EXPLORING THE LONG RUN EFFECTS AND RELATIONSHIP OF MILITARY EXPENDITURES AND ECONOMIC GROWTH IN THE SCENARIO OF PAKISTAN

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ABSTRACT

The principal attributes of this study were to examine the effect of military expenditures on economic expansion in the long run from the perspective of Pakistan. We took the yearly data from the year 1961 to 2018 and used A R D L estimation technique for empirical results. Through our results, we can confirm the existence of a connection between military spending and economic expansion of Pakistan in the long run. Additionally, over the long term, a positive outcome of military expenditures is observed upon the financial development of Pakistan. Hostile India and Kashmir issue are the principal reason behind a large-scale military expenditure of Pakistan. Solving this dispute and improving bilateral relations can help to reduce the extensive military budget and to attain efficient resource allocation for both countries.

Keywords: Economic Growth, Defense Expenditure, National Security, Pakistan, ARDL
JEL Codes: H30, H56, Q43, C51, E62

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I. INTRODUCTION

The connection between economic growth and military expenditures is a phenomenon that has always remained highly debated among socioeconomic experts. Defense spending is a universal phenomenon and each country must spend a considerable amount to safeguard its territorial integrity, national security, and national interest. It is always argued by critics and experts that military expenditure is an extraordinary load on a nation's economy, and it can cause balance of payment deficit and can lead to many other problems such as crowding out of important socio-economic expenditures. It mainly deflects the allocation of resources from various development-related programs on the economy. (SIPRI) stated that expenditures of the armed forces have surpassed the amount of 1.63 trillion dollars worldwide in 2010, which is half higher than what it was in 2001. It is further explainable if we consider defense expenditures as a fiscal policy tool of government, which is used to check economic fluctuations in the short run as explained in Military Keynesianism. Military spending can have positive and negative impacts simultaneously on the country's economic prosperity, it can positively affect by improving security and increasing aggregate demand of the economy, and it can affect negatively through crowded out important investments, stated by (Hassan et al., 2003).

Pakistan is an underdeveloped nation with a positioning of 151st in the per capita bracket of GDP, with an HDI ranking at 152nd, global peace ranking at 152nd. In the light of a statement made in 2018 by (SIPRI) which states that Pakistan is ranked as the 20th largest defense spender across the globe with defense spending of \$11.4 billion. India, a next-door hostile neighbor of Pakistan had the third-highest defense budget in 2019 with total defense expenditures of \$71 billion. Geopolitical threats and insecurities always lead to an increase in the defense budget. Kashmir issue is like a never-ending dispute between India and Pakistan. Pakistan had to face three wars with India over the Kashmir issue, therefore Pakistan is forced to spend a major portion of its annual budget of the armed forces. A huge military budget is a necessity for Pakistan but also an opportunity cost of economic growth. The amount spent annually on defense can be a reason for low economic growth, poverty, and health issues for the country. On the other hand, the defense sector also creates vast employment opportunities and is the main reason behind the sovereignty and integrity of Pakistan. In this paper, we will observe the long-term effects of military expenditures in the economy of Pakistan by utilizing yearly data from 1961 to 2018.

II. LITERATURE REVIEW

There is a plethora of literature available in the perspective of military expenditures and its impacts on economic expansion. It is generally believed that an inverse relationship between military spending and economic expansion exist due to the high opportunity cost of military spending (Ali & Ather, 2015). Benoit (1978) was the primary individual who led an investigation of the connection among the military expenditures and economic development for 44 different nations. His findings reflected and emphasized that a link between economic development and military spending does exist. He stated that economic expansion and military spending are correlated in a positive manner. He further elaborated that the defense could cause an increase in growth i.e. High military expenditure may lead towards high economic growth through aggregate demand channel. His findings initiated a new pathway for research articles and papers.

Dager & Smith (1983) conducted a research on the data in 50 least developed countries to determine the relationship of economic expansion and military spending by utilizing the cross-sectional data (1965 to 1975). Their discoveries reflected a small beneficial effect of military expenditures on the economies of those specific countries through modernization channels and a large negative effect through saving channels i.e. The negative impact of saving outweighs the positive impact of modernization, so the net impact of defense expenditures is negative on the economy. Defense organization is capital intensive in both developed and underdeveloped countries, stated by (Kentor & Kick, 2008). They conducted their study by using a " cross-sectional panel regression and causal analysis " for developing economies and underdeveloped economies simultaneously. The outcome of that study shows that defense expenditure per soldier restrains the per capita GDP growth. Their results also reflected the positive effects of arms import on economic condition of underdeveloped countries.

Khilji et al. (1997) conducted a study in the scenario of Pakistan. Their outcomes reflected the negative effects of defense expenditures on the economy Pakistan. Their results also reflected a bi-directional causality between economic expansion and defense expenditures, by using Granger Causality Test. Johansen Co integration Test and Granger Causality Test were applied to the yearly data of Pakistan (1980 to 2010). Their results reflected a long-term positive linkage between defense spending and economic expansion (Anwar et al., 2012).

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Khan (2004) checked the credibility of using defense expenditure as a fiscal policy tool for macroeconomic stabilization (Military Keynesianism Hypothesis) from the perspective of Pakistan. Johansen co-integration techniques and Vector Error Correction Model were used by them. Their result determined a positive long-term connection between economic growth and defense expenditures from a perspective of Pakistan. Their result also reflected that defense spending is neither a burden nor it hurts economic growth. It also negates the narrative that increases in military expenditure causes a decline in development expenditure.

III. DATA SOURCE

NAME 0F VARIABLES	DATA SOURCE
GDP PER CAPITA (C0NSTANT LCU)	WDI
EXP0RTS 0F G00DS & SERVICES (CONSTANT LCU)	WDI
IMP0RTS 0F G00DS & SERVICES (C0NSTAN LCU)	WDI
MILITARY EXPENDITURE (CURRENT USD)	WDI

Table 1: Data Source

IV. METHODOLOGY

Following the methodologies of Ali (2015), Ali (2018), Ali and Bibi (2017), Ali and Ahmad (2014), Ali and Audi (2016), Ali and Audi (2018), Ali and Rehman (2015), Ali and Naeem (2017), Ali and Zulfiqar (2018), Ali et al., (2016), Arshad and Ali (2016), Ashraf and Ali (2018), Haider and Ali (2015), Sajid and Ali (2018), Ali and Senturk (2019), Kassem et al, (2019) and Ali and Bibi (2020), the model of this study become as:

G D P per capita = f (Exports , Imports , Military Expenditures) (1)
We are taking L0G on both sides of the equation (1)
ln GDP per capita = f (ln Exports , ln Imports , ln Military Expenditures) (2)

The econometric model of Equation (2) is given below:
Ln GDP_1_t = β0 + β1 Ln Exports_1_t + β2 Ln $Imports\_1_t$ + β3 Ln Military Expenditures$_t$ (3)
Where:

       GDP_1 = GDP per capita (Constant LCU)
       β0 = C (Intercept)
       Exports_1 = Exports of goods and services (Constant LCU)
       Imports_1 = Imports of goods and services (Constant LCU)
       Military Expenditures_3 = Military expenditures (Current USD)
       ε = Error term

The ARDL regression equation for this model is given below:
lnΔGDP_1_t = β_0 + $\beta_1$lnExports_1_t + $\beta_2$lnImports_1_t + $\beta_3$lnMilitary Expenditures_1_t +
$\sum_{t=1}^{t=n} \alpha_0ln\Delta$GDP_$1_{t-1}$ + $\sum_{t=1}^{t=n} \beta_1$lnΔExports_1_{t-1} + $\sum_{t=1}^{t=n} \beta_2$lnΔImports_1_{t-1} +
$\sum_{t=1}^{t=n} \beta_3$lnΔMilitary Expenditures_3_{t-1} + ε $_t$ _(6)

" ARDL " estimation technique has been employed because it is the most authentic technique to check the long term linkages between dependent and independent variable as well as short term relationship.

V. RESULTS AND DISCUSSION

Variables	P value	P value	Decision
At Level		At First Difference	
GDP PER CAPITA (C0NSTANT LCU)	0.2438	0.0000	I (1)
EXP0RTS 0F G00DS & SERVICES (CONSTANT LCU)	0.6848	0.0000	I (1)
IMP0RTS 0F G00DS & SERVICES (C0NSTAN LCU)	0.9404	0.0000	I (1)
MILITARY EXPENDITURE (CURRENT USD)	0.5248	0.0000	I (1)

Table 2: Augmented Dickey Fuller Test Results

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We have applied the Augmented Dickey Fuller Test on the variables to check their stationary (unit root). Table 2 is reflecting the ADF results. In the decision column, I (0) is used to show the stationary of variation at the level and I (1) is used to show the stationary of variable at first difference. As we can see from the table that all our variables are having Unit Root at level and all of them are stationary at first difference.

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	10.94901	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Table 3: ARDL Bound Test Results

We have used ARDL Bound Test, here to determine the presence of long-term relationships among the variables. The null hypothesis for this test is that long term relationships do not exist. If the calculated value of the given test falls below the lower bounding, then we do not reject the null hypothesis and say that long term relationships does not exist between variables. If the calculated value of this test lies between the lower bounding I (0) and upper bounding I (1), then the results are inconclusive. If the calculated value of this test is greater than the upper bounding and lower bounding simultaneously, then we accept the alternative hypothesis and say that a long-term relationship do exist between variables.

From Table 3, we can see that our calculated value of F test is greater than the lower bound and upper bound at a 5 % significance level, so we reject the null hypothesis and conclude that a long-run relationship exists between variables at a 5 % significance level.

VARIABLE	C0EFFICIENT	S.ER	T STATISTIC	P VALUE
Exports_1	0.122534	0.033874	3.617305	0.0007
Imports_1	0.014537	0.060587	0.239930	0.8115
Military Expenditures_3	0.212840	0.023560	9.034094	0.0000
C	0.991309	0.437578	2.265446	0.0283

Table 4: Long-Run Coefficients of estimated ARDL Model

Table 4 is representing the "long-run coefficients" of estimated A.R.D.L Model. From table, we can say that Exports_1 is having a note able effect on the dependent variable GDP_1 in long term as its probability value is lower than 0.05 at a 5 % significance level. 1 % increase in Exports_1 will cause a 0.122534 % increase in GDP_1. We can see that Imports_1 is having an insignificant effect on the dependent variable in the long run because its probability value is higher than 0.05 at a 5 % significance level. We found that Military Expenditures_3 is having a significant effect on the dependent variable as its probability value is lower than 0.05 at a 5 % significance level. So, a 1 % increase in Military Expenditures_3 will cause a 0.212840 % increase in GDP_1.

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Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EXPORTS_1)	0.038521	0.014560	2.645728	0.0112
D(IMPORTS_1)	0.046534	0.018312	2.541100	0.0146
D(IMPORTS_1(-1))	-0.047667	0.023655	-2.015082	0.0499
D(IMPORTS_1(-2))	0.026083	0.019284	1.352531	0.1830
D(MILITARY_EXPENDIT...	0.090065	0.020508	4.391619	0.0001
D(MILITARY_EXPENDIT...	-0.046727	0.021255	-2.198361	0.0331
CointEq(-1)	-0.314371	0.073982	-4.249283	0.0001

Table 5: Error Correction Representation of Estimated A.R.D.L Model

From table 5, we can see that our ECM value is negative and significant. The value of "Error Correction" (ECM) is reflecting the adjustment speed of this model i.e , how much time time period will it take to move towards the equilibrium.
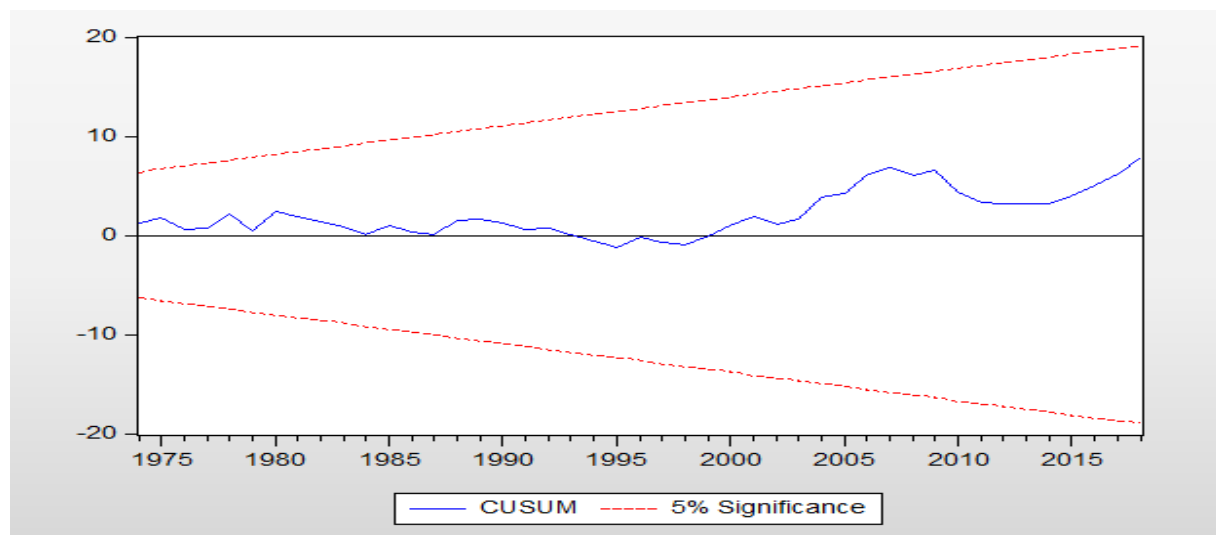

Figure 1: Plot of ARDL CUSUM TEST

We have conducted the CUSUM Test in order to find out the recursive estimates. If the plotted line of this test lies between the critical bounding (red lines), It will reflect that our coefficients are stable in the long term. From figure 1, we observed that the plotted line of this test is between the critical bounding at a 5 % level of significance, which hereby confirms the stability of long run coefficients at a 5 % significance level.

V. CONCLUSIONS

The principal motive behind this study was to detect the long-term effects of military expenditures upon economic growth. To carry out this particular task, we have taken yearly data from 1961 to 2018. To find out empirical results, the ARDL estimation technique has been used because it is the most reliable technique to check the linkages between dependent and explanatory variables in the long-term perspective. In the long run, our findings reflected that exports are having a considerable effect on the per capita bracket of GDP. On the other hand, Imports are having no serious impact on per capita bracket of GDP in the long-term perspective. Our outcomes also reflected the evidence of long run connection between Military expenditures and per capita bracket of GDP. Considering our data, estimation technique, and results, we can somehow negate the general perception that "defense spending hurt economic growth. Our outcomes also support the finding that defense spending can have a positive impact through an increase in security, stated by (Hassan et al., 2003). Regardless of our findings, that argument is still valid that military expenditure is an opportunity cost that can be spent in any sector of the economy to achieve productive outcomes. Any positive impact of military expenses on growth can be easily neutralized due to crowding out other

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investment opportunities. Defense spending is a necessity for Pakistan to protect its National Integrity and ensure its National Security, but we cannot take it as a measure of an increase in overall economic growth. India and Pakistan both are huge markets with a lot of trade potential. Bilateral trade between these two next-door nations can open the door of socioeconomic development for both countries. Both countries need to solve their disputes as early as possible for the betterment of their people. Solving the Kashmir issue and giving them their legitimate right to live their lives according to their will can solve the long rivalry between both countries, which will definitely reduce their military budgets and better resource allocation will lead towards the long-term betterment of both nations.

REFERENCES
Ahmed, A. (2019). Pakistan among top 20 military spending countries in 2018: report.

Ahmed, A. (2020). India has world is third biggest defense spending now.

Ali, A & Bibi, C. (2020*). Public Policies, Socio-Economic Environment and Crimes in Pakistan: A Time Series Analysis. *Bulletin of Business and Economics,* 9(1), 1-11.

Ali, A. & Naeem, M.Z. (2017). Trade Liberalization and Fiscal Management of Pakistan: A Brief Overview. *Policy Brief-Department of Economics, PU, Lahore*. 2017 (1), 1-6.

Ali, A. (2011). Disaggregated import demand functions of Pakistan; An empirical Analysis. M-Phil Thesis, NCBA&E, Lahore, Pakistan, 1-70.

Ali, A. (2015). *The impact of macroeconomic instability on social progress: an empirical analysis of Pakistan*. (Doctoral dissertation, National College of Business Administration & Economics Lahore).

Ali, A. (2018). Issue of Income Inequality Under the Perceptive of Macroeconomic Instability: An Empirical Analysis of Pakistan. *Pakistan Economic and Social Review*, 56(1), 121-155.

Ali, A. and Bibi, C. (2017). Determinants of Social Progress and its Scenarios under the role of Macroeconomic Instability: Empirics from Pakistan. *Pakistan Economic and Social Review* 55 (2), 505-540.

Ali, A., & Ahmad, K. (2014). The Impact of Socio-Economic Factors on Life Expectancy in Sultanate of Oman: An Empirical Analysis. *Middle-East Journal of Scientific Research*, 22(2), 218-224.

Ali, A., & Ather, M. (2015). Impact of defense expenditure on economic growth: Time series evidence from Pakistan. *Global Journal of Management and Business Research*.

Ali, A., & Audi, M. (2016). The Impact of Income Inequality, Environmental Degradation and Globalization on Life Expectancy in Pakistan: An Empirical Analysis. *International Journal of Economics and Empirical Research*, 4 (4), 182-193.

Ali, A., & Audi, M. (2018). Macroeconomic Environment and Taxes Revenues in Pakistan: An Application of ARDL Approach. *Bulletin of Business and Economics* (BBE), 7(1), 30-39.

Ali, A., & Rehman, H. U. (2015). Macroeconomic instability and its impact on the gross domestic product: an empirical analysis of Pakistan. *Pakistan Economic and Social Review*, 285-316.

Ali, A., & Şenturk, İ. (2019). Justifying the Impact of Economic Deprivation, Maternal Status and Health infrastructure on Under-Five Child Mortality in Pakistan: An Empirical Analysis. *Bulletin of Business and Economics*, 8(3), 140-154.

Ali, A., & Zulfiqar, K. (2018). An Assessment of Association between Natural Resources Agglomeration and Unemployment in Pakistan. *Pakistan Vision*, 19(1), 110-126.

Ali, A., Ahmed, F., & Rahman, F. U. (2016). Impact of Government Borrowing on Financial Development (A case study of Pakistan). *Bulletin of Business and Economics* (BBE), 5(3), 135-143.

Anwar, M. A., Rafique, Z., & Joiya, S. A. (2012). Defense spending-economic growth nexus: A

Arshad, S., & Ali, A. (2016). Trade-off between Inflation, Interest and Unemployment Rate of Pakistan: Revisited. *Bulletin of Business and Economics (BBE)*, 5(4), 193-209.

Ashraf, I., & Ali, A. (2018). Socio-Economic Well-Being and Women Status in Pakistan: An Empirical Analysis. *Bulletin of Business and Economics (BBE)*, 7(2), 46-58.

Benoit, E. (1978). Growth and defense in developing countries. *Economic development and* case study of Pakistan. *Pakistan Economic and Social Review*, 163-182.

countries. *Journal of conflictresolution*, 27(2), 335-353.

cultural change, 26(2), 271-280.

culturalchange, 35(1), 179-196.

Deger, S. (1986). Economic development and defense expenditure. *Economic development and*

Deger, S., & Smith, R. (1983). Military expenditure and growth in less developed

Rehman, S. F. (2020*). Exploring the Long Run Effects and Relationship of Military Expenditures and Economic Growth in the scenario of Pakistan. *Bulletin of Business and Economics,* 9(3), 106-112.

Haseeb, M., Bakar, A., Azam, M., Hassan, S., & Hartani, N. H. (2014). The macroeconomic impact of defense expenditure on economic growth of Pakistan: An econometric approach. *Asian Social Science*, *10*(4), 203-213.

Hassan, M. K., Waheeduzzaman, M., & Rahman, A. (2003). Defense expenditure and economic growth in the SAARC countries. *The Journal of Social, Political, and Economic Studies*, *28*(3), 275.

Index, G. (2020). Pakistan - Global Peace Index 2020.

Kalim, R., & Hassan, M. S. (2014). Public defense spending and poverty in Pakistan.

Kassem, M. Ali, A. & Audi, M. (2019). Unemployment Rate, Population Density and Crime Rate in Punjab (Pakistan): An Empirical Analysis. *Bulletin of Business and Economics (BBE),* 8(2), 92-104.

Kentor, J., & Kick, E. (2008). Bringing the military back in: Military expenditures and economic growth 1990 to 2003. *Journal of World-Systems Research*, 142-172.

Khan, M. U. H. (2004). Defence expenditure and macroeconomic stabilization: Causality evidence from Pakistan. *State Bank of Pakistan Working Paper*, *6*.

Khilji, N. M., Mahmood, A., & Siddiqui, R. (1997). Military expenditures and economic growth in Pakistan [with Comments]. *The Pakistan Development Review*, 791-808.

Sajid, A. & Ali, A. (2018). Inclusive Growth and Macroeconomic Situations in South Asia: An Empirical Analysis. *Bulletin of Business and Economics (BBE),* 7(3), 97-109.