THE VALUE OF FISCAL MULTIPLIER AND ECONOMIC CHARACTERISTICS OF COUNTRIES[a]

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Abstract

This study is a contribution in the technical debate regarding the real effects of fiscal multipliers which occur through government expenditure shocks on other economic variables. The debate is mainly confined around any country's key characteristics, i.e., exchange rate regime, trade openness, etc. To be more precise, we have tried to predict the actual value of fiscal multipliers by using the dataset of 55 countries categorized according to their economic characteristics around the world. We further divided the set of countries in accordance with their exchange rate (fixed and flexible), while some of them had been classified on their average rate of tariffs. The findings of a panel Vector Auto-Regressive (VAR) technique suggested that in the case of fixed exchange rate, the value of multipliers tend to be more pronounced; specifically, the government expenditure multipliers clearly showing that the results are similar to Mundell-Fleming Model and the Keynesian Synthesis. The multiplier effects of government expenditure have been found to be negative in the case of closed economy as compared to open economy.

Keywords: Fiscal Policy, Monetary Policy, Vector Auto-Regressive.
JEL Classification: E52, E62.

I.   Introduction

Fiscal multipliers measure the short-term impact of discretionary fiscal policy on output. They are usually defined as the ratio of a change in output to an exogenous change in the fiscal deficit with respect to their respective baselines. Better estimation and use of multipliers can play a key role in ensuring macroeconomic forecast accuracy. Many countries have experienced a dramatic turnaround in their fiscal position during the crisis, shifting from stimulus to consolidation. In this context of large-scale fiscal actions, GDP growth may be primarily driven by fiscal policy. Thus it is essential to measure accurately the relationship between these two variables in order to plan and forecast the effect of policy actions. For example, Blanchard and Leigh (2013)

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find that the under-estimation of fiscal multipliers early in the crisis contributed significantly to growth forecast errors.

Fiscal multipliers can be measured in several ways. Generally, they are defined as the ratio of a change in output (ΔY) to a discreationary change in government spending or tax revenue (ΔG or ΔT) (Splimbergo and others, 2009). Thus, the fiscal multiplier measures the effect of a 1$ change in spending or 1$ change in tax revenue on GDP.

The multipliers are commonly used to calculate:

$$\text{Impact Multiplier} = \left.\Delta Y_t\right|_{\Delta G_t}$$

$$\text{or}$$

$$\text{Impact Multiplier} = \left.\Delta Y_t\right|_{\Delta T_t}$$

$$\text{Multiplier at Horizon i} = \left.\Delta Y_{t+i}\right|_{\Delta T_{t+i}}$$

where t can be a quarter or a year, depending on the frequency of the data that is used in the study. The "overall" multiplier describes the output response to an unspecified fiscal shock, while the "revenue" ("spending") multiplier relates output to a discretionary change in revenue (spending).

After the introduction (Section I), the rest of the paper is presented as under, Section II present the literature review and Section III describes the estimated Methodology, whereas Section IV explains the dataset used herein. Section V the explanation of the investigations pertaining to the econometric aspects is given, along with the results and finally, the conclusion with specific recommendations for policymakers is given in Section VI.

II. Literature Review

The fiscal policy has become the center point of discussion in the debate regarding the formulation of macroeconomic policy since the repercussions of the financial crisis have emerged throughout the world. Many countries attempted to respond by increasing public spending (fiscal stimulus)[1], whereas several had taken austerity measures to face, such financial crisis. The option to adopt this policy motivated economic researchers to find out the significant effects of fiscal policy, mainly those affecting the size of fiscal multipliers.[2] Since 2009, the package of fiscal stimulus hastily surrounded the world, especially the developed countries after the sub-prime mortgage crisis emerged in the USA.

[1] In order to increase in economic growth there is increase in government spending or reduction in taxes is called fiscal stimulus.
[2] Ramey (2016).

Both broad agreements and disagreements among economists are apparently seen regarding the size or value of fiscal multipliers. Charles and Reichling (2015) have undertaken the most prominent work on fiscal stimulus; they strongly believe in the severe effectiveness of fiscal policy after the Great Depression of 1930's. Taylor (2018) concluded, after the recession of 2007, that counter cyclical policies have a very small multiplier effect. Regis and Matthes (2017) found that contractionary government spending multiplier is greater than one during the time of economic slack. Similarly, Robert and Barro (2013) argued that peace-time fiscal multipliers and those multipliers valued at the time of expansion, appeared to remain nearest to zero. The argument of Barro (2009) and, Romer and Bernstein (2009) is based on uncertainty regarding job opportunities in the world, which staggeringly stood approximately at 3.7 million by the end of the fiscal year 2010. There are doubts about the value of fiscal multipliers in less developed countries, as well as in emerging economies, because of limited available data and that too, often dubious in quality [Hory (2016)]. Empirically, the results reflect a new theoretical debate among neo-Classical and neo-Keynesian researchers. For instance, the range of fiscal multipliers lies between zero and to more than two [Ilzetzki (2011)]. These differences may arise due to the use of different types of methodologies in various studies, as well as, characteristics in different countries. Thus, consensuses among researchers are still contradictory with regards to the methods used in theoretical and empirical measurements in the size of fiscal multipliers despite propagation of analysis from the beginning of financial crisis.

Historically, fiscal recklessness and stained debt repayments could raise various points in our minds, especially when the sustainability of fiscal stimulus packages becomes an important part of the main discussion. Muir and Weber (2013) and Baum, et al. (2012) present quite an immense and extensive debate on fiscal multipliers and its sustainability in developed economies, based on G7 and an underdeveloped country such as Bulgaria and all these studies included theoretical and empirical approaches such as Vector Auto Regressive (VAR). During the first year after initiating any fiscal measures, the government spending and tax revenue multipliers lies between 0 to 2 and -1.5 to -1.4, respectively. Both government revenues and spending multipliers are normally found to be at the lowest range in emerging world markets[3] [Ilzetzki (2011)]. This could be the cause of underdeveloped financial sectors and high sovereign risk premium.[4]

The outcome showed stronger effects of fiscal stimulus packages on the rates of interest that partially offset the initial impact of fiscal measures. Similarly, it is still not clear why theoretically; the size of fiscal multipliers in emerging markets (EMEs) and least income countries (LIC) is low. There are very limited studies that support to reflex

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[3] Monetarists contended that central banks should control the stock of money in the economy, and not focus on targeting short-term nominal interest rates, as mechanism to achieve this long-run inflation objective and real output.

[4] It is the chance that a central bank will implement foreign exchange rules that will significantly reduce or negate the worth of its forex contracts. It also includes the risk that a foreign nation will either fail to meet debt repayments or not honor sovereign debt payments.

multipliers in EMEs are smaller than least income countries [Ilzetzki (2013), Estevão and Samake (2013), Kraay (2012), Ilzetzki (2011)]. However, our study mainly focuses on spending multipliers with respect to the exchange rate regime and trade openness and closeness of the economy. As mentioned above, the precautionary savings of people are higher in the emerging markets and least developing countries because of uncertainty, which creates leakages in the economy and could negatively affect the value of fiscal multipliers. The uncertainty in the financial sector is caused due to inefficiency in the administration pertaining to public spending and revenues, which created huge space showing a lack of confidence and incredibility for investors. Finally, the expectations of agents rely more on monetary policies as compared to fiscal policies [Andersen and Jordan (1968), Friedman and Meiselman (1971), and Friedman and Schwartz (1963)].

As far as monetarists are concerned, the optimum range of price levels in the short-run do not represent only the target of authorities, but the stability of real output also had to be considered as the core objective for their interests [Andersen and Carlson (1970), Andersen and Jordan (1968)]. Moreover, many researchers argued that when public debt liabilities continuously tend to increase, it is normally financed through monetization.[5] Inflation tax is negatively affected by the position in exchange rates of any country, which depends on the degree of openness: Currently different financial crises in the world economies had drawn the attention of policymakers towards fiscal effectiveness. Nearly after a decade of crisis, now most economies have learned to rely on fiscal authorities due to less effectiveness of monetary policy when zero interest bond occurs as a severe constraint [Federal Reserve Bank 'Staff report', Gauti B. Eggertsson].

The debt to GDP ratio affects the balance of trade of a country and its effectiveness on fiscal policy. Checcherita and Rother (2010) and Reinhart and Rogo (2008), made attempts to show that negative correlation existed in expansionary fiscal policy and indebtedness of every country whereas, their external balance had non-linear relationship against fiscal activities when government indebtedness shows increasing trends. When a country's balance of payment affects are found due to foreign debt servicing the volatility of exchange matters, and accordingly the countries have different exchange rates regime, i.e., freely floating, fixed and finally, pegged with Euros and Dollars, etc., [Fida, et al. (2012)].

The value of fiscal multiplier affects with respect to different exchange rates regime of countries by using the panel Vector Auto-Regressive (VAR) model of time series data [Born and Muller (2012)]. They also identified that government expenditure multipliers are higher in case of fixed exchange rates as compared to the freely floating exchange rates (Mundell-Fleming argument)[6]. According to the prediction

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[5] David E. Lebow, The Monetisation of Japan's Government Debt (September 2004), BIS Working Paper No.161.

[6] Mundell Fleming: From Mundell-Fleming Model, the analyses under fixed exchange rate regime shows that when capital mobility is perfectly in order, interest rates in home country cannot be deviated from those rates prevailing abroad. Hence, monetary policy in a small open economy is quite ineffective to signify the level of national income and employment and vice versa, under perfect capital mobility in the fixed regime.

in the Mundell-Fleming model, exchange rates regime affects the initial levels of fiscal multipliers and suggested that its value would be larger in economies, where exchange rates are paged with some other economies or as part of currency unions. However, in freely floating exchange rates regime, the value will stand at zero. Meanwhile, larger government spending would obviously place upward pressure on policy rates that are inclined to increase capital inflows and leads to appreciate the domestic currency. Due to high export elasticity of goods, there is net crowding out of exports that consequently tend to offset the impact of expansionary fiscal policy on demand for domestic goods. Unlike as in fixed regimes, such monetary policies play active role to accommodate the pressure on the domestic currency that prevents currency appreciation. In conclusion, the value of multipliers is greater than unity due to increase in public sector demand than within the private sector, while no specific change occurs in net exports.

Since 1990, there had been remarkable changes in fiscal stimuli packages to neutralize the recessionary impact of the global financial crisis in advanced economies. According to the American Recovery and Reinvestment Act and European Recovery Plan, its focus had shifted towards the fiscal austerity. The remarkable measures related to fiscal stimulus packages had especially been taken in Europe and consequently, the government of central Europe focused on the value of fiscal multiplier to be around one per cent. At the initial stages of fiscal austerity, governments had main interest and vital concern to focus on weaker economic growth. Different studies have empirically attempted to discuss the size of fiscal multiplier under different exchange rates regimes. Acconcia, et al. (2014) showed that the value of the regional multiplier is quite sizeable as per monetary union. The economy of the USA reported that relative multipliers in the open economy stand around 1.5 while in one of the provinces of Italy, it was estimated to be 1.2. These estimates reflect the output effects in a common currency union when public spending changes with the passage of time. Ilzetzki, et al. (2011) empirically compared the multiplier effects across various regions of 44 developing and industrialized countries from where data was collected, and used the panel vector auto-regressive (VAR) model to estimate the value of multipliers in the long-run under the fixed exchange rates regime, to be 1.65, while it stood at zero in those countries where floating exchange rates regime was being followed.

On the basis of an identification technique, Corsetti, et al. (2012) found the same results for a panel of OECD countries and was similar to the Mundell-Fleming model. Corsetti, et al. (2012) and Ilzetzki, et al. (2011) concluded that there is no indication for a significant appreciation of real exchange rates and no crowding out effect had been reported under floating exchange rates regime. Leeper, Walker and Yang (2011) estimated the value of multipliers under fixed exchange rates regime for the short-run duration and found it around 1.2 whereas; it was 0.75 under the floating exchange rates system. Moreover, other studies also confirmed that the dy-

namics of exchange rates and net exports do not completely support the fiscal trans-mission mechanism, which had been proved by the Mundell-Fleming model.

There is a big obstacle of data availability of empirical studies to estimate the precise value of fiscal multipliers. Some of the studies are based on quarterly data, but quarterly data and their values for some countries are available on annual basis. Therefore, different software techniques are applied to convert the annual data into a quarterly data set, which could adversely affect the reliability of the final results. To overcome these short comings and to provide accurate and precise results, we have tried to collect data on annual frequency. We have organized an innovative an-nual dataset for 55 countries (including developing, developed and emerging mar-kets, etc.). The other studies had focused only on OECD countries, while our research has covered different economies from different markets representing various eco-nomic characteristics, which would give maximum benefits for our research outcome and accordingly provide precise and accurate conclusions. Since limited studies are available in the past and contemporary literature to discuss the multiplier effects with respect to exchange rates regime and trade openness. This research would be a useful contribution in the literature of fiscal multipliers in future, which also covers various characteristics of quite a number of countries. The main and vital outcome of our study is based on the following determinants of fiscal multipliers.

1.   *Identification of Fiscal Shocks*

A considerable disagreement is witnessed among the economists in existing literature regarding the value of fiscal multipliers and relevant important indicators when they intend to compute the classification of fiscal shocks. For instance, the causes of identification are difficult since they arise from two different directions: (i) government expenditures may affect output (ii) output may affect government expenditures (explicit or implicit government policy and automatic stabilizers). The essential question that arises is how the researchers may assure whether the first or the second channel is true? Earlier, two important techniques were used in literature to find out the identification issues. First, the Structural Vector Auto-Regression (SVAR) method was applied by Blanchard and Perotti (2002) for the first time. Second, Barro (1981) introduced the natural experiment approach of high military spending, which had been further transformed by Ramey and Shapiro (1998), they used military expense (reported in Business Week) as the fiscal shock. The elemen-tary axiom behind the SVAR technique tends to show that fiscal policy takes some time (one quarter) to response with information related to emerging conditions of the economy.

When this study used a VAR approach to eradicate foreseeable reactions of the two variables with each other, it is supposed to affect spending on output as influenced by the components of government expenditures and output relationship.

III. Estimated Methodology

Blanchard and Perotti in 2002, used the following system of equations:

$$AY_{n,t} = \sum_{k=1}^{K} C_k\, Y_{n,t-k} + Bu_{n,t}$$

$$EU_{n,t}\, [u_{n,t},\, u'_{n,t}]$$

where $Y_{n,t}$ stands for vector of variables consisting of government expenditures variables (e.g., consumption and investment), annual GDP ratio, and various other endogenous variables (including real exchange rate, current account, and interest rate/t-bill rates determined by the central bank) for a given quarter t and country n. The C_k is a matrix of the own-and cross-effects of the kth lags of the variables set on determined current observations. The matrix B is diagonal, while matrix A captures all the simultaneous effects of all endogenous variables. The matrix U_t represents the shocks specially shocks to government expenditures. In the above system of equations the matrices A, B and C_k do not vary across a country and with time. The system estimated by panel Ordinary Least Square (OLS). OLS (VAR) provided estimates of matrices. We follow Kim and Roubini (2008) for recursive ordering within the system of equations and to make a panel of the collected data across the countries. We eventually divided the sample of countries into the exchange rate and closed/opened economies, and accordingly compared the value of multipliers in developed and developing countries and emerging markets.

IV. Data

The structural vector auto-regressive model (SVAR) assumes that discretionary fiscal policy requires at least one quarter affecting the economic aggregates, yet it is quite reasonable to assume quarterly the impact of the fiscal shocks. It may not be necessarily correct and true for all countries because they possess different economic characteristics. The previous studies focused on OECD countries only where the behavior data shows the quarterly effect of fiscal policy shocks on economic growth. We have collected the information for 55 countries in which some belong from OECD, developing, emerging, and developed countries. In our sample, the majority of countries have long-run patterns of fiscal policy shocks. This is an important reason which validates the results of structural vector auto-regressive and vector auto-regressive models in the long-run. VAR investigation may consider that fiscal policy requires almost one full period for analyzing the impact of new economic data with any discretionary measures. Therefore, on the basis of reasonable arguments, we assumed that fiscal policy shocks could be responded even in one quarter, but not necessarily as it can also take a full year. On the basis of data information taken from World Bank and IMF sources,

we first divided 55 countries into closed and opened economies, and ultimately, into flexible and fixed exchange rate economies. We acquired almost 1210 observations in our panel data set. Table 2 provides the detailed information regarding the explanation of variables in the appendix[7]. We collected the annual data from International Financial Statistic (IFS), World Development Indicator (WDI), and State Bank Annual Report.

The Table 1 summarizes the results of different tests, i.e., Akaike, Schwartz and Hanna Quinn conducted for choosing the lagged length in the system. It shows that optimum lagged length varied from 1 to 8, as per tests and economic characteristics of different countries. The number of lags selected in VAR often significantly changes the result, which could be dependent on how many lags are being selected in the VAR.

This study has used the data for empirical analysis in the following manner. The core specification includes real GDP, the ratio of the current account to GDP, real government expenditure, real effective exchange rates, besides with policy interest rates, which are determined by the central bank [Ilzetzki, and Véghet al. (2008)]. GDP deflators or CPI have deflated those variables which are not available in real terms. First, we made use of CPI to neutralize the inflationary pressure, but if CPI is not available for any country, we selected GDP deflator for this purpose. There is no change in the final results of the study as it took natural logarithms of GDP, all government expenditures, and real effective exchange rates, except policy rates and current account. We de-trend the data to get better results in our VAR model; all the supporting variables were non-stationary, except for the ratio between the current account and GDP and the central bank's interest rates. We made these variables stationary at the first difference.

Since the collected data sets showed wide deviations from non-stationary aspect to quadratic trends in the regression equations, we applied a linear trend which provided the requisite identical results. The interest rate policy, current accounts and real effective exchange rate stood stationary at the same levels, while the real GDP and government expenditure were at the first difference. After de-trending the data set, the outcome series became motionless with unit roots not being accepted at 99 per cent

TABLE 1

Lag Criteria

Criteria	Models			
	Open as per Tariff	Close as per Tariff	Flexible	Fixed
Akaike	1	8	8	8
Schwartz	1	1	2	1
Hanna Quinn	1	4	2	4

Source: Authors' estimation.

[7] Table A-2 (Appendix) comprises of definitions of all endogenous variables.

confidence interval level for all implying variables (used Augmented Dickey and Fuller test, and Pesaran and Shin test).

The above Table 1 summarized the results of different tests, i.e., Akaike, Schwartz and Hanna Quinn, conducted for choosing the lag length in the system. It shows that optimum lags length varies between 1 to 8 as per test and countries' economic characteristics. The number of lags selected in VAR often significantly changes the result, depending on the number of lags selected in VAR.

V. Empirical Findings and Impulse Responses

The main objective of this study is to find out how the government spending shocks responded to other endogenous variables with economic factors of the selected countries. These responses include government spending, current account (CA), Treasury bills (T-Bills) and real effective exchange rate (REER). As mentioned earlier, our sample data comprising of 55 countries had been divided into various episodes pertaining to fixed exchange rates, flexible exchange rates and ultimately the closed and opened economies. We have used the de facto classification as explained by Reinhart and Rogoff, (2008) and the IMF Annual Report on 'Exchange Rate Arrangements and Exchange Restrictions (2016)[8].

1. Fixed Exchange Rates

Keeping in view the main objective of the study, we have tried to trace out the impulse responses of fiscal policy (government spending) on GDP including some other impacts which include Treasury bills (T-bills), Current Account (CA) and Real Effective Exchange Rate (REER) via the mean "Generalized Impulse Response" analysis. The impulse responses were calculated to measure the reactions and responses of GDP due to the shocks of different variables at zero time. Moreover, the dotted lines represent the 95 per cent level of confident intervals, based on the estimated standard errors as applied by Monte Carlo.

The impact of multipliers of monetary policy could clearly be observed through one per cent shocks for the policy rates on output. In case of fixed exchange rates regime, it is more pronounced as compared to the flexible exchange rates, which still tends to show negative signs, from short-run to long-run sources, while in fixed exchange rates, its negative effects neutralizes in the long-run. Similarly, the impact of multipliers of the current account on real GDP is less in flexible exchange rates as apparently observed in comparison to the fixed exchange rates. It shows the significant impact of monetary policy under both regimes and could be related to the expansionary fiscal policy, as well.

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[8] Table A-3 (Appendix) provides the list of countries according to the above classification.

In Figure 1 (Appendix) shows the effects of one per cent shocks of T-bills on GDP along with the results which suggest that after the first period, it gradually starts to increase. The effects seem to be continuously increasing throughout the periods and possibilities to change and converge into positive signs in upcoming periods do exist. Whereas, in Appendix Figure 2 the effects of one per cent shocks of CA on GDP and its results suggest that after the first period, it starts to increase gradually and keeps on increasing throughout the entire periods. Again in Figure 3 (Appendix) the effects of one per cent shocks of REER on GDP and their results suggest that after initial raise during the first two periods, significant effects of the shocks are seen, but after the third period it starts to decline continuously till the last period. Moreover, under the fixed exchange rates at one per cent shocks of GEXP, creates no significant impact on GDP for the next 4 years, while it starts to increase upwards in the following periods and it is statistically significant and different from zero.

2. *Floating Exchange Rate*

In Appendix Figure 4 shows the effects of one per cent shocks of T-bills on GDP and suggests that under the floating exchange rate system, a shock leads to an increase in GDP. It is quite evident from the above figure that effects of shocks will be converted into positive signs and the results are similar to the analysis [Ilzetzki, et al. (2016)], while Figure 5 (Appendix) shows the effects of one per cent shock of LCA on GDP suggesting that in the later period the GDP will increase till the very next period and ultimately turn to be constant throughout in all next periods, depicted in the figure. Again, Figure 6 (Appendix) shows that GDP will increase after the first period and will keep on decreasing after the second period. In Appendix Figure 7 shows the impulse responses of GDP with one S.D innovation to real effective exchange and Figure 8 (Appendix) the impulse responses of effects of shocks of GEXP on GDP are shown and suggest that there is no immediate effect of GEXP on shocks and after the second period, it will become negative and then gradually tend to decline. Finally, the deviation in real GDP negatively affects government expenditure (flexible) and vice versa (fixed). These findings are in support of the Mundell Fleming Model[9] and New Keynesian synthesis.[10] According to the Mundell Fleming Model when there is capital mobility and open economy under a flexible exchange rate

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[9] Mundel Fleming: From the analyses of Mundell Fleming model under the fixed exchange rate regime, it follows that when capital mobility is perfect, interest rate in the home country cannot deviate from those prevailing abroad. It is quite evident from above that under perfect capital mobility under fixed exchange rate regime, monetary policy in a small open economy is ineffective to influence the level of national income and employment and vice versa.

[10] Central Bank under the fixed exchange rate cannot use independently the monetary policy to maintain exchange rate with perfect capital mobility. However to achieve the economic stability and raise the national and employment government can use expansionary fiscal policy. Expansionary fiscal policy causes an increase in GNP, an appreciation of the currency, and a decrease in the current account balance in a floating exchange rate system according to the AA-DD model. Contracting the fiscal policy will cause reduction in GNP, depreciation in currency, and an increase in the current account balance in a floating exchange rate system according to the AA-DD model.

regime the fiscal policy becomes ineffective due to crowding out the effect of government consumption expenditures.[11]

3.   *Closed and Open Economy*

Ilzetzki, and Végh, (2008) used the two criteria to decide whether economies are closed and open. However, whenever the foreign trade of a country tends to be less than 60 per cent of GDP, we define that country as having 'closed' or 'open' economies[12]. Similarly, there are some other criteria that has been used in this paper average rate of tariff in different trade regimes. Therefore, we have adopted other criteria for selecting either countries to be closed or open, i.e., average tariff rates are greater than 4 per cent or less than 4 per cent, according to the World Bank indicators as specified in our study. We have found consistency in the results when countries are to be sorted as per the volume of trade or rates of tariffs. For fixed and flexible exchange rate criteria, the impulse responses of panel VAR in our study with respect to all exogenous factors are being incorporated therein.

In Appendix Figure 9 and 10 shows the impulse responses of one per cent shocks to policy rates and current account on real GDP at the 5 per cent level of significance with 95 per cent confidence intervals. When there is 1 per cent shock to real GDP in the case of closed economy, the policy rates of the central bank is negatively affected by approximately 2 per cent and 10 per cent in SR, which starts to increase after the second year, and finally, it becomes constant in the LR. In Appendix Figures 10 and 14, the impulse response of real GDP to policy rates with closed and opened economies are being presented. The shocks in policy interest rate, of course, positively affect the real GDP. The GDP increases from negative value in short- and mid-term to the long-run aspects. These findings are in line with the concluding results estimated by Canova and de Nicolo (2002) reflecting that the monetary policy derives output and inflation cycles. However, it further proves that monetary policy always causes GDP to be high in open and closed economies, showing approximately similar results [Kandil (2002)]. The monetary policy rates are initially affected with negative signs and finally it affects the neutralized economies in the long-run. Also, the multiplier effects critically depend on the fiscal stimuli packages that are normally dominated in every respect (John Keynes).

In our study, Figures 11 to 16 in Appendix represent the impulse responses of government expenditures to GDP and GDP to government expenditures in case of closed as well as, open economies. The multiplier effects are found to be negative when there is a shock to the standard deviations of government expenditure (in open economy)

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[11] The New Keynesian (NK) model shows that for flexible exchange rates more differentiated approach is needed than under Mundell Fleming (MF) model. In the NK model fiscal policy remains a powerful policy tool in all three versions of flexible exchange rates, provided that Central bank does not instantaneously off-set the fiscal impulse.

[12] A list of open and closed economies by this classification is shown in Appendix Table A-3.

because the impulse response function declines continuously. Therefore, opposite results occur in our study in case of closed economy. But fortunately, our findings are still consistent when economy tends to be either closed or open, within tariff and trade as a percentage of GDP. Barrell, et al. (2012), Ilzetzki (2013) and IMF (2008), precisely tend to show that when there is lower propensity to import (large volume of GDP or only partially opened trade within the countries) have large fiscal multipliers because their import bills are less pronounced. Similarly, Figure 12 and 13 (Appendix) shows IRF of the real effective exchange rate in case of closed economy and impulse response of capital account on GDP in opened economy.

VI. Conclusion

This study is an important investigation for a central debate and actual discussions in macroeconomic policies evolved during the last decade. How the fiscal and monetary authorities are effective is the fundamental question and what could be the important role of government expenditures and finally, how the Central bank policy rate on fiscal multipliers is allocated? As we have used the panel VAR to explore the outcome, the results are based on the conjectural and economic characteristics of the countries with similar concerns shown in Keynesian Syntheses and Mundell-Fleming Model. When there is one per cent shock in Central bank's policy rates, the value of impact multipliers shows negative signs in cases of flexible exchange rates, in the short-run as well as, in the long-run. However, impact multipliers could obviously be converted from negative to positive trends in the long-run, when the country tends to follow the fixed exchange rates system. Moreover, one per cent shock of GEXP would have no significant impact on GDP for the next four years if the fixed exchange rate is adequately followed, whereas it would start from initial period.

Finally, the deviation in real GDP would negatively affect government expenditure (flexible) and vice versa (fixed). The multiplier effects are negative when there is a shock to the standard deviation of government expenditure (opened economy), because the impulse response function declines continuously and presents opposite results in the case of closed economy. Our findings still stand with consistent results when economies are either closed or opened, with tariff and trade representing to be a reflection of the GDP percentage.

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APPENDIX

Fixed Exchange Rate

Response of Cholesky One S.D. Innocations ± 2 S.E.
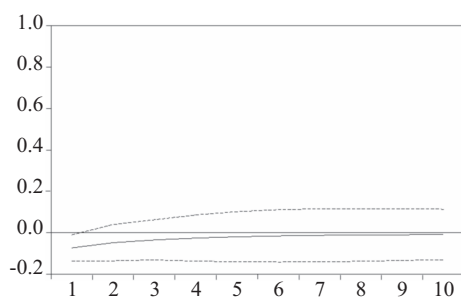
FIGURE 1

Response of LGDP to T-bills
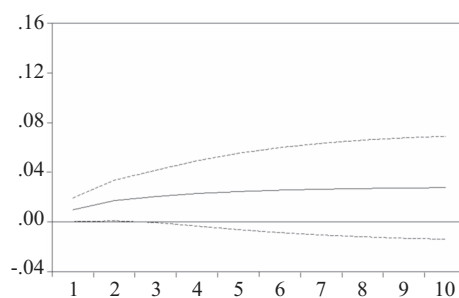
FIGURE 2

Response of LGDP to LCA
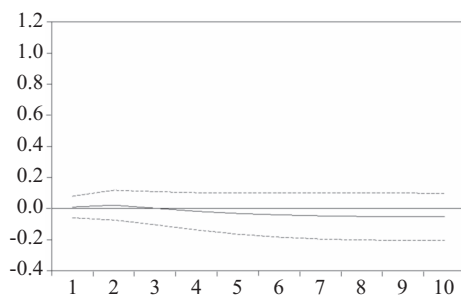
FIGURE 3

Response of LGDP to REER
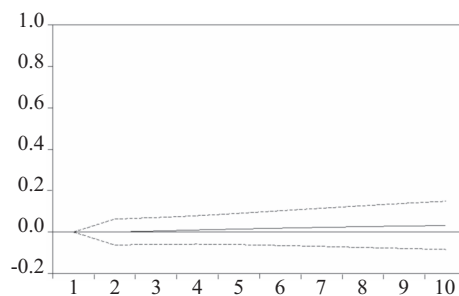
FIGURE 4

Response of LGDP to LGEXP

Flexible Exchange Rate

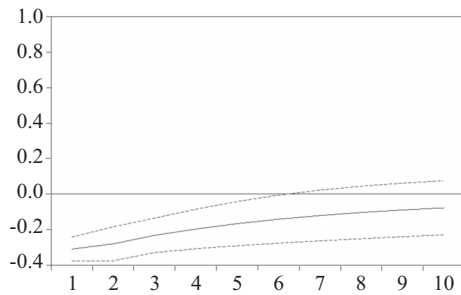Response of Cholesky One S.D. Innocations ± 2 S.E.
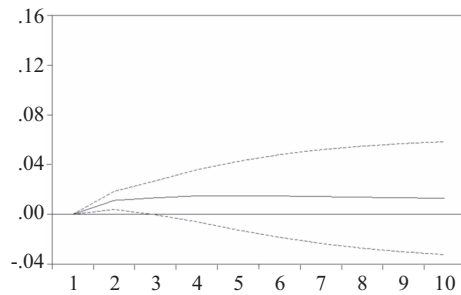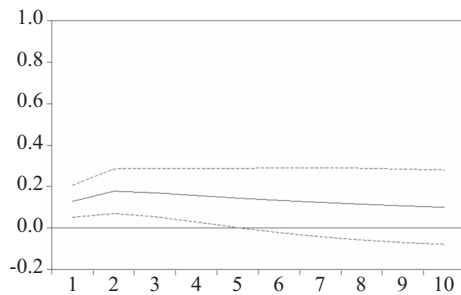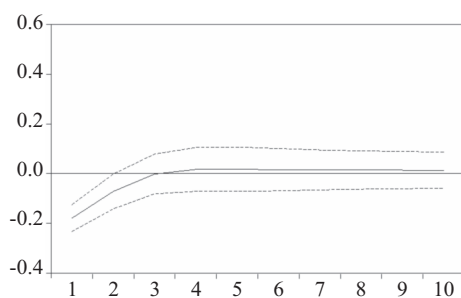
FIGURE 5

Response of LGDP to T-bills

FIGURE 6

Response of LGDP to LCA

FIGURE 7

Response of LGDP to REER
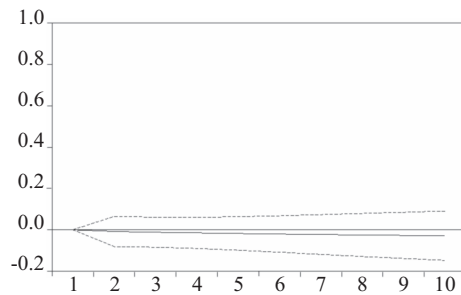
FIGURE 8

Response of LGDP to LGEXP

Closed Economy

Response of Cholesky One S.D. Innocations ± 2 S.E.

FIGURE 9

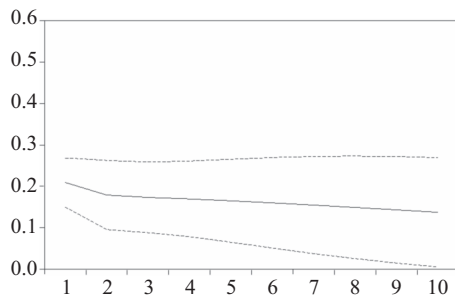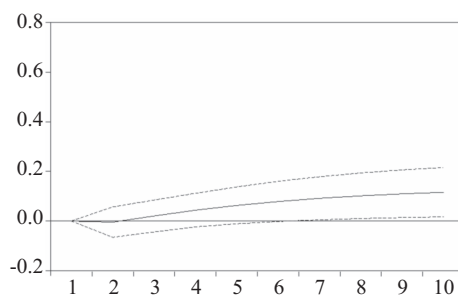Response of LGDP to T-bills
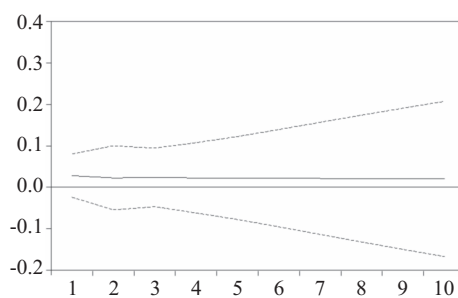
FIGURE 10

Response of LGDP to LCA

FIGURE 11

Response of LGDP to REER

FIGURE 12

Response of LGDP to LGEXP

Opened Economy
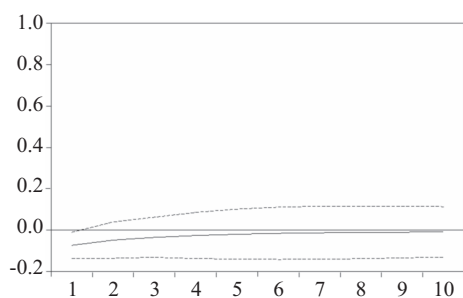
Response of Cholesky One S.D. Innocations ± 2 S.E.

FIGURE 13

Response of LGDP to T-bills
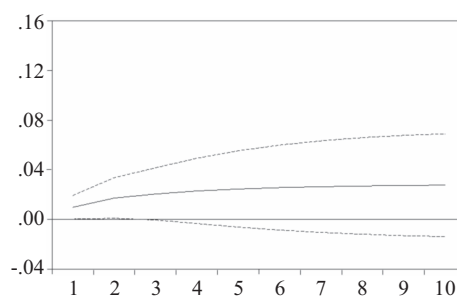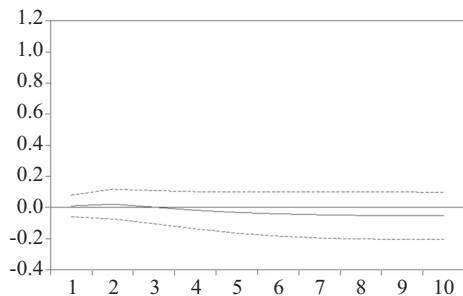
FIGURE 14

Response of LGDP to LCA

FIGURE 15

Response of LGDP to REER
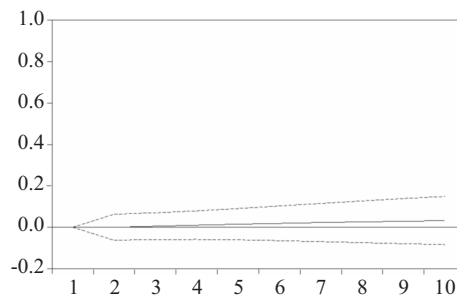
FIGURE 16

Response of LGDP to LGEXP

TABLE A-2

Definitions of Variables

Variables	Definition
Treasury Bills	These are government bonds or debt securities with maturity of less than a year.
	T- bills are issued to meet short-term mismatches in receipts and expenditure. Bonds of longer maturity are called dated securities.
Real Effective Exchange Rate	The real exchange rate measures the value of currencies, taking into account changes in the price level. The real exchange rate shows what you can actually buy. It is the value consumers will actually pay for a good.
Real Gross Domestic Product	Gross domestic product (GDP), which is the value of all final goods and services produced within a country in a given year.
Government Expenditure	All the expenses related to development as well as non development.
Current Account	Keeps all the records of imports, exports and interest payment as well.

Source: IMF working paper No. 11/52.

TABLE A-3

Distribution of Countries by Characteristics

Fixed Economies	Flexible Economies	Closed Economies	Open Economies
Australia	Algeria	Algeria	Belgium
Belgium	Argentina	Argentina	Bulgaria
Brazil	Armenia	Armenia	Finland
Canada	Bahamas, The	Australia	France
Chile	Bahrain	Bahrain	Germany
China	Bangladesh	Bangladesh	Greece
Colombia	Belize	Belize	Italy
Finland	Bolivia	Bolivia	Poland
France	Bulgaria	Brazil	Singapore
Georgia	Burundi	Burundi	Spain
Ghana	Cameroon	Cameroon	Sweden
Japan	Egypt	Canada	Switzerland
Korea	Fiji	Chile	Turkey
Mexico	Germany	Colombia	United Kingdom
Moldova	Greece	Egypt	United States
Paraguay	Italy	Georgia	
Philippines	Jordan	Ghana	
Poland	Malaysia	Jordan	
South Africa	Nepal	Korea	
Spain	New Zealand	Malaysia	
Thailand	Nigeria	Mexico	
Turkey	Pakistan	Moldova	
United Kingdom	Russia	Nepal	
United States	Saudi Arabia	New Zealand	
Uruguay	Singapore	Nigeria	
India	Sri Lanka	Pakistan	
	Sweden	Paraguay	
	Switzerland	Philippines	
	Vietnam	Russia	
		Saudi Arabia	
		South Africa	
		Sri Lanka	
		Thailand	
		Uruguay	
		Vietnam	
		Japan	
		Bahamas, The	
		Fiji	

Source: IMF working paper No. 11/52.