

# Nexus among PSDP Expenditures, Trade in Services and Economic Development: A Case of Pakistan

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## ABSTRACT

This study analyzes the nature of long run causal relationship among PSDP expenditures, public and private investment, trade in services and economic development of Pakistan in context of Keynesian theory of government expenditures, Neo-classical supply side hypothesis, Wagner theory of economic growth, demand pull aspect of high mass consumption and well-known theory of export-led growth while keeping in view the governance, stability and security issues and concerns. The foresaid analyses have been done by using Unit Root Tests to check the stationary issues, Johansen's Co-integration method to examine the long run equilibrium properties among variables, and Granger Causality test for bivariate analysis and Vector Auto-regression method (VAR) for multivariate analyses. Prior to that, the tradability of services was examined on the basis of comparative advantage. The empirical results explain that the growth and development in the economy does not follow a single path. It is due to a fact that almost all the economic hypotheses and theories under consideration found to be valid with varying degrees of confidence. This fact also shows that the policies of the successive governments remain contradictory to each other. Therefore growth and development process requires a big push in private investment and subsequently trade in services. To achieve this objective, government should priorities its development expenditures. The focus of the federal PSDP funds should be on strategic programs and plans rather than on the district roads, canals and bridges which are primarily the provincial subjects after the 18<sup>th</sup> amendments.

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*Keywords:* PSDP expenditures, private capital formation, trade in services, economic development.

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Note: Views expressed here are those of the authors and not necessarily of the PIDE, Islamabad and/or the Ministry of Communication, Islamabad.

## 1. INTRODUCTION

Since services generally entail professionalism and expertise to deliver, that is why services are considered the most knowledge intensive products. Similarly the trade in services led economy is also called a knowledge driven economy (i.e. the case of USA). This economy is quite different from market economy as well as political economy. It emerges as the consequence of the interaction among innovation, knowledge infrastructure and political economy. This trade in services economy is customer-driven rather than supplier-driven. Life cycle of the quality of services and technologies are shortening. Key economy driver is innovative entrepreneurial (i.e. Schumpeter's New Man) rather than large industrial firms. Scope of competition is worldwide. Success measure is capitalization rather than profit. Key drivers to growth are Public Sector Development Expenditures to provide infrastructure for the private capital formation to expand and also provide conducive environment to operate in the economy.

The tradability of services depends primarily on the levels of skills (Which are produced with specialized knowledge and fully drenched experience), private capital formation and income which determine the significant existence of scale and scope economies, where the significant presence of scale and scope economies brings enough comparative advantage to produce concentration of services and hence make them tradable. Due to relatively more differentiation in services, the uniformity in their prices is unlikely to be found. The tradability of services is also directed and determined as the services primarily move to attain their shadow price determined by international supply and demand forces from the lower local market determined price. That is why, the least developed and developing nations experience the issue of brain drain of professionals including engineers, doctors, scientists and economists towards developed countries.

At present, the direction of flows of trade in services which is based on comparative advantage is changing due to the high pace of development of technologies, where the use of these technologies explain the characteristics of domestic market, its size, the pattern of investment in services sector and especially in enhancing knowledge and skills of professionals.

Gains from trade in services divide the features of the economies into the economies of scale and economies of scope. In the economies of scale, the gains from trade in services are accrued through providing more of given services with differential efficiencies. The essence of such economies is linked with capital intensive services oriented technologies. The scope economies are the manifestation of utilization of common outputs into new combinations on the basis of concentration of particular skills.

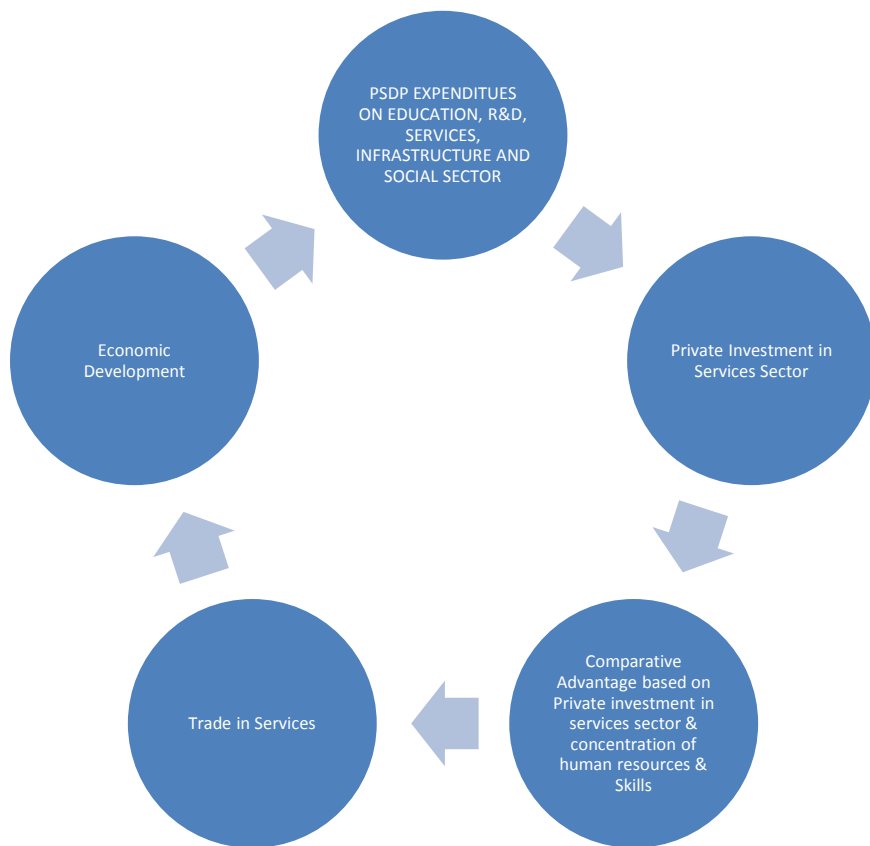
In contemporary world, the services industries like banking, construction, insurance, transportation, travel and tourism, finance, communications, information are contributing significant portion to Gross Domestic Product. A new grown feature of services industries has been a regular nature of trade in services

which is of paramount importance in balancing the current account especially in developing countries. As services trade is growing, the international flows of skill labour (human resource) and the quantum of goods attached with services have been manifold.

There are some basic reasons that why Pakistan needs to move into the global economy. These are; (i) the share of technology- intensive commodities / services to overall exports is growing very fast across the world, (ii) the competitiveness in the global economy is closely dependent on investment in knowledge and (iii) larger initial stock of human capital can enable this economy to adapt new ideas and acquire technological capability to export knowledge based trade in services. It also accelerates the need for continuous learning to keep up with the pace of change.

There is needed first to look into the transmission mechanism of economic growth and development through trade in services for the economy of Pakistan in line with the economic theory and empirical studies done so far. On the basis of extensive review of literature, the following model in its most general form is shown below in fig 1.

Figure 01: IMPACT OF PSDP EXPENDITURES ON ECONOMIC DEVELOPMENT THROUGH TRADE IN SERVICES (MODEL OF TRANSMISSION MECHANISM)



This study analyzes the nature of long run causal relationship among PSDP expenditures, public and private investment, trade in services and economic development of Pakistan in context of Keynesian theory of government expenditures, Neo-classical supply side hypothesis, Wagner theory of economic growth, demand following aspect of high mass consumption and well-known theory of export-led growth while keeping in view the governance, stability and security issues and concerns. The foresaid analyses will be made using Unit Root Test to check the stationary issue, Johansen's Co-integration method to examine the long run equilibrium relationship among variables, and Granger Causality test for bivariate analysis and Vector Auto regression method (VAR) for multivariate analyses. Prior to that, the tradability of services will be examined on the basis of comparative advantage.

## 2. REVIEW OF RELEVANT LITERATURE

Balassa (1965, 1979) by introducing his famous RCA index argued that the comparative advantage model is "revealed" by observing the commodity pattern of trade, which explains the relative costs and differences in non-price factors. Later, this index is found extensively in the economic literature to identify the areas for specialization of a country. Sapir and Lutz (1981) asserted that the principle of comparative advantage and the factor endowment model is consistent with the international trade in services. The structural and institutional factors of Revealed Comparative Advantage, across countries over period were identified for the identification of policy tools in a preference order. Hindley, et' al (1984) explains the validity of principle of comparative advantage in trade in services. He is of the view that the applicability of the principle of comparative advantage in trade in services cannot be rejected on the basis of heterogeneity of services because goods are heterogeneous too. Marel (2011) analyzes the geographical, Heckscher- Ohlin and institutional determinants of services trade based on the literature for goods trade. He also analyzes the importance of a country's governance of regulation as a source of comparative advantage in services markets. He explains that the determinants for services trade differ from goods.

Hoekman and Mattoo (2000) analyzed the welfare and efficiency gains along with the growth through services liberalization and human capital by adopting general equilibrium (GE) model approach. They showed that services liberalization can stimulate economic welfare and in some cases more than that from goods liberalization. Li, et'al (2003) used to analyze the impact of trade in services and merchandize trade on growth separately along with the indicator of government regulations (i.e. days to start a new business) and gross domestic investment. Karmakar, Suparana (2007) examine the various issues regarding services trade liberalization with the objective of creating balance between the potential gains from liberalization. The paper concludes that domestic regulation is very important for trade liberalization. He also studied the

pattern of growth of services sector in all five South Asian countries for last three decades. He analyzed that under GATS; these countries have liberalized many of their services sectors but due to weak domestic preparedness before opening up are likely to be associated with unsatisfactory and undesirable outcomes of liberalization. Francois, et'al (2010) explains the contributions of factors of international trade and investment. They conclude that services liberalization is a major potential source of gains in economic performance. The services policies are an important determinant of trade volumes and development. Services trade is also a means of increasing political unease about the impacts of globalization on labour markets.

The viewpoints of two schools of economic thought are divided on the effects of causal relationship between public spending and private investment. Near Neo-classicals (like Voss 2002, Kustepeli, 2005), public spending crowds out the private investment while the Keynesians (like Atukeren 2004, Odedokun 1997) are the proponent of crowding in effect of public expenditures. Near Neo-classicals, the rationale of crowding out effect exists when public investment is financed through public debt. It results in the shortfall of liquidity in the market. Resultantly, interest rate goes up for a given level of money stock. Higher rate of interest discourages private investment on the grounds of low or non-profitability.

Similarly, according to the Ricardian theorem, when the current public investment is made through imposing higher taxes in future, it leads towards misallocation of private sector resources due to change in relative prices. It also causes the fall of private investment in the prior sectors.

The Keynesians give the logic of crowds in effect of public spending on the basis of low sensitivity of interest rate under the scenario when actual employment is less than full employment. In this situation, IS-LM model indicates the rise in interest rate due to increase in government consumption and consequently, there is decrease in public investment.

However, the empirical studies give mix results. Gatawa and Bello (2009) and Voss (2002) explain crowding out effect while Fedderke et al (2006) and Atukeren (2004) explain crowding in effect.

### **3. METHODOLOGICAL SETUP AND ESTIMATION TECHNIQUE**

Tradability is primarily dependent on comparative advantage.

#### **3.1 MODEL OF COMPARATIVE ADVANTAGE**

##### **3.1.1 Introduction**

There has been very fundamental question to examine the comparative advantage in trade in services. Since in trade services, two factors including technology and factor supplies especially human resource play pivotal role in making trade in services possible by creating comparative advantage. So to

capture the impact of these two factors, the application of Balassa (1965) index of Revealed Comparative Advantage is appropriate. RCA is most appropriate methodology to examine the comparative advantage for a given service in a given period across countries. It also explains the implications of the determinants of a country's relative position in trade in services. To understand the theoretical underpinnings of Balassa index more rigorously, Dornbusch, Fischer and Samuelson (DFS, 1977) model with Ricardian specification is used. Further the DFS is extended by incorporating the trade costs and it ultimately leads to the theoretical basis of Balassa index which is quite appropriate to examine the comparative advantage in trade in services.

### 3.1.2 Technology

Assume there are two countries which produce consumer services which would be indexed by  $j$ ,  $\varepsilon[1, K]$ , where  $K$  shows whole amount of services which are provided from home or abroad.

For given  $j$ ,  $b(j)$  represents the unit labour requirement of home country and  $b^*(j)$  is the unit labour requirement of foreign country. Now each service can be categorized by its relative unit labour requirement (cost) that is  $b^*(j)/b(j)$ . The unit cost of labour at home is  $w$  and at abroad is  $w^*$ . The unit labour costs are determined on assumption that the trade in services between two countries is balanced. Now assume that there is no trade costs, so the home country will export a certain service  $j$  if it is the low-cost provider as shown below;

$$b(j)w \leq b^*(j)w^* \quad 3.1$$

Now relax the assumption of no trade costs. Let assume that trade costs are the function of institutions, regulatory framework, distance, tariffs and the like. Assume that  $h(\cdot)$  and  $h^*(\cdot)$  be the fraction of trade costs in home country and foreign country with the reference of country of origin. In this situation, the home country will provide the service  $j$  as long as the following condition is fulfilled.

$$b(j)w \leq \frac{b^*(j)w^*}{h^*(\cdot)} \quad 3.2$$

In above situation, the home country's comparative advantage in particular service is taken in decreasing order. Here, the relative observed comparative advantage of foreign country would be as follows;  $B^*(j)$

$$B^*(j) = \frac{b^*(j)/h^*(.)}{b(j)} \tag{3.3}$$

$$B^*(j+1) < B^*(j)$$

$B^*(j)$  ratio is assumed to be unique for all  $j$  for the simplification of the model. Similarly, if the exports from home country is costly and then the foreign country will provide service  $j$  with the following condition;

$$b^*(j)w^* \leq \frac{b(j)w}{h(.)} \tag{3.4}$$

Similarly, the adjusted (with trade costs) comparative advantage of home country would be

$$B(j) = \frac{b^*(j)}{b(j)/h(.)}, \quad B(j+1) < B(j) \tag{3.5}$$

It is further assumed that the costs of trade include shipping and technology costs. It is further assumed that the home country provide a range of services indexed from one to some service  $x^*(w, h^*(.))$  which is explained as;

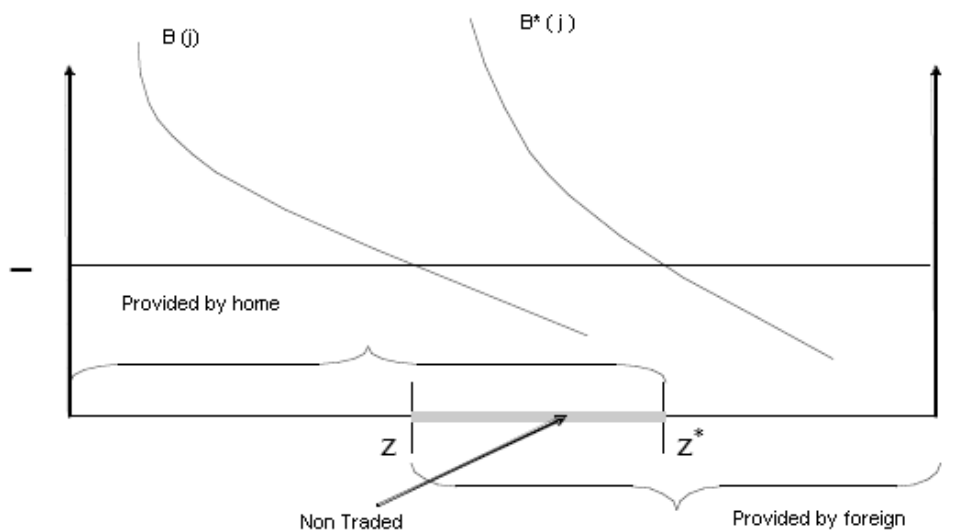
$$x^* \leq (B^*(w, h^*))^{-1} < x^* + 1 \tag{3.6}$$

And foreign country provides the services ranging from  $x(w, h)$  to  $n$  define as below;

$$x \leq (B(w, h))^{-1} < x + 1 \tag{3.7}$$

Where  $x \leq x^*$ . The graphical representation is shown in fig 3.2.2 below:

Fig: 3.2.2



Equations 3.4 and 3.6 which are graphically explained in above figure reveal that the comparative advantage and export performance of home country is jointly determined by the relative unit labour and trade costs of both home and foreign countries. The borderline service which the home country will export would be determined by its own trade cost and technological advantage. The borderline service  $z$  in which the home country has comparative disadvantage in providing service. For given technologies and trade costs, it explains that the relative unit labour cost has to fall within the following interval:

$$\frac{b^*(k)}{b(k)/h(.)} \leq w \leq \frac{b^*(j)/h^*(.)}{b(j)}, \quad j \leq x^*, k \geq x \quad 3.8$$

Adjusted for costs of trade, on the right hand side of the inequality in equation 3.8, the home country has comparative advantage in all services indexed  $j$  while on left hand side, the foreign country has a comparative advantage in services indexed  $k$ .

### 3.1.3 Demand

It is assumed that identical Cobb-Douglas preferences present which guarantee constant expenditure shares. Define  $d(j)$  as the share of domestic income  $y$  spent on service  $j$ .

$$d(j) = \frac{p(j)c(j)}{y} > 0 \forall i \quad 3.9$$

Where  $d(j)$  is domestic use of service  $j$  and  $p(j)$  is its price. There is positive demand for all services, so by definition, it is

$$\sum_{j=1}^n d(j) = 1 \quad 3.10$$

Similar preferences in the two countries guarantee that

$$d(j) = d^*(j) \quad 3.11$$

The foreign income  $y^*$  Share spent on services which are imported and explained as

$$\lambda = \sum_{j=1}^x d(j) \quad 3.12$$

Here  $x$  is the borderline service that is not exclusively provided in home country. Now the share of domestic income  $y$  used to get services provided by the foreign country is defined as;

$$\lambda^* = \sum_{j=x+1}^n d(j) \quad 3.13$$



$x^*$  shows the incremental services. The actual 'borderline' services will be determined in equilibrium. Equilibrium has the condition that domestic labour income is equal to the world spending on domestically provided services.

$$wl = (1 - \lambda^*)wl + \lambda.w^*l^* \quad 3.14$$

Here land  $l^*$  are the labour provision in home and foreign countries respectively. So the equation 3.14 can be written as:

$$w = \frac{\lambda}{\lambda^*} \cdot \frac{l^*}{l} = D\left(x, x^*, \frac{l^*}{l}\right) \quad 3.15$$

Since  $x$  and  $x^*$  determine  $\lambda$  and  $\lambda^*$ . The function  $D(\cdot)$  explains the demand side of the model. For given relative labour provision, it shows relative factor wage  $w$  that are consistent with trade patterns and defined by  $x$  and  $x^*$ . It is increasing in the share of income foreigners spent on services provided by home and vice versa. Since the whole income is spent on services  $j$  in this model. Moreover, the relative wages also determine relative demands for services, and  $D(\cdot)$  shows demand schedule. Equilibrium is explained as;

$$B(\bar{x}) \leq \bar{w} = \frac{\bar{\lambda}}{\bar{\lambda}^*} \cdot \frac{l^*}{l} = D\left(\bar{x}; \bar{x}^*; \frac{l^*}{l}\right) \leq B^*(\bar{x}^*) \quad 3.16$$

Here the bar variables define their static or equilibrium values.

Now each service  $j$  will be sorted out into service category  $k$  and the world income  $y^w$  is normalized to 1. Suppose that the share of home country in world income be  $q$ . Suppose  $q_j$  is the level of service  $j$  provided by home country which is the fraction of world income. Let  $q_j = d(j)$  if  $j$  is traded service and  $q_j = q \cdot d(j)$  if it is non-traded service. So the category  $k$  services exports are

$$e_k = (1 - q) \sum_{j=1}^j d_k(j) \quad 3.17$$

and the total exports of home country at FOB are

$$e = \sum_{k=1}^n e_k = (1 - q) \sum_{k=1}^n \sum_{j=1}^j d_k(j) \quad 3.18$$

Now taking into account the costs of trade and prices, the equation of exports is defined as below;

$$e_k(j) = d(j) \cdot (1 - q) = \frac{d(j) \cdot w b_k(j) \cdot (1 - q)}{p_k(j)} \quad 3.19$$

Inserting 3.19 into Balassa-Index and after simplifications, it leads to;

$$DI_k = \frac{\frac{\sum_{j=1}^x \frac{b_k(j)}{p_k(j)}}{\sum_{j=1}^n \sum_{j=1}^x \frac{b_k(j)}{p_k(j)}}}{\left( w.(1-q) \cdot \sum_{j=1}^x \frac{b_k(j)}{p_k(j)} + w^* \cdot q \cdot \sum_{j=x+1}^n \frac{b^*_k(j)}{p^*_k(j)} \right) / \left( w.(1-q) \cdot \sum_{j=1}^n \sum_{j=1}^x \frac{b_k(j)}{p_k(j)} + \sum_{j=1}^n \sum_{j=1}^x \frac{b^*_k(j)}{p^*_k(j)} \right)} \quad 3.20$$

Now taking log on both sides and after simplifications, the equation 5.20 is shown as below;

$$DI_k = \frac{\frac{\sigma_k / \lambda}{(1-q) \cdot \sigma_k + q \cdot \sigma_k^*}}{(1-q) \cdot \lambda + q \cdot \lambda^*} \quad 3.21$$

### 3.2 MODEL OF TRANSMISSION MECHANISM OF ECONOMIC GROWTH

The model is based on Neo-classical aggregate production function in per capita terms. On the basis of review of literature (feder 1982, Grossman 1988 etc), Government expenditure (i.e. development expenditures and non-development expenditures), Export, Import and Trade in Services and public and private capital formation are included in the production function at levels. The functional form is as follows;

$$C_t = f (A_t, B_t, D_t, E_t, F_t, G_t) \quad 3.2.1$$

Where C = GDP per capita, A = per capita private capital formation, B = per capita public capital formation, D = non-development expenditures, E = development expenditures, F = export of services G = import of services H = Trade in Services and t = 1, 2, 3, ....., T.

Let there be linear relationship among the variables in their levels, therefore the simple econometric specification of the model is;

$$C_t = \phi_0 + \phi_1 A_t + \phi_2 B_t + \phi_3 D_t + \phi_4 E_t + \phi_5 F_t + \phi_6 G_t + \mu \quad \dots \quad 3.2.2$$

Where all the coefficients are expected to have positive signs

#### 4. DATA TYPE AND ESTIMATION TECHNIQUE

The revealed comparative advantage (RCA) index, which shows the comparative advantage in terms of the share of a particular industry in a country's total exports relative to the industry's share in total world exports has been calculated in order to assess the dimension of comparative advantage among the service groups of member countries and to infer the degree of potential Complementarity of the countries as well as the degree of potential Complementarity of the countries in international trade. The RCAX and RCAM explain the advantage / disadvantage in labour-intensive and capital-intensive services.

The formulation to measure the RCA for exports and imports are given below:

$$RCAX = \left( \frac{X_i^k}{X_i} \right) / \left( \frac{X_w^k}{X_w} \right) \dots \dots \dots 4a$$

$$RCAM = \left( \frac{M_i^k}{M_i} \right) / \left( \frac{M_w^k}{M_w} \right) \dots \dots \dots 4b$$

The Unit Root Test to check the stationary issue, Johansen's Co-integration method to examine the longrun equilibrium relationship among variables embedded in common stochastic trend, and Granger Causality test for bivariate analysis and Vector Auto regression method (VAR) for multivariate analyses. To check the stationarity of individual time series data on the variables, ADF unit root test was used. It is important because if the time series has unit root then the traditional asymptotic Normality conditions become invalid. Then Johansen's Co-integration method to find out the co-integrating factors between the series was conducted. The existence of these factors indicate the long run linear combination between the series. The Granger Causality test was made to check the bivariate causality of the variables given that the variables are stationary at the same levels. Akiake and Schwarz criteria were used to determine the number of lags. To check the existence of serial correlation in VAR model, the Braisch LM statistics were employed. To check the causality among the variable in multivariate structure of the model, Vector Autoregressive (VAR) model, was used. The VAR model consistent with Sim (1980) and Voss (2002) included only the lagged values of all the variables to analyze the chain interaction among the variables and to avoid the issues of simultaneity. The general form of VAR model consistent with Sim (1980) and Voss (2002) is as follows;

$$A_t = \alpha + \sum_{j=1}^k \beta A_{t-1} + \sum_{j=1}^k \beta B_{t-1} + \sum_{j=1}^k \beta C_{t-1} + \sum_{j=1}^k \beta D_{t-1} + \sum_{j=1}^k \beta E_{t-1} + \sum_{j=1}^k \beta F_{t-1} + \sum_{j=1}^k \beta G_{t-1} + \varepsilon_{1t} \quad 4.1$$

$$B_t = \alpha + \sum_{j=1}^k \beta A_{t-1} + \sum_{j=1}^k \beta B_{t-1} + \sum_{j=1}^k \beta C_{t-1} + \sum_{j=1}^k \beta D_{t-1} + \sum_{j=1}^k \beta E_{t-1} + \sum_{j=1}^k \beta F_{t-1} + \sum_{j=1}^k \beta G_{t-1} + \varepsilon_{2t} \quad 4.2$$

$$C_t = \alpha + \sum_{j=1}^k \beta B_{t-1} + \sum_{j=1}^k \beta C_{t-1} + \sum_{j=1}^k \beta A_{t-1} + \sum_{j=1}^k \beta D_{t-1} + \sum_{j=1}^k \beta E_{t-1} + \sum_{j=1}^k \beta F_{t-1} + \sum_{j=1}^k \beta G_{t-1} + \varepsilon_{3t} \quad 4.3$$

$$D_t = \alpha + \sum_{j=1}^k \beta B_{t-1} + \sum_{j=1}^k \beta C_{t-1} + \sum_{j=1}^k \beta D_{t-1} + \sum_{j=1}^k \beta A_{t-1} + \sum_{j=1}^k \beta E_{t-1} + \sum_{j=1}^k \beta F_{t-1} + \sum_{j=1}^k \beta G_{t-1} + \varepsilon_{4t} \quad 4.4$$

$$E_t = \alpha + \sum_{j=1}^k \beta B_{t-1} + \sum_{j=1}^k \beta C_{t-1} + \sum_{j=1}^k \beta D_{t-1} + \sum_{j=1}^k \beta E_{t-1} + \sum_{j=1}^k \beta A_{t-1} + \sum_{j=1}^k \beta F_{t-1} + \sum_{j=1}^k \beta G_{t-1} + \varepsilon_{5t} \quad 4.5$$

$$F_t = \alpha + \sum_{j=1}^k \beta B_{t-1} + \sum_{j=1}^k \beta C_{t-1} + \sum_{j=1}^k \beta D_{t-1} + \sum_{j=1}^k \beta E_{t-1} + \sum_{j=1}^k \beta F_{t-1} + \sum_{j=1}^k \beta A_{t-1} + \sum_{j=1}^k \beta G_{t-1} + \varepsilon_{6t} \quad 4.6$$

$$G_t = \alpha + \sum_{j=1}^k \beta B_{t-1} + \sum_{j=1}^k \beta C_{t-1} + \sum_{j=1}^k \beta D_{t-1} + \sum_{j=1}^k \beta E_{t-1} + \sum_{j=1}^k \beta F_{t-1} + \sum_{j=1}^k \beta G_{t-1} + \sum_{j=1}^k \beta A_{t-1} + \varepsilon_{7t} \quad 4.7$$

In the above model, the error terms explain the composite exogenous shocks elements which distinguish the correlation from causality. Here k represents the lag value which is limited to 2 in this framework. That data on annual frequencies from 1982 to 2013 were taken from hand book of statistics (2010) of State Bank of Pakistan, Economic Survey of Pakistan, various issues, database of International Trade Centre and UN data base on trade in services and WDI.

## 5. RESULTS AND DISCUSSION

The revealed comparative advantage indices (RCAIX and RCAIM) for the period 1990 to 2013 were estimated. As shown in Appendix Table 5.1 and 5.2, Pakistan is taking clear comparative advantage in export of services after 2000, while it had relatively higher comparative advantage in import of services in 90s. Pakistan has RCAX greater than 1; it also has RCAM greater than 1 in the same categories. This fact makes the services sector more important to be focused first for policy making to get the maximum benefit in terms of increase in trade volume in services and per capita income and employment generation. Since, mostly services are knowledge intensive, so the import of services in the second stage enhance knowledge capability and skills in the local labour and thus enhance their productivity which ultimately stimulates the growth of per capita income.

The results of ADF unit root test (as shown in appendix table 5.3) confirm that per capita private capital formation, per capita public capital formation, Per Capita GDP, per capita Non-Development expenditures, Per Capita Development Expenditures and Per Capita Exports and Imports and Trade in Services are non-stationary at their levels and stationary at first difference. It explains that all the variables are integrated of order one. This fact indicates the possible existence of long run equilibrium relationship among the variables. The existence of co-integrating factors found through Johansen's co-integration method with standard procedure. The results ascertain the existence of longrun relationship among the variables (See appendix table 5.4-5.6). The results of Granger Causality to check the bivariate long run causal relationship are shown in Tables 5.7, 5.8 and 5.9. The test results are shown in a summery form in the following figure, 5.1. Development expenditure causes non-development expenditures and exports of services which testify the **Supply Leading hypothesis**. Development expenditures have no impact on private capital formation, while non-development expenditures cause trade in services and hence economic growth and development which is confirmation of the existence of **Keynesian thesis** in the case of Pakistan economy. This fact explains the security and governance issues in Pakistan. Since there is need of security and governance issues and for good check and balance to provide conducive environment for the development programs and projects to take place in time, non-development expenditures are required. That is why, to improve the bleak security situation in Pakistan, there is a rising trend in non-development expenditure. Private capital formation causes development and non-development expenditures, public capital formation, import of services and trade in services. It shows the significance of the private capital formation for boosting up the trade in services through import of skills and knowledge to export knowledge intensive services products. It also explains that the private sector in Pakistan is very much dependent on development programs for

infrastructure development for good operations of their business. The public capital formation causes directly trade in services and economic growth and development of the country. These features explain the state driven economic growth of socialist countries ascertain the **Keynesian hypothesis**. This feature is commonly found in developing economies. Imports cause development expenditures which show the validity of **demand following hypothesis**. As hypothesized earlier in this study, there is bidirectional causality between trade in services and economic growth and development. The phenomenon of import led growth and growth led import hypotheses were found to exist. Economic growth and development further causes development expenditures, which ascertains the **Wagner's hypothesis** in the economy of Pakistan. The results of VAR model is shown in Table 5.10. The summary of the results of the VAR model is shown in fig 5.2.

In multi-variate analyses, all the foresaid hypotheses of economic theories and thought were still found to exist in Pakistan economy.

Fig5.1 : BIVARIATE LONG-RUN CAUSAL RELATIONSHIP

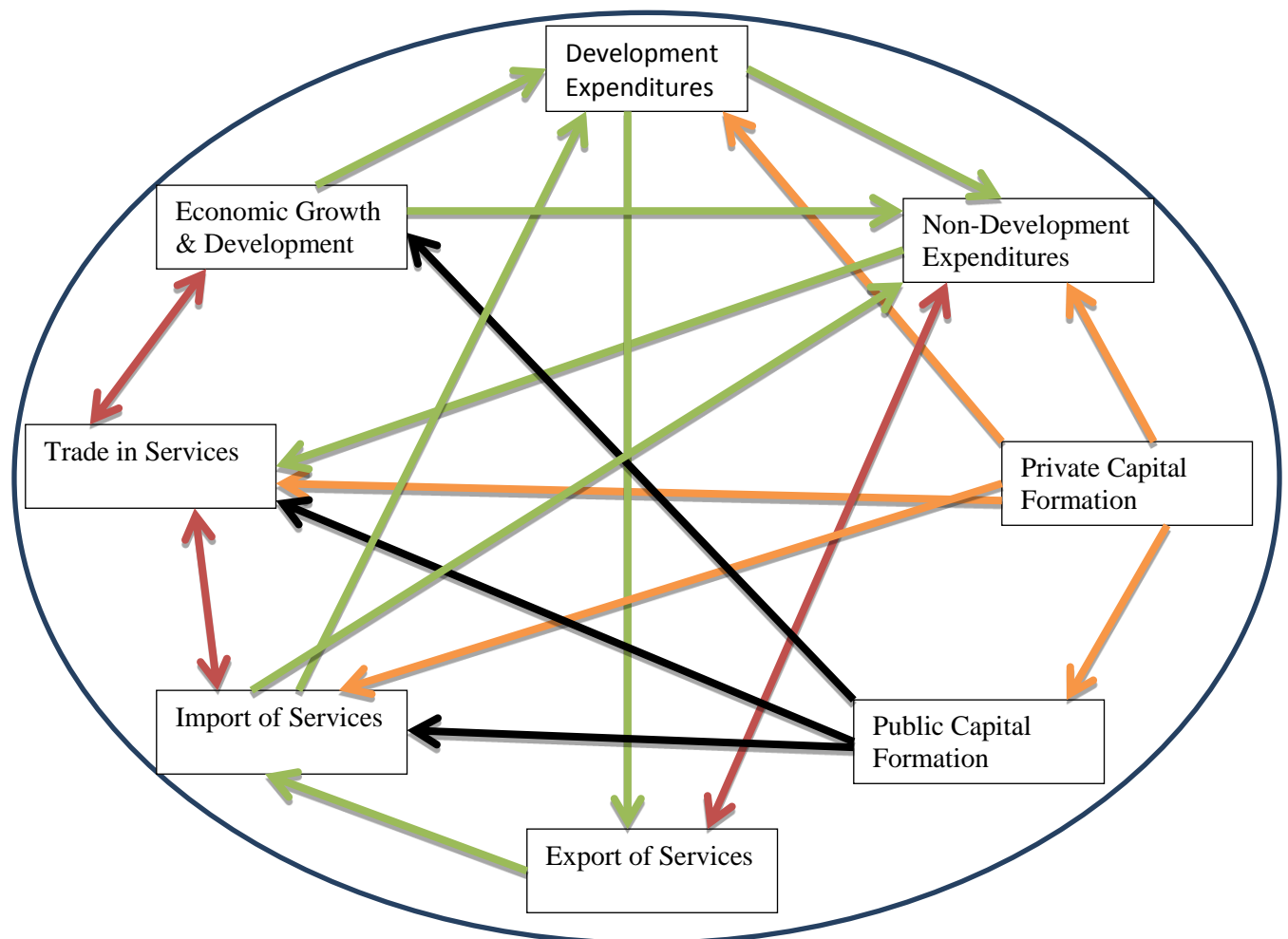
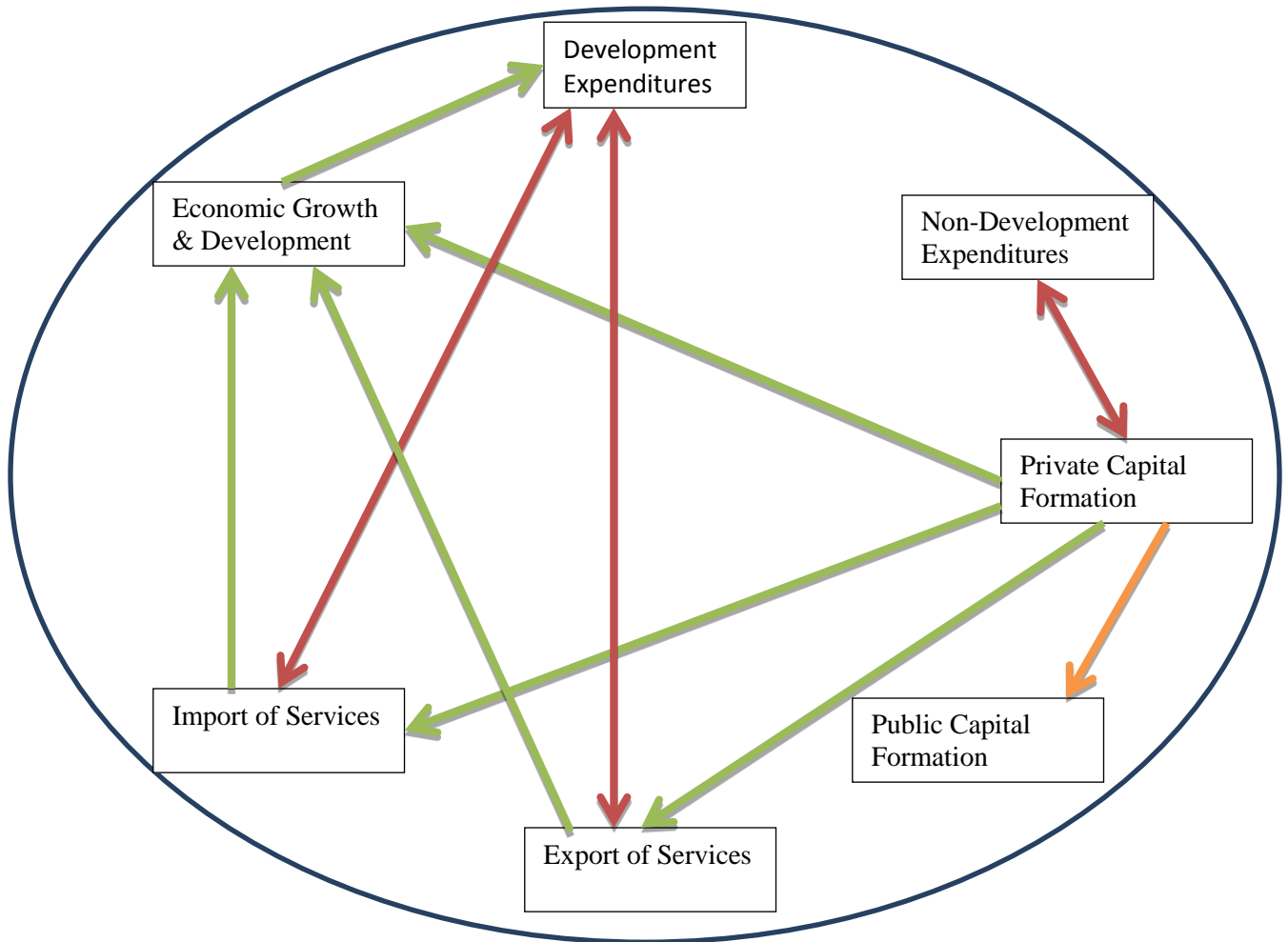


Fig 5.2: MULTIVARIATE MODEL OF LONG-RUN ANALYSIS



The long run determinants of each variable were also examined. As shown in figures from 5.3 to 5.9, development expenditures and economic growth have negative while non-development expenditures have positive impact on private capital formation. It explains somehow crowding out effect. Private capital formation has positive while economic growth has negative impact on public capital formation. Economic growth is mainly influenced by private capital formation and exports of services. Non-development expenditures are influenced positively by private and public capital formation and negatively influenced by economic growth and development expenditures. Non-development expenditures, exports and economic growth have positive impact on development expenditures while private capital formation has negative impact. The exports of services are mainly influenced positively by private capital formation, development

and non-development expenditures and economic growth while received negative impact of public capital formation. The imports of services are influenced positively also by private capital formation and development expenditures while public capital formation and economic growth have negative impact on it.

## 6 CONCLUSION

The results not only confirm the tradability in services sector but also explain that Pakistan has comparative advantage both in import and export of services. The import of services also plays a key role in terms of enhancing in-housing capacity building. This phenomenon can help in converting the more than 250 million youth into human resource which is always a stepping stone on the trajectory of economic growth and development. The results further explain that the growth and development in the economy does not follow a single path. It is proved with the fact that almost all the economic hypotheses and theories including the Keynesian model of economic growth, the Wagner's hypothesis, the demand following hypothesis, the supply leading hypothesis, the growth led import and import led growth found to be valid with varying degrees in Pakistan. It explains that the policies of the successive governments remain contradictory to each other. Some of them made the policies in which the government itself was given the role in economic growth and development through public capital formation and direct involvement in enhancing the exports through decreasing the value of rupee. Some of the governments left the economic activity more on the private sector.

The role of development expenditures especially in terms of boosting and encouraging the private investment and consequently enhancing the trade in services has been significant. However, the focus of the federal PSDP funds should be on strategic programs and plans rather than on the district roads, canals and bridges which are primarily the provincial subjects. It is also found in the study that the public investment in terms of providing infrastructure such as roads, communications, electrification etc has been very important. It increases the accessibility and mobility, therefore reduces the cost of private owned economic activity and raises profits. In this way, the private investment both from domestic and abroad is attracted. Moreover, the value of non-development expenditures for the purpose of providing conducive environment to the private sector to operate freely especially in the current scenario of the security situation has been manifold. However, there is a need to use the non-development expenditures in more judicious way. In this study, the private capital formation emerged as the most important factor of trade in services and economic growth and development. This is a very encouraging feature of Pakistan that the people of Pakistan generally and private sector especially are playing the central role in the development of the country. Keeping in view the importance of private investment, the government should envisage its PSDP program to encourage the resilient people of Pakistan to play an active role in the growth and development



process of the country through mobilizing their indigenous resources resulting in value addition and export promotion. In this regard, the key features of the indigenous resource mobilization policy of the government should focus on;

- Help and support SMEs in targeting diverse services export markets
- An effective campaign of 'One Constituency, One product' will be started with the objective to develop a unique base of export oriented products (both goods and services) keeping in view each constituency's indigenous resources (which include, natural and human resources). For this purpose, National Collaboration and Indigenous Resource Mobilization Committee (NCIRMC) may be constituted.
- To assist individuals, households and enterprises in the attainment of necessary skills to mobilize and manage their resources, a 'National Resource Management Committee (NRMC) and Sub-Committees may be constituted at National, Provincial and Constituency levels.
- To develop entrepreneurship as a viable employment option in Pakistan, the 'Entrepreneurial Development Trust' (EDT) at constituency levels may be established. The function of this trust may include;
  - i. Providing online information and one window guidance to potential entrepreneurs, startups, existing businesses, passionate students, people looking for ideas and researchers.
  - ii. Develop awareness about the knowledge of business legislations, regulations and administrative requirements among the potential entrepreneurs.

With the help of provincial and local governments, the Indigenous Resource Mobilization Policy may be financed through PSDP. This policy will increase the value added of locally produced goods and services and hence generate high quality exports of services and goods. This is the only viable way for the country to develop and prosperous.

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Appendix

Table 5.1: Exports in Services		Table 5.2: Imports in Services	
Year	RCA Value	Year	RCA Value
1990	0.70	1990	0.40
1991	0.73	1991	0.50
1992	0.74	1992	0.60
1993	0.75	1993	0.72
1994	0.79	1994	0.78
1995	0.87	1995	0.90
1996	0.80	1996	1.15
1997	1.00	1997	1.20
1998	1.10	1998	1.30
1999	1.10	1999	1.35
2000	1.20	2000	1.30
2001	1.40	2001	1.51
2002	1.50	2002	1.50
2003	1.70	2003	1.41
2004	1.85	2004	1.45
2005	1.80	2005	1.50
2006	1.82	2006	1.56
2007	1.96	2007	1.47
2008	2.11	2008	1.47
2009	2.01	2009	1.42
2010	2.38	2010	2.14
2011	2.42	2011	1.97
2012	2.12	2012	1.67
2013	2.45	2013	1.60

Table 5.3: ADF Unit Root Test (At levels)

Dependent Variable	t Value	Critical Value at	
		5 % Significance Level	Type of Series
Per Capita Private Capital Formation	5.5	-2.9	Non-Stationary
Per Capita Public Capital Formation	5.6	-2.9	Non-Stationary
Per Capita GDP	2.1	-2.9	Non-Stationary
Per Capita Non-Development Expenditures	7.7	-2.9	Non-Stationary
Per Capita Development Expenditures	3.6	-2.9	Non-Stationary
Per Capita Export of Services	4.7	-2.9	Non-Stationary
Per Capita Imports of Services	4.2	-2.9	Non-Stationary

**Table 5.4 Johansen' s Co-integration Method**

Sample (adjusted): 1984 2013

Included observations: 30 after adjustments

Trend assumption: Linear deterministic trend

Series: A B C01 D1 E F G

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.996809	538.4458	159.5297	0.0000
At most 1 *	0.984001	366.0263	125.6154	0.0000
At most 2 *	0.955194	241.9701	95.75366	0.0000
At most 3 *	0.882894	148.8075	69.81889	0.0000
At most 4 *	0.797677	84.46729	47.85613	0.0000
At most 5 *	0.535363	36.53066	29.79707	0.0072
At most 6	0.362990	13.53570	15.49471	0.0966

Trace test indicates 6 cointegratingeqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

**Table 5.5 Unrestricted Cointegration Rank Test (Maximum Eigenvalue)**

No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.996809	172.4195	52.36261	0.0000
At most 1 *	0.984001	124.0561	46.23142	0.0000
At most 2 *	0.955194	93.16259	40.07757	0.0000
At most 3 *	0.882894	64.34023	33.87687	0.0000
At most 4 *	0.797677	47.93664	27.58434	0.0000
At most 5 *	0.535363	22.99495	21.13162	0.0270
At most 6	0.362990	13.52909	14.26460	0.0651

Max-eigenvalue test indicates 6 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

**Table 5.6 Co integrating Equation(s):**

Normalized co-integrating coefficients (standard error in parentheses)							
Eq 1	A	B	C01	D1	E	F	G
	1.000000	0.595638	-0.158797	-0.127241	-0.580646	27.89207	26.69892
		(0.01957)	(0.00192)	(0.00952)	(0.06240)	(11.4428)	(11.4133)
Eq 2	1.000000	0.000000	-0.137446	-0.195144	1.040583	0.827758	-2.247576
			(0.00088)	(0.01154)	(0.08258)	(15.3553)	(15.3154)
	0.000000	1.000000	-0.035846	0.114000	-2.721836	45.43753	48.59747
			(0.00171)	(0.02250)	(0.16095)	(29.9293)	(29.8515)
Eq 3	1.000000	0.000000	0.000000	0.793195	1.784625	349.4233	342.5491
				(0.12656)	(0.88166)	(167.736)	(167.307)
	0.000000	1.000000	0.000000	0.371757	-2.527792	136.3505	138.5197
				(0.04578)	(0.31894)	(60.6780)	(60.5229)
	0.000000	0.000000	1.000000	7.190729	5.413327	2536.230	2508.591
				(0.94337)	(6.57167)	(1250.27)	(1247.07)
Eq 4	1.000000	0.000000	0.000000	0.000000	0.975064	824.7292	805.9420
					(1.33682)	(257.183)	(257.069)
	0.000000	1.000000	0.000000	0.000000	-2.907218	359.1179	355.7037
					(0.51058)	(98.2271)	(98.1838)
	0.000000	0.000000	1.000000	0.000000	-1.925764	6845.125	6709.488
					(10.9625)	(2109.00)	(2108.07)
	0.000000	0.000000	0.000000	1.000000	1.020632	-599.2292	-584.2102
					(1.02747)	(197.669)	(197.582)



Table: 5.7

Pairwise Granger Causality Tests At First Difference

Sample: 1982 2013

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
B does not Granger Cause A	30	0.17809	0.8379
A does not Granger Cause B		1.51149	0.2401
C01 does not Granger Cause A	30	1.67631	0.2074
A does not Granger Cause C01		1.83297	0.1808
D1 does not Granger Cause A	30	0.11377	0.8929
<b>A does not Granger Cause D1</b>		<b>4.23837</b>	<b>0.026</b>
E does not Granger Cause A	30	0.52857	0.5959
<b>A does not Granger Cause E</b>		<b>7.11989</b>	<b>0.0036</b>
F does not Granger Cause A	30	0.19455	0.8244
A does not Granger Cause F		1.30803	0.2882
G does not Granger Cause A	30	0.57625	0.5693
<b>A does not Granger Cause G</b>		<b>7.23800</b>	<b>0.0033</b>
H does not Granger Cause A	30	0.81190	0.4554
<b>A does not Granger Cause H</b>		<b>5.07939</b>	<b>0.0141</b>
C01 does not Granger Cause B	30	1.95109	0.1632
B does not Granger Cause C01		0.20615	0.8151

Table: 5.8

Pairwise Granger Causality Tests At First Difference

Null Hypothesis:	Obs	F-Statistic	Prob.
D1 does not Granger Cause B	30	0.64611	0.5326
B does not Granger Cause D1		1.05688	0.3626
E does not Granger Cause B	30	0.38475	0.6846
B does not Granger Cause E		1.36054	0.2749
F does not Granger Cause B	30	0.61309	0.5496
B does not Granger Cause F		2.01021	0.155
G does not Granger Cause B	30	0.90151	0.4187
B does not Granger Cause G		2.42969	0.1086
H does not Granger Cause B	30	0.95911	0.3969
B does not Granger Cause H		1.98831	0.158
D1 does not Granger Cause C01	30	0.22380	0.8011
<b>C01 does not Granger Cause D1</b>		<b>2.96852</b>	<b>0.0697</b>
E does not Granger Cause C01	30	0.01111	0.989
<b>C01 does not Granger Cause E</b>		<b>6.07739</b>	<b>0.0071</b>
F does not Granger Cause C01	30	0.11230	0.8942
C01 does not Granger Cause F		1.73426	0.1971
G does not Granger Cause C01	30	0.12472	0.8833
<b>C01 does not Granger Cause G</b>		<b>5.84092</b>	<b>0.0083</b>
H does not Granger Cause C01	30	0.28096	0.7574
<b>C01 does not Granger Cause H</b>		<b>5.56899</b>	<b>0.01</b>
<b>E does not Granger Cause D1</b>	<b>30</b>	<b>4.04384</b>	<b>0.0301</b>
D1 does not Granger Cause E		0.26629	0.7684

Table: 5.9

Pairwise Granger Causality Tests At First Difference

Null Hypothesis:	Obs	F-Statistic	Prob.
F does not Granger Cause D1	30	6.39754	0.0057
D1 does not Granger Cause F		6.39368	0.0057
G does not Granger Cause D1	30	9.57550	0.0008
D1 does not Granger Cause G		0.96283	0.3955
H does not Granger Cause D1	30	5.95737	0.0077
D1 does not Granger Cause H		4.62633	0.0195
F does not Granger Cause E	30	1.75809	0.193
E does not Granger Cause F		1.72891	0.198
G does not Granger Cause E	30	21.5887	4.00E-06
E does not Granger Cause G		0.54122	0.5887
H does not Granger Cause E	30	22.3173	3.00E-06
E does not Granger Cause H		1.40784	0.2634
G does not Granger Cause F	30	2.25134	0.1262
F does not Granger Cause G		3.66117	0.0403
H does not Granger Cause F	30	2.24914	0.1264
F does not Granger Cause H		0.87106	0.4308
H does not Granger Cause G	30	3.65890	0.0404
G does not Granger Cause H		0.86771	0.4322

Table 5.10 Vector Autoregression Estimates

Sample Adjusted: 1984-2013

	A	B	C	D	E	F	G
DA(-1)	-1.48808	-1.16182	-9.64938	1.198402	-0.74079	0.354450	-0.19617
t-value	[-0.73579]	[-0.57755]	[-0.55313]	[ 2.55118]	[-2.64755]	[ 2.97534]	[-0.73684]
DA(-2)	3.768601	2.334387	23.06914	-0.07208	-0.60117	-0.43924	1.150856
t-value	[ 2.54398]	[ 2.58427]	[ 2.80536]	[-0.12737]	[-1.82534]	[-3.34189]	[ 5.90143]
DB(-1)	-0.4913	-0.04415	-4.06925	0.782424	-0.28913	0.120352	0.078250
t-value	[-0.53383]	[-0.04823]	[-0.51260]	[ 2.22552]	[-1.41306]	[ 1.47391]	[ 0.64587]
DB(-2)	0.685260	0.320347	2.033159	-0.98705	-0.10915	-0.22531	0.088791
t-value	[ 0.74150]	[ 0.34850]	[ 0.25505]	[-2.79591]	[-0.53125]	[-2.74787]	[ 0.72984]
DC(-1)	0.324663	0.233798	2.314786	-0.22755	0.115400	-0.0554	0.018683
t-value	[ 0.99551]	[ 0.72074]	[ 0.82286]	[-2.82647]	[ 2.59160]	[-1.91455]	[ 0.43518]
DC(-2)	-0.52085	-0.37423	-3.03334	0.101280	0.097618	0.084412	-0.14745
t-value	[-2.09278]	[-2.51176]	[-1.41298]	[ 1.06529]	[2.76424]	[ 3.82275]	[-4.50058]
DD(-1)	1.089626	0.736295	8.692011	0.651046	-0.08618	-0.11917	-0.30217
t-value	[ 2.55792]	[ 1.05838]	[ 1.44075]	[ 2.43674]	[-0.55421]	[-1.92036]	[-3.28183]
DD(-2)	-0.39896	-0.26087	-2.81083	-0.31028	-0.21852	0.259284	0.168625
t-value	[-0.68089]	[-0.44761]	[-0.55614]	[-1.38623]	[-2.67745]	[ 4.98748]	[ 2.18612]
DE(-1)	0.697652	0.691964	5.898286	-2.4013	-1.69747	-0.00583	0.550564
t-value	[ 0.48958]	[ 0.48820]	[ 0.47986]	[-4.41129]	[-5.35798]	[-0.04614]	[ 2.93494]
DE(-2)	-4.51453	-2.56495	-28.9107	2.134722	0.372657	0.473899	0.248960
t-value	[-2.98062]	[-1.13134]	[-1.47044]	[ 2.45166]	[ 0.73538]	[ 2.34332]	[ 0.82970]
DF(-1)	16.84043	47.20372	292.7864	84.23304	89.98387	20.47983	24.32299
t-value	[ 0.06386]	[ 0.17995]	[ 0.12871]	[ 0.83611]	[ 2.53471]	[ 0.87525]	[ 0.70060]
DF(-2)	74.64056	113.6373	862.6546	166.2026	140.0973	-1.01057	7.016642
t-value	[ 0.26525]	[ 0.40601]	[ 0.35541]	[ 1.54617]	[ 2.23939]	[-0.04048]	[ 0.18942]
DG(-1)	18.80626	48.44149	301.5040	80.58657	90.35615	20.11022	24.31077
t-value	[ 0.07139]	[ 0.18488]	[ 0.13269]	[ 0.80081]	[ 1.54279]	[ 0.86042]	[ 0.70103]
DG(-2)	76.61883	114.5898	876.4177	167.8009	140.5065	-0.76298	5.722755
t-value	[ 0.27192]	[ 0.40885]	[ 0.36059]	[ 1.55892]	[ 2.24288]	[-0.03052]	[ 0.15428]
C	947.5609	1163.030	8165.612	561.0583	722.1400	-93.7188	-117.191
t-value	[ 1.04410]	[ 1.28840]	[ 1.04310]	[ 1.61836]	[ 3.57907]	[-1.16391]	[-0.98092]
R-squared	0.704355	0.751000	0.796488	0.808424	0.788166	0.777344	0.827572

Fig5.3:LONG-RUN DETERMINANTS OF PRIVAE CAPITAL FORMATION

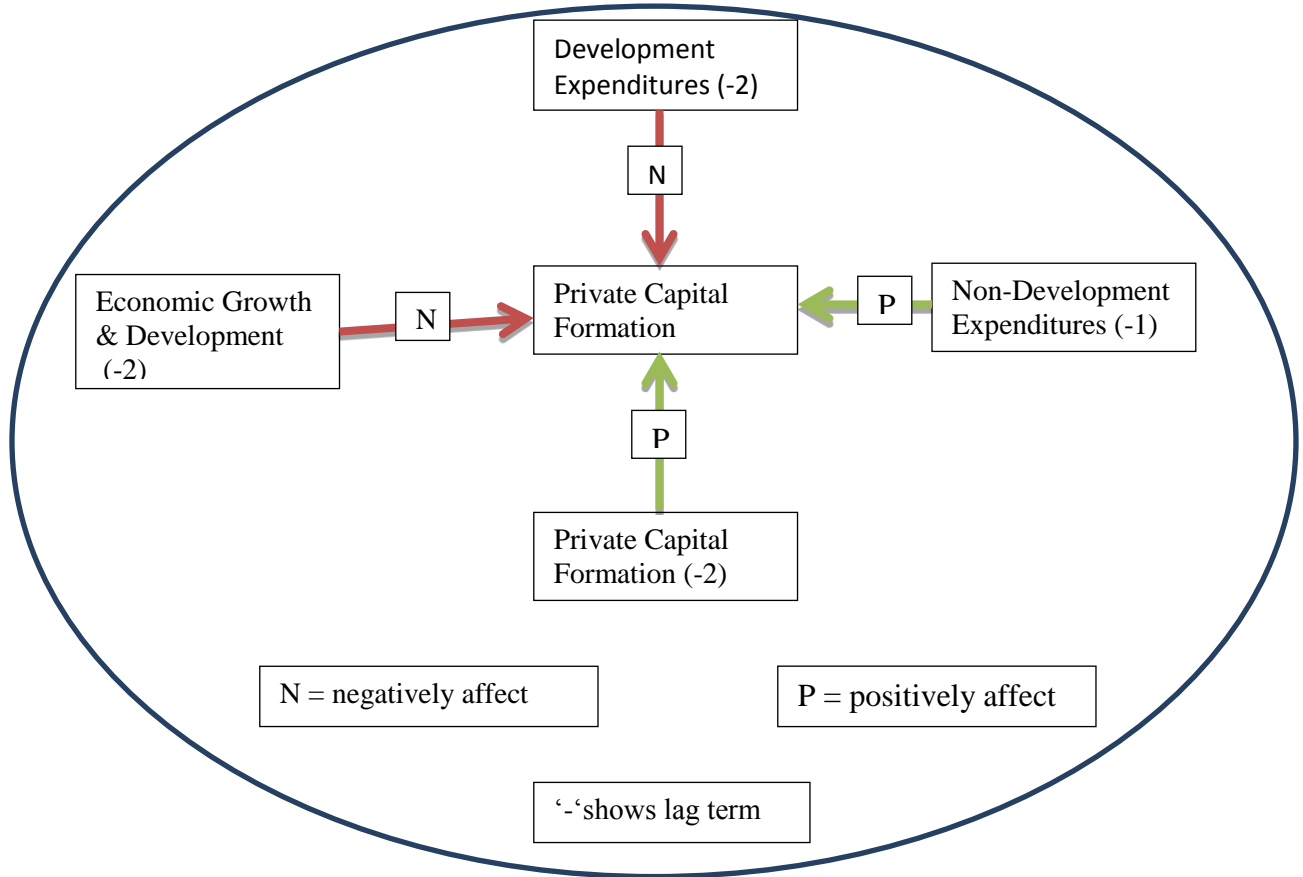


Fig5.4:LONG-RUN DETERMINANTS OF PUBLIC CAPITAL FORMATION

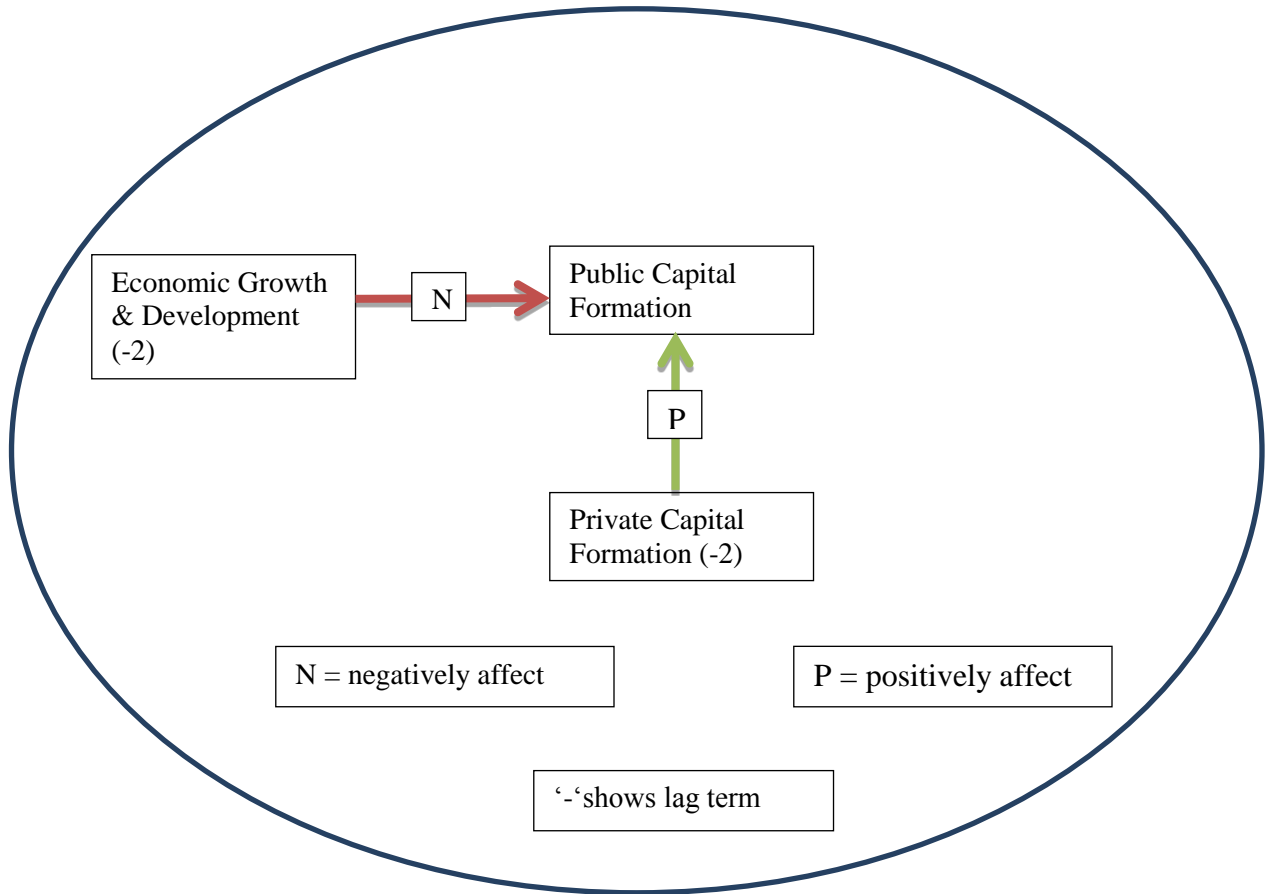


Fig5.5: LONG-RUN DETERMINANTS OF ECONOMIC GROWTH

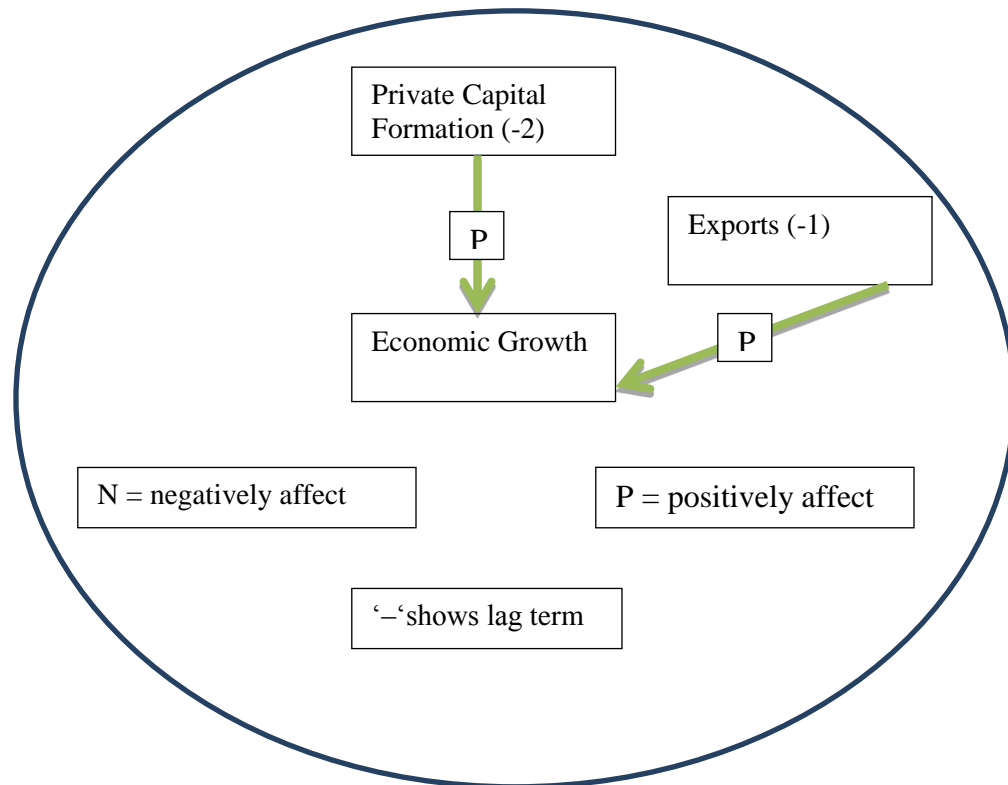


Fig5.6: LONG-RUN DETERMINANTS OF NON-DEVELOPMENT EXPENDITURES

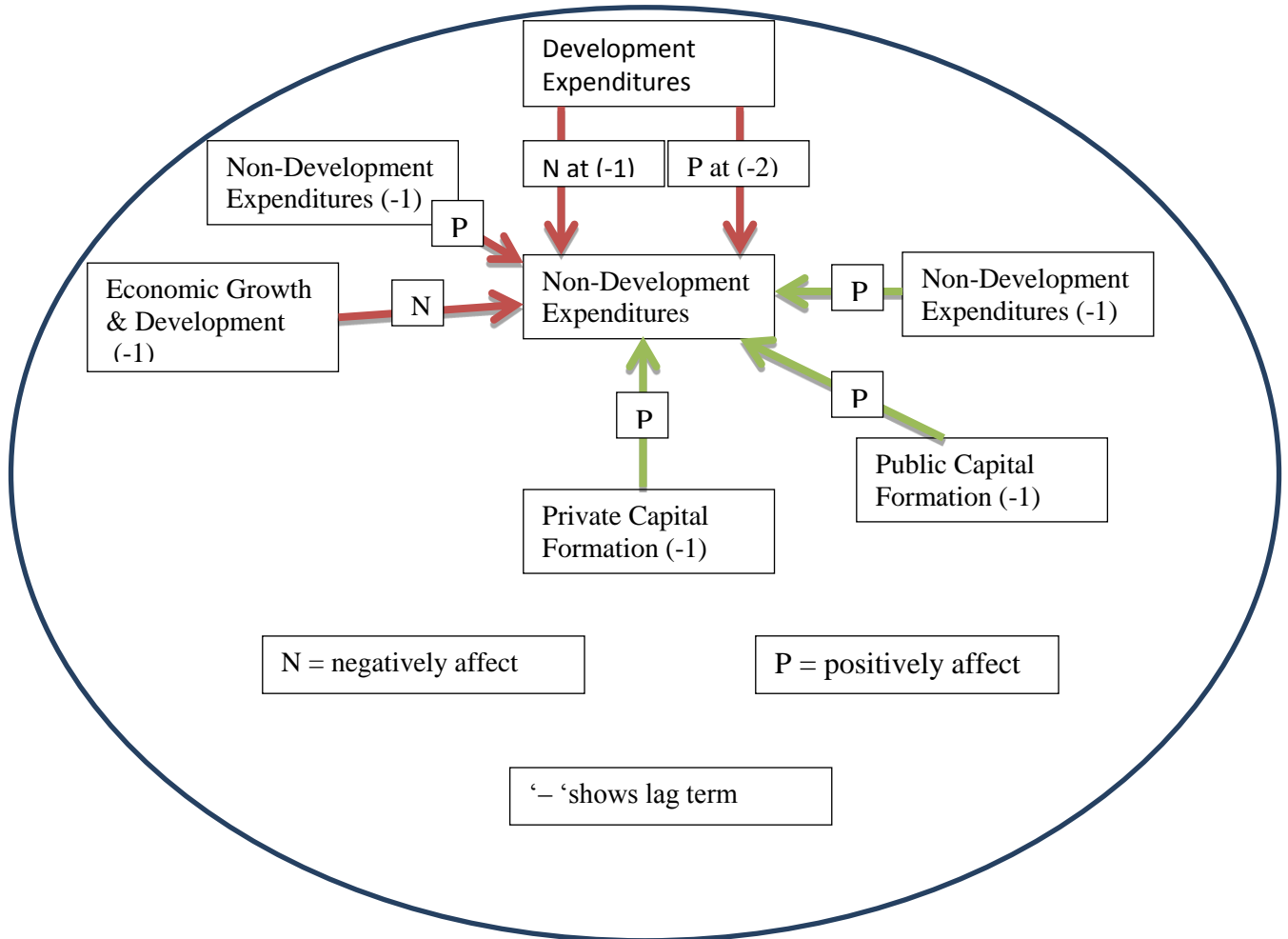




Fig5.7: LONG-RUN DETERMINANTS OF DEVELOPMENT EXPENDITURES

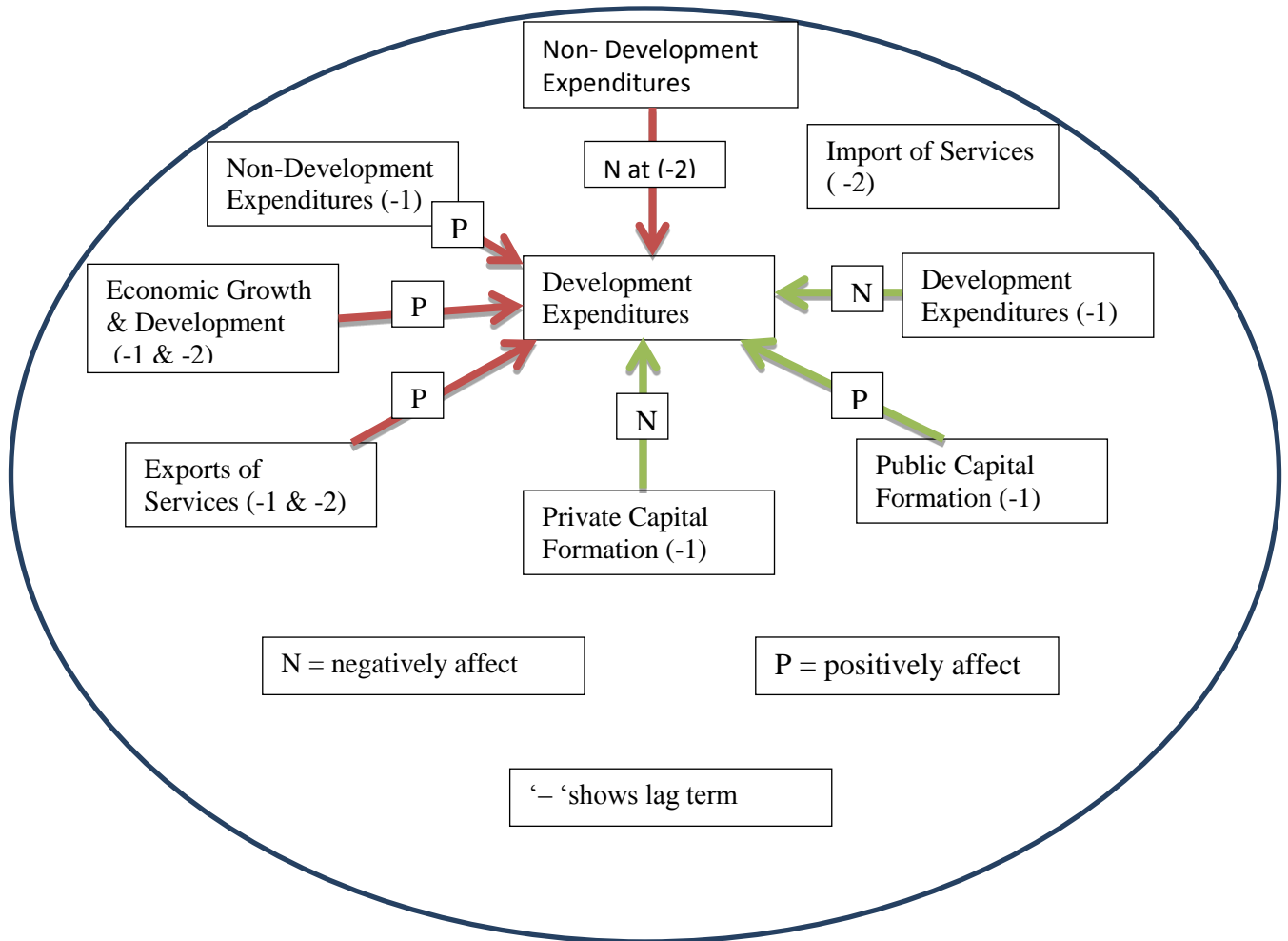


Fig5.8: LONG-RUN DETERMINANTS OF EXPORT OF SERVICES

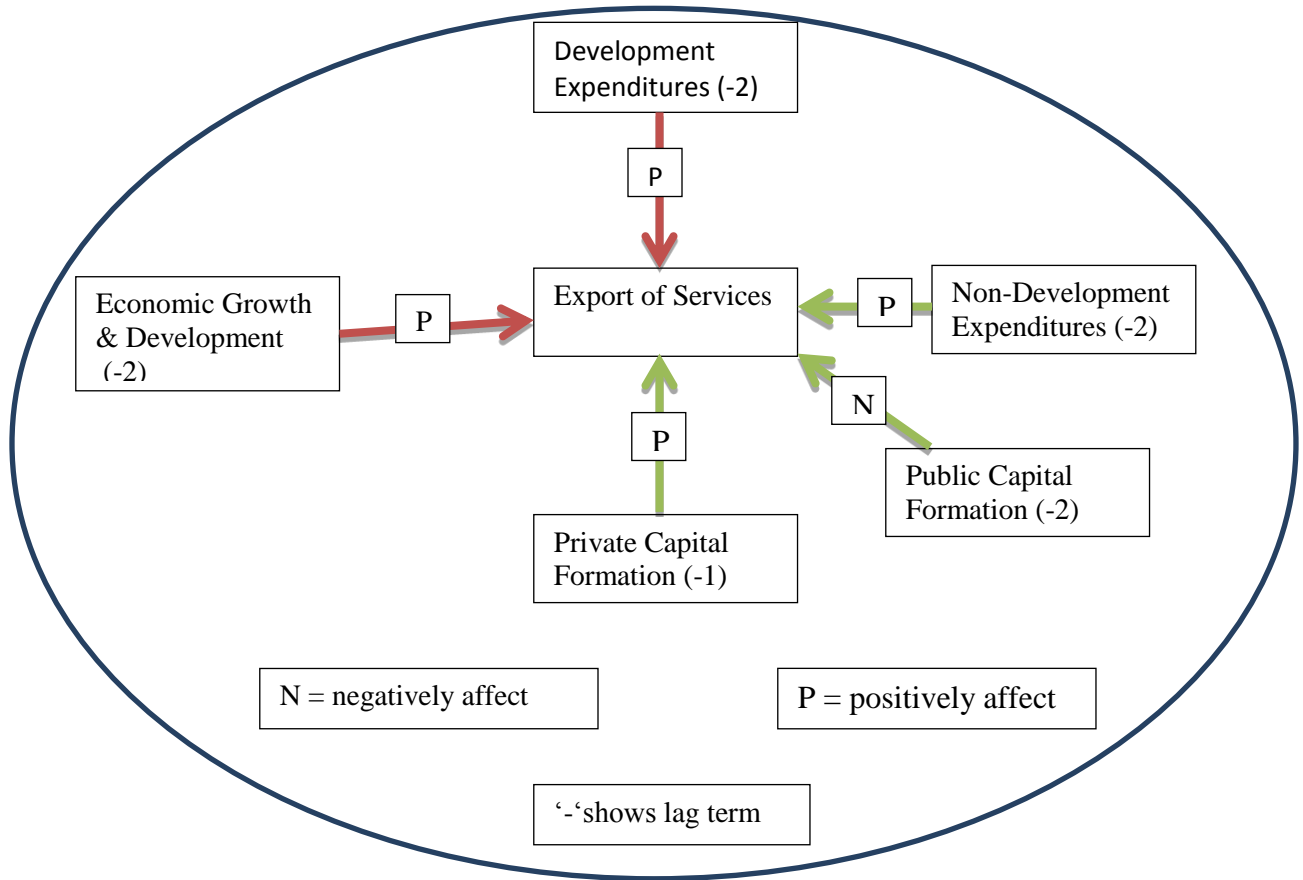


Fig 5.9: LONG-RUN DETERMINANTS OF IMPORT OF SERVICES

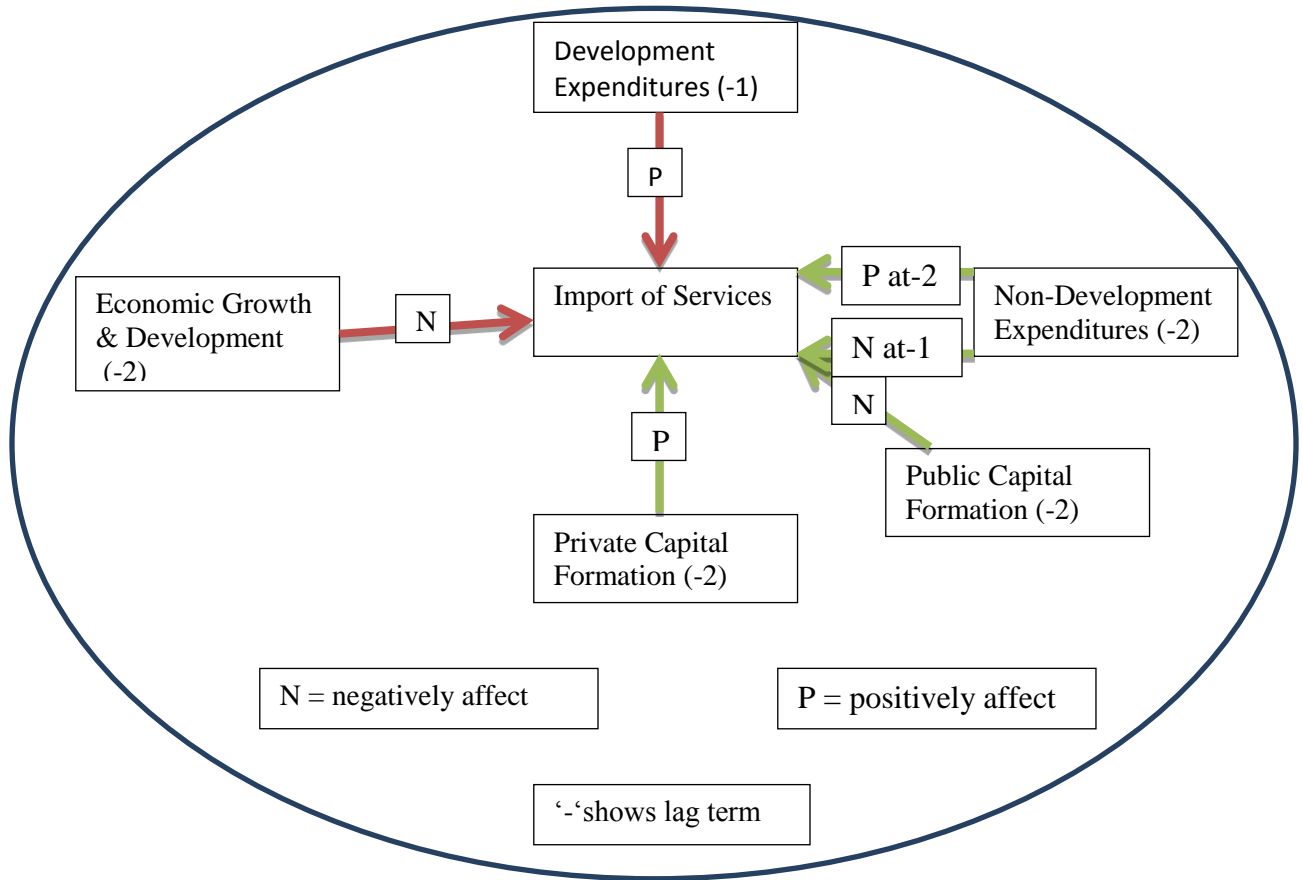


Fig 5.10: LONG-RUN EQUILIBRIUM RELATIONSHIP AMONG THE VARIABLES

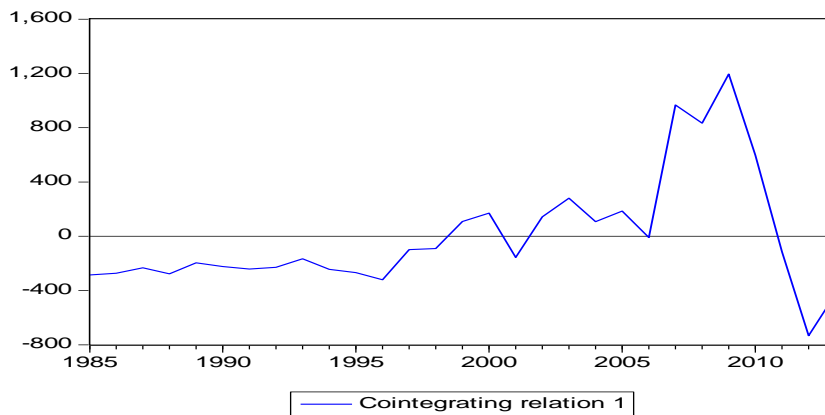
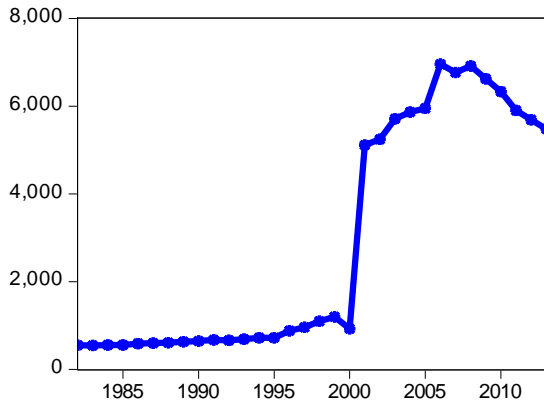
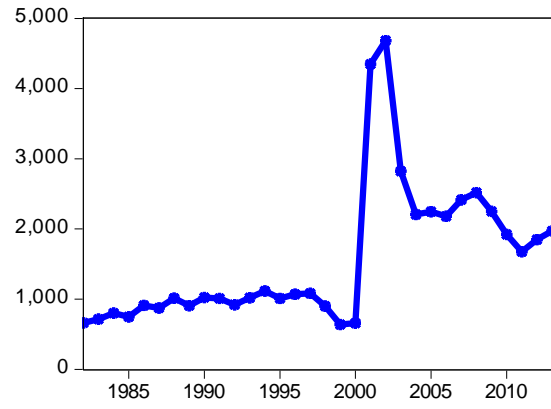


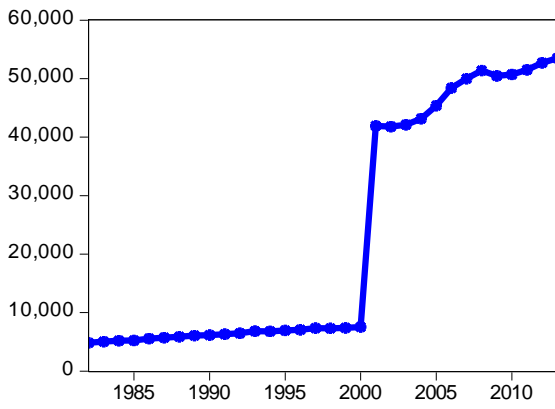
Fig 5.11: GRAPHS OF ENDOGENOUS VARIABLES



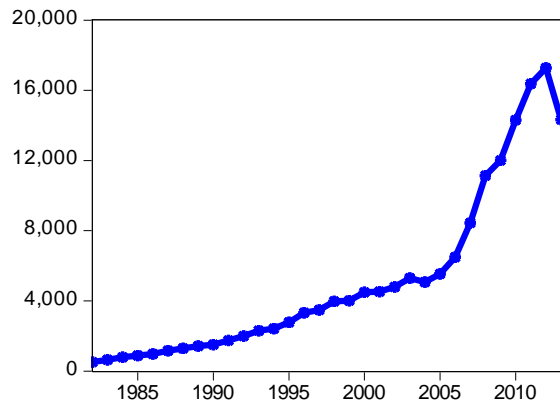
A



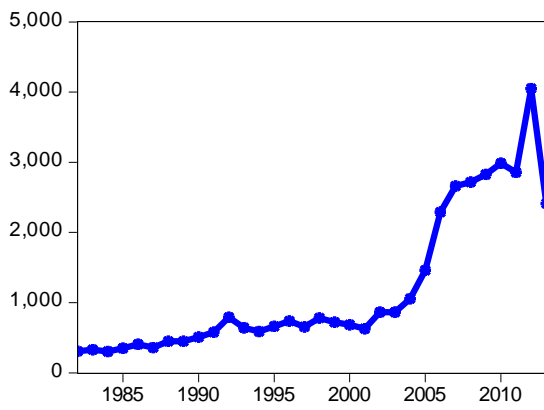
B



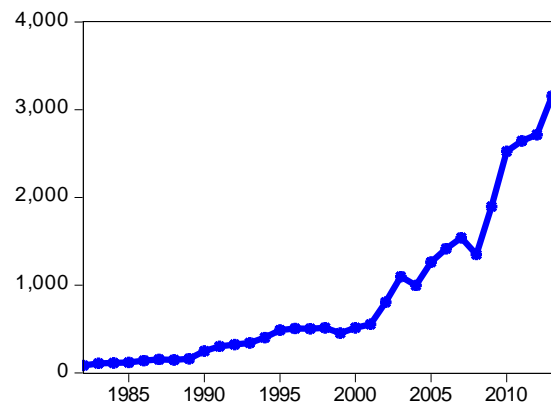
C01



D1



E



F