Theoretical and Applied Economics
Volume XXVI (2019), No. 1(618), Spring, pp. 169-182

Empirically testing Keynesian defense burden hypothesis, nonlinear hypothesis, and spillover hypothesis: Evidence from Asian countries

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Abstract. *The objective of the study is to evaluate different alternative and plausible hypothesis, i.e., Keynesian defense burden hypothesis, nonlinear hypothesis, and spillover hypothesis by controlling governance indicators in a panel of 5 Asian selected countries during a period of 2000 to 2016. The study employed panel Fully Modified OLS (FMOLS) and Dumitrescu-Hurlin panel causality estimates for robust inferences. The results confirmed the defense burden hypothesis where high military expenditures decrease country's economic growth. The real interest rate, trade openness, and government education expenditures substantially decreases country's per capita income due to market imperfection, arms import, and low spending on education. The political instability decreases economic growth while voice and accountability and regulatory control largely support country's economic growth. The causality estimates confirmed the feedback relationship between i) per capita income and exports ii) trade openness and military expenditures, and iii) real interest rate and exports, while growth led military expenditures and arms conflict, military led exports and political instability, and trade led regulatory control established in causality framework.*

Keywords: military expenditures; economic growth; political instability; regulatory control; voice and accountability; FMOLS; Asian countries.

JEL Classification: C33, G38, H54.

1. Introduction

Military expenditures is professed as undesirable expenditures as well as burden on an economy, because these spending on military or defense divert domestic allocation of the resource within the economic framework and within the different projects in an economy. However, perception beyond the above statement has also face criticism that state continue to add to their military spending and to develop their defense aspects because of foreign protection (Khan et al., 2018). The literature of defense in macroeconomics postulates that these defense spending manages throughout war and peace and its externalities on different sectors of the economy. Usually, not only military expenditures is considered in defense economics as a public good expenditure but also the military expenditures examines the combination of defense spending and growth of that economy through different channels such as spill-over hypothesis as well as Keynesian defense burden (Hatemi-J et al., 2018).

The effects of military expenditures on economic growth have become the subject of literature in the area of defense economics. The theories on spending of defense and their effects on the growth of the economy are highly differ and including the arguments that military expenditures either increases economic growth or crowd out the productive investment. Though, the important argument is that whether the potential losses resulting from resources crowed out by investment in the sector of military exceeds the positive externalities. In addition, current literature recognizes the different channels through which the growth can be effected by defense expenditure. The old-style 'guns-vs.-butter' argument suggests that military spending cause to move more slowly the growth of the economy. But, positive externalities may also be possible that in an economy with military spending has as spin-offs of the technology, spillovers of security in the country as well as formation of human capital. Meanwhile, each viewpoint may lead to conclude it differently. However, the total effect of the military expenditure is unclear on country's economic growth. The empirical investigations of the relationship between economic growth and military expenditures, generally employing the analysis of the cross-countries and that follow the assumption that all areas are same steady-state path of the income of the economy. However, this assumption is highly force as it may reduce heterogeneity problem in the estimated parameter (Yildirim and Öcal, 2016).

The significant part of the resources of an economy is incurred on defense expenditure, based on perceived intimidations insight of political sector of the country. It is justified typically in terms of the security maintenance of the country, the law and order as well as to combat disturbances of the nation internally. According to Stockholm International Peace Research Institute in 2013, it has estimated that the world's military spending was US $1747 billion. It is approximately 2.4 percentage of the world GDP. Specified the extensive poverty all over the world, illiteracy and undernourishment in poor countries, it look like illogical transformation of the limited resources on the way to military spending at the cost of unattended basic people needs. In addition, the South

Asian region has disturbing part of the undernourished people in the world. In 2011, the estimated percentage was 24.5% and 60.2% of the people in South Asia region are surviving their lives less than 1.25 dollar per day (PPP) and 2 dollar in single day (PPP) respectively (Ismail, 2017). In 2015 the estimated Global military expenditure was $1676bn, and the increasing around 1.0% real terms from then 2014, which is 2.3% of the worlds' gross domestic product.

There is seriously debate on the causal relationship (negative or positive) in military spending and economic growths during the last some decades of the twentieth century. The debate has resulted in the existence of the 3rd school of thought, i.e., it is believed that there is no causal relationship between military spending and economic growth. However, military expenditures effects economic growth in two different ways, i.e., (i) effects of demand side and (ii) effects of supply side. As far as effects of demand side is concern, it postulates that aggregate demand in an economy is increasing by military expenditure while, secondly, supply-side effects are concerned, it has further two ways, i.e., (i) Direct effects and (ii) Indirect effects. The nature of direct effects is negative, because of crowd out effects of the investment as well as capital from the civilian's activities in an economy. While, indirect effects have controversial arguments, which are positive or negative. Moreover, there are mainly four types of indirect effects including, (i) training effects, (ii) infrastructural effects (iii), consumable effects, and (iv) security effects (Mirza et al., 2015)

Deger and Smith (1983) and Deger (1986)claimed that the defense spending in under developed countries has positive but minimal on the economic growth through modernization effects. But its net affects the rate of growth of the economy remains negative. In addition, Deger and Smith have also found that there exists causal relationship between military spending and economic growth. Moreover, they claimed that economic 'spin-off' from military to the economic development is weak, but they have found positive correlation of the military expenditure and economic growth of under-developed countries. There are numerous studies that have examined the relationship between military spending and economic growth. The evidences of the previous studies are mixed (Yildirim et al., 2005). It is widely found that military expenditure is conducive to growth as according to the Benoit (1973) and Weede (1983). Apart from this some other studies found that military expenditure may retard growth see Deger and Smith (1983), Huang and Mintz (1990), Heo (1999); Ward and Davis (1992), and Pieroni (2009). Some other empirical studies revealed that military expenditure neither hinders nor foster the economic growth (Loayza et al. 1999). The current studies confirmed the Keynesian defense burden hypothesis in different economic settings, i.e., Khan et al. 2018, Hatemi-J et al. (2018), Emmanouilidis and Karpetis (2018), etc. The spillover hypothesis is verified in the following current studies, i.e., Daddi et al. (2018), Su et al. (2018), Ortiz et al. (2018), etc. The non-linear hypothesis is verified in the following current studies, i.e., Ajmair et al. (2018), etc. The

previous studies largely ignore governance indicators in military-growth nexus, which is included in this study to filled the missing gap of the literature.

On the basis of significant discussion on the stated topic, the study confined its objectives, i.e.:

1. To examine the impact of military expenditures and armed conflict on country's per capita income.
2. To substantiate the non-linear relationship between military expenditure and per capita income for analyzing the inverted U- shaped relationship between them.
3. To investigate the impact of governance indicator on country's per capita income, and
4. To verify the invested U-shaped relationship between good governance expenditure and military expenditure in a panel of selected Asian countries.

2. Data and Methodology

The study developed four simultaneous equations that access the possible impact of military expenditure, good governance indicators and economic growth in Panel of 5 Asian countries, i.e.,

Model-I: Impact of Military Factors on Country's Economic Growth

$$GDPPC = \beta_0 + \beta_1 MILT + \beta_2 AIMP + \beta_3 MILT \times AIMP + \beta_4 TOP + \beta_5 FDI + \varepsilon \quad (1)$$

Where, GDPPC shows GDP per capita, MLIT shows military expenditures, AIMP shows arms import, TOP shows trade openness, and FDI shows foreign direct investment inflows.

Equation (1) shows that GDP per capita served as a dependent variable and military expenditures, arms import, trade openness, and foreign direct investment as the independent variables.

Model-II: Non-Linear relationship between Military Expenditures and Economic Growth

$$GDPPC = \beta_0 + \beta_1 MILT + \beta_2 MILT^2 + \beta_3 CPI + \beta_4 RIT + \beta_5 GEXP + \varepsilon \quad (2)$$

Where, RIT shows real interest rate, CPI shows consumer price index, and GEXP shows government expenditures.

Model-III: Impact of Governance Indicators on Economic Growth

$$GDPPC = \beta_0 + \beta_1 PINS + \beta_2 RQ + \beta_3 VC + \beta_4 EXPORT + \beta_5 EXPORT \times PINS + \varepsilon \quad (3)$$

Where, PINS shows political instability, RQ shows regulatory control, and VC shows voice and accountability.

Model-IV: Impact of Governance Indicators on Military Expenditures

$$MILT = \beta_0 + \beta_1 PINS + \beta_2 VC + \beta_3 RQ + \beta_4 VC^2 + \beta_5 RQ^2 + \beta_6 FDI + \beta_7 TOP + \varepsilon \quad (4)$$

Table 1 shows list of variables and their measurement for ready reference.

Table 1. *List of variables*

Variables	Symbol	Measurement
GDP per capita	GDPPC	Constant 2010US$
Military expenditure s	MILT	% of GDP
Arms import	AIMP	SIPRI Trend indicator value
Trade openness	TOP	% of GDP
Foreign direct investment net inflow	FDI	% of GDP
Government expenditure on Education ,total	GEXP	% of GDP
Consumer price index	CPI	Annual %
Real interest rate	RIT	Annual %
Export of goods and services	EXPORT	% of GDP
Political Instability	PINS	Index value :-2.5 to +2.5
Regulatory Quality	RQ	Index value :-2.5 to +2.5
Voice and accountability	VC	Index value :-2.5 to +2.5

Source: World Bank (2017).

The data is collected from World Development Indicator published by World Bank (2017).

The following are the hypothesis of the study, i.e.:

H_1: There is likelihood that military expenditures either support to economic growth to verify Spillover hypothesis, while it deteriorate the countries per capita income to support defense burden hypothesis.

H_2: There will be a negative correlation relationship arms conflict and per capita income.

H_3: There is expected that growth specific factors includes trade openness, FDI inflows, Government education expenditures, exports, and real interest rate may support countries economic growth.

H_4: There is expected to support an inverted U-shaped relationship between military expenditures and economic growth.

H_5: There will be a positive relationship between economic growth and good governance indicators in a selected panel of countries, and

H_6: There is expected to verify inverted U-shaped relationship between good governance indicators and military expenditures across Asian countries.

The above 4 equations would be empirically estimated by panel FMOLS and Granger causality for robust inferences.

3. Results and discussion

Table 2 shows the descriptive statistics of the variables. Table indicates the descriptive of variables in terms of minimum value, maximum value, mean, standard deviation, skewness, and kurtosis. The political instability, regulatory control and freedom of voice have a negative index value, which clearly shows that the country has a vehicle political instability, low level of regulatory control and lack of freedom of voice. Arms import, CPI, Export, FDI,GDPPC, GEXP, ME and TOP Prices have positively skewed distribution with mean value of 71.9E+08,7.293057, 18.08684,1.064731, 1229.862, 2.708056, 2.469568 and 44.76649 respectively. RIT has a mean value is 3.592942 and negatively skewed distribution. RQ mean value is -0.535561 and VC mean value is –0.376609. VC has positively skewed distribution.

Table 2. *Descriptive statistics*

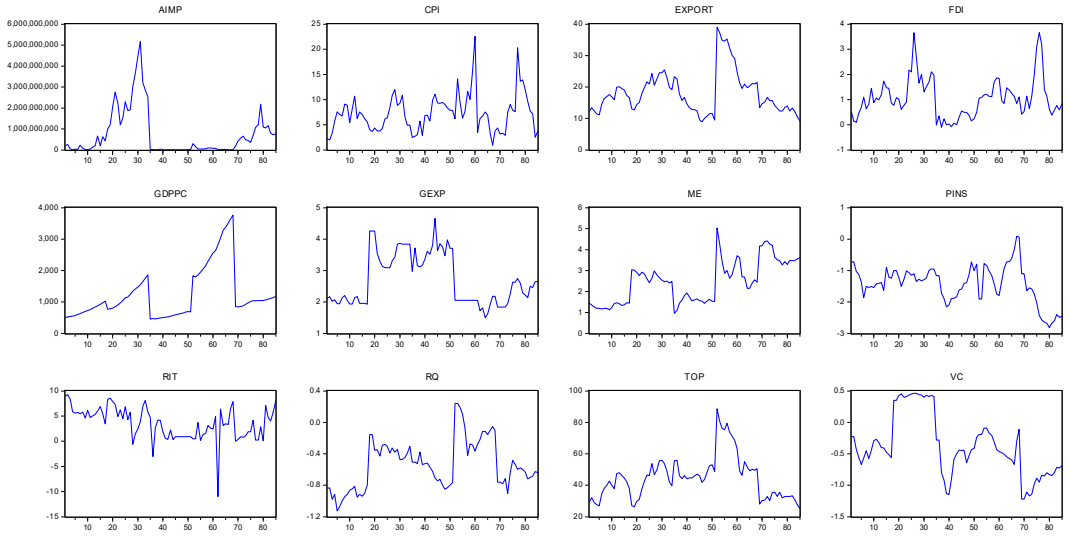
Methods	AIMP (US$)	CPI (Annual %)	EXPORT (% of GDP)	FDI (% of GDP)	GDPPC (US$)	GEXP (% of GDP)
Mean	7.19E+08	7.293057	18.08684	1.064731	1229.862	2.708056
Maximum	5.17E+09	22.56450	39.01570	3.668323	3759.230	4.661810
Minimum	1000000	0.922022	8.904030	-0.098375	459.1163	1.496600
Std. Dev.	1.10E+09	3.801959	6.741500	0.799182	823.9608	0.816209
Skewness	1.983754	1.312967	1.200478	1.171981	1.550479	0.524209
Kurtosis	6.705117	6.020821	4.199899	4.696197	4.592787	1.893056
Observations	85	85	85	85	85	85

Methods	ME (% of GDP)	PINS (Index value: ranging from -2.5 to 2.5)	RIT (%)	RQ (Index value: ranging from -2.5 to 2.5)	TOP (% of GDP)	VC (Index value: ranging from -2.5 to 2.5)
Mean	2.469568	-1.421814	3.592942	-0.535561	44.76649	-0.376609
Maximum	5.033889	0.090368	9.256956	0.240110	88.63644	0.462193
Minimum	0.962150	-2.810035	-11.01738	-1.126801	25.13914	-1.220254
Std. Dev.	1.014176	0.600146	3.195593	0.312645	13.68022	0.483587
Skewness	0.365216	-0.301512	-0.984784	0.431702	1.039410	0.386687
Kurtosis	2.129200	3.174497	6.465185	2.632662	4.039963	2.327223
Observations	85	85	85	85	85	85

Note: AIMP shows arms import, CPI shows inflation, EXPORT shows export, FDI shows FDI inflows, GEXP shows government expenditure on education, ME shows military expenditures, PINS shows political instability, RIT shows real interest rate, RQ shows regulatory control, TOP shows trade openness, and VC shows voice and accountability.

Figure 1 shows the level data plots for ready reference.

Figure 1. *Plots of level data*



Source: World Bank (2017).

Table 3 shows the correlation matrix. There is positive correlation of arms imports, CPI, export, FDI inflows, military expenditure, political inability, regulatory control, trade openness, and voice accountability with per capita income while negative correlation of government education expenditure and real interest rate with per capita income. The result confine that high per capita income increase arms conflict, high price value of good, high export values and high FDI flows across countries. Military expenditures and governance indicators influence by high per capita income across countries. Military expenditures increase arms imports, high prices of goods, high exports, and high FDI inflows, while there is negative correlation of governance indicators and military expenditure in the panel of selected SAARC countries.

Table 3. *Correlation matrix*

Correlation												
Probability	AIMP	CPI	EXPORT	FDI	GDPPC	GEXP	ME	PINS	RIT	RQ	TOP	VC
AIMP	1.000000											

CPI	0.095594	1.000000										
	0.3841	-----										
EXPORT	0.121673	0.173093	1.000000									
	0.2673	0.1131	-----									
FDI	0.386769	0.375513	0.306187	1.000000								
	0.0003	0.0004	0.0044	-----								
GDPPC	0.006897	0.085880	0.535414	0.308485	1.000000							
	0.9500	0.4345	0.0000	0.0041	-----							
GEXP	0.443031	-0.010235	-0.251155	-0.091076	-0.365448	1.000000						
	0.0000	0.9259	0.0204	0.4071	0.0006	-----						
ME	0.226930	0.161905	0.272281	0.345332	0.321440	-0.194722	1.000000					
	0.0367	0.1388	0.0117	0.0012	0.0027	0.0741	-----					

Correlation												
Probability	AIMP	CPI	EXPORT	FDI	GDPPC	GEXP	ME	PINS	RIT	RQ	TOP	VC
PINS	-0.048530	-0.395786	0.265570	-0.027834	0.415253	0.000785	-0.294935	1.000000				
	0.6592	0.0002	0.0140	0.8004	0.0001	0.9943	0.0061	-----				
RIT	0.173259	-0.328481	-0.128765	0.074414	-0.052310	-0.000660	-0.190580	0.161233	1.000000			
	0.1128	0.0021	0.2402	0.4985	0.6345	0.9952	0.0806	0.1404	-----			
RQ	0.163108	0.021531	0.679763	0.255947	0.665167	0.067120	0.462205	0.254022	-0.105037	1.000000		
	0.1358	0.8449	0.0000	0.0181	0.0000	0.5416	0.0000	0.0190	0.3387	-----		
TOP	-0.088341	0.308024	0.861590	0.129874	0.465132	-0.060338	0.060008	0.257451	-0.317041	0.602081	1.000000	
	0.4214	0.0041	0.0000	0.2361	0.0000	0.5833	0.5854	0.0174	0.0031	0.0000	-----	
VC	0.614727	-0.033465	0.383876	0.301116	0.145275	0.462811	-0.113618	0.448035	0.327055	0.398591	0.274046	1.000000
	0.0000	0.7611	0.0003	0.0051	0.1846	0.0000	0.3005	0.0000	0.0022	0.0002	0.0112	-----

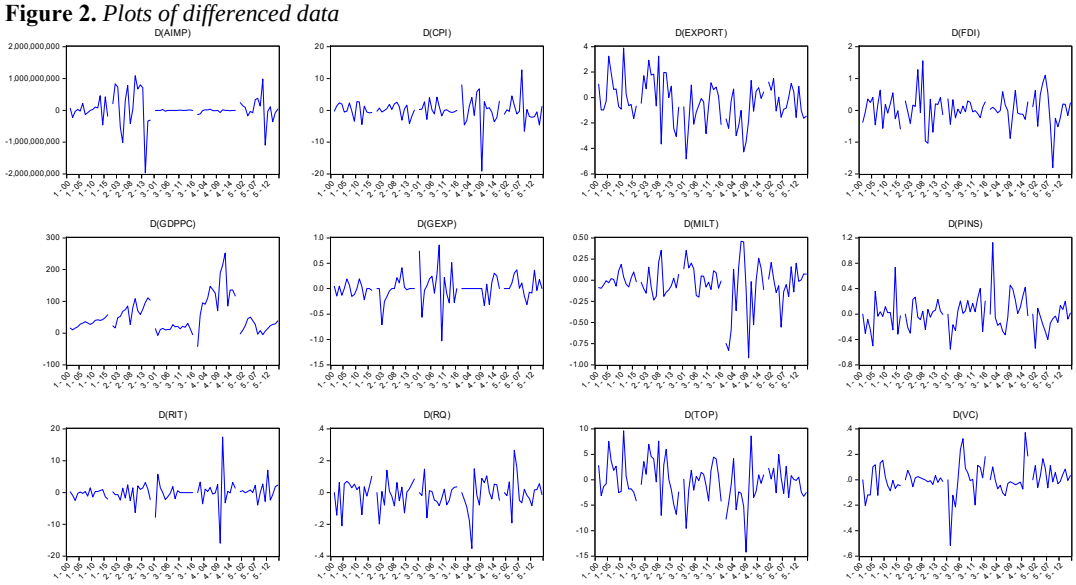
Table 4 shows the panel unit root estimates. The results show that arms import, and per capita income is non-stationary variables, while it is stationary after taking its first difference of the variables. The remaining variables including CPI, exports, FDI, education expenditures, military expenditure, real interest rate, trade openness, and good governance indicators are level stationary variables. The result concludes that arms import and per capita income have a volatile data set therefore both variables exhibit at first difference level. The overall, there is a mixture of variables in terms of its order of integration is visible, however, it is clearly evident that by using four different panel unit root tests, all given variables are non-stationary level and stationary at its first different at least in any one of the prescribed panel unit root test, Thus, it is good justification to used FMOLS regression for robust inferences.

Table 4. *Summary of panel unit root test estimates*

Methods	AIMP	CPI	EXPORT	FDI	GDPpc	GEXP	MILT	PINS	RIT	RQ	TOP	VC
Level Null: Unit root (assumes common unit root process)												
Levin, Lin and Chu t*	-0.508	-2.031**	-2.394*	-1.540***	3.257	-2.180**	-2.758*	-2.132**	-1.500***	-1.670**	-1.850**	-2.403*
Level Null: Unit root (assumes individual unit root process)												
Im, Pesaran and Shin Wstat	-0.684	-0.970	-0.520	-1.146	4.756	-1.776**	-2.050**	-1.369***	-1.170	-1.208	-0.862	-2.023**
ADF - Fisher Chi-square	12.617	12.582	12.959	14.559	0.855	18.531**	20.605**	16.584***	15.454	15.623	15.629	20.809**
PP - Fisher Chi-square	17.195**	16.070	21.929**	12.190	0.224	14.523	15.839	11.225	30.079*	13.585	10.107	12.321
First Difference Null: Unit root (assumes common unit root process)												
Levin, Lin and Chu t*	-3.573*	-5.659*	-3.059*	-1.654**	-1.168	-2.466*	-4.883*	-4.941*	-1.268	-1.729**	-4.610*	-3.527*
First Difference Null: Unit root (assumes individual unit root process)												
Im, Pesaran and Shin Wstat	-4.428*	-4.472*	-1.944**	-2.710*	-1.264	-2.728*	-3.316*	-2.971*	-4.172*	-2.262**	-2.629*	-2.850*
ADF - Fisher Chi-square	37.756*	38.216*	19.719**	24.611*	15.328	25.903*	29.369*	26.329*	36.292*	20.962**	24.924*	27.088*
PP - Fisher Chi-square	70.750*	74.430*	29.890*	56.730*	16.342***	55.224*	30.432*	40293*	90.523*	52.891*	36.969*	42.978*

Figure 2 shows the plots of differenced data for ready reference.

Figure 2. *Plots of differenced data*



Source: World Bank (2017).

Table 5 shows the panel Fisher cointegration estimates and confirmed that Model-I and Model-III possess cointegration process as the number of cointegration equations are 4 in trace statistics and maximum Eigen value statistics, while Model-II and Model-IV although shows that the given equations confirmed the cointegration process, however, there is a difference exists in the number of cointegration statistics both in the trace statistics and maximum Eigen values, thus it confined the 'indifferent' between acceptance and rejection of null hypothesis of cointegration.

Table 5. *Panel Fisher cointegration estimates*

Models	Model-I	Model-II	Model-III	Model-IV
Number of Cointegration equations by Trace Statistics	4	4	4	4
Number of Cointegration equations by Eigenvalue	4	5	4	5
Decision	Cointegration	Indifferent	Cointegration	Indifferent

Table 6 shows the estimates of panel FMOLS for Model-I.

Table 6. *Estimates of panel fully modified least squares (FMOLS) with moderation*

Dependent Variable: GDPPC				
Method: Panel Fully Modified Least Squares (FMOLS)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MILT	-295.5668	116.0673	-2.546512	0.0131
AIMP	5.73E-07	4.89E-07	1.171531	0.2454
MILT×AIMP	-2.96E-07	1.48E-07	-2.002954	0.0491
TOP	-28.56282	5.877320	-4.859837	0.0000
FDI	153.3499	64.53157	2.376355	0.0203
AIMP×TOP	8.30E-09	4.25E-09	1.950597	0.0552
R-squared	0.923549	Mean dependent var		1251.522
Adjusted R-squared	0.912470	S.D. dependent var		835.4869
S.E. of regression	247.1833	Sum squared resid		4215873
Long-run variance	83706.67			

The results show that military expenditures decreases country's economic growth, which supports 'defense burden hypothesis', while the interactive term of arms import with military expenditures further decreases economic growth across countries. Trade liberalization policies first decreases economic growth and then improves country's per capita income with the interaction of arms import, which confirmed that arms import required for country's safety, which lead to increase country's per capita income. The results are consistent with the previous studies of Khan et al. (2018) and Hatemi-J et al. (2018) that supported the findings of defense burden hypothesis in different economic settings. Table 7 shows the estimates of Model-II for ready reference.

Table 7. *Estimates of panel fully modified least squares (FMOLS) with square term*

Dependent Variable: GDPPC				
Method: Panel Fully Modified Least Squares (FMOLS)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MILT	3120.600	426.6504	7.314186	0.0000
$(MILT)^2$	-588.3499	90.59888	-6.494008	0.0000
AIMP	2.99E-08	9.62E-08	0.311318	0.7564
CPI	-33.04391	26.80359	-1.232817	0.2215
RIT	-64.00307	33.11511	-1.932745	0.0571
GEXP	-685.4845	134.9561	-5.079314	0.0000
R-squared	0.552365	Mean dependent var		1251.522
Adjusted R-squared	0.522120	S.D. dependent var		835.4869
S.E. of regression	577.5627	Sum squared resid		24684823
Long-run variance	689915.1			

The results confirmed the U-shaped relationship between military expenditures and per capita income, as the second order coefficient value is positive. The results imply that military expenditures improves country's per capita income while at later stages of economic development it decreases country's economic growth, which need strategic policies to reduce military expenditures for economic welfare. The real interest rate and public spending on education both decreases country's per capita income, as higher interest rate reduce financial market transactions while low spending on education lead to decrease per capita income of the selected panel of countries. The results are in line with the previous studies of Emmanouilidis and Karpetis (2018), Daddi et al. (2018), etc. Both of the studies confirmed the significant relationship between military spending and economic growth in diversified panel of countries. Table 8 shows the panel FMOLS estimates for Model-III.

Table 8. *Estimates of panel fully modified least squares (FMOLS) for Model-II with moderation*

Dependent Variable: GDPPC				
Method: Panel Fully Modified Least Squares (FMOLS)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
PINS	-653.7101	291.0821	-2.245793	0.0279
RQ	-338.1949	371.2823	-0.910883	0.3655
VC	-326.3331	249.4400	-1.308263	0.1951
EXPORT	52.92696	25.41586	2.082438	0.0410
EXPORT×PINS	52.93853	15.72200	3.367163	0.0012
R-squared	0.880698	Mean dependent var		1251.522

Adjusted R-squared	0.865359	S.D. dependent var		835.4869
S.E. of regression	306.5693	Sum squared resid		6578934
Long-run variance	125204.4			

The results confirmed that political instability lead to decrease country's per capita income, while export largely supports economic growth of the selected panel of countries. It is quite interesting that under the political instability, export largely supports country's per capita income, which needs more work to understand this causal relationship between them. The results are consistent with the previous studies of Kugler (2018), Cox and Weingast (2018), etc. Table 9 shows the estimates of Model-IV for ready reference.

Table 9. *Estimates of panel fully modified least squares (FMOLS) for Model-II with square term*

Dependent Variable: MILT				
Method: Panel Fully Modified Least Squares (FMOLS)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
PINS	-0.232878	0.131552	-1.770237	0.0812
VC	2.016133	0.998916	2.018321	0.0475
RQ	1.181726	0.644646	1.833139	0.0712
$(VC)^2$	1.881646	0.687432	2.737209	0.0079
$(RQ)^2$	1.546068	0.616549	2.507617	0.0145
FDI	-0.063392	0.082757	-0.766001	0.4463
TOP	0.003056	0.008464	0.361092	0.7192
R-squared	0.909759	Mean dependent var		2.440859
Adjusted R-squared	0.895161	S.D. dependent var		0.962642
S.E. of regression	0.311692	Sum squared resid		6.606346
Long-run variance	0.146498			

The results show that political instability leads to decrease military expenditures, while voice and accountability and regulatory control both substantially increases military expenditures across countries. The results confined that governance indicators partially support to increase military spending for controlling law and order situation in a country. The results are consistent with the previous studies of Arbetman and Kugler (2018), Mares (2018), etc. Table 10 shows the Granger causality estimates for ready reference.

Table 10. *Dumitrescu-Hurlin panel causality estimates*

Variables	CPI	AIMP	EXPORT	FDI	GDPPC	GEXP	MILT	PINS	RIT	RQ	TOP	VC
CPI	----	→	→	≠	≠	≠	≠	≠	→	≠	≠	≠
AIMP	≠	----	≠	≠	≠	≠	≠	≠	→	→	≠	≠
EXPORT	≠	≠		≠	≠	≠	≠	→	↔	→	→	≠
FDI	≠	→	≠		≠	≠	≠	≠	→	≠	→	≠
GDPPC	≠	→	≠	→		≠	→	→	≠	≠	↔	→
GEXP	≠	→	→	→	→		≠	≠	≠	≠	≠	→
MILT	≠	≠	→	≠	≠	≠		→	↔	≠	↔	≠
PINS	≠	≠		≠	≠	≠	≠		≠	≠	≠	≠
RIT	≠	≠	↔	≠	≠	→	↔	≠		≠	→	≠
RQ	≠	↔		≠	≠	≠	≠	→	≠		≠	≠
TOP	≠	≠	≠	≠	↔	≠	↔	≠	≠	→		≠
VC	≠	≠	≠	≠	≠	≠	≠	≠	≠	≠	≠	

Note: → shows unidirectional causality, ↔ shows bidirectional causality, and # shows no causality between the variables.

The results show that there is bi-directional causality between GDPPC and EXPORT, RIT and EXPORT, RQ and AIMP, TOP and GDPPC and between TOP and MILT. There is uni-directional causality exists, running from GDPPC to PINS, VC, AIMP, FDI, MILT and TOP, and from GEXP to AIMP, EXPORT, FDI, GDPPC, and VC. There is also one-way causality exist, running from MILT to EXPORT and PINS, from EXPORT to PINS, RQ and TOP, from FDI to AIMP, RIT and TOP, from RIT to GEXP, MILT and TOP, from RQ to PINS, from TOP to RQ, from AIMP to RIT and RQ and from CPI to EXPORT, AIMP .

4. Conclusions

The military expenditure and economic growth is widely used in the previous literature which provoked the need of effective polices to expand money income on war against terrorism and countries economic growth. The study initiate to analysis military expenditures and economic growth controlling good governance indicators and monetary instruments in a Panel of selected Asian countries by using time series 2000 to 2016 and applied Panel unit root test, Pedroni cointegration, fully modified least squares and Dumitrescu-Hurlin panel causality. The result of the study confirmed the defense burden hypothesis therefore it is advisable to reduce military expenditure in order to expand more income of social expenditure including health, education, poverty reduction and rational income distribution, these recommendation does not seem that military expenditure are no more required to expand money on arms import however we propose that government should have to take care about military expenditures for unnecessary expending on prolific of arms nominations in a country. Although the impact of arms import is positive on countries economic growth however the military officials should have to allocate low spending on arms import to spend more budget on social expenditures. This implication does not imply that arms import is bad equilibrium as we need more spending on war against terrorism where Asian countries especially Pakistan is the Alliance partner's for terrorism reduction. The result confirmed the U-shaped results between military expenditure and per capita income hence it is desirable to reduce military spending by sound social reforms in a country. The growth specific factors including consumer price index, real interest rate, government expenditure and trade openness does not positive contribute to the countries per capita income due to structural imperfection in the policy formulation across countries. We have to increase more spending on education expenditures, increase export and improve price level which may translate positively to the per capita income. The result confirmed that political instability harmful for the countries per capita income hence it is imperative to stabilize political scenario across countries. Similar results found for political instability and military expenditure where political instability negative influence military expenditure hence it is desirable for stable political scenario in a panel of country. The good governance indicators including voice & accountability and regulatory control have a positive impact on military expenditure hence it is desirable to regulate our institutions in order to provide fair justice and accountability to promote the cause of war against terrorism in the long run.

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