

## **DEFENSE SPENDING-ECONOMIC GROWTH NEXUS: A CASE STUDY OF PAKISTAN**

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**Abstract.** Defense spending of Pakistan remains high in order to sustain a credible deterrence, significant geopolitical position in Afghan wars and combat terrorism. The present study analyzes the defense spending in light of perceived and real threats to Pakistan's security and its linkages with economic growth. By developing a theoretical framework to explore the different dimensions of relationship, the study empirically investigates the relationship between defense spending and economic growth. Econometric techniques such as Johansen Cointegration and Granger Causality tests have been applied to obtain empirical results by using a time series data from 1980 to 2010. The results indicate that there exists a long-run relationship between defense spending and economic growth whereas economic growth granger causes defense spending.

**Keywords:** Defense spending, Economic growth, Security of Pakistan

**JEL classification:** H56, H72, Q43, Q47

### **I. INTRODUCTION**

Defense expenditure is professed as undesirable spending and burden on an economy because expenditure on defense diverts the resource allocation of that economy from development projects. Above and beyond this perception and criticism nation-states continue to add to their defense expenditures and to develop their military stockpile and take it as a primary duty of

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governance for many reasons. According to Stockholm International Peace Research Institute (SIPRI), world military spendings have crossed the figure of \$ 1.63 trillion in 2010, which shows a 1.3 percent increase in real terms from 2008 military spending and 50 percent increase since 2001. This can be thought by considering defense expenditure as a component of government spending which is used as a fiscal policy tool to correct short-run economic fluctuations explained by Military Keynesianism. It can be characterized as state's responsibility to pursue the goals of security and prosperity.

Pakistan is a poor country with a ranking of 156<sup>th</sup> in world per capita purchasing power parity (PPP) adjusted gross national income of \$ 2,600, human develop index (HDI) ranking 125<sup>th</sup>, peace ranking 145<sup>th</sup> and stands 35<sup>th</sup> in defense spending ranking. Defense expenditure of Pakistan remains high and takes a large portion of gross domestic product (GDP) 4.5% on average from 1995 to 2009 due to longstanding conflicts and arms race with India and its geopolitical position in Afghan war and internal incidents of terrorism. These high defense spendings have attracted many researchers from within (Tahir and Sajid, 1999; Khilji and Mahmood, 1997) and outside the country (Henderson, 1993; Looney, 1998a; 1998b). There are economic effects of these expenditures and enough literature is available which shows the relationship between defense spending and economic growth and indicates the direction of this relationship. Recently there is a decline in defense spending from 6.4% in 1995 and 4.1% in 2000 to 3.1% of GDP in 2009.

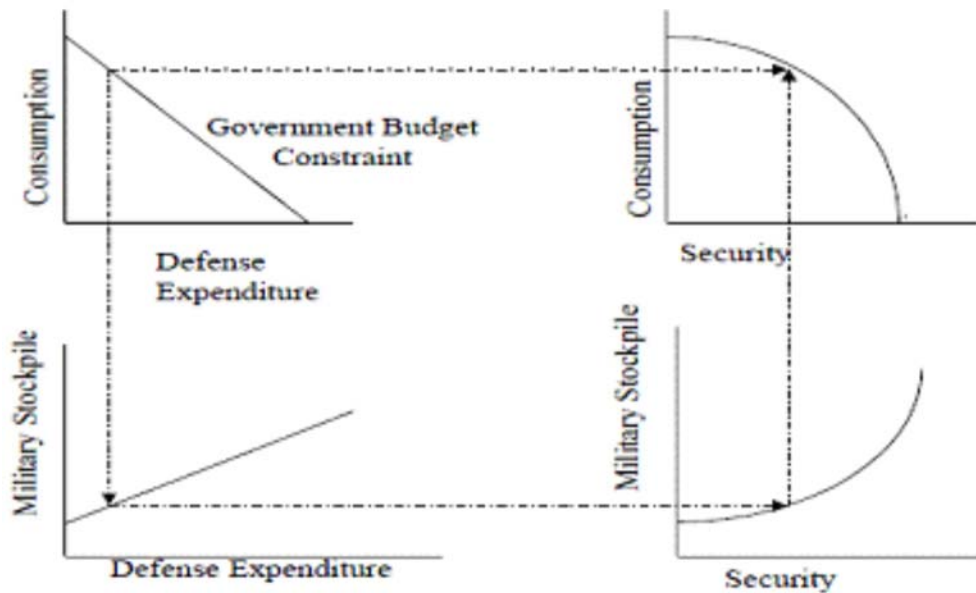
The present study aims at finding out the determinants of high defense spending and to gauge the relationship between defense spending and economic growth in Pakistan. Keeping this in view, the paper has been organized on the following lines. Section II explains theoretical framework and literature review is given in section III. Section IV explores the dynamics of defense spending; section V presents methodology and data sources; section VI gives result; and section VII concludes the study. Lastly some recommendations are given in section VIII.

## **II. THEORETICAL FRAMEWORK**

Defense economics studies the defense expenditure management during peace and war and analysis its externalities on other sectors of the economy. Generally defense expenditure is considered as public good expenditure of an economy but defense economics analyzes the integration of defense expenditure and growth of that economy through various routes (Ando, 2009). Figure 1 gives a brief introduction of defense economics. The upper

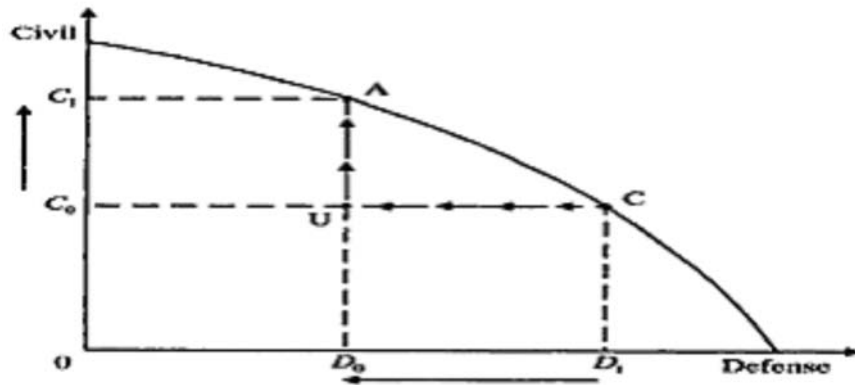
left part of the Figure shows the government budget constraint in allocation of national income either for defense spending or civil consumption. If government decides to invest more on defense it will contribute in military stockpile on lower left part of Figure leaving the debate why government should do this aside for a moment. This will turn into military power or security shown on lower right part of Figure. The upward turning curve in this part indicates technology improvement and it will interpret the government choice between security and consumption of society on right upward part of Figure. Alesina and Spolare (2008) claim economies of scale in producing public goods and per capita cost of many public goods in large economies is low as tax payers pay for them. Hou (2009) argues that large economies in terms of population or national income are less exposed to external aggression so security is a public good that increases with economy size. That's why small economies have to spend proportionately more than large economies.

FIGURE 1  
Defense Expenditures



This concept can be explained with the classical example of guns versus butter. Now think of an economy that is operating at its potential producing  $D_1$  of military goods and  $C_1$  of civil goods. Imposing a reduction in defense expenditure will move military goods from  $D_1$  to  $D_0$  and civil goods from  $C_1$  to  $C_0$ . Time to adjust this change involves costs of dislocation of capital and unemployment.

FIGURE 2



Now economy is producing more of civil goods and the move from *C* to *A* shows the change in preference of the economy. The move will not be directly shifted from *C* to *A* but it adjusts or proceeds through *U*, which is cost of this change, and it might be unemployment or dislocations. The probability that disarmament and armament involve benefits and costs should be treated as investment process (Sandler and Hartley, 1995).

### III. LITERATURE REVIEW

Along with above theoretical literature there is enough empirical literature also available which shows the causal relationship between defense expenditure and economic growth and they can be grouped into four categories. First is bi-directional causal relationship between defense expenditure and economic growth, second is unidirectional causal relationship from defense expenditure to economic growth, third is unidirectional causal relationship from economic growth to defense expenditure and last is no causal relationship between defense expenditure and economic growth.

#### Feedback Causal Relation between Economic Growth and Defense Spending

Tahir and Sajid (1999) study the causality between defense expenditure and economic growth for Pakistan and LDCs. Authors have applied granger causality test on quarterly decomposed series of real defense expenditure and real output from 1961 to 1997 for Pakistan. The results of their paper suggest a feedback relationship in case of Pakistan, India and Iran. There exists a

unidirectional causal relation from gross domestic output to defense spending for Guatemala and Venezuela. A unidirectional causal relation from defense spending to GDP is found for Turkey. There exists no relationship between defense expenditure and GDP for Philippines, Ecuador and Sri Lanka. Still the simple causality results show the existence of bi-directional causality between defense spending and GDP.

Joerding (1986) states that military can affect growth through various routes such as aggregate demand effect. Think of an economy enjoying high growth rates can increase defense spending to protect her from foreign aggression and to maintain internal stability. The important thing here is to review whether defense spending initiates economic growth or defense spending are affected by changes in economy.

### **Causal Relation Running from Defense Spending to Economic Growth**

Kentor and Kick (2008) examine the capital intensiveness of military organization in developed and less developed countries. They have used cross sectional panel regression and causal analysis of developed and less developed countries from 1990-2003. The results show that military spending per soldier inhibit the growth of per capita gross domestic product (GDP). The findings of the study also show that arm imports have positive impact on economic growth but only in less developed countries.

Hou (2009) examines the causes and effect of defense expenditure on economic growth in India and also in broader context taking 36 developing countries in study. He use cross sectional and panel data technique to find the impact of defense expenditure on economic growth for these countries. His results show a negative effect of defense expenditure on economic growth. His findings hold same indication for panel data analysis.

Ando (2009) examines relationship between defense and growth in context of defense economics. Feder model that assumes economy consists of two sectors (private and defense) has been used to estimate the economic growth of 109 countries with 30 OECD included, using panel data from 1995 to 2003. The results show that as defense sector increases, economy will grow and defense spending have not any negative effect on economy.

Lai *et al.* (2002) examine the linkages between balanced economic growth and military expenditure using endogenous growth model that captures demand side factors as well as supply side factors. The results show that when an economy is spending more on its defense it enjoys a high growth rates and endorse Benoit findings that high military spending lead to high economic growth.

Yildirim and Sezgin (2005) examine the relationship between government expenditure and military spending. They estimate the impact of government expenditure on military spending by using panel data technique for 92 countries from 1987 to 1997. The results of their study show a significant and positive impact of government expenditures on military spending.

### **Causal Relation Running from Economic Growth to Defense Spending**

Looney (1989) suggests that national income level of an economy may be viewed as most important determinant to translate the level of military expenditure for that economy. Hewitt (1996) examines the gross national product level and its impact on level of military expenditure. He argues that the relationship might appear convex as estimated coefficient on log of gross domestic product appear negative and they appear positive when he use log of gross domestic product square.

Tamubudzi (2007) examines the defense spending determinants in 12 Southern African countries from 1997 to 2004. He uses the cross sectional and panel data techniques to obtain his results. His findings confirm the importance of gross domestic product (GDP) per capita in determining the level of military burden an economy can afford.

Batchelor (2002) explores the military spending in South Asia from 1963 to 1997. Their empirical results support the level of military expenditure is determined by national income. Sun and Yu (1999) find that the military expenditure in china is positively related to its gross national product (GNP).

Kalyoncu and Yucel (2005) explore direct effect of military expenditure on growth for Turkey and Greece. The study also explores the direction of causality between growth of gross national product (GNP) and military expenditure. For empirical results they use logarithmic form unit root test and Engel-Granger cointegration test on annual data set from 1956 to 2003. The results show that there exist long-run equilibrium between defense spending of Turkey and Greece. The findings of causality test hold that there exists a unidirectional causality from growth to defense spending for Turkey.

### **No Causality between Defense Spending and Economic Growth**

Habibullah *et al.* (2008) explore the relationship between military expenditure and economic growth in selected Asian countries including Pakistan from 1989 to 2002. They use unit root test, panel cointegration test base on Larson *et al.* (2001) and panel error correction test based on Pesaran

*et al.* (1999). They find that military spending and real gross domestic product (GDP) per capita are integrated with unit root test. The panel cointegration test shows long-run relationship between military spending and economic growth. The panel error correction test shows that military spending and economic growth are not related in Asian countries.

Khan (2004) examines the plausibility of using defense expenditure as a macroeconomic stabilization tool (Military Keynesianism Hypothesis) in case of Pakistan. The author has used Johansen's cointegration techniques and the vector error correction modeling from Fiscal Year 51 to 2003. The results indicates that defense expenditure are not burden or do not hurt economic growth during the estimation period. In case of Pakistan the Military Keynesian hypothesis does not hold too. The paper also undermines the prevailing view that increases in defense expenditure are accompanied with the decline in development expenditure.

Al-Yousif (2002) explores the relationship between economic growth and defense expenditure in six Gulf countries taking a time period from 1975 to 1997. A multi-variant error correction model has been used with granger causality test by author to get results. The results indicate that the relationship between growth and defense spending cannot be generalized and must be seen in context of socio-economic conditions of an economy.

Aslam (2007) examines the linkages between social expenditures, defense spending and economic growth for 59 countries across different regions from 1972 to 2000. In her study she addresses the effect of defense expenditure on growth and explores that to what extent defense spending are fueled with other social spending by using Feder model (1982). The empirical results do not show any trade-off between social expenditure and defense expenditure and show no significant productivity impact on economic growth for Asia region.

Looney (1995) addresses the question that does defense spending effect low saving rates of Pakistan and how this effect is different from other government spending. Haiso tests have been used to draw results about the relationship of defense spending and saving rates. It provides little evidence that saving rates of Pakistan are affected by her military spending, albeit, its impact is different from other government expenditures on saving rates.

#### **IV. DYNAMICS OF PAKISTAN DEFENSE SPENDING**

Military spending remained high on an average of 6.62 percent of GDP till 1999 but then there is a notable change in 2000 when these spending fell from 5.1 percent to 4.1 percent. Then it started to increase from 2001 into

2003 and declined again. This was due to foreign military aid after war on terror and inclusion of defense pensions in civil budget (IMF, (ROSC) Pakistan).

The justification for Pakistan high defense spending provided by the decision makers and policy formulation bodies is mostly based on the state's security due to potential threats from inside and outside the territories. After the partition of subcontinent in 1947 the rivalry began between Pakistan and India. These two countries shares almost same institutions, budgetary mechanism and political structure but differ in religion, foreign policy and coalition, so both came front to front on many conflicts. The government and military of Pakistan perceive India as a potential threat to its sovereignty. As in 1980s General Zia-ul-Haq the then president and chief of army staff refused to impose any cut on defense expenditure as he stated that no one can fight a nuclear submarine and jets with sticks so we had to match our arsenal capabilities with our adversaries, so Pakistan cannot afford any reduction in defense spending, as you cannot congeal the security threats to Pakistan (Chawla, 2001). These security threats lead Pakistan and India to fought four wars on different territorial locations.

TABLE 1  
Conflicts between Pakistan and India

Year	Location
1947-48	Northern Kashmir
1965	Punjab and Sindh
1971	East-Pakistan
1999	Kargil

These conflicts and security threats results in arm race between these two neighbouring countries, which is a classical example of arm race in recent times. These action-reaction acquisitions of arsenals cause a high allocation of resources towards defense. Hollist (1977) indicates that the coefficients of reaction are not clear by using Richardson type arms race model and a period from 1949 to 1973. Deger (1990) reports that there is asymmetric arms race between Pakistan and India and Pakistan shows high response to India's military spending.

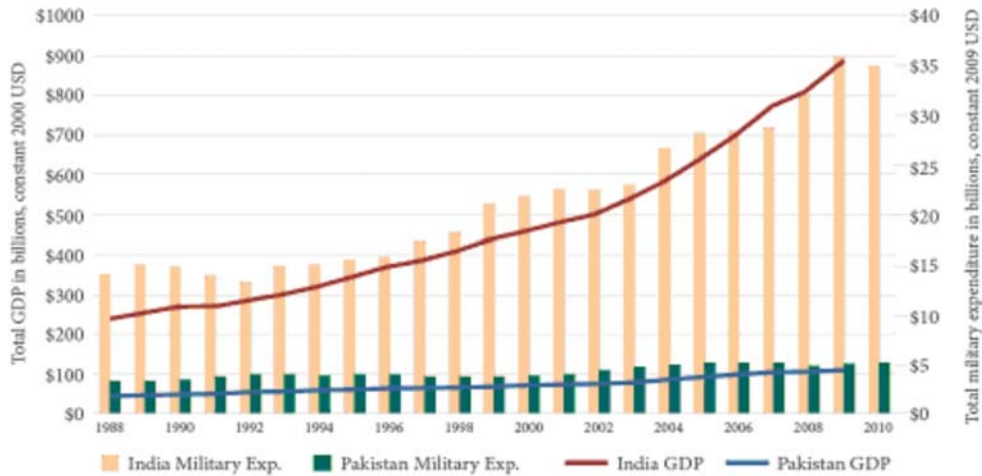
Dunne *et al.* (1999) uses bi-variant VAR model for a period 1962-96 and find an action-reaction arms race between Pakistan and India. Yildirim



and Ocal (2006) use multi-variant model and find a bi-directional causality between Pakistan and India.

FIGURE 3

## GDP and Military Expenditure of India and Pakistan



Source: An Introduction to Pakistan's Military. Belfer Center for Science and International Affairs, 2011.

The Soviet invasion of Afghanistan in 1979 had a profound impact on Pakistan's security as the country emerged as a front-line state in the war against communism and found it uncomfortably placed in a two-front threat scenario such as no other South Asian state has ever experienced. On the other hand, the war on terror in Afghanistan also made Pakistan the no.1 ally of the United States and a front line state. During the both Afghan Wars, the United States provided unequivocal support to Pakistan, which gave it the self-confidence to withstand Soviet pressure and fight with Taliban and terrorists in the war against terror. In this regard, Pakistan courageously opposed the Soviet invasion and took a leading part in condemning Soviet aggression in all international and regional forums.

The Afghan War provided political legitimacy to General Zia and General Musharaf's military rule, which had been highly unpopular in the country. Afghan refugees posed an alarming threat to Pakistan's security. Domestically, the Afghan refugees have not only created political, economic and socio-cultural problems for Pakistan, but they also introduced drugs and a Kalashnikov culture. Suicide attacks, local insurgencies and insecurity has the made the life of the people of Pakistan miserable. The Afghan Wars also

allowed ethnic and sectarian warfare and Islamic fundamentalism to tighten their grip on the country. Moreover, the consequences of the Afghan war damaged Pakistan's international image, spreading a narrow and violent version of Islam throughout the region and increasing tensions with its neighbours.

Pakistan is fighting an insurgency against the Taliban, Tehrik-e-Nifaz-e-Shariat-e-Mohammadi (TNSM), al Qaeda, the Islamic Movement of Uzbekistan, and a host of home-grown terror groups such as Laskar-e-Taiba, Harakat ul-Mujahidin, Lashkar-e-Jhangvi and others. By 2003, a loose alliance of tribally-affiliated and personally-linked militant extremist groups had begun to identify itself as the Tehrik-e-Taliban Pakistan (TTP). The Taliban's growth as an insurgency in Pakistan strengthened beginning in 2004 when heavy pressure from Washington to cut off infiltration into Afghanistan led Pakistan's President Pervez Musharraf to order tens of thousands of troops into North and South Waziristan. Efforts by Pakistan's premier military security organization, the Inter-Services Intelligence (ISI), to exercise control over this area destroyed much of their remaining traditional structures.

Over the next several years, a TTP presence was felt in most of the remaining tribal agencies and then in adjoining districts of the NWFP in the so-called settled areas. Pakistan had to face many insurgencies in Sawat, NWFP, Balochistan and other parts of the country. Pakistan sacrificed more than 3000 of its military and civilian persons including one general and also the great leader Benazir Bhutto and her borders both at eastern and western sides are not safe. This threat including with local insurgencies made it essential for Pakistan to improve its defense capabilities.

Due to the important role of military in power politics of Pakistan, the civil bureaucracy cannot dictate or supersede military in the defense budgeting process. Ministry of Defense, Ministry of Foreign Affairs and Ministry of Finance constitute the bureaucracy involves in defense decision-making. The organizational structure of ministry of defense is twisted to save guard the military interests. Serving and retired military officials occupy central positions in the ministry which make possible to them to control and monitor the work according to the desires of the military establishment. The civilian officials within the ministry also have enough authority to handle military affairs on their own (Siddiqah-Agha, 2000). The ministry of foreign affairs serves government in locating sources of supply for weapons. The ministry does not have hands-on the procurement process and its importance

in arms procurement varies with the heads of government in Pakistan (Chawla, 2001).

The ministry of finance is an important body in defense decision-making as it controls the finances of the military establishment but It does not have the influence over the decisions made by military in Pakistan. The ministry of finance faces immense pressure from the military to provide funds for the maintenance of the existing infrastructure and for acquiring new equipments. Given the resource limitation the ministry of finance cannot reduce the funds for military but can delay other funding under its authority (Siddiqah-Agha, 2000). This is also explained by bureaucratic model of Lucier (1979), which states defense expenditures as a characteristic of bureaucracy to protect their status quo and future budgeting (Jeffrey, 1999).

## V. METHODOLOGY AND DATA SOURCES

Johansen Cointegration and Granger Causality tests have been applied to obtain empirical results by using a time series data from 1980 to 2010. The model is based on Keynesian military theory which explains that defense spending make spillover effect and boosts the economic growth. The data which this study has been used for estimating the causal relation between defense spending and economic growth has obtained from World Bank, SIPRI, various issues of Economic survey of Pakistan and from different research papers. All the data for the variables are taken in percentages of GDP. The variables which are used along with defense spending to explain the relation of economic growth with defense spending are given below:

GDP  $\int$  (EX, IMP, INV, ME)

GDP	Gross Domestic Product
EX	Total Exports
IMP	Total Imports
INV	Gross Domestic Investment
ME	Military Expenditure

The GDP growth rate data is obtained from World Bank data and various issues of Economic survey of Pakistan. The percentage growth rate of GDP is calculated on market prices on bases of constant local currency and does not include any subsidies on products. It shows the pace of an economy and the direction of its development. Some scholars also use this variable to look the living standards of people living in an economy because

it indicates the fiscal and macro-economic standards of a country so there is a strong relation between economic growth and public policy.

In case of developing countries the published defense spending should be treated with care because of aggregate budget categories, military assistance and involvement of military in civil projects. This paper is using the data of defense spending compiled by the World Bank on definition provided by the NATO. The data on defense spending includes the whole range of current and capital spending on armed forces like ministry of defense, paramilitary forces, military research & development, operations and maintenance and procurement.

It does not involve civil defense spending on previous military activities and conversion or destruction of weapons. Defense consumes a large portion of total income of an economy therefore it has been under the debate of many scholars that whether spending on defense is useful or wasteful. The level of defense spending depends upon the regional and geo-strategic condition of particular country so a country with more threats will spend more on its defense and vice-versa. This is an issue of high consideration for policy analysts.

The data for exports is extracted from World Bank data and various issues of Economic survey. It includes all the goods and services which are provided to world and does not include factor services and transfer payments. Exports are one of the main drivers which drive the economic growth of an economy and main component of international trade. It reflects the domestic industry performance of an economy and productivity of that economy.

The data for imports is obtained from World Bank data and various issues of Economic survey. It includes all the goods and services which are received from the world and does not include the factor services and transfer payments. Imports are usually proclaimed as unpleasant activity for an economy as a huge money is consumed on goods and services which are not available in a particular economy but import of consumer goods can make a competitive environment for local manufacturer to develop their technology and import of services in some sectors can be used to develop human resource.

The data for gross domestic investment has obtained from World Bank data and various issues of Economic survey. It includes net changes in the level of inventories, land improvements, plant, machinery, equipment, construction of roads, railways, construction of schools, offices, hospitals,

private residences, commercial and industrial buildings. It is a good indicator of productive capacity of an economy which interns contributes to economic growth.

## VI. RESULTS

At first stage time series is tested to check the stationary through proper unit root analysis. Underlying assumption in Econometric models is that the present time series is stationary. If this assumption is violated then the whole analysis will result into nothing and in this case the regression will become spurious. A nonstationary time series has an infinite memory and it is not mean reverting. One popular example is the random walk model where the data is derived by random shocks. Now by infinite memory it means that the effects of shocks will persist very long time. As the consequences of non-stationary have dire effect on the results of regressions so we need to know wither the data we are dealing is stationary or not.

In the literature, two tests are generally applied to find out the order of integration but study applied the ADF (Augmented Dickey-Fuller, 1979). Table reports that all the tests of unit root of these variables,  $\tau_t$ -statistics corresponding to the parameter  $\rho = 0$ , the calculated  $t$  values are compared with tabulated  $\tau_t$  values, the statistics shows that all the variables (*i.e.* GDP growth, real investment, exports, imports, and military expenditures) are I(1) in their levels and I(0) in the first difference at five percent level of significance. Augmented Dickey-Fuller test has been applied to check the stationarity of the variables. All the variables are stationary at first difference. Table 2 contains the ADF values of all variables which are statistically significant.

TABLE 2  
ADF Values of All Variables

Variables	With Intercept		With Trend and Intercept		Conclusion
	Level	1 <sup>st</sup> Difference	Level	1 <sup>st</sup> Difference	
EX	–	–5.31	–	–5.21	I(1)
GDP	–3.81	–6.77	–	–6.63	I(1)
IM	–	–6.88	–3.59	–6.77	I(1)
INV	–	–3.31	–	–	I(1)
MEX	–	–4.32	–	4.90	I(1)

Table 3 presents the results of the Johansen maximum likelihood method of testing for cointegration. The test is used to check the long-run relation among the variables. If the values of trace statistics (based on Likelihood ratio) and values of Max. Eigen values are greater than their critical values then we will reject  $H_0$ . Here  $R = 0$  shows there is no co integrating vector means there is no cointegration found at  $R = 0$ . Now we move towards  $R \leq 1$  here both the values are greater than their critical values and refer to rejection of  $H_0$ . Now variables moves to  $R \leq 2$  here both values are lower than their critical values and refers to acceptance of  $H_0$  this means that here two co integrated vector found. In this case cointegration is found among the all the variables (GDP, Real Investment, Imports, Exports and Military expenditures).

TABLE 3

Johansen and Juselius (1990) Maximum Likelihood Test for Cointegration

Null Hypothesis	Trace Statistic	0.05* Critical Value	Prob**	Max-Eigen Statistic	0.05* Critical Value	Prob**
$R = 0$	129.6712	95.75366	0.0000	49.41161	40.07757	0.0034
$R \leq 1$	80.25957	69.81889	0.0058	33.93469	33.87687	0.0492
$R \leq 2$	46.32488	47.85613	0.0691	24.75271	27.58434	0.1105
$R \leq 3$	21.57216	29.79707	0.3229	15.85223	21.13162	0.2336
$R \leq 4$	5.719938	15.49471	0.7283	5.443478	14.26460	0.6851

- Notes: (a) Trace test indicates 2 cointegrating eqn(s) at the 0.05 level  
 (b) Max-eigen value test indicates 2 cointegrating eqn(s) at the 0.05 level  
 (c) \* denotes rejection of the hypothesis at the 0.05 level  
 (d) \*\* MacKinnon-Haug-Michelis (1999) p-values

The variables are found to be cointegrated which indicates long-run relationship between these variable. So the next step is to find short-run dynamics and for this purpose Error Correction Model (ECM) has been applied. There are two important things, the sign of the ECM term and its statistical significance. The ECM term can be either positive or negative. If it is positive, then it means that the equilibrium is unstable. If it is negative, it implies that the equilibrium is stable. Then comes the statistical significance of the ECM term. If the ECM term is insignificant, it means that the system is always in equilibrium, *i.e.* there are no short term disturbances. If the ECM

term is significant then there exists a short-run relationship. The value of the ECM term (after converted into percentage) indicates the speed of adjustment per period of time towards the long-run equilibrium. The ECM vector indicates three variables with significant T-value among them and two variables with negative sign. These variables are GDP growth  $-0.557135$   $[-2.86942]$ , Military spending  $-0.060089$   $[-2.04863]$  and imports  $0.946164$   $[4.31762]$  where ECM term for other variables appear insignificant and with positive sign. ECM parameter ( $\alpha_1 = -0.557137$ ) implies that 55.71% of the long-run equilibrium deviation is corrected annually and it applies to all. The results of ECM are given in Table 4.

TABLE 4  
Result of ECM

Error Correction	D(DGDP)	D(DMEX)	D(DIM)	D(DEX)	D(DINV)
CointEq1	-0.557135	-0.060089	0.946164	0.006170	0.127350
	(0.19416)	(0.02933)	(0.21914)	(0.12746)	(0.09856)
	$[-2.86942]$	$[-2.04863]$	$[4.31762]$	$[0.04841]$	$[1.29213]$
D(DGDP(-1))	-0.240019	0.032508	-0.423909	-0.033992	-0.018360
	(0.17217)	(0.02601)	(0.19432)	(0.11302)	(0.08739)
	$[-1.39410]$	$[1.24989]$	$[-2.18155]$	$[-0.30075]$	$[-0.21008]$
D(DMEX(-1))	-1.596421	-0.288998	-2.835331	0.619488	-0.317400
	(1.24666)	(0.18833)	(1.40703)	(0.81841)	(0.63281)
	$[-1.28056]$	$[-1.53455]$	$[-2.01512]$	$[0.75694]$	$[-0.50157]$
D(DIM(-1))	-0.825995	-0.060222	0.251382	-0.018440	0.266437
	(0.20611)	(0.03114)	(0.23262)	(0.13531)	(0.10462)
	$[-4.00758]$	$[-1.93414]$	$[1.08064]$	$[-0.13628]$	$[2.54667]$
D(DEX(-1))	0.730222	-0.005373	0.050003	-0.626558	-0.164609
	(0.31041)	(0.04689)	(0.35034)	(0.20378)	(0.15757)
	$[2.35243]$	$[-0.11459]$	$[0.14272]$	$[-3.07469]$	$[-1.04469]$
D(DINV(-1))	-0.637874	0.164227	-0.565257	0.264902	-0.335422
	(0.39468)	(0.05962)	(0.44545)	(0.25910)	(0.20034)
	$[-1.61618]$	$[2.75442]$	$[-1.26895]$	$[1.02239]$	$[-1.67425]$
C	0.065790	0.004484	-0.178739	0.151570	-0.183449
	(0.46579)	(0.07037)	(0.52571)	(0.30578)	(0.23644)
	$[0.14124]$	$[0.06373]$	$[-0.33999]$	$[0.49568]$	$[-0.77588]$

Table 5 shows the results of Granger-causality. If the value of F-statistic for the required observations is 4 and probability value is less than 0.05 then  $H_0$  will be rejected.

Table 5  
Granger Causality Test Results

Null Hypothesis	Obs	F-Statistic	Probability
EX does not Granger Cause GDP	28	1.47108	0.25050
GDP does not Granger Cause EX		2.54955	0.09998
IM does not Granger Cause GDP	28	1.36696	0.27482
GDP does not Granger Cause IM		22.0421	4.5E-06
INV does not Granger Cause GDP	28	3.17564	0.06056
GDP does not Granger Cause INV		19.2921	1.2E-05
MEX does not Granger Cause GDP	28	0.90764	0.41745
GDP does not Granger Cause MEX		6.50010	0.00579

Exports do not cause GDP and similarly GDP does not cause exports because the F-statistic value is smaller than 4 and probability value is greater than 0.05. Imports do not cause GDP but GDP causes imports. Investment does not cause GDP but GDP causes investment. Military spending does not cause GDP but GDP causes military spending.

## VII. CONCLUSION

The findings of this study are similar to the findings of Khan (2004) that defense spending do not hurt economic growth but also cannot be used as macroeconomic stabilizer and differs from the findings of Tahir (1995) which indicate a feedback relation between economic growth and military spending. In this period, the study finds defense spending and economic growth cointegrated but the relation is flowing from economic growth to defense spending. Every developing or developed country surely has its own problems which determine the defense spending or bound the cuts in defense spending. These particular problems range from civil war, regional wars, militarization of security policy, military regimes, and use of military to suppress internal voices or conflicts to involvement of foreign powers. All these circumstances indicate a non-linear relationship between maintaining present level of defense spending and reduce defense spending. The arms



transfers have positive impact when the threat is high and decrease in defense spending during conflict or civil war may subvert the very basis of state.

### **VIII. RECOMMENDATIONS**

Both India and Pakistan are large markets with great economic opportunities but the economic relations between them have never been progressive. Therefore, reduced bilateral trade, higher military expenditure, less development expenditure and less general trade openness are all conflict enhancing elements. Trade can be increased with India to reduce threat perception and rivalry. India gave the Most Favoured Nation (MFN) status to Pakistan but Pakistan still has not been able to reciprocate it due to its concerns.

Defense no doubt is a vital element of national security but policy makers should consider economic, social, energy and other elements of national security. Defense spendings are recently high due to non-traditional warfare but it should be regulated in order to avoid the security paradox. The defense budget should be made transparent and accountable. The defense budget should come under proper heading in annual budget sheet.

Pakistan needs to acquire and maintain a high GDP growth to increase the pace of development and to alleviate poverty. Poverty at its present high level is a threat to the state and national integration by fueling the conflict in social structures.

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