IMPACT: Journal of Research in Humanities, Arts and Literature (IMPACT: JRHAL)
ISSN(E): Applied; ISSN(P): Applied
Vol. 1, Issue 2, Dec 2015, 11-20

PUBLIC INVESTMENT IN SMALL-SCALE MANUFACTURING SECTORS OF PAKISTAN

GULZAR ALI[1] & MUHAMMAD MAAZ[2]

[1]Research Scholar, School of Economics, Huazhong University of Science & Technology, Wuhan, Hubei, P.R China. Beijing

[2]BS Economics, Department of Economics, University of Peshawar, KPK, Pakistan

ABSTRACT

This research study attempted to empirically analyze the role of Small-Scale Manufacturing Sector of Pakistan using time series data for the period of 1981-2014. The Augmented Dicky-Fuller unit root test, Johansen Co-integration and Vector Error Correction Model (Restricted VAR) as analytical Techniques. The results of the study shows that Total government revenue (TGR) , Domestic Credit Available to Small-Scale Manufacturing Sector Capital (DCsm) , Stock in Small-Scale Manufacturing Sector (Km), Foreign borrowing/foreign loans (Fb) , lagged Public Investment in Small-Scale Manufacturing Sector ($Ism_{(-1)}$) and Dummy variable for the political stability and favorable condition (Dps) has positive and significant impact, while Index of Price of Capital (Ipk) and Weighted Rate of Interest (rw) has significant negative impact on the Public Investment in Small-Scale Manufacturing (Igm) Sector of Pakistan. The study recommends that government should need to take into consideration not only the conditions in domestic economy but also of the international economy and finally the assets redistribution.

KEYWORDS: Public Investment, Small-Scale Manufacturing Sector, Augmented Dicky-Fuller, Johansen Co-Integration and Vector Error Correction Model

INTRODUCTION

Historical Industrialization and the emergence of business system indicated the influence of politics, law and culture as well as natural endowments and markets perspective has successfully illuminated understanding of economic changes Small-Scale manufacturing Sector. Industrialization variations with in nation - states at the level of industry as well as companies may consequently be more apparent. Most of the countries depend on external resources to increase there per capita income. Small-Scale manufacturing Sector plays a vital role in the economic development of a country. It is the second vital commodity producing sector of the economy. At the time of partition Pakistan have no large scale industrial units, though few small Small-Scale manufacturing Sector did exist, but it was not adding enough to the economy of the country. But Pakistan can claim a proud share of that historical privilege of high artistic skill of her craftsmen of the past. The skills and wonders of Muslims are found in Egyptian 'mummies of ancient times. This was again Muslims who become the rival of British cotton textiles industry of eighteenth century. The industrial heritage of Pakistan at times of its inception was a very limited one. The British government neglected the industrial sector.

The objective force for such neglect was there colonial policy aimed primarily at transferring raw materials from the Indian sub - continent to UK, at cheaper rates and transforming them into manufactured articles, for export abroad at

higher process. A total of 35 factories formed the industrial base of Pakistan at the eve of its independence. In 1949 only 7.7% was industrial contribution towards the Gross Domestic Product of Pakistan. As such feeling the imperative need a massive task if Small-Scale manufacturing Sector was pursued and indusial policy was announced in 1948. The 15 years to follow extend from 1949 - 1965 recorded a remarkable growth rate to an average of 15% annually in the output of modern Small-Scale manufacturing Sector. The compound growth of output was as high as 25% per year during 1950 - 1954. During the next 5 years (1954-1959) it, however declined to 12.7%.

Manufacturing Sector is the third largest sector of the economy, accounting for 18.5 percent of Gross Domestic Product (GDP), and 13 percent of total employment. Large Scale Manufacturing (LSM), at 12.2 percent of Gross Domestic Product, dominates the overall sector, accounting for 66% of the sectoral share, followed by Small Scale Manufacturing, which accounts for 4.9 percent of total GDP. The third component of the sector is slaughtering, which was separately included as a sub-category from 2003-04, and accounts for 1.4 percent of overall GDP. Pakistan has experienced a lot of structural and policies changes during different decades of rulers like privatization, nationalization, Islamic economic system and mixed economic system. (Ahmed ; 1990) found that due the frequent changes in the policies regarding to Small-Scale manufacturing Sector severely affected this sector especially from 1970's to 80's.

(Hirschman;1958) analyzed that public sector investment has playing a productive role in the Small-Scale manufacturing Sector through reducing cost, financing, credit availability and expended the capital of this sector. (Looney and Frederiksen; 1981) found the passive role of public investment in Small-Scale manufacturing Sector and in capital formation. (Looney and Winterford; 1992) addressed that public sector investment and facilities have greater positive and significant effect on the Small-Scale manufacturing Sector.

A vast literature been found regarding to Small-Scale manufacturing Sector in the studies of (Cebula; 1998), (Delevw and Holloway; 1985), (Hoelschur; 1986), (Khan; 1986), (Dewald; 1983), (Dwyer; 1982), (Evan; 1987), (Makin; 1983), (Mascaro and Meltzer; 1983), (Mcmillan; 1986), (Motey; 1983), (Plosser; 1983) and (Dewald; 1986) with the connection of public investment and its importance in the economic growth and development of the economy.

More than half of the sub-groups within Small-Scale Manufacturing Sector depicted improvement as considered to the previous year, with industries producing consumer and intermediate goods being the main beneficiaries. The main contributors to Small-Scale Manufacturing Sector growth were: Automobiles, followed by Tyres & Tubes, Leather Products, Electronics, Fertilizers, Non-Metallic Minerals Products, Pharmaceuticals, and Engineering Products. Auto-mobiles Production been increased an average of 31.6 %. Within the group, a major increase was seen in the production of motorcycles 58.2%, jeeps & cars 37%, tractors 27%, buses and trucks 16.2%. The increase of 29.5% in rubber products was due to increase in production of motor tyres and tubes at 23 % and 50% respectively. The electronic items production been increased by 23%. Major items showing increase in output under this head included air conditioners 59%, deep freezers 36% and refrigerators 17 %. Engineering products witnessed an increase in output of 6%. Major items showing increase in production include sugarcane machines, wheat threshers and production of diesel engines.

Pina and Aubyn (2006) investigated the role of public investment in the United States Economy using the restricted Vector Auto-Regressive Model (VAR) for the period of 1956-2001. Pereira (2001), Pereira and Andraz (2003) and Pereira (2000) worked on the effect of aggregate public sector investment using restricted Vector Auto-Regressive Model (VAR) for the United States Economy. This research study too analytical applying the restricted Vector Auto-

Regressive Model (VAR) known as Vector Error Correction Model for the period of 1980-2014 on the time series data to empirically analyze the role of public sector investment in the Small-Scale Manufacturing Sector of Pakistan as the primary objective of this research study.

DATA ANALYSIS AND MODEL OF THE STUDY

Data Description

The data used in this study are based on annual figures because quarterly data for most of the variables are not available from any source in case of Pakistan. The time period of the study data is from 1981 to 2014, because data prior to 1981 at constant price are unavailable. There is no direct source to complete data; therefore data are collected from Economic Surveys, Federal Bureau of Statistics, State Bank of Pakistan, Ministry of commerce and Industry, Small and Medium Enterprises Development authority (SMEDA), Cooperatives and Commercial Banks, International Financial Statistics (IFS), Pakistan Institute of Development Economics (PIDE), World Development Report (WDR), National Accounts of Pakistan and from different surveys and reports.

All the variables used in the estimation for all investment function are taken as real and at constant prices. The price index of capital good has been calculated by dividing the value of gross fixed capital formation at current price by corresponding value at constant prices.

Model for Public Investment Small-Scale Manufacturing Sector

The estimates of Small-Scale manufacturing sector investment in Pakistan are primarily constructed separately for public sectors by economic activity as well as by capital assets. It comprises expenditure incurred on the acquisition of fixed assets, replacement, additions and major improvements of fixed capital viz. land improvement, buildings, civil and engineering works, machinery, transport equipments and furniture and fixture.

To be consistent with the theory various popular models of investment behavior have studied in search for the determinants of investment. In particular, main focused on the well-recognized theories of investment behavior known as Keynesian Theory, Post Keynesian Theory, Accelerator Principle and Neo-Classical theory etc. Alternative formulations of investment function have been proposed by various economists to explain even a single theory. The Keynesian with accelerator model, in their modified form are considered as best model for investment behavior.

Similarly, the three elements are essential in understanding the investment are: the demand for the output produced by the new investment (i.e. revenues etc), the interest rate and cost of the investment (mainly capital cost) and expectations about the state of the economy.

Public investment in Small-Scale Manufacturing consists of mining and quarrying, manufacturing small-scale, construction (Indus Basin and other construction), electricity and gas, whole sale and retail trade, finance and insurance and services. It is mostly the investment in infrastructure.

The function of public investment in Small-Scale Manufacturing sector is as follows:

$$Igm = f(TGR, Csm, Kstock, Fb, Igm(-1), Dps, I_{pk}, rw) \quad 2.1$$

The corresponding regression/econometric equation of the above given function is given below:

$$I_{gm} = \omega_0 + \omega_1 Csm + \omega_2 TGR + \omega_3 Kstock + \omega_4 Fb + \omega_5 I_{gm(-1)} + \omega_6 D_{ps} + \omega_7 I_{pk} + \omega_8 rw + \varepsilon \quad 2.1(a)$$

Where

$$\omega_1 > 0, \omega_2 > 0, \omega_3 > 0, \omega_4 > 0, \omega_5 \gtrless 0, \omega_6 > 0, \omega_7 < 0, \omega_8 < 0,$$

The detail of the variables included in the study as is follows;

(I_{gm}) = Public Investment in Small-Scale Manufacturing Sector

(TGR) = Total government revenue

(DCsm) =Domestic Credit Available to Small-Scale Manufacturing Sector Capital

(Km) = Stock in Small-Scale Manufacturing Sector

(Fb) = Foreign borrowing/foreign loans

($Ism_{(-1)}$) = lagged Public Investment in Small-Scale Manufacturing Sector

(Dps) = Dummy variable for the political stability and favorable condition

(Ipk) = Index of Price of Capital and

(rw) = Weighted Rate of Interest.

ESTIMATION TECHNIQUE & PROCEDURE

During the regression analysis estimating the econometric model, the researchers often faces the problem of unit roots especially in time series data. Therefore, to test the reliability of some econometric models and theories, some of researchers then use data that are at least once differenced. So the Augmented Dicky-Fuller unit root test is applied on the data used in this research study firstly for the correction and to make the data stationary. The results of the Augmented Dicky-Fuller unit root test are incorporated in below tables (3.1) and (3.2).

Table 3.1: The Augmented Dicky-Fuller Unit Root Test Result of Data at Level

Variables	Abbreviations	Augmented Dickey Fuller	Critical Value (ADF)
Public Investment in Small-Scale Manufacturing	Igm	-1.873559	-2.9705
Total Government Revenue	TGR	-1.229213	-2.9705
Credit Available to Small-Scale Manufacturing	DCsm	-1.311890	-2.9705
Capital Stock to Small-Scale Manufacturing	Km	-1.113016	-2.9705
Dummy Variable for political Stability	Dps	-1.529137	-2.9705
Foreign Borrowing	Fb	-1.623615	-2.9705
Lag of Small-Scale Manufacturing Investment	$Ism_{(-1)}$	-2.231845	-2.9705

Table 3.1: coned ,			
Index of price of Capital	I_{pk}	-2.468468	-2.970
Weighted Rate of Interest	rw	-2.040361	2.970

Note: The Variable are Taken in Their Log form and Critical Value is Selected at 5% Significance Level

Table 3.2: The Augmented Dicky-Fuller Unit Root Test Result of Data at First Difference

Variables	Abbreviations	Augmented Dickey Fuller	Critical Value (ADF)
Public Investment in Small-Scale Manufacturing	**Igm**	-4.258414	-2.9705
Total Government Revenue	**TGR**	-3.459036	-2.9705
Credit Available to Small-Scale Manufacturing	**DCsm**	-3.553742	-2.9705
Capital Stock to Small-Scale Manufacturing	Km	-3.831656	-2.9705
Dummy Variable for political Stability	**Dps**	-4.291975	-2.9705
Foreign Borrowing	**Fb**	-3.470192	-2.9705
Lag of Small-Scale Manufacturing Investment	**$Ism_{(-1)}$**	-3.425057	-2.9705
Index of price of Capital	**I_{pk}**	-4.362324	--2.9705
Weighted Rate of Interest	**rw**	-3.645500	-2.9705

Note: The Variable are Taken in Their Log form and Critical Value is Selected at 5% Significance Level

The data used in the present study is time and it is analyzed through unit root. The unit root test is done before choosing the appropriate econometric framework in order to get the results. In order to decide which technique should be used it is important to investigate whether the time series data is co-integrated of some order or not and the univariate properties of the data are also advised to be checked. There are so many ways to check the unit root in the data but in this research the data was checked through Augmented Dickey-Fuller tests. The ADF test was used in order to check the variables at their level form as well as at first differences. The result obtained from Augmented Dickey-Fuller test shows that variables of the model are non-stationary in their level forms. Again they were tested in their first difference form concluded that the variables are stationary at first difference as shown in table (3.2). So looking into the results of both the tests it is conclude that all the variables used in the model are stationary at I (1). Similarly, the data further to check for the co-integrating vectors and long-run relation by applying the Johansen co-integration test. The result of Johansen co-integration test is integrated in table (3.3).

Table 3.3: Johansen Co-Integration Test Results

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.983630	381.5355	156.00	168.36	None **
0.964699	266.3907	124.24	133.57	At most 1 **
0.883973	172.7630	94.15	103.18	At most 2 **
0.859617	112.4529	68.52	76.07	At most 3 **
0.595247	57.47818	47.21	54.46	At most 4 **
0.529113	32.15278	29.68	35.65	At most 5 *
0.301525	11.06495	15.41	20.04	At most 6
0.035669	1.016993	3.76	6.65	At most 7

*(**) Denotes Rejection of the Hypothesis at 5 %(1%) Significance Level

L.R. Test Indicates 6 Co-Integrating Equation(s) at 5% Significance Level

Johansen Co-integration methods used are very popular tools in economic work to find out whether or not variables of the model are co-integrated. The presence or absence of co-integration is necessary in order to decide about the technique which will be used to test the hypothesis linked to the relation of the variables that have unit root. In order to find out which technique should be used and either there is short-run or long-run relation between the variables, the Johansen co-integration test was applied. The result indicates that there long-run relation between the variables having six co-integrating vectors. The model that has co-integrated factors, the suggested regression model is Vector Error Correction Model and the results of VECM model are interpreted in table (3.4).

Table: 3.4. Regression Results of Public Investment in Small-Scale Manufacturing Sector as Dependent Variable are:

Dependent Variable	**Independent Variables**								
Igm	**C**	***TGR***	***DCsm***	*Km*	**Dps**	***Fb***	**$Ism_{(-1)}$**	**I_{pk}**	**rw**
(1)	**0.142 (3.86)**	**0.081 (2.58)**	**0.12 (2.74)***	***0.35* (4.45)**	**0.256 (5.63)**	**0.054 (4.59)**	**0.098 (3.83)**	**-0.217 (3.83)**	**-0.113 (-2.28)**
R-Squared	***0*.937193**	***Adj. R-Squared***	**0.925641**	***F-Statics***	**731.7529**				

Public investment in Small-Scale Manufacturing sector contains mining and quarrying, construction i.e. Indus Basin and other construction, electricity and gas, Wholesale & Retail Trade, Financial Institutions and services etc. The public investment in Small-Scale Manufacturing sector's function has been analyzed by including the variables like total government revenue (TGR), Domestic Credit Available to Small-Scale Manufacturing Sector (DCsm), Capital Stock in Small-Scale Manufacturing Sector (Km), foreign borrowing/foreign loans (Fb), lagged Public Investment in Small-Scale Manufacturing Sector ($Ism_{(-1)}$), dummy variable (Dps) for the political stability and favorable condition, Index of Price of Capital (Ipk) and Weighted Rate of Interest (rw). The estimated function is reported in table (3.8).

The result in the table (3.4) shows that overall performance of the model is highly significant as the value of (F-statistic) value is (*731.7529*) and the R-squared value is (*0.93*). The explanatory variables such as total government revenue, Domestic Credit Available to Small-Scale Manufacturing Sector, foreign borrowing/foreign loans, lagged Public Investment in Domestic Credit Available to Small-Scale Manufacturing Sector and Capital Stock in Small-Scale Manufacturing Sector having positive and significant coefficient value showing noteworthy effect on the Public Investment in Small-Scale Manufacturing Sector of Pakistan.

Dummy variable for the political stability and favorable condition are statistically significant. The political stability and favorable economic conditions also significant and positively affect the public investment in other sectors. The coefficient of lagged investment in Small-Scale Manufacturing Sector and foreign borrowing have positive sign and is statistically significant. Therefore, it can conclude that government budgetary conditions, previous investment level, foreign capital inflows and stable political and economic environment are the important determinants of Public investment in this category as showing by the result incorporated in the above table (3.4).

There is negative and significant effect of Index of Price of Capital and Weighted Rate of Interest on Public investment in Small-Scale Manufacturing Sector. These two variables can also be used as opportunity cost of capital. So, the key factors which seem to have a strong role in determining the Small-Scale Manufacturing Sector investment include

the price level of capital goods, capital stock, weighted interest rate and the output level. The outcome of the model is quite consistent with the theory and all the coefficients have correct signs as expected.

CONCLUSIONS

In this research study, an attempt is made to analyze the factors which are responsible for increasing the Public investment in Small-Scale Manufacturing Sector of the country and to determine empirically the role of Public investment in Small-Scale Manufacturing Sector of Pakistan. This study has investigated the Public investment in Small-Scale Manufacturing Sector in Pakistan for the period of 1981-2014 using the Vector Error Correction Model framework. For public investment in Small-Scale Manufacturing Sector total government revenue, foreign borrowing (foreign loans), Domestic credit, Capital Stock, lagged Public Investment and political stability and favorable condition are the major determinants. The result shows that foreign capital inflow, government's budgetary position, political stability and government incentive policies affect this investment category significantly.

The study recommends that by increasing domestic purchasing power, export expansion, import substitutions through assets redistribution the fruitful increase can be fetch in public investment in Small-Scale Manufacturing Sector. Though, these policies may be difficult to implement in that they have other impacts on the domestic economy. Export expansion and import substitution may be quite desirable for increasing demand. Government should take into consideration not only the conditions in domestic economy but also the international economy and finally the assets redistribution.

REFERENCES

1. Ammad S. and Ahmed, Qazi Masood (2013), "Dynamic Effects of Energy Sector Public Investment on Sectoral Economic Growth: Experience from Pakistan Economy," presented at the 29th AGM of Pakistan Society of Development Economist.
2. Afonso António and Aubyn Miguel St (2008), "Macroeconomic Rates of Return of Public and Private Investment Crowding-In And Crowding-Out Effects," E.C.B Working Paper Series, No 864, February 2008.
3. Akaike H. (1974), "A New Look At The Statistical Model Identification," IEEE Transactions On Automatic Control, Ac-19, 716-723.
4. Alesina, A., S. Ardagna, R. Perotti, And F. Schiantarelli (2002), "Fiscal Policy, Profits, and Investment," The American Economic Review, 92(3): 571–89
5. Aschauer, D. (1989a), "Is public expenditure productive?," Journal of Monetary Economics, Vol. 23, pp. 177-200
6. Aschauer, D. (1989b). "Does public capital crowd out private capital?," Journal of Monetary Economics, Vol.24, pp. 171-188.
7. Aschauer, D. (1989c). "Public investment and productivity growth in the group of seven," Economic Perspectives, Vol. 13, No. 5, pp. 17-25.
8. Baotai, Wang (2004), "Effectiveness of Government Expenditure On Private Investment: Canadian Empirical Evidence," Empirical Economics, Vol. 30, No. 2 (2005), pp. 493-504.

9. Barro, R. (1991), “Economic Growth in Cross-Section of Countries,” Quarterly Journal of Economics, 106(2): 407-443.
10. Bose Niloy, Haque M. Emranul and Osborn, Denise R. (2007), ”Public Expenditure And Economic Growth: A Disaggregated Analysis For Developing Countries,” The Manchester School, Vol. 75, No. 5 September 2007.
11. Chakraborty, Lekha (2006), “Fiscal Deficit, Capital Formation and Crowding Out: Evidence From India,” NIPFM, Working Paper 06/43.
12. Devarajan S., Swaroop V, Zou H. (1996), “The Composition of Public Expenditure and Economic Growth,” Journal of Monetary Economics, 37: 313-344.
13. Dickey, D.A. and W.A. Fuller (1979), “Distribution of the Estimators For Autoregressive Time Series With A Unit Root,” Journal of The American Statistical Association, 74, pp. 427–431.
14. Easterly, W. And Rebelo, S. (1993), “Fiscal Policy And Economic Growth: An Empirical Investigation,” Journal of Monetary Economics, 32: 417-458.
15. EngenEm, Skinner J. (1992), “Fiscal Policy and Economic Growth,” NBER Working Paper, 4223.
16. Engle, R.F., and C.W.J. Granger (1987), “Cointegration and Error Correction Representation: Estimation and Testing,” Econometrica, 55, pp. 251-276.
17. Folster, S. And M. Henrekson (2001), “Growth Effects of Government Expenditure and Taxation In Rich Countries,” European Journal of Political Economy, 45: 1501 –1520.
18. Ganeli, Giovanni (2003), “Useful Government Spending, Direct Crowding-Out and Fiscal Policy Interdependence,” Journal of International Money and Finance, 22: 87-103
19. Haque, N. U. And Montial P. J. (1993), “Fiscal Adjustment In Pakistan: Some Simulation Results,” International Monetary Fund Staff Papers, 40(2), pp. 471-80.
20. Hussain, A., Muhammad Sulaiman D., Akram Kamran and LalIrfan (2009), "Effectiveness of Governmentexpendi-ture Crowding-In Or Crowding-Out: Empirical Evidence In Case of Pakistan," European Journal of Eco-nomics, Finance and Administrative Sciences, No. 16, 2009
21. Hyder, Kalim (2001), “Crowding-Out Hypothesis In A Vector Error Correction Framework: A Case Study Of Pakistan,” The Pakistan Development Review 40: 4 Part II (Winter 2001) pp. 633–650.
22. Jeffery, Franks (2013), “Pakistan: The Realities of Economic Reform,” The International Monetary Fund’s Global Economy Forum, http://blog-imfdirect.imf.org/2013/12/19/pakistan-the-realities-of-economic-reform/
23. Johansen, S. (1991), “Estimation and Hypothesis Testing of Cointegrating Vectors In Gaussian Vector Autoregres-sive Models,” Econometrica, 59, pp. 1551-1580.
24. Johansen, S. (1995), “Likelihood-Based Inference InCointegrated Vector Autoregressive Models,” Oxford: Oxford University Press.
25. Kamps, Christophe (2005), "The Dynamic Effects of Public Capital: VAR Evidence For 22 OECD Countries,"

International Tax And Public Finance, Springer, Vol. 12(4), pp. 533-558, August.

26. Ligthart, J. (2002), “Public capital and output growth in Portugal: an empirical analysis,” European Review of Economics and Finance, Vol. 1, No. 2, pp. 3-30.
27. Lütkepohl, H. (1991), “Introduction to Multiple Time Series Analysis,” Berlin: Springer.
28. Majid, N. (2000). "Pakistan: Employment, output and productivity," Issues in development, Discussion Paper 33. Geneva, Switzerland: International Labour Organization.
29. Majumder Md. Alauddin (2007), "Does Public Borrowing Crowd-Out Private Investment? The Bangladesh Evidence", Policy Analysis Unit Research Department Bangladesh Bank.
30. Milesi-Ferretti, G. and N., Roubini. (1998), “On the Taxation of Human and Physical Capital in Models of Endoge-nous Growth,” Journal of Public Economics, Vol. 70, pp. 237-254.
31. Mittnik, S. and Neumann, T. (2001), “Dynamic Effects of Public Investment: Vector Autoregression Evidence from Six Industrialized Countries,” Empirical Economics 26, pp. 429-446.
32. Naveed H. Naqvi (2002), “Crowding – In or Crowding Out? Modeling The Relationship Between Public And Private Fixed Capital Formation,” Pakistan Development Review, Autumn 2002, 41(3), pp. 255 – 76.
33. Otto, G. and Voss, G. (1994), “Public capital and private sector productivity,” The Economic Record, Vol. 70, No. 209, pp. 121-132.
34. Parker, K. (1995), “The Behaviour of Private Investment,” IMF Occasional Paper No. 134. Washington, D.C.: International Monetary Fund.
35. Pereira, Alfredo M. and Pinho Maria De Fatima (2011), “Public Investment, Economics Performance and Budgetary Consolidation: VAR Evidence for the 12 Euro Countries,” Journal of Economic Development, 2011, Vol. 36, Issue 1, pp. 1-20.
36. Pereira, Alfredo M. and Andraz Jorge M. (2003), “On The Impact of Public Investment on The Performance of U.S Industries,” Public Finance Review, Vol 31 No1, January 2003, pp. 66-90.
37. Pereira, Alfredo and Sagales (1999), “Public Capital Formation And Regional Development In Spain,” Review of Development Economics, 3(3), pp. 281-294.
38. Pereira, A. (2000), “Is All Public Capital Created Equal?” Review of Economics and Statistics, 82(3), pp. 513-518.
39. Pereira, Alfredo M. (2001), “Public Capital Formation and Private Investment: What Crowds In What?,” Public Finance Review, 29 (1), 3-25.
40. Pereira, A. and Andraz, J. (2007), “Public investment in transportation infrastructures and industry performance in Portugal,” Journal of Economic Development, Vol. 32, pp. 1-20.
41. Pereira, A. M. And Andraz, J. M. (2005), “Public Investment in Transportation Infrastructure and Economic Performance in Portugal,” Review of Development Economics, 9: 177–196.

42. Pereira, Alfredo M. & de Frutos, Rafael Flores, (1999), "Public Capital Accumulation and Private Sector Performance," Journal of Urban Economics, Elsevier, vol. 46(2), pp. 300-322, September.

43. Pereira, Alfred M. & Roca-Sagales, Oriol (2001), "Infrastructures and private sector performance in Spain," Journal of Policy Modeling, Elsevier, vol. 23(4), pp. 371-384, May.

44. Phillips, P.C.B. and P. Perron (1988), “Testing For A Unit Root in Time Series Regression,” Biometrika, 75, pp. 335–346.

45. Pina, A. and St. Aubyn, M. (2006), “How Should We Measure The Return on Public Investment In A VAR?,” Economics Bulletin 8(5), pp. 1-4

46. Razzolini, Laura, and William F. Shughart Ii (1997), “On The (Relative) Unimportance of Balanced Budget,” Public Choice 90: 215-233.

47. SPDC Annual Review (2001), “Social Development in Pakistan: Towards Poverty Reduction,”

48. http://www.spdc.org.pk/Publications/Annual%20Reviews/AR-3.pdf

49. Saeed, Hyder. And A. Ali (2006), “The Impact of Public Investment on Private Investment: A Disaggregated Analysis,” The Pakistan Development Review 45(4): 639-663

50. Schwarz G. (1978), “Estimating The Dimension Of A Model," The Analysis of Statistics, 6, pp. 461-464

51. Solow, Robert M. (1956), “A contribution to the theory of economic growth,” Quarterly Journal of Economics.70: 6594.

52. Sturm, J. and De Haan, J. (1995), “Is public expenditure really productive? New evidence for the U.S.A. and the Netherlands,” Economic Modelling, Vol. 12, No. 1, pp. 60-72.

53. Voss, G. (2002), "Public and Private Investment In The United States and Canada," Economic Modeling, 19, pp. 641-664.

54. Wang, B. (2004), “Effects of government expenditure on private investment: Canadian empirical evidence,” Empirical Economics, Vol. 30, pp. 493-504.