothesis is based on an idea that the status of large market can be achieved by useful utilization of resources and through economies of scale; when the market size grow up to a size that when foreign firms sees a future in that market, FDI will start to flow. This hypothesis has become very popular and used as explanatory variables in the empirical studies of determinants of FDI.

Shah and Ahmad (2002) in their study we found that fiscal policy and high return from the investment have played a significant role in attracting FDI in Pakistan. The result of the study show that cost of capitals has strong impact on investment. The lower the cost the greater will be the FDI.

Jordaan (2004) mentions it in his study that good quality infrastructure can attract FDI. The role of growth in attracting FDI has been also an important discussion. Charkrabarti (2001) states, foreign firms sees that in growing economy there has always been better opportunity for making profit than one not growing or slowly growing.

Real interest also plays an important factor in the decision of investment. A negative relation is expected theoretically in between real interest and investment because if real interest increases then investment will decrease but Mikinnon, (1973) and Shaw, (1973) mentioned in their studies that there is a chance of positive relation between interest rate and investment, because when real interest rate increases people tend to save more of his money in banks for to earn high profit. This will increase domestic credit and this will lead to increase investment in the economy.

Aqeel and Nishat (2004) empirically discuss the role of different variables on the FDI of a host country. They have taken tariff rate, exchange rate, tax rate, credit to private sector, index of general share price, wage rate, per capita GDP. The technique WASCO integration and error correction model was used. They found all of them significant to FDI except wage rate and share price index.

Nawaz and khan (2010) used OLS technique on the variables like GDP, exchange rate, export, tariff rate, and whole price index. They found GDP, export, tariff rate and whole price index were in significant relation to FDI. The study found the relation between exchange rate and FDI significant.

Khan and khan (2009) attempted to analyze the determinants on private investment by using ARDL co integration techniques to check the existence of long run relationship as well as short run dynamic of investment. The result supported the idea of providing suitable environment for markets i.e. protection of rights, reinforcement of contracts, and voluntary exchange at market determined prices.

Rashid et.al, (2012) in their study analyzed the relationship between FDI and FDI, indirect tax, transport storage and communication, exchange rate, and trade openness. The used the data from the year 1975-2011 taken from world development indicator. The sign of coefficient of GDP, indirect tax, trade openness and exchange rate were found positive. The sign of coefficient of transport storage and communication were found insignificant.

Hafez, S. Khan (2009) attempted to check the determinants of private investment in Pakistan. They have taken data from year 1972-2005 and analyzed by using ARDL co-integration approach. They have found that traditional factor have little or no effect on private investment. The result favored towards non-traditional factors on private investment, which are quality of institutions, governance, entrepreneurial skills etc

Frenkel, et.al, (2004) studied the determinants of FDI flow to growing economies. They want to check the factors of both home and host countries that may play a vital role in the determining of FDI flows. They found that distance can play a significant role in the determining of FDI flows and that FDI is inversely related to the distance between the home and host country.

Theoretical Background

Theoretically; the relationship between level of domestic output and investment is positive. Acceleration theory also suggests that when income or demand increases then the investment will also increases. Furthermore when demand increases in excess then firm will increase investment to match demand. The real interest rate is very

important factor to determine the investment according to neo classical theory. The relationship between real interest and investment theoretically negative, when interest rate increases investment decreases because people don't likely to pay higher interest on their loans so investment will decrease. On the other hand some study suggest like Mckinnon (1973) and shaw (1973) that the relation could be positive when interest rate increases people tend to save most of their income in banks to earn high profit this can lead to increase in saving volume which would led to increase credit in economy and equilibrium investment will be high. Real interest has also positive relationship between FDI, if a country is politically and economically stable and there is no risk, then high real interest will a pull factor like Switzerland. High level of debt can divert the local resources to pay services on the loan. Theoretically negative relationship is expected between external debt and investment. In developing country like Pakistan where expenditure is higher than revenue then to cover up that expenditure government borrows money from external sources like IMF, World Bank, from different countries. This is called deficit financing. Major portion of our budget are allocated for the services payment on these loans. Then government has no enough resources for public investment, but if this debt is utilized efficiently then economy will be on a good path to economic growth. The expected sign of coefficient of tariff tax is negative. Higher taxes will lead to decrease the imports and hence it will lead to decrease investment. Pakistan is import oriented country because Pakistan imports raw materials, highly equipped machineries, cars, so if tariff tax increases on imports goods the prices will also increase of these goods when prices increase demand is decreases and it will led to decrease in private investment. Tariff tax has also negative effect on FDI, because when foreign firms want to invest in a country they bring their own machineries and capital to start operation so if tariff taxes is higher than foreign firm will not interested.

Pakistan is a developing country which needs foreign direct investment so this is the reason why it is one of the most important key factors in the development of Pakistan. During last decades Pakistan is playing an important role in the war of terrorism. Different groups of terrorist have attack on Pakistan on different time which is effecting foreign direct investment and slow the process of economic growth

Econometric methodology

The following regression model was used to analyze the determinants of investment in the economy.

$Y = \beta_0 + \beta_1 X_1 + \beta 2X2 + \beta_3 X_3 + \beta_4 X4 + \mu$

Where;

Y = gross capital formation (investment)
X1 = real interest rate
X2 = external debt
X3 = tariff
X4 = terrorism
μ = error term.

Data Sources

Variables were selected from WDI (world development indicators), economic survey of Pakistan, SBP (State bank of Pakistan), and south Asian terrorism portal. Data used were from the year 1972-2013.

Results and Interpretations

Unit Root Test

In order to check the stationary of a series we used Augmented Dickey fuller test (ADF) for unit root. In this we check null hypothesis (Ho) that unit root exists and alternative hypothesis (Ha) that unit root does not exist at 5% significance level. The results indicate that unit root exist mean that data is non-stationary, that is the change in variable is unpredictable. ADF test was applied at both with and without intercept and trend and it was found that at level, K (gross capital formation), R (real interest rate), TAR (tariff tax) , were found non-stationary because there probability were more than 5%, so we accepted Ho that unit root exist as shown by the table 1 and EXD (external debt), TER(terrorism) were stationary at level because there probability were less than 5% and K, R, TAR were stationary at first difference, because probability become less than 5% as shown by the table 1.

Table 1 ADF Unit Root Test Results

Variables	Level	1st difference
K	O.7121	0.0020
EXD	0.0000	
R	0.2659	0.0000
TAR	0.7199	0.0000
TER	0.0035	

Source: Author K=gross capital formation, exd=external debt, r=real interest rate, tar= tariff duty, ter= terrorism
h0: unit root exist

H_0: unit root does not exist. Significance level at 5%

Lag Selection Criteria

For lag selection Schwarz criteria is commonly used. As the guide line is for lag selection process that the lower the value the better is the optimal lag, hence that lag was selected. According to Schwarz criteria one lag 5.2 was taken. It was tried on two lags and three lags as well. The result showed that 1 lags is the best option.

Table 2 Lag selection criteria

VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1895.915	NA	1.30e+35	95.04575	95.25686	95.12209
1	-1767.175	218.8587*	7.37e+32*	89.85873*	91.12539*	90.31672*
2	-1748.899	26.49956	1.10e+33	90.19496	92.51716	91.03459

* indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

Johansen co-integration technique

In order to identify long run relation Johansen co-integration test was used before using co integration. We first find a specific order of lags through criteria, which is shown in the above table 2 by Schwartz; suggesting to use 1 lag. Trace test indicates that there are 2 co-integration equations at 5%. The trace statistics value is greater than critical value hence null hypothesis was rejected. At most 2 the trace statistics value is less than critical value so accepted null hypothesis at 2 co integration equations. Max- Eigen test also accept null hypothesis at 2 co integration because we can reject null hypothesis and accept alternative there is 2 co integration equations at 5%.

Table 3 Johansen Co-integration

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.938599	180.1576	76.97277	0.0000
At most 1 *	0.589823	68.54415	54.07904	0.0015
At most 2	0.342242	32.89746	35.19275	0.0866
At most 3	0.262964	16.14070	20.26184	0.1679
At most 4	0.093713	3.935959	9.164546	0.4217

Trace test indicates 2 co-integrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.938599	111.6135	34.80587	0.0000
At most 1 *	0.589823	35.64670	28.58808	0.0053
At most 2	0.342242	16.75676	22.29962	0.2478
At most 3	0.262964	12.20474	15.89210	0.1744
At most 4	0.093713	3.935959	9.164546	0.4217

Max-eigenvalue test indicates 2 co-integrating eqn (s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

Source: Author

Autoregressive distributed lag estimates.

According to the result below the two variable EXD and TER is stationary at level. VECM cannot be used instead ARDL was adopted. The F value is below the lower bound, so we cannot reject hypothesis of no level

effect. In diagnostic test table is showing that there is problem of serial correlation or auto correlation because probability is less than 5%, and we rejected null hypothesis. The significance level of normality showed that variables are not normally distributed; as probability is less than 5%. Diagnostic table showing that there is no problem of heteroscedasticity because the probability is more than 5%. But it is not problematic in case of autoregressive distributed lag model. Its mean it does not affect the significant of our parameters

Table 4 Autoregressive Distributed Lag Estimates

ARDL (1, 0, 1, 0, 0) selected based on Schwarz Bayesian Criterion

Dependent variable is LK 41 observations used for estimation from 1973 to 2013			
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
LK(-1)	.64816	.14764	4.3901[.000]
R	-.0012817	.0020977	-.61104[.545]
LEXD	-.047667	.029391	-1.6218[.114]
LEXD(-1)	-.047705	.024971	-1.9104[.065]
LTAR	.11642	.075199	1.5481[.131]
LTER	-.0076494	.012171	-.62849[.534]
INPT	3.2769	1.1002	2.9785[.005]
TREND	-.0062927	.0024872	-2.5301[.016]
R-Squared	.97557		
F-statistic 95% Lower Bound 95% Upper Bound 90% Lower Bound 90% Upper Bound 3.2541 3.9343 5.2128 3.3148 4.4312			
W-statistic 95% Lower Bound 95% Upper Bound 90% Lower Bound 90% Upper Bound 16.2707 19.67 26.06 16.57 22.15			

Test Statistics *	LM Version *	F Version
A: Serial Correlation CHSQ(1) =	3.9487[.047]	F(1,32) = 3.4103[.074]*
C: Normality CHSQ(2) =	12.0509[.002]	Not applicable *
D: Heteroscedasticity CHSQ(1) =	1.6092[.205]	F(1,39) = 1.5933[.214]*

Sources: Author

Short Run Analysis

On the application of ECM on ARDL model, table 5 shows that the t-value is showing that every time period the error will be less than -2.3831 and the probability of ECM is showing that short run will change into long run which is desirable. The coefficient of R is showing that there is negative relation between R with k, R increases K will decrease and vice versa as the government of Pakistan increases real interest rate. The Short run relation Between R and K does not exists because probability is more than 5%. The co efficient of EXD is showing that the relation between EXD and K is negative, because Pakistan is under developing country so there is always deficit fiscal policy so to cover expenditure government takes loans which are again rarely used in development sectors. The weak short run relation exists between EXD and K with the probability of 10%. The relation TAR and K is positive when T is increases K will increase and vice versa. There is no short run relation is exists because the probability of TAR is more than 5%. The relation Between TER and K is negative. When TER increases in Pakistan investment decreases, because people then go abroad and invest outside the country. The probability of TER is Insignificant which show that there is short run relation between TER and K. The co-efficient of trend is show that investment is decreases as time passes and the probability is showing that short term relation is exists, probability value is less than 5%. The value of R which is 97% is indicating that each variable is very good fitted in model.

Short run

Table 5 Error Correction Representation for the Selected ARDL Model
ARDL (1, 0, 1, 0, 0) selected based on Schwarz Bayesian Criterion

Dependent variable is Dlk 41 observations used for estimation from 1973 to 2013			
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
dR	-.0012817	.0020977	-.61104[.545]
dLEXD	-.047667	.029391	-1.6218[.114]
dLTAR	.11642	.075199	1.5481[.131]
dLTER	-.0076494	.012171	-.62849[.534]
dTREND	-.0062927	.0024872	-2.5301[.016]
ecm(-1)	-.35184	.14764	-2.3831[.023]

Source: Author

LONG RUN ANAYLSIS

Table 6 Estimated Long Run Coefficients using the ARDL Approach
ARDL (1, 0, 1, 0, 0) selected based on Schwarz Bayesian Criterion

Dependent variable is LK 41 observations used for estimation from 1973 to 2013			
Regressor	Coefficient	Standard Error	T-Ratio[Prob]
R	-.0036430	.0062185	-.58583[.562]
LEXD	-.27107	.16879	-1.6060[.118]
LTAR	.33088	.099292	3.3324[.002]
LTER	-.021741	.033854	-.64221[.525]
INPT	9.3136	1.0055	9.2631[.000]
REND	-.017885	.0016037	-11.1524[.000]
R= interest rate, exd= external debt, tar= tariff tax, ter= terrorism			

Source: Author

After applying long run ARDL model table 6 indicates some short run relations of variables is change to long run relationships. Variables which converge from short run relation to long relation are EXD and TAR. The co-efficient of R is showing negative relation with K, as R is increases k decrease and vice versa and the probability is showing that no long run relation exists, because the probability is greater than 5%. The co efficient of EXD is confirming that there is negative relation Between EXD and K. The Co-efficient of TAR is showing positive relation between TAR and K, and also probability is also confirming of long run relation which is less than 5%. The coefficient of TER is also showing negative relation between TER and K showing that terrorism increases in Pakistan investment will decrease. The probability is greater than 5% which show no long run relation of TER with K. The negative sign of trend indicates that at the time increases the investment decreases. The probability which is less than 5%indicates that long relation exists.

CONCLUSION

The study was conducted to find what determines investment decisions in Pakistan. Furthermore the study finds out the behavior of investment in the short and long run using data from the year 1972 to 2013. Using ARDL technique the study find out that in short run the relationship of variables with K was found weak as well as insignificant but in long run the relationship was strong and significant. In short run the relation of variables like R (Real interest rate), EXD (external debt) and TER (terrorism) is indicating negative relation means these have negative impact on Pakistan economy except TAR (tariff) which is positive. In long run the relation of R, EXD and TER also indicating negative relation except for TAR which is positive. Result is showing us that poor government management is responsible for low investment in Pakistan. Foreign as well as Pakistani investors don't want to invest in this threaten environment because of high risk is in Pakistan which is not suitable for Pakistan economy. For example terrorism is having negative relation in both long run and short run so government should focus law and order situation in Pakistan. Pakistan is main victim of terrorism and Pakistan is also fighting the war on terror which is costing a lot of financial and human being, which is ruining Pakistan economy, if terrorism is control by Pakistani and bring peace in country then investment, will increase. EXD is also has negative relationship with investment so government should control expenditure and revenue and if they want to take loans anyway it should be in a way to boost developmental project in country. Real interest rate (R) is also having negative relation with investment in both short and long run. State Bank of Pakistan needs to control monetary policy like real interest rate and inflation etc.

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