GOVERNMENT SPENDING MULTIPLIER:
THE CASE FOR PAKISTAN

By

Afrasiyab Gul

PIDE2018FMPHILECO16

Supervisor

Dr. Muhammad Nasir

MPHIL ECONOMICS

PIDE School of Economics

Pakistan Institute of Development Economics,
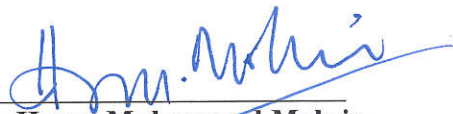
Islamabad

2022

Pakistan Institute of Development Economics

CERTIFICATE

This is to certify that this thesis entitled: **"Government Spending Multiplier: The case for Pakistan"** submitted by **Mr. Afrasiyab Gul** is accepted in its present form by the PIDE School of Economics, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree of **Master of Philosophy in Economics**.
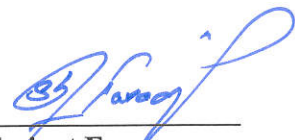
External Examiner:

Dr. Hasan Muhammad Mohsin
Joint Economic Advisor
Finance Division
Islamabad.

Supervisor:

Dr. Muhammad Nasir
Associate Professor
IBA, Karachi

Head, PIDE School of Economics:

Dr. Shujaat Farooq
Assistant Professor/Head
PIDE School of Economics
PIDE, Islamabad

Author's Declaration

I **Afrasiyab Gul** hereby state that my MPhil thesis titled **Government Spending Multiplier: The Case for Pakistan** is my own work and has not been submitted previously by me for taking any degree from Pakistan Institute of Development Economics or anywhere else in the country/world.

At any time if my statement is found to be incorrect even after my Graduation the university has the right to withdraw my MPhil degree.

Date: _____   Signature of Student: _____

                                   Name of Student: _____ Afrasiyab Gul _

Dedication

I dedicate this Research to all those people who are living a miserable life, and to the untold stories that people hold.

(Afrasiyab Gul)

ACKNOWLEDGEMENTS

ABSTRACT

.

Despite frequent use of fiscal policy for stabilization and its crucial role played by fiscal activism over the decades, the output response following an exogenous shock to fiscal policy (i.e., budgetary multiplier) has been a hotspot for debate at empirical and theoretical level, both globally and in the Pakistani context. Using military spending as an instrument to establish exogeneity, this study provides new evidence for the effect of government spending on output for the period of 1971-2019. The short-run spending multiplier is estimated to 1.19, that remained positive and significant over the period. Trade openness and gross fixed capital formation is found to have positive association with GDP, whereas interest rate is significant and negative in its impact on GDP. The estimated multiplier value, when compared with tax multipliers, suggest that austerity measures through increase in tax is more harmful than through reduced government spending.

JEL Classifications: E62, H3, C36

Keywords: Fiscal Policy, Multipliers, Government Spending, Instrumental Variable.

Table of Content

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

1.1.   Background of the Study

It has been a popular issue for decades to investigate the effect of fiscal policy actions and plans on the aggregate gross domestic product (GDP) and its constituents, and this has continued today. The Keynesian models of the 1960s featured a large number of fiscal variables, which were investigated through the estimate of behavioral equations to determine their effects on macroeconomic variables (Ramey 2016). Prior to the Great Recession of 2008 and the execution of the zero lower bound[1], the majority of empirical shock studies focused on the effects of monetary policy; however, the Global Financial Crisis (GFC) and the implementation of the zero lower bound shifted curiosity and interest to the consequences of fiscal policy.

Although immediate responses were made from monetary authorities after GFC, but it soon became evident that the ordinary monetary policy tools were not sufficient to offset substantial fall in economic activity. Central banks also implemented a quasi-fiscal policy[2], a policy action that affects the central bank's balance sheet with exception of traditional monetary policy Heshmati, Kim et al. (2015). In reaction to the apparent incapacity of conventional and unconventional monetary policy tools to promote global economic demand, a discussion concerning the role of discretionary fiscal policy in stabilizing the global economy erupted. In contrast, during the Great Financial Crisis, governments and institutions usually took a more sympathetic stance toward

---

[1] Zero-bound refers to the lowest level that interest rate can fall to. It is an expansionary monetary policy tool where a central bank lowers short-term interest rate to zero, if needed, to stimulate the economy.

[2] Policy actions that are fiscal in nature but carried out by central banks instead of fiscal authorities.

fiscal restraint, advocating for large-scale fiscal stimulus measures instead. However, despite the use of fiscal policy to stabilize the economy and the significant role played by fiscal activism in the aftermath of the Great Recession, budgetary multipliers size, that measures the output response to an exogenous shock for fiscal policy, has been a source of heated debate on both an empirical and theoretical level.

While computing for government spending changes in economy, many factor affecting economic process and output may not be recognized and omitted. The omitted variables result in biased estimates, leading to wrong calculation for spending changes effect on output. The spending multipliers estimated using simple regressions are unreliable because they suffer from endogeneity issues. The issue of endogeneity arises when the explanatory variables are measured with error terms. Secondly, there is reverse causality in regression i.e. the explanatory variable is caused by the dependent variable. Biasness can be removed and treated, by adding those factors effecting output that were not included before while doing analysis. The spending multipliers estimated using exogenous shocks are therefore more reliable. Exogenous spending changes are those changes that are motivated by some external factors, not to stimulate economy or counter-cyclical measures. The spending changes manipulated by these factors are termed as "exogenous". Once the true exogenous spending changes are determined, estimates are unbiased.

Military spending has a major chunk of share (18.3% by 2019) in government annual spending for security and peace purposes. The military spending may vary with overall internal and external security situations, which can be defined as "exogenous shocks". In developing countries, internal rebellions are one of the major influences on military expenditure. The government plan and set their defense expenditure accordingly to deter and engage such rebellions. Military equipment is imported in many developing countries, rather than produced domestically, and cost government

money for developmental projects and other budgetary purposes. Therefore, these exogenous shocks should be considered for the efficient allocation of government spending.

Pakistan due to its geo-political position in region has been massively hit by terrorist attacks internally and faced war threats by eastern neighbor country externally. Secondly, Pakistan is sharing its western and longest border with Afghanistan that is war throne country over the decades. Thirdly, Pakistan is closely located with major power like Russia and share border with China in north. Fourthly, Arabian sea in the south of the country has emerged as a defining factor of economy after development of Gwadar port. Numerous evidence from literature suggests that military spending reacted to geo-political events, for example, the Cambodia-Thailand border dispute in 2008.

This study is closely related to the literature that studies the effect of fiscal policy in countries and provides new evidence for effect of government spending on output in Pakistan. Data was compiled for output, government spending, trade openness, military spending and other relevant variable for the time period of 1971-2019. To estimate spending multiplier instrumental variable is used, where military spending is an instrument for government spending. The instrumental variable correlates with the regressor and do not cause regressand directly. Secondly, it is not correlated with error term. This approach has been used widely for many countries including United States (Ramey and Shapiro 1998), Hall (2009).

1.2. Problem Statement

Government of Pakistan has decided to adopt austerity measures, and austerity measures are taken through (i) increase in taxes and (ii) reduction in government expenditure. To gauge the impact of these measures on output, their multipliers need to be estimated. Hence, reliable, and unbiased spending multipliers are required to examine the true effect on growth. For unbiased estimates,

fiscal shocks affecting output must be recognized. The question that, "what are those fiscal shocks and what are their implications in economy?" is still unanswered.

While the possibility of regional or worldwide war is a prevalent issue that may inspire military investment, internal rebellions within governments in most developing nations are a major threat that undermine the authority of the state. As reported by (Collier 2006), civil wars are ten times more common than foreign conflicts. Furthermore, military expenditures may be frequently motivated by the need and desire to protect the government from the possibility of domestic unrest, as previously stated. Pakistan was in hostile situation for several years while facing a layer of terrorism, militancy and regional security threats due to its geo-political position effecting peace and economic growth. Threat of war from eastern neighbor country, unrest at western border and overall security challenges in region is a challenging menace to tackle. According to Watson Institute for International and Public Affairs, 23,372 Pakistani civilians and 8,832 Pakistani security personnel were martyred because of terrorism. India is found to be an active member in promoting terrorism and sectarianism in Pakistan. On 3rd March 2016, an Indian serving naval officer, named Kalbhushan Jadhav was arrested during counter-intelligence operation in Balochistan. He was actively spying for India's intelligence agency and involved in promoting terrorism inside Pakistan. In November 2020, Pakistan foreign office presented irrefutable proofs of financial and material support to multiple terrorist organization by India. The sponsored terrorist organizations are also included in the United Nations designated terrorist organizations like Balochistan Liberation Army(BLA), Tehreek-i-Taliban Pakistan(TTP) and Jamaat-ul-Ahrar(JA). Several military operations were conducted against terrorist groups by Pakistan Army that brought peace, according to South Asian Terrorism Portal Index (SATP) terrorism declined drastically by 89% in 2017 since 2000. According to the Government of Pakistan, terrorism costed

Pakistani economy by 68 billion US dollars from 2000 to 2010. Further, in 2018 newspaper (Dawn News) reported a total loss (direct and indirect) of 126.79 US dollars to the economy of Pakistan since 2001 due to war on terror. During the period, the military operations conducted by Pakistan Army against militants also increased military expenditures (Nasir and Shahbaz 2014). Hence, unbiased spending multipliers using exogenous shocks need to be estimated for better allocation of government resources for the upcoming future. The broader hypothesis is that military spending as exogenous shock can be used as instrument to get unbiased government spending multiplier.

1.3.   Objective of The Study

The main objective of this study is to estimate unbiased government spending multiplier. This is done by using military spending as an instrumental variable to deal with the endogeneity problem arising from reverse causality between output and government spending.

1.4.   Significance of the Study

This study intends to estimate government spending multiplier. The previous studies who tried to estimate this multiplier suffer from endogeneity issues, thereby resulting in biased estimates (Raashid, Saboor et al. 2020). This results in a misguided policy, especially when the government intends to take the austerity measures through spending cuts. If the spending multipliers are under reported, this can be detrimental for growth i.e. the policy made through under reported multiplier may not yield the expected results for the change in output. Hence, our study is the first attempt to estimate unbiased government spending multiplier and therefore have a direct policy relevance.

1.5.   Organization of the Study

This study follows a proper organized pattern. Chapter 2 of the study look into theoretical background and literature review. Chapter 3 is qualitative assessment that discusses the

government fiscal policy focusing on spending behavior. Chapter 4 elaborates methodology and the data used for this study. Empirical results are explained in Chapter 5. In last, Chapter 6 provide conclusion of the study followed by recommendations.

CHAPTER 2

LITERATURE REVIEW

2.1.   Theoretical Background

At first appearance, the relationship between macroeconomic outcomes and factors such as fiscal policy changes appear to be an empirical problem. According to economic theory, there is no single theory, but rather a variety of school of thought on the multiplier effect of government taxation and expenditure. Tax changes, public spending, and how the change was funded and distributed across economic agents all have an impact on the economy's response to fiscal shocks. Other factors and characteristics of the economy, such as trade openness and exchange rate regulation all have an impact on how the economy responds to fiscal shocks and how it responds to monetary policy (Ramey 2019).

Generally speaking, three broad theoretical frameworks serve as a basis for understanding the relationship between fiscal policy and macroeconomic results. Specifically, the Keynesian model proposes that demand drives the level of GDP in the short run, and that government expenditure should be considered as the inverse of one minus the marginal desire to consume (Ramey 2019). The tax multiplier is less than the spending multiplier, and they only enter the equation through their influence on discretionary spending.

Two further predictions of the Neoclassical model, which incorporates both labor supply and variable capital stock, are that positive expenditure and a negative tax multiplier will occur (Kemp 2020). The transmission mechanism, on the other hand, differs from that of the Keynesian model. In a neo-classical model, a positive expenditure multiplier results in a negative household impact, which encourages households to work more, resulting in a labor supply response that raises GDP

as a result of the shock. Tax increases that are distortive have a significant detrimental impact on these models. In a neoclassical model, tax shocks have an impact on economic outcomes through the supply-side channel, as opposed to a Keynesian model, in which tax shocks have an impact through aggregate demand (Ramey 2019).

Finally, the New Keynesian model, which is expressed in the New-Keynesian Dynamic Stochastic General Equilibrium (NK-DSGE) model, which is a mix of features from both the neoclassical and Keynesian models, is the third theoretical framework. The NK-DSGE model has a tendency to yield a tiny, but positive, multiplier for government expenditure. With the addition of heterogeneous agents, sticky wages, and a financial market, among other characteristics, the NK-DSGE model has been significantly enhanced. Agents have a high MPC, which translates into high spending multipliers for the company (Ramey 2019).

The importance of these theoretical issues should not be overlooked when assessing the impact of fiscal policy changes on macroeconomic outcomes is being debated. It is critical to understand which fiscal factors might have an impact on the fiscal multiplier in a certain institutional structure of the economy.

The likelihood to manipulate economic activity by monetary tools or fiscal consolidation remained an interesting debate. Different evidence suggests various results, some in favor of monetarists and other contradictory, endorsing fiscal consolidation. The fiscal consolidation that is necessarily to be adopted to influence economic activity has evolved and showed fruitful results in calculations for future forecasting. However, fiscal policy developed a strong case in its favor.

2.2.   Fiscal Multipliers

The literature on the effect of spending changes on the level of output is relatively more in comparison to tax changes. (Andersen and Jordan 1968) studied the influence of monetary and fiscal influence, they simply regress growth output on receipts and high employment spendings. They note that monetary influence is vigorous and operate quickly than fiscal influence, advocating that, monetary action influence on economic activity is more definite than that of fiscal actions in economy.

The idea that, the fiscal consolidation composition matters for their likelihood of success and their macroeconomic consequences, (Alesina and Perotti 1997) analyze three OECD countries and find that, in some countries fiscal contractions can be expansionary as well. Fiscal adjustments relying primarily on spending cuts in government wage bill and transfers has a greater chance of success and are expansionary, contrary to the fiscal adjustments that depend essentially on increase in taxes. For a better policy output, a major fiscal adjustment should be accompanied by exchange rate policy. The fiscal adjustment which avoids to deal the problems of social security, welfare projects, and engorged government bureaucracies rests in failure.

In 1980s number of countries having large government deficit or debt implemented deficit cuts. In many cases, contrary to expectations private consumption boomed. Using neo-classical framework, (Perotti 1999) find positive association between private and government consumption at high levels of government consumption. In addition to the typical neo-classical wealth impact, the consumption of governments has a positive demand effect on the economy as a whole. Furthermore, fiscal policy can have an impact on human wealth by affecting the amount of future disposable income available.

An approach that combined structural VAR and event analysis was used to evaluate the dynamic effects of shocks in government taxes and spending in United States throughout the post war period. Positive government expenditure shocks has a positive influence on output, but positive tax shocks has a negative effect on output (Blanchard and Perotti 2002). Government expenditure continuously crowds out private consumption, whereas taxes continually crowds out private consumption. Investment spending is adversely affected by both tax rises and increases in government spending, which both have a large and negative impact on the spending. According to Jalil (2012), in nations where monetary authorities are constrained in their ability to mitigate shocks, taxes have a significant negative impact on output, whereas the effect of government spending is minimal.

In the rouse of increasing and brutal incidences of terrorism, many countries around the globe have directed their considerable precious resources towards combating terrorism by halting their sources of finance (Czinkota, Knight et al. 2010). The efforts of governments to counter terrorism and secure peace in country and region, opted to finance defense forces and further advocated the use of military power to tackle vigorous terrorism in country and region (Koh 2007) (Czinkota, Knight et al. 2010).

The main features of the model that come up with a high multiplier are, decline in markup ratio of the prices over cost when output rises, and the elastic response of the employment towards increase in demand (Hall 2009). The GDP grew half by the amount of increase in government purchases during WWII and the Korean War, the multiplier ranges between 0.7 to 1.0. Further, they persuaded that, the rise in GDP is roughly by the size of an increase in government purchases, and possibly further when monetary policy is passive in nature. Further going beyond, encouraged to

make room for thinking beyond New Keynesian framework to explain high value estimates of the multiplier along with other mysteries of aggregate economic behavior.

Because of institutional constraints and data scarcity, there is a paucity of empirical research on the short-term effects of fiscal policy on the economic activity of developing nations. (Gupta, Clements et al. 2002) investigate the impact of fiscal adjustment and expenditure composition on growth in 39 low-income countries over the short term. a 1% reduction in the deficit to GDP ratio results in a 0.25 to 0.5 percent rise in real per capita income in the short run, and Keynesian effects of fiscal policy are stronger in low-income countries that have achieved fiscal and macroeconomic stability. (Haque, Montiel et al. 1991) construct a dynamic, small open economy Mundell Fleming model for a sample of 31 developing countries and find that increased government spending has contractionary effects in the short and medium term but has no effect in the long run.

(Davoodi, Clements et al. 2001) decomposed the sources of peace dividend into country –specific, regional, and global factors to analyze their relative importance in economy and government spending priorities. Decease in military spending and higher non-military spending is systematically related to ease of international and regional coercion and the existence of International Monetary Fund (IMF) supported adjustment programs. Further-more, the fiscal adjustments imply an observable and a large cut in military spending of countries with International Monetary Fund (IMF) supported programs. The average country that doubles the military expenditure reduce a growth rate for a period, which in turns reduce the level of income by 20 percent (Collier 2006). For developing countries, the effects on income are likely to be even more costly than for the global average. Military expenditure is a drag on development even if not linked with conflict, and military conflict may lock country in phase of economic contraction. Further, in an international war a country is more likely to spend about an additional 2.5% of GDP

on the military forces, while in a civil war eruption it might spend around an additional 1.8 % of GDP.

In order to explore the relationship between government military spending and economic growth in Sri Lanka in the context of the civil war, (Wijeweera and Webb 2009) used the VAR model, which revealed a substantial rise in military expenditure while recording good economic growth. Furthermore, when comparing military spending and non-military government spending, it is shown that military spending has a small beneficial influence on actual GDP production. Over a ten-year period, military spending improves the economy's gross domestic product by 0.05 percent. Instead, when non-military spending is raised by 1 percent, the economy grows by 1.6 percent, according to the World Bank.

Reversion to conflict might be at high risk after end of conflict (Collier and Hoeffler 2006). Increase or decrease in military spending might be a signal of country's government intentions towards rebels. Reduction in military spending may signal towards the government intention towards the terms of the peace settlement, and hike in military spending in post conflict environment is attached significantly to surge the risk of engaging into conflict again. This effect of government military spending is distinctive in nature to post-conflict period, and moreover becomes progressively noticeable over the decade.

According to (Joerding 1986), the military can have an impact on growth through a variety of channels, including the aggregate demand effect. Consider the possibility that a growing economy with high growth rates may be able to raise defense spending in order to protect itself from external aggression and to maintain domestic stability. In this case, it is critical to consider whether defense spending stimulates economic growth or whether defense spending is influenced by changes in economic conditions.

There is long lasting debate on the causal relationship of military expenditure and GDP growth, and there is mixed evidence employing cross-sectional, fixed effect and pooled data. (Dicle and Dicle 2010) used sample of 65 countries, specially emphasizing on structural changes and stationarity around time trend. Out of 65 countries, 54 countries were reported with causal relationship between GDP growth and military spending. Overall, estimation provide bi-direction positive causal relationship.

(Weber 1999) used a co-integration and error correction model to gauge long-run multipliers from post-war United States data, he finds that the long-run multiplier ranges from 1.11 to 1.14. Interestingly, these estimated figures are fairly similar to (Baxter and King 1993).

2.3. Pakistan Fiscal Multipliers

Keynesian view of fiscal policy is favorable when government spends in productive means rather than unproductive projects. Estimate for fiscal multiplier varies with model used in study, different econometric models yield different results. (Munir and Riaz 2020) analyzed the fiscal policy with SVAR model finding that surge in government expenditure leads to rise in private consumption and increase in prices after three quarters, whereas private investment follows declining trend. Prices and private investment are positively related to taxes, while private consumption and interest rate are related negatively with taxes. The spending multiplier is positive and tax multiplier become negative after two quarter. Government to adopt strict policies of accountability for the generation and collection of revenues.

(Ismail and Husain 2012) assumed that, the fiscal spending decision is made on the basis of previous year spending to presume that development and current expenditure are not influenced by economic activity. They found that government spending remains insignificant for employment, output and inflation. Further, government spending on interest payment and defense

13

spending decrease the fund available to stimulate economic activity. (Shaheen and Turner 2010) use Structural Vector Autoregressive (SVAR) methodology and provide evidence to claim that, there is positive effect of government spending on inflation and output. The spending multiplier is positive in short-run, while negative in long-run. Further. Positive government expenditure shock increase output, have significant effect on prices, and spending shocks increase interest rate in short-run as well.

Considering Pakistan, there is long-run relationship between economic growth and overall fiscal deficit, and presence of expansionary fiscal contraction (Ali, Ahmad et al. 2010). Using linear equation, they found that fiscal deficit affects economic growth positively up to some threshold level, beyond that threshold level there are some major macro-economic consequences as well. Further, advocated that budget deficit should be 3% to 4% of GDP and reduction in public expenditure should be made rather than resource mobilization to reduce fiscal deficit.

Although (Looney 1995) found no evidence of genuine crowding-out as a result of the government's non-infrastructure investment program in Pakistan's large manufacturing sector, he did find evidence of real crowding-out in the small manufacturing sector. With the help of a vector error-correction framework that includes GDP, private investment, and governmental investment, (Hyder and Qayyum 2001) evaluates the hypothesis of crowding-out for Pakistan. His statement affirms the relation between public and private investment as being complementary. (Naqvi 2002) assesses the relation between economic development, private investment, and public investment in Pakistan by employing a co-integration vector auto-regression. Past government investment had a favorable effect on private investment, according to the evidence provided by the author.

Using Keynesian dynamic stochastic general equilibrium (DSGE) model (Raashid, Saboor et al. 2020) found a fall in private investment, private consumption and export for positive government

spending shock. Which in terms rise interest rate, negative wealth effect and currency appreciation domestically. The estimated multiplier value is 0.45, which become 0.18 after ten years. This shows that fiscal spending has positive effect on GDP in short-run and become very small in long-run. (Munir and Riaz 2019) analyzed the effect of fiscal policy on macro-economic variables using VAR model for the period of 1976-2017. They found that increase in government spending bring increasing change in private consumption and prices in three quarters, while private investment shows a declining trend. Further, advocated the active role of government for macro-economic stability.

Using SVAR model with annual data for aggregate and as well as different components of government expenditures (Khalid and Satti 2016) noted that, GDP rises in response to surge in aggregate government expenditures. Sign of the fiscal expenditure multiplier turns out to be positive and consistent. (Khalid, Malik et al. 2007) estimates shows that, responses of output gap and inflation to budget deficit GDP ratio shocks are statistically insignificant. Concluding that, fiscal policy is an endogenous and pro-cyclical. (Jalil, 2021) endorse the expenditure-based stabilization preferable as compared to tax-based austerity using ARDL model approach. Cut in development expenditure worsen the economy in recession, as multipliers of development expenditures are higher compared to the current expenditure multiplier. The austerity measures through tax multiplier is more harmful than reduced government spending.

(Tahir and Sajid 1999) investigate the relationship between military expenditure and economic growth in Pakistan. The authors conducted a granger causality test on quarterly decomposition series of real military expenditure and real production for the period of 1961 to 1997, and found that the relationship was causal. According to the findings of their paper, a feedback link exists in the cases of Pakistan, India, and Iran. Guatemala and Venezuela both have a one-way causal

relationship between their gross domestic product and their defense budget. In the case of Turkey, a unidirectional causal relationship between defense spending and GDP has been discovered. When it comes to the Philippines, Ecuador, and Sri Lanka, there is no link between defense expenditure and gross domestic product (GDP). Nonetheless, the findings of the simple causality tests indicate that there is a bidirectional relationship between defense spending and GDP.

The bi-variant VAR model developed by (Dunne, Nikolaidou et al. 2002) is used to the period 1962-1996 and finds that Pakistan and India are engaged in an action-reaction weapons race. With the help of a multi-variant model, (Yildirim and Öcal 2006) discovered that there is a bi-directional causation between Pakistan and India.

(Wijeweera and Webb 2011) found a favorable association between military spending and economic growth in Pakistan, according to their research. (Shahbaz, Afza et al. 2013) show that military spending has a negative impact on economic growth, but they do not establish a causal relationship between military spending and economic growth. On the other hand, (Khan 2004) discovers evidence of bi-directional causality between military spending and economic growth. He claims that Pakistan's defense budget does not obstruct the country's economic development. He maintains that Pakistan's defense spending does not impede the country's economic development. However, (Yildirim and Öcal 2006) find no evidence of a direct relationship between defense expenditures and growth, whereas (Anwar, Rafique et al. 2012) find a causal relationship between economic growth and military expenditure in Pakistan. To be sure, according to (Shahbaz, Afza et al. 2013) the conclusions addressing the relationship between economic growth and military spending are equivocal, and the outcomes are dependent on the methodology used, the sample countries used, and the time period under consideration.

16

Using combined co-integration test and boot-strap causality test, (Ahmed, Zafar et al. 2020) fount that, military spending has a favorable influence on ecological footprint but a detrimental impact on economic growth, according to the study. Similarly, (Hacker and Hatemi-J 2012) used bootstrap causality test and outcomes highlighted that, economic growth Granger causes military spending and causality runs from military spending to ecological footprint. (Shahbaz and Shabbir 2012) indicated a long-run relationship between economic growth and military spending using rolling window approach. Further, negative, and uni-directional causality was found that run from defense spending to economic growth. The study opened new sights for the policy making authorities to sustain good economic growth by cutting down defense spending.

2.4.   Summary and Research Gap

The literature on the effect of spending changes on the level of output is relatively more in comparison to tax changes. For a better policy output, a major fiscal adjustment should be accompanied by exchange rate policy. The composition of fiscal consolidation matters for the likelihood of success. (Czinkota, Knight et al. 2010) and (Davoodi, Clements et al. 2001) decomposed the sources of peace dividend into country –specific, regional, and global factors to analyze their relative importance in economy and government spending priorities. They found that, decease in military spending and higher non-military spending is systematically related to ease of international and regional coercion and the existence of International Monetary Fund (IMF) supported adjustment programs.

The military conflict may lock country in phase of economic contraction. The average country that doubles the military expenditure reduce a growth rate for a period, which in turns reduces the level of income by 20 percent, and reversion to conflict might be at high risk after end of conflict (Collier and Hoeffler 2006). Increase or decrease in military spending might be a signal of country's

intentions towards rebels. Reduction may signal towards the government intention to observe the terms of the peace settlement. There is long lasting debate on the causal relationship between military spending and GDP growth. (Munir and Riaz 2020) fiscal policy is favorable when government spends in productive means rather than unproductive projects. Government to adopt strict policies of accountability for the generation and collection of revenues. The study opened new sights for the policy making authorities to sustain good economic growth by cutting down defense spending.

Government of Pakistan has decided to adopt austerity measures through increase in taxes and reduction in government expenditure. To gauge the impact of these measures on output, their multipliers need to be estimated. The threat of regional or international war is one common concern that might motivate the military spending. For most of the developing countries, governments internal rebellions are major threat that challenge the write of state. Hence, spending multipliers for exogenous shocks need to be estimated for better allocation of government resources for the upcoming future.

The table 1(a, b) shows a spending multiplier calculated by various authors.

Table 1(a): Expenditure multiplier estimates (Summary)

Study	Sample Period	Multiplier Value
Barro, 1958	1898-1972	0.51-0.98
Woodford & Rotemberg, 1992	1947-1989	1.25
Ramey & Shapiro, 1998	147-1996	0.60-1.00
Blanchar and Paerotti, 2002	1960-1997	0.90-1.29
Uhlig & Mountford, 2009	1955-2000	0.65
Hall, 2009	1930-2008	0.70-1.00
Cogan, et al, 2010	1966-2004	0.64
Peter & Fisher, 2010	1960-2007	1.50
Redlicks & Barro, 2011	1917-2006	0.60-0.70
Ramay, 2011	1939-2008	0.60-1.20
Gorodnichenko & Auerbach, 2013	1947-208	-0.30-2.20
Pappa & Zeev, 2015	1947-2007	2.0
Wingender & Serrato, 2016	1970-2009	1.70-2.00
Moral-Benito & De Cos,2016	1986-2012	0.60-1.40
Ramey,2016	Various samples	0.56-1.97
Guerrero & Dupor, 2017	1951-2014	0.00-0.50
Hagedorn et al, 2019	Micro data, Experimental study.	1.3
Pallara & Metelli, 2020	1929-2015	0.20-2.50

Table 1(b): Pakistan Expenditure Multiplier Estimates (Summary)

Study	Sample Period	Multiplier Value
Naveed, Sohail & Shamim, 2011	1990-2009	0.84
Rashid, Saboor & Ahmad 2020	1976-2017	0.5-0.18
Paul & Rozina, 2010	1973-2008	-0.09
Beyer & Milivojevic, 2020	1990-2017	1.22
Hussain, Rafiq & Khan	1976-2017	0.68
Hayat & Qadeer, 2016	1982-2014	0.38-1.05

CHAPTER 3

FISCAL POLICY ASSESSMENT

The multiplier effect in the economy changes by change in fiscal policy, because policy effect consumption, investment and spending level in economy. Government spending affects income levels in the economy. The additional spending and its response in economy is measured, and that measured amount is called multiplier effect.

The graphical representation of the government spending(G) and military spending(M) shows the association of the military spending and government spending. Fluctuations can be seen in the graph over the years. It might be because of the violence and security threats to the state. In 2013 government spending was 11.03 percent of the GDP, out of which 15.9% was on military spending. After two years, in 2015 the government spending was 10.97% of the GDP whereas military

Figure 1: Spending over the years
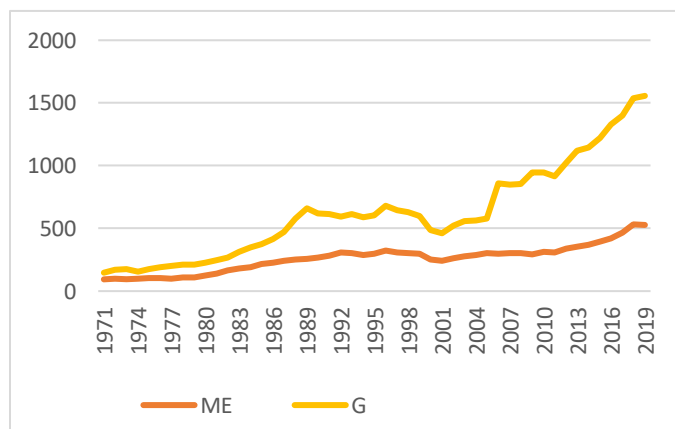
spending was contributing 17.96 percent of the total spending. In 2018, military spending was 18.7 percent of total spending, where total spending was 11.7 percent of the GDP. Hence, it can be concluded that military spending does effect government overall spending.

Pakistan has faced a layer of terrorism in recent past that has costed hundreds of lives of the innocent public. The graph illustrates the period of violence and terrorism. Violence took pace in

2006, 317 incidents of killing occurred and 1,466 people died. In 2009 violence was at its peak and took life 11,317 people in 1,665 incidents of killing. The number of incidents reduced to 294 in 2017. Pakistan has successfully coped with deteriorating peace within country

Figure 2: Violence
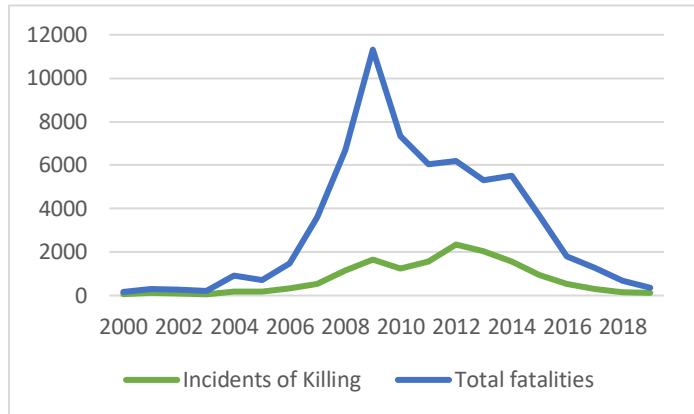
by taking military action and knocking out the terrorists. Beside public lives, there was impact on the economy of Pakistan as well.

Coming towards the economy of Pakistan, government of Pakistan is focused to stabilize economy. For this purpose, the government initially tried to reduce fiscal deficit. This was majorly done by focusing on increase in tax collections. The government tried to bring major transaction in the tax nets. Measures such as the requirement of national identity card for transactions of more than Rs. 50,000 were taken. Such measure, however, were strangling the business sector since it increased the compliance cost of businesses. Austerity measure through spending cuts were also considered and ban was imposed on purchase of vehicles for government institutions, except for law enforcing agencies with obligation of No Objection Certificate (NOC) from Finance Division. Restrictions on official lunch and dinner was encouraged. On 3rd December 2018 a notification was issued by Finance Division and it was directed to save about 10% in current expenditures allocated for repair and maintenance. Further, delegations for foreign visits were reduced to least number of most relevant delegates.

However, the Covid-19 was a major setback for efforts to reduce fiscal deficit. At time of pandemic, government adopted expansionary policies to give support and relief to the general

public. Around the globe countries spend on military to cater associated internal and external threats towards the sovereignty. Similarly, Islamic republic of Pakistan safeguards its ideology and public welfare in given economic resources. Government makes military spending to prevail peace and remove security threats.

The military budget's proportion of the total budget reveals how much money is allocated to the armed forces in real terms. Considering spending distribution in Pakistan, Word Bank data reflects that military expenditure comprises of 18.44% of total government spending in 2019 which was 15.9% in 2013. The country has consistently increased its military spending in past decades.

Pakistan's 2020-21 budget was estimated about $41 billion expenditure, out of which 47% (i.e. $19.35 billion) will go into debt servicing. The overall debt of the country is about $114 billion. Pakistan economy is surviving on IMF loan package deal of $6 billion and to meet expenditures government has raised tax target by 27% from previous year to meet the revenue target of $43.16 billion. The defense expenditure comprises of $8.5 billion i.e., 19% of 2020-21 budget, but according to Al-Jazeera report, counting all other associated expenditures that are not mentioned in Budget is around $11 billion (i.e. 25%). The budget did not include military pensions, nuclear program, para-military forces, arm acquisition and many more as per analysis.

Pakistan has a population of 21.66 crores in 2019, according to the World Bank. The 2020-21 budget proposed a 48 percent reduction in subsidies and a 73 percent increase in the petroleum charge. Additionally, Pakistan has agreed to drastically increase electricity costs in order to meet another IMF demand.

For health and education, which are two of the most essential human needs, the government allocated just $151 million and $545 million, respectively, in the most recent budget for these two human necessities. This equates to a $0.7 or PKR 106 annual cost of health aid for each Pakistani

person. When it comes to education, the only means of empowerment available to the average citizen, the government has decided to spend only $2.5 or PKR 381 each year. That is in a country where, according to a United Nations Development Program report, more than half of the population is under 30 years old, with another quarter of the population being between the ages of 15 and 29 years old.

The Ministry of Finance is an essential decision-making body in the defense sector because it is in charge of the financing of the military institution. The Ministry of Finance is under tremendous pressure to provide funding to military for the upkeep of existing infrastructure as well as the acquisition of new weapons and equipment. Because of the limited resources available, the Ministry of Finance is unable to restrict money allocated to the military, but it can delay other financing under its jurisdiction (Siddiqa-Agha 2000).

CHAPTER 4

DATA AND METHODOLOGY

Developed in accordance with the requirements of the study goals and objectives, this section of the study elaborates the framework and empirical method to capture the effect of exogenous shocks on government spending, using military spending as an instrument. The framework of this study elaborates that, why broader measures of government spending changes are expected to capitulate biased estimates for the effects of government spending policies. The framework of the study emphasis on the importance and give justification for the crucial role of exogenous shocks while computing spending multiplier for the economy. Secondly, 2sls procedure is used for statistical estimation, thirdly, variables and their data sources has been discussed.

4.1.   Theoretical Framework

The previous studies that computed for spending multiplier suffer from endogeneity issue and estimates are biased. This biasness is due to neglecting some factors that affect spending multiplier. To address this issue of biasness this study come up with idea of exogenous factors that affect spending multiplier. The set of equation in frame work of this study try to clear the said issue of endogeneity.

The equation below show relationship between real output and government spending changes.

$$\Delta Y_t = \partial + \beta_1 \Delta G_t + \beta_2 X + \varepsilon_t \qquad (1)$$

(Y) is real output, (G) represents government spending changes and X is a vector or control variables. Many developments other than government spending changes also affect real growth. Other shocks that are exogenous to economic cycle like natural disasters, monetary policy shocks, wars and other expectations about the future are likely to be the components of ε_t.

$$\varepsilon_t = \sum_{c=1}^{z} \varepsilon_t^c \qquad\qquad (2)$$

There is no special reason to expect that various ε_t^c's is not correlated with each other. Now, consider a specification for determinants of government spending changes,

$$\Delta G_t = \sum_{c=1}^{z} b_t^c \varepsilon_t^c + \sum_{k=0}^{n} \omega_t^k \qquad\qquad (3)$$

The $\varepsilon_t^{c\prime}s$ are same as they were before, and ω_t^k's are additional influences on government spending. Above equation represents that, some government spending changes are not related to developments that can persuade output in near term. Secondly, it captures the response of spending for each episode and reflect the fact that legislative spending changes are discrete events.

Combining equation (1) and (3), we get new equation representing spending changes effect on output.

$$\Delta Y_t = \alpha + \beta_1 \left[\sum_{c=1}^{z} b_t^c \varepsilon_t^c + \sum_{k=1}^{L} \omega_t^k \right] + \beta_2 X + \varepsilon_t \qquad\qquad (4)$$

Above equation (4) shows that, some government spending changes are correlated with error term and lead towards biased estimates. It includes number of non-policy movements which are correlated with other developments effecting output as well.

By modifying the equation, we get,

$$\Delta Y_t = \alpha + \beta_1 \sum_{k=1}^{L} \omega_t^k + \beta_2 X + \gamma_t \qquad\qquad (5)$$

The $\sum w_t^k$ in each quarter or annual is a new measure of fiscal shocks. The equation folds the effect of government spending changes that is motivated by some other shocks to output into error term. The idea that some of spending changes are exogenous with respect to other is apprehended by the

assumption that, each ω_t^k is not correlated with ε_t^c's and b_t^k's. Hence, once the ω_t^k's are identified accurately, estimates are unbiased.

4.2. Model Selection

This study uses the Two Stage Least Square (2SLS) technique for analysis where military spending is used as an instrument to establish exogeneity. As this study intends to estimate short-run spending multiplier, therefore, Ordinary Least Square (OLS) method for regression is used to examine the nexus between dependent variable and independent variable.

4.3. Linking OLS to 2SLS

The 2SLS procedure is used when OLS estimate are biased and suffer from endogeneity i.e. when the dependent variable's error terms are correlated with the independent variable. In structural equations modeling, 2SLS procedure is used to estimate the path coefficient, which is commonly applied in quasi-experimental[3] studies. 2SLS procedure make use of instrumental variable to treat endogeneity and yield unbiased results.

4.4. Empirical Model

The estimation of equation (1) in section 3.1 by Ordinary Least Square (OLS) will yield biased estimates for government spending multiplier, as it suffers from endogeneity i.e., explanatory variables are measured with error and reverse causality problem. To get unbiased estimates, we

---

[3] Quasi-experimental study is that, where the independent variable is manipulated to measure the outcome. These experimental techniques are used for establishing and evaluating cause-and-effect relationships between dependent and independent variable.

will make use of Two Stage Least Square(2SLS) using military spending as an instrumental variable.

Step 1:

Government spending is altered by military spending depending on security threats to state. The threats might be internal or external, or may depend on geo-political presence in the region. Therefore, military expenditure is of core importance.

$$lnG_t = \alpha_0 + \alpha_1 \, lnME_t + \alpha_2 V_t + \alpha_2 X + \varepsilon_t \qquad (6)$$

In equation (6), G represents government spending, ME represents military spending and violence is represented by V. For violence, dummy variable is used. Whereas, X is a vector or control variable and "t" denotes time period. The above equation will yield us estimated government spending $(\hat{G})$.

Step 2:

The G-government spending in equation (1) will be replaced with estimated $\hat{G}$-government spending, which was obtained in stage 1 from equation (6). The equation (1) to be estimated in stage 2 is given below,

$$lnGDP_t = \beta_0 + \beta_1 ln\widehat{G_t} + \beta_2 W + \varepsilon_t \qquad (7)$$

GDP represents gross domestic product, G^ represents estimated government spending, whereas, W is a vector of other control variables and "t" denotes time period. The estimation of equation (7) will yield us unbiased estimates that can be used in framing efficient and effective fiscal policy.

4.5.   Variables and Data Source

Time series data is used over the period, from 1971 to 2019 to statistically explore the association among the specified variables. Annual data for Pakistan is used with 49 observations suitable for time series data regression analysis. The analytical information comes from secondary major sources like World Development Indicators (WDI), and International Monetary Fund. Dependent variable GDP and independent variable Military expenditure, Government spending and control variables Trade openness, Interest rate, Total population of Pakistan, IGFCF- Government Fixed Capital Formation, which is used as proxy for investment. Data for GDP, government spending and military expenditure is in local currency unit and used as ln-GDP, ln-government spending and ln-military expenditure respectively. Dummy variable is used for violence. It represents the years in which the security situation was deteriorating and incident of killing were rising in Pakistan through suicide attacks, IED's, bomb attacks and militancy uprising. The dummy variable takes the value 1 if the number of incidents are greater than 30, and zero otherwise. All other variables are described in table 2 with data sources.

Table 2: Variables and data source

Variables	Description	Measures	Data Source
GDP	Gross Domestic Product	GDP (constant LCU)	WDI
ME	Military expenditure	Military expenditure (constant LCU)	WDI
TOP	Trade Openness	Trade openness (TO)= Imports + Exports/GDP	WDI
IRate	Interest Rate	Policy rate of Central Bank	ISF
POP	Total Population of Pakistan	Population growth (annual %)	WDI
IGFCF	Government Fixed Capital Formation	Gross fixed capital formation (% of GDP)	WDI
G	Government Expenditure	General government final consumption expenditure (constant LCU)	WDI

CHAPTER 5

EMPIRICAL RESULTS AND DISCUSSION

5.1.   Introduction

In this chapter of the study, estimations and analysis of the data is presented. First, it presents

variables descriptive statistics for showing data summary, secondly, the unit root is applied to

check stationarity of the data. At last, Ordinary Least Square method is applied using Two Stage

Least Square procedure to get finding for the objective of the study.

5.2.   Descriptive Statistics

Table 3 shows the descriptive statistics for the variables under observation, which reveals some

indication about the nature of the variables. The table provide the number of observations, Mean,

Maximum, Minimum, and Standard Deviation for each variable.

Table 3: Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
GDP	49	5740.471	3480.863	1416.643	13262.866
Government spending	49	624.403	378.088	146.989	1556.641
Military Expenditure	49	259.958	109.727	94.964	532.212
IGFCF	49	15.734	1.835	11.33	19.129
Interest Rate	49	10.515	3.095	5	20
Trade Openness	49	0.328	0.061	0.241	0.606
Population	49	2.684	0.428	2.029	3.364

Mean value shows the average value, so the mean value for GDP, government spending and

military spending is 5740.471,624.403 and 259.958 respectively. Whereas, mean value for IGFCF,

interest rate, trade openness and population is 15.7, 10.5,0.32 and 2.684 respectively. The standard deviation shows the deviation from the mean value, so the GDP is more deviating from the mean as compared to other series.

5.3.   Unit Root Test

In order to validate our visualization unit root is applied and variables are first differenced. Table 4 illustrate results for Augmented Dickey Fuller test (ADF Test).

Table 4: Unit root test

Variables	Level		1st Difference	
	Statistic	Prob	Statistic	Prob
GDP	0.692	0.9970	-3.901	0.0121**
Government Spending	-0.372	0.9877	-6.132	0.000***
Military Expenditure	-2.471	0.3427	-4.751	0.000***
Trade Openness	-6.798	0.000***		
Interest Rate	-2.436	0.0094**		
Population	-9.916	0.000***		
IGFCF	-2.176	0.0174**		
Note: IGFCF= Gross Fixed Capital Formation H0: Series is non-stationary, *** p<.01, ** p<.05, * p<.1				

5.4.   Two Stage Least Square

Following the procedure of Two Step Least Square (2SLS), this study utilizes Ordinary Least Square Regression (OLS) for statistical analysis to assess the degree of association among the variables.

5.4.1. First Stage of 2SLS

In first stage of the regression analysis, G-Government spending is dependent variable and ME-Military expenditure is an independent variable that is being used as instrument to establish exogeneity. The other variables like trade openness, interest rate, gross fixed capita formation, and population enter as control variables, whereas, dummy for violence is used. Table 5 illustrates results for first stage of 2SLS analysis, the results indicate that military expenditure and dummy variable is significant while all other variables are insignificant. The sign of military expenditure coefficient is positive with a value of 1.093, this coefficient is significant at 1 percent level of significance. Secondly, dummy variable is positively and significantly associated with government spending. The coefficient value of the dummy variable indicates that in violent years, the government spending increased by 24 percent, on average.

Table 5: First stage regression using military spending as an instrument

Dep. Variable= ln(Government Spending)	Coefficient
ln(Military Expenditure)	1.093*** (0.114)
IGFCF	0.085 (0.158)
Interest Rate	0.042 (0.064)
Trade Openness	-0.04 (0.0151)
Violence Dummy	0.243*** (0.058)
Population	0.156 (0.167)
F-test = 288.266	**Prob > F** =0.000***
Note: IGFCF= Gross Fixed Capital Formation. Standard errors are reported in parentheses. *** p<.01, ** p<.05, * p<.1	

The F-value>10, that is 288.26, it indicates that independent variables reliably predict government spending. The associated P-value to F-statistic is 0.000, which shows the level of significance less than 1 percent.

5.4.2. Second Stage of 2SLS

In second stage of 2SLS, the estimated government spending in first stage is used with other control variables to estimate spending multiplier. The estimated government spending has been given the name "G-hat". Table 6 illustrates results for the second stage.

All the variables are significant and positively associated to GDP except Interest rate, which is negative associated with GDP. The antilog of G-hat give us the short-run spending multiplier(slope) value of 1.19 and significant at level of significance less than 1 percent. This means that 1 Billion increase in government spending will bring about 1.19 billion increase in GDP. So, when a government spend money and people who receive it will save some and spend rest, this will create a multiplier effect. Gross fixed capital formation and population is significant at level of significance less than 1 percent and positively associated with GDP. The investment in economy encourages household to work more that result in labor supply and raises GDP. Trade openness is positive associated with GDP at level of significance less than 5 percent. Positive association of trade openness with GDP was also found by (Ali and Abdullah 2015) in short-run. This means that increase in export or imports will increase GDP. Interest rate is negatively and significantly associated with GDP. The P-value for interest rate is 0.54, which means that interest rate is significant at level of significance less than 10 percent. The increase in interest rate will decrease investment and spending on durable goods, and GDP will be decreased.

Table 6: Second stage regression using estimated value of government spending

Dep. Variable= lnGDP	Coefficient
G-hat	0.176*** (0.015)
IGFCF	0.086*** (0.022)
Interest Rate	-.018* (0.054)
Trade Openness	0.052** (0.022)
Population	1.461*** (0.26)
F-test = 16969.800	**Prob > F** = 0.000***
Note: IGFCF= Gross Fixed Capital Formation, G-hat= Estimated Government Spending. Standard errors are reported in parentheses. *** p<.01, ** p<.05, * p<.1	

The F-statistic value is 16969.8 which is greater than 10, Secondly, the associated P-value to F-statistic is 0.000, which means that F-value is significant at level of significance less than 1 percent. It means that there is no reverse causality and independent terms reliably predict change in GDP. Hence, short-run government spending multiplier is 1.19.

The higher F-value indicates that issue of endogeneity is resolved and estimates are unbiased. However, to make it sure that there is no endogeneity problem, Hausman endogeneity test is applied. Table 7 illustrates result for endogeneity test.

Table 7: Tests for endogeneity

Durbin (score) chi2(1)	1.03424 (p = 0.3092)
Wu-Hausman F-statistic	.902866 (p = 0.3476)
Ho: variables are exogenous	

The P-value for endogeneity test is 0.3476, it means that null hypothesis is accepted and the variable is exogenous. This also indicate that instrumental variable used for analysis is valid. The

instrumental variable is correlated with government spending but not correlated with GDP. Hence, the unbiased short-run spending multiplier is 1.19 that remain positive and significant over the period.

Further, Ramsay Retest test is applied to check for omitted variable bias. Table 8 illustrates result for Ramsay Retest test.

Table: 8 Test for omitted variable bias

F-statistic	P-value
2.09	0.1181
Ho: model has no omitted variables	

The P-value for the omitted variable bias test is 0.1181, it means that null hypothesis is accepted and the model has no omitted variables. Hence the estimates are unbiased.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

It has been a popular issue for decades to investigate the effect of fiscal policy actions and plans on the aggregate gross domestic product (GDP) and its constituents, followed by exogenous shocks. This study follows a novel way to measure short-run government spending multiplier. For this purpose, data over the period of 1971-2019 is used. To gauge government spending multiplier, Two Stage Least Square (2SLS) procedure is used with Ordinary Least Square(OLS) model, where military expenditure is used as an instrument to establish exogeneity. The result shows that, unbiased short-run government spending multiplier for the economy of Pakistan is 1.19, that remain positive and significant over the period. Trade openness and population is found to have positive association with GDP, whereas interest rate is significant and negative in its impact on GDP. The estimated multiplier value, when compared with tax multipliers, suggest that austerity measure through tax multipliers is more harmful than through reduced government spending. Non-development expenditure need to be reduced through spending cuts. These finding have important implications for the economy of Pakistan and must be considered while making fiscal policy for austerity measures.

Before concluding, it is important to specify the limitation of our analysis. Further investigation can be carried out but there are data constraints. First, spending on durable and non-durable/services, military spending of other countries in region, type of weapons and specific intention behind the alteration in military expenditure will come up with more specific estimates to frame an efficient and effective fiscal policy. Secondly, extent of institutional coordination

between Ministry of Defense, Ministry of Foreign Affairs, monetary and fiscal authorities, and their impact on spending multiplier remain a question.

References.

Ahmed, Z., et al. (2020). "Analyzing the linkage between military spending, economic growth, and ecological footprint in Pakistan: evidence from cointegration and bootstrap causality." Environmental Science and Pollution Research **27**(33): 41551-41567.

Alesina, A. and R. Perotti (1997). "Fiscal adjustments in OECD countries: composition and macroeconomic effects." Staff Papers **44**(2): 210-248.

Ali, S., et al. (2010). "The Effects of Fiscal Policy on Economic Growth: Empirical Evidences Based on Time Series Data from Pakistan [with Comments]." The Pakistan Development Review **49**(4): 497-512.

Andersen, L. C. and J. L. Jordan (1968). "Monetary and fiscal actions: A test of their relative importance in economic stabilization." Review.

Anwar, M. A., et al. (2012). "Defense spending-economic growth nexus: A case study of Pakistan." Pakistan Economic and Social Review: 163-182.

Baxter, M. and R. G. King (1993). "Fiscal policy in general equilibrium." The American Economic Review: 315-334.

Becker, G. S. (2008). "Human capital: The concise encyclopedia of economics." Library of.

Becker, G. S. (2009). Human capital: A theoretical and empirical analysis, with special reference to education, University of Chicago press.

Blanchard, O. and R. Perotti (2002). "An empirical characterization of the dynamic effects of changes in government spending and taxes on output." The Quarterly Journal of Economics **117**(4): 1329-1368.

Chang, H.-J., et al. (1998). "Interpreting the Korean crisis: financial liberalisation, industrial policy and corporate governance." Cambridge journal of Economics **22**(6): 735-746.

Collier, P. (2006). "War and military spending in developing countries and their consequences for development." The Economics of Peace and Security Journal **1**(1).

Collier, P. and A. Hoeffler (2006). "Military expenditure in post-conflict societies." Economics of Governance **7**(1): 89-107.

Czinkota, M. R., et al. (2010). "Terrorism and international business: A research agenda." Journal of International Business Studies **41**(5): 826-843.

Dao, M. Q. (2012). "Government expenditure and growth in developing countries." Progress in Development Studies **12**(1): 77-82.

Davoodi, H., et al. (2001). "Military spending, the peace dividend, and fiscal adjustment." IMF Staff Papers **48**(2): 290-316.

Dicle, B. and M. F. Dicle (2010). "Military spending and GDP growth: Is there a general causal relationship?" Journal of Comparative Policy Analysis **12**(3): 311-345.

Dunne, J. P., et al. (2002). "Military spending, investment and economic growth in small industrialising economies." South African Journal of Economics **70**(5): 789-808.

Gupta, S., et al. (2002). "Expenditure composition, fiscal adjustment, and growth in low-income countries." IMF Working Papers **2002**(077).

Hacker, S. and A. Hatemi-J (2012). "A bootstrap test for causality with endogenous lag length choice: theory and application in finance." Journal of Economic Studies.

Hall, R. E. (2009). By how much does GDP rise if the government buys more output?, National Bureau of Economic Research.

Haner, M., et al. (2019). "Price of liberty or never again: Americans' views on preventing mass murder." Justice Evaluation Journal **2**(1): 50-72.

Haque, N. U., et al. (1991). "A forward-looking macroeconomic simulation model for a developing country." Journal of Policy Modeling **13**(1): 41-65.

Heshmati, A., et al. (2015). Fiscal policy and inclusive growth in advanced countries: Their experience and implications for Asia. Inequality, Inclusive Growth, and Fiscal Policy in Asia, Routledge**:** 278-297.

Hyder, K. and A. Qayyum (2001). "Crowding-out hypothesis in a vector error correction framework: a case study of Pakistan [with Comments]." The Pakistan Development Review: 633-650.

Ismail, M. and F. Husain (2012). "Fiscal discretion and its impact on Pakistan Economy." The Pakistan Development Review: 339-362.

Jalil, A. (2012). "Comparing Tax and Spending Multipliers: It's All About Controlling for Monetary Policy." Available at SSRN 2139855.

Joerding, W. (1986). "Economic growth and defense spending: Granger causality." Journal of Development Economics **21**(1): 35-40.

Kemp, J. H. (2020). Empirical estimates of fiscal multipliers for South Africa, WIDER Working Paper.

Khalid, M., et al. (2007). "The fiscal reaction function and the transmission mechanism for Pakistan." The Pakistan Development Review: 435-447.

Khalid, M. and A. u. H. Satti (2016). "Fiscal policy effectiveness for Pakistan: A structural VAR approach." The Pakistan Development Review: 309-324.

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

Koh, W. T. (2007). "Terrorism and its impact on economic growth and technological innovation." Technological forecasting and social change **74**(2): 129-138.

Lajeunesse, M. J. and G. A. Fox (2015). Statistical approaches to the problem of phylogenetically correlated data, Oxford University Press Oxford**:** 261-283.

Lane, P. R. and G. M. Milesi-Ferretti (2008). "International investment patterns." The Review of Economics and Statistics **90**(3): 538-549.

Looney, R. E. (1995). "Public sector deficits and private investment: a test of the crowding-out hypothesis in Pakistan's manufacturing industry." The Pakistan Development Review: 277-297.

Mallick, H. (2008). "Government spending, trade openness and economic growth in India: A time series analysis."

Marimuthu, M., et al. (2009). "Human capital development and its impact on firm performance: Evidence from developmental economics." Journal of international social research **2**(8).

Mishra, A. V. (2007). "International investment patterns: evidence using a new dataset." Research in International Business and Finance **21**(2): 342-360.

Munir, K. and N. Riaz (2019). "Macroeconomic effects of fiscal policy in Pakistan: a disaggregate analysis." Applied Economics **51**(52): 5652-5662.

Munir, K. and N. Riaz (2020). "Macroeconomic effects of exogenous fiscal policy shocks in Pakistan: a disaggregated SVAR analysis." Hacienda Publica Espanola(233): 141-165.

Naqvi, N. H. (2002). "Crowding-in or crowding-out? Modelling the relationship between public and private fixed capital formation using co-integration analysis: The case of Pakistan 1964-2000." The Pakistan Development Review: 255-275.

Okojie, C. (1995). "Human capital formation for productivity growth in Nigeria." Nigerian Economic and Financial Review **3**(1): 44-45.

Othman, N., et al. (2018). "Impact of Government spending on FDI inflows: The case of Asean-5, China and India." International Journal of Business and society **19**(2): 401-414.

Perotti, R. (1999). "Fiscal policy in good times and bad." The Quarterly Journal of Economics **114**(4): 1399-1436.

Pesaran, M. H., et al. (1999). "Pooled mean group estimation of dynamic heterogeneous panels." Journal of the American statistical Association **94**(446): 621-634.

Raashid, M., et al. (2020). "Fiscal policy transmission mechanism in Pakistan: A general equilibrium analysis." Business Review **15**(1): 50-66.

Raju, M. H. and Z. Ahmed (2019). "Effect of military expenditure on economic growth: evidences from India Pakistan and China using cointegration and causality analysis." Asian Journal of German and European Studies **4**(1): 1-8.

Ramey, V. A. (2016). "Macroeconomic shocks and their propagation." Handbook of macroeconomics **2**: 71-162.

Ramey, V. A. (2019). "Ten years after the financial crisis: What have we learned from the renaissance in fiscal research?" Journal of Economic Perspectives **33**(2): 89-114.

Ramey, V. A. and M. D. Shapiro (1998). Costly capital reallocation and the effects of government spending. Carnegie-Rochester conference series on public policy, Elsevier.

Rutledge, D. and A. Barros (2002). "Durbin–Watson statistic as a morphological estimator of information content." Analytica Chimica Acta **454**(2): 277-295.

Schultz, T. P. (1988). "Education investments and returns." Handbook of development economics **1**: 543-630.

Schultz, T. W. (1981). Investing in people. The Economics of population Quality/Th. W. Schultz, Berkeley, Calif.: University of California Press.

Shafuda, C. P. and U. K. De (2020). "Government expenditure on human capital and growth in Namibia: a time series analysis." Journal of Economic Structures **9**(1): 1-14.

Shahbaz, M., et al. (2013). "Does defence spending impede economic growth? Cointegration and causality analysis for Pakistan." Defence and Peace Economics **24**(2): 105-120.

Shahbaz, M. and M. S. Shabbir (2012). "Military spending and economic growth in Pakistan: New evidence from rolling window approach." Economic research-Ekonomska istraživanja **25**(1): 119-131.

Shaheen, R. and P. Turner (2010). "Measuring the dynamic Effects of Fiscal Policy shocks in Pakistan." 25Th Agm Pide Pakistan.

Siddiqa-Agha, A. (2000). "Defence a public good? A case study of Pakistan's military expenditure, 1982-99." PR Chari and Ayesha Siddiqa-Agha, Defence Expenditure in South Asia, India and Pakistan. Regional Centre for Strategic Studies.

Sweetland, S. R. (1996). "Human capital theory: Foundations of a field of inquiry." Review of educational research **66**(3): 341-359.

Tahir, R. and G. Sajid (1999). "Defence spending and economic growth in less developed countries: Re-examining the issue of causality." Government College Economic Journal **32**(1&2): 27-39.

Weber, C. E. (1999). "Fiscal policy in general equilibrium: empirical estimates from an error correction model." Applied Economics **31**(7): 907-913.

Weisburd, D. and C. Britt (2014). Measuring Association for Interval-Level Data: Pearson's Correlation Coefficient. Statistics in Criminal Justice, Springer**:** 398-438.

Wijeweera, A. and M. J. Webb (2009). "Military spending and economic growth in Sri Lanka: A time series analysis." Defence and Peace Economics **20**(6): 499-508.

Wijeweera, A. and M. J. Webb (2011). "Military spending and economic growth in South Asia: A panel data analysis." Defence and Peace Economics **22**(5): 545-554.

Yildirim, J. and N. Öcal (2006). "Arms race and economic growth: the case of India and Pakistan." Defence and Peace Economics **17**(1): 37-45.

Zakaria, M., et al. (2019). "Effect of terrorism on economic growth in Pakistan: an empirical analysis." Economic research-Ekonomska istraživanja **32**(1): 1794-1812.