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ABSTRACT

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The literature on remittances is large and growing. However, its focus has mainly been on the effects of remittance inflows on the receiving economies. Little has been done on the sending economies. In this paper, we use data from Saudi Arabia, one of the top remitting countries in the world, to identify the impact of government spending on Saudi Arabia's real output considering the role of remittance outflows. The results suggest that remittance outflows have a weak effect, if at all, on government spending, which, in turn, has an insignificant impact on GDP. The paper discusses some policy implications.

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1. Introduction and Motivation

There is a large and growing literature on the impact of remittances on the receiving economies; however, little is known on the effect of remittances on sending economies. To this end, a number of papers have examined the impact of remittance outflows on host countries' GDP. For example, Islam et al. (2013) and Morley (2006) find a long-run bidirectional causality between remittances and GDP in the USA during 1952–2000 and 1930–2002, respectively. Baas and Melzer (2012) find that an increase in remittances results in an increase in GDP in Germany during 1996–2009. For Saudi Arabia, Alkhathlan (2013) finds a negative and an insignificant impact of remittances on GDP during 1970–2010, and Abdel-Rahman (2006) finds that causality run from remittances to GDP during 1975–2001. It stands to reason that remittance outflows would be of concern to both policy makers and researchers in remittance sending countries. As they may play a lessening role in investments and consumption, thus putting undue stress on government spending to shoulder the burden of economic revival. This leads to calls to regulate remittance outflows. Proponents of regulating remittance outflows believe that they are leakages from the economy due to the negative relationship between remittances and domestic consumption/saving. The reduction in savings leads to a fall in investment. In other words, GDP is expected to be affected due to the large leakages from the system. Therefore, the government finds itself in a position to pick up the slack, i.e. to increase government spending. If there are no income taxes, such as those in the Gulf, this policy action may bring in budgetary issues (budget deficit).

One such example is Saudi Arabia which offers a unique opportunity to study the effects of remittance outflows on the sending economy. Firstly, Saudi Arabia is one of the largest players in the global crude oil market: it produces more than a tenth of the world's crude oil

production and owns a quarter of the world's proven reserves (Nakov and Nuño, 2013). Oil accounts for 40% of Saudi Arabia's gross domestic product (GDP) and more than 90% of its export earnings (Nakov and Nuño, 2013). Government spending accounts for 66% of non-oil GDP and fiscal revenues come mainly from hydrocarbon exports. The narrow base of taxes and the passive role of monetary policy due to Saudi riyal's peg to the US dollar (Termos et al., 2016), leaves government spending as the main instrument for macroeconomic stabilization. What adds to the uniqueness of the Saudi case is its position as the largest economy among the six Gulf Cooperation Council (GCC) countries.[1] The GCC countries constitute the third most important destination for migrant workers, after North America and Europe (Adams, 2009; Adams and Page, 2005).

The reasons for the Gulf region being an attractive destination for migrants include large oil wealth, ambitious development projects (fast economic growth), small and unskilled local labor force, and unfavorable conditions in labor sending countries (political conflicts, poor economic conditions, etc.). Expatriates constitute more than 60 percent of the total population in the GCC.[2] The share of non-national labor in Saudi Arabia in 2013 was estimated at 32% of total population (GLMM, 2014).[3] Owing to its sizable migrants, the GCC countries represent the largest migrant remitters in the world with more than 98.6 billion USD in 2015, significantly larger than the top remitting country (the United States).[4,5] Out of the GCC's 98.6 billion USD remittance outflows, Saudi Arabia accounts for 40 percent with total amount of 37.8 billion USD in 2015 (5.8% of Saudi Arabia's current prices GDP).

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[1] The GCC countries are Bahrain, Oman, Kuwait, Qatar, Saudi Arabia and the United Arab Emirates.
[2] Data are from the Gulf Labour Markets and Migration (GLMM) online database.
[3] Although Saudi Arabia has the smallest share of expatriates from the total population in the region, the 32 percent share represents almost 10 million foreign workers (GLMM, 2014).
[4] World Bank's Annual Remittances Data, (updated as of October 2016).
[5] For factors contributing to migration and remittance in the Gulf region refer to Naufal (2011) and Naufal and Genc (2012).

Against this backdrop, this paper identifies the impact of government spending on Saudi Arabia's real output considering the role of remittance outflows. As in Espinoza and Senhadji (2011), studying Saudi Arabia in the GCC has the added benefit of working on the most dominant economy with the longest dataset in the region. This study contributes to the literatures in two ways. First, the existing research on remittances has largely focused on the effects of remittance inflows on the receiving countries.[6] Few studies have analyzed the macroeconomic effects of remittance outflows on the sending countries. For example, Termos et al. (2013) find that remittance outflows mitigate the inflation pressure in the GCC countries. In a study similar to our research, Alkhathlan (2013) finds an (a) insignificant (significant) relationship between outflows of workers' remittances and economic growth in the long (short) term in Saudi Arabia by directly relating remittances to the GDP. However, it does not account for indirect channels arising from potential adverse effects of remittances on the fiscal spending multiplier. Several reasons explain the low propensity to consume among the immigrant workers in Saudi Arabia. Chief among them are the temporary short-term contracts available to immigrant workers (two to three years only); the high dependency of families back home on immigrant workers; the limited investment opportunities for immigrants in the host country; and the difficult access to property ownership (Naufal (2011); Naufal and Genc (2012)). The low propensity to consume among immigrants reduces the effectiveness of the government spending multiplier in boosting economic activities. Our paper uses the widely available techniques in the literature to quantify the impact of fiscal spending, controlling for the endogeneity issue. We also examine whether remittances affect the real output (in particular, non-oil output) independently of fiscal spending.

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[6] For example, inflows of remittances have been linked to main macroeconomic variables in the receiving economies such as exchange rates, employment patterns, inflation and economic growth (Amuedo-Dorantes and Pozo, 2004; 2006; Narayan et al., 2011; Giuliano and Ruiz-Arranz, 2009 and Gupta et al., 2009).

Second, this paper also contributes to the empirical literature on estimating the size of fiscal multipliers by focusing on a unique environment. Previous research is largely confined to industrialized and non-oil emerging and developing countries (Hemming et al., 2002; Ilzetzki and Vegh, 2008; Ilzetzki et al., 2011; IMF, 2008; Corsetti and Müller, 2012).[7] The non-existence of personal income taxes in Saudi Arabia provides a unique environment to incorporate the impact of fiscal multipliers.[8] The abundance of oil wealth in Saudi Arabia suggests that consumers are not pushed out of the market for fear of having to pay for the expansion in government spending in the future via increased income taxes (as would have been expected in a Ricardian world). Thus, the paper contributes to this literature by analyzing the effect of remittance outflows on the effectiveness of government spending in stimulating output through increased economic activity. The paper is organized as follows: the next section presents the methodology and data; followed by analysis and conclusion.

2. Methodology and Data

We use annual data on Saudi Arabia and the US (also on the world real GDP for comparison purposes). Table 1 summarizes the data series and their sources. Nominal Saudi data are converted to real using the GDP deflator.

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[7] A number of papers has examined the impact of fiscal spending on output growth in the GCC region. For example, Al-Faris (2002) finds that public expenditures do not cause national income in GCC countries. Likewise, Khalifa (1997), Kireyev (1998), and Wang and Fasano-Filho (2001) fail to find a significant impact of government expenditures on non-oil real growth in GCC countries. The paper of Espinoza and Senhadji (2011) provides the first set of fiscal multiplier estimates for the GCC countries

[8] The literature suggests that monetary regimes, openness to trade, the composition of fiscal expenditures, financial development, the state of public finances, and the size of the government are the main determinants of the size of fiscal multipliers (Blanchard and Perotti, 2002; Mountford and Uhkig, 2009; Ramey, 2011; among others).

Table 1: Data Description and Sources

Series	Description	Time Period	Source
gdp	Annual growth rate in Saudi Arabia's Non-oil GDP (constant prices) in national currency	1980 – 2015	IMF
nrmt_gdp	Annual growth rate in non-oil Gross National Disposable Income (constant prices) in national currency	1980 – 2015	IMF
g	Annual growth rate in Saudi's government total expenditure in current prices deflated by the GDP deflator	1980 – 2015	IMF
GDP_def	Saudi's GDP deflator; index 2005=100	1980 – 2015	IMF
US_gdp	United States' Chained 2009 dollars seasonally adjusted annual growth rate in real GDP	1980 – 2015	FRED
g_ce	Annual growth rate in government capital expenditures. (Note: figures for 1990 and 1991 are interpolated, as they were combined in the original data)	1980 – 2015	Ministry of Finance, Saudi Arabia
remitt	Annual growth rate in workers remittance outflows in current prices deflated by GDP deflator	1980 – 2015	WB

Notes: IMF is International Monetary Fund; WB is the World Bank; FRED is the Federal Reserve Economic Data.

From an empirical standpoint, one needs to investigate the relationship between government spending and the GDP by also considering the impact of remittances. However, we note that the endogeneity between income and government spending has long been discussed in the literature. This issue has undeniable impact on theoretical as well as empirical considerations. We avoid this issue by using a reduced vector autoregressive (VAR), which assume that all variables (elements of a system) are endogenous. To be more precise, we concentrate on the cumulative impulse responses obtained from the VAR estimations.[9]

The empirical part largely follows Espinoza and Senhadji (2011) (ES, hereon). We use a reduced form VAR model that is insensitive to the ordering of the variables.[10] To gauge the role of remittances in the economy, we estimate two models: a VAR with remittance outflows and a VAR without remittance outflows. The difference between the two models is in the way the

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[9] As a practitioner's note, we check the stationarity of the data before conducting the econometric analysis. We find ample evidence for the stationarity, [I(0)], of variables of concern that are discussed below. The optimum lag length that we use here is one, which is found by the Hannan-Quinn criterion (HQ). Schwarz criterion (SC) points to 3 lags whereas Akaike info criterion (AIC) picks 5 lags. For the interest of parsimony, we choose a single lag, largely because of the relatively short span of data. Also note that HQ and SC are preferable to AIC especially in unstable processes (Lutkepohl, 1993). All these test results are available from the authors.

[10] We are grateful to a referee who pointed out to us that in a reduced form VAR, the ordering of variables does not matter.

remittance outflows are incorporated. The VAR with remittance outflows has the following variables: [$remitt$; g; gdp; US_gdp] where $remitt$ stands for the growth rate in real workers' remittance outflows, g stands for the *growth rate* of Saudi Arabia's real government spending, gdp is the *growth rate* of real non-oil GDP in Saudi Arabia, and US_gdp is the *growth rate* of real GDP in the United States. The US_gdp is used to represent the $World\ GDP$.[11]

On the other hand, the VAR without remittance outflows has the following variables: [g; $nrmt\_gdp$; US_gdp] where g and US_gdp are as defined above, and $nrmt\_gdp$ is the *growth rate* of Saudi Arabia's real non-oil-non-remittance GDP (equivalent to the non-oil Gross National Disposable Income). In this specification, remittances are imposed as a leakage from the system. We produce cumulative impulse response functions (CIRF) from the two VAR's.

3. Results and Analysis

3.1 VAR without Remittance Outflows

To start with, we need to mention that each period in our VAR analysis represents a year as we are dealing with annual data. This will be seen in the horizontal axis of our figures below. The vertical axis in this case will present the dynamic response of each element of the VAR function to a one standard deviation shock to each element's error term. Accordingly, the units in the vertical axis will be the same as the dependent variable under investigation. Then, as shown in Figure 1, the response of real income (as measured by the growth rate of real non-oil GDP) to a one standard deviation shock in the growth rate of real government spending (*g*) is around 0.12

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[11] World growth represents international dynamics. Oil market is also represented by the world economic conditions as it is largely determined by the world market (ES). That is why we also try the world GDP, whose period is shorter, with similar results. We found the U.S. GDP statistically more significant and improved the overall fitness of the model compared to the World GDP. We, thus, used the U.S. GDP only in the reported results. This is in line with the empirical evidence which suggests that the GCC economies are synchronized with the US economic fluctuations. See, inter alia, Abu-Qarn and Abu-Bader (2008), Genc et al (2010) and Kim et al (2012). It is worth mentioning that the world GDP results are also qualitatively similar.

percent one year after the shock, and goes down to about 0.10 percent after the first period. What that means is that the additional changes (marginal responses) in the trend of the real income over time are statistically zero in the long run. [12]

Comparing our result to the literature, ES find the response of real income to a one standard deviation shock in the real government spending to be about one fourth one year after the shock. Their finding stabilizes around 5 percent over time, and it is statistically significant. In terms of Saudi riyals, our finding would imply that one riyal increase in government spending improves non-oil GDP by 0.755 riyals one year after the shock.
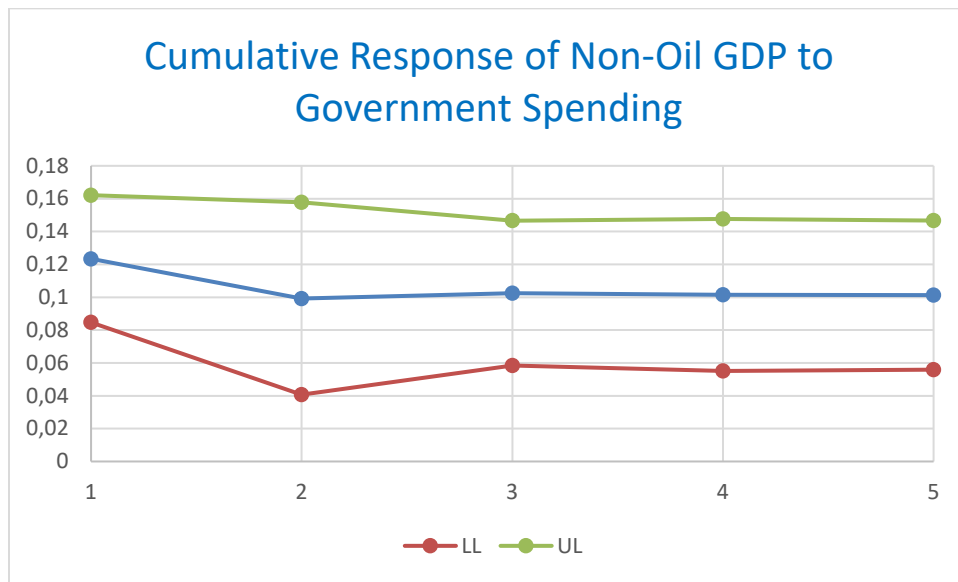

Figure 1: Response of the growth rate of Non-Oil GDP to Government Spending. LL and UL represent the lower and upper boundaries for a 95 percent confidence interval derived using a bootstrapping technique.

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[12] Practitioner's comment: Our finding of insignificant long run impact is consistent with our previous claim that our VAR variables are stationary. Otherwise, an unstable VAR system would produce an explosive time path nullifying our ability to derive any conclusions from this exercise. This econometric observation holds true for all the experiments subsequently conducted in this paper.

Interestingly, a similarly qualitative result is obtained once remittances are removed from the non-oil real GDP, as well (Figure 2). In terms of Saudi riyals, one riyal increase in government spending improves non-oil GDP by 0.870 riyals one year after the shock. Nevertheless, as stipulated in the introduction, if remittances are taken away, the impact of government spending becomes more exacerbated as suggested by the proponents of regulating remittances. One should note here, though, that the impact is also small. To summarize, we find that consideration of remittances does not affect the impact of government spending on real output growth.[13]
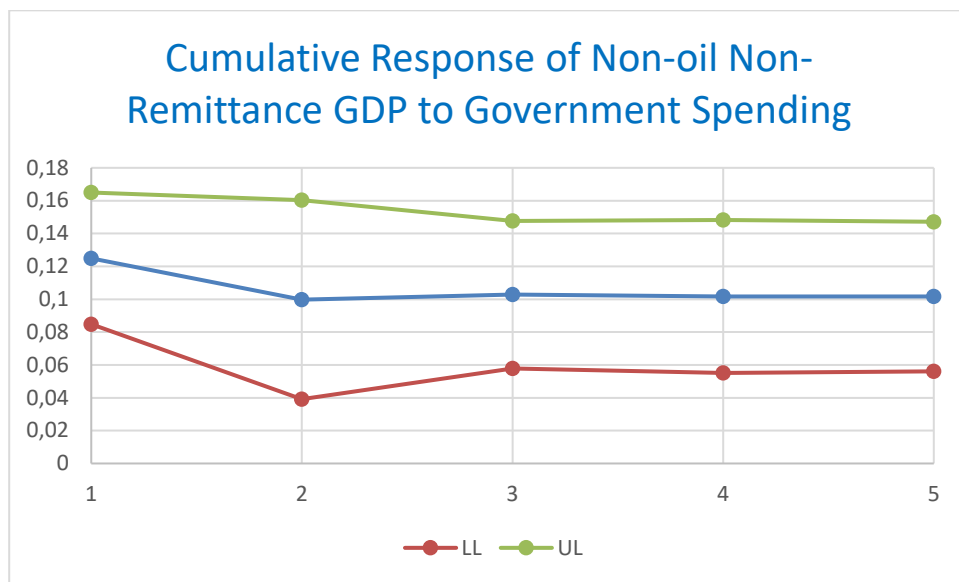

Figure 2: Response of the growth rate of Non-oil Non-Remittance GDP to Government Spending. LL and UL represent the lower and upper boundaries for a 95 percent confidence interval derived using a bootstrapping technique.

[13] To validate the robustness of our results, we consider the 1995 – 2012 sub-period and find no statistically different outcomes. Additionally, it is worth noting that replacing total government spending with government's spending on capital goods does not alter the VAR results either.

Additionally, we find that the government spending multiplier has a limited impact on the non-oil output growth in the country. Its effect wanes beyond a year. This may be because of the economic nature of the role of government, which is essentially devoted to the oil industry. In other words, government invests in the oil sector and related businesses leaving other industries to the private sector.

3.2 VAR with Remittance Outflows

In the above section, we did not take into consideration endogeneity issues arising from the role of remittance outflows. Endogeneity of the remittance outflows come from reverse causality (GDP and remittances) and omitted variable bias. As the economy expands (GDP grows), more expatriate workers are hired, and as a result, remittance outflows increase. Or alternatively, as foreign workers come to the country, as inferred from an increase in remittance outflows, the economy expands (GDP grows). That is why; one can make a case for causality in both directions. This calls for the treatment of remittance outflows and GDP as separate endogenous variables in the VAR model.

Thus, in a model where remittances are allowed to be endogenous, the response of real income (as measured by the growth rate of real non-oil GDP) to real government spending (Figure 3a) is around 0.126 percent one year after the shock, and dies out immediately after the first period. This result is almost identical with the one obtained in Figure 1 above. In terms of Saudi riyals, this finding would imply that a one riyal increase in government spending improves non-oil GDP by 0.895 riyals one year after the shock. . This finding is consistent with our earlier result from Figure 1. Figure 3a also reveals that real non-oil GDP does not respond to the shocks in remittances.
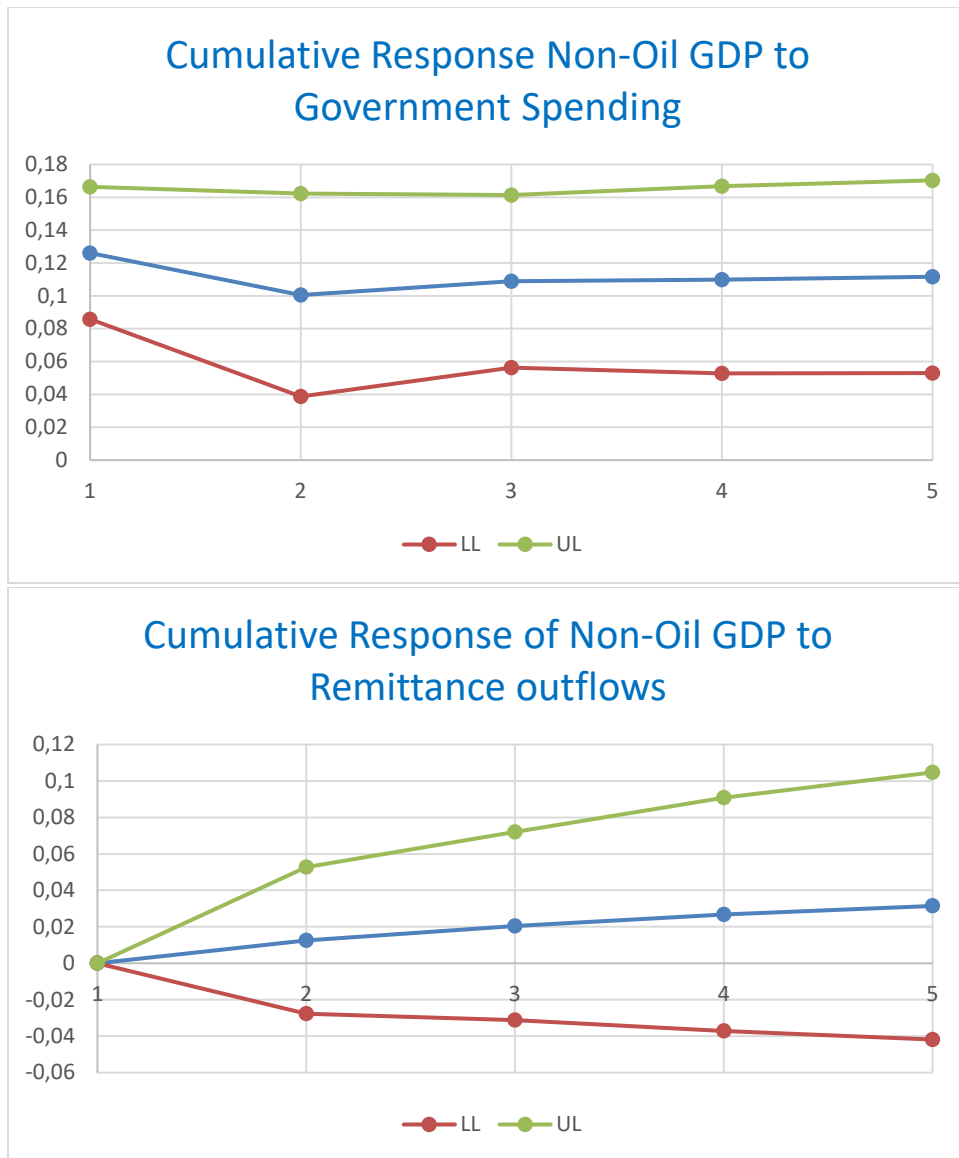
Figure 3a: Response of the growth rate of Non-Oil GDP to Government Spending (upper) and Response of the Non-Oil GDP to Remittances Outflows (lower). LL and UL represent the lower and upper boundaries for a 95 percent confidence interval derived using a bootstrapping technique.

Through Figure 3b, we find that remittances (remit) statistically respond to changes in government spending (g); however, remittances are not responsive to changes in the non-oil GDP (gdp).
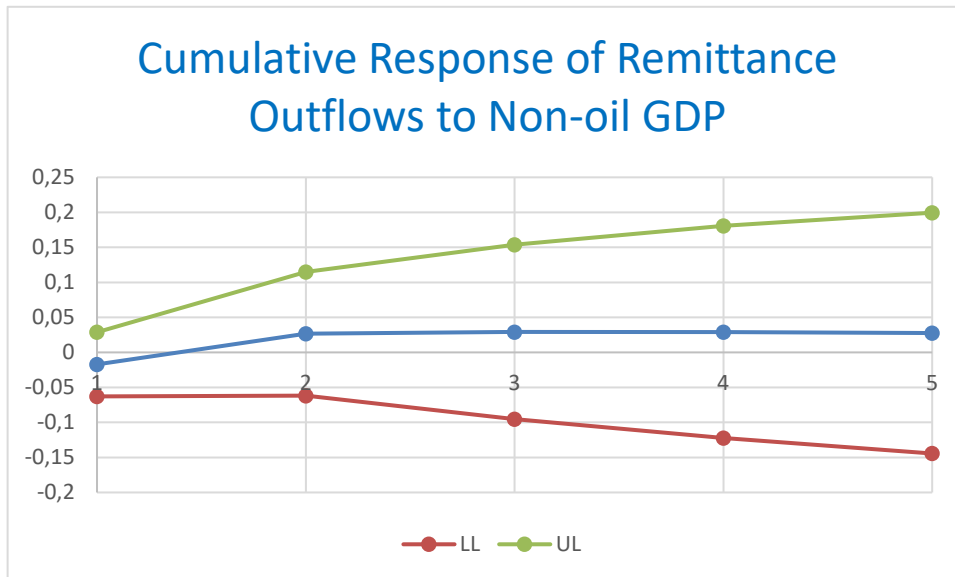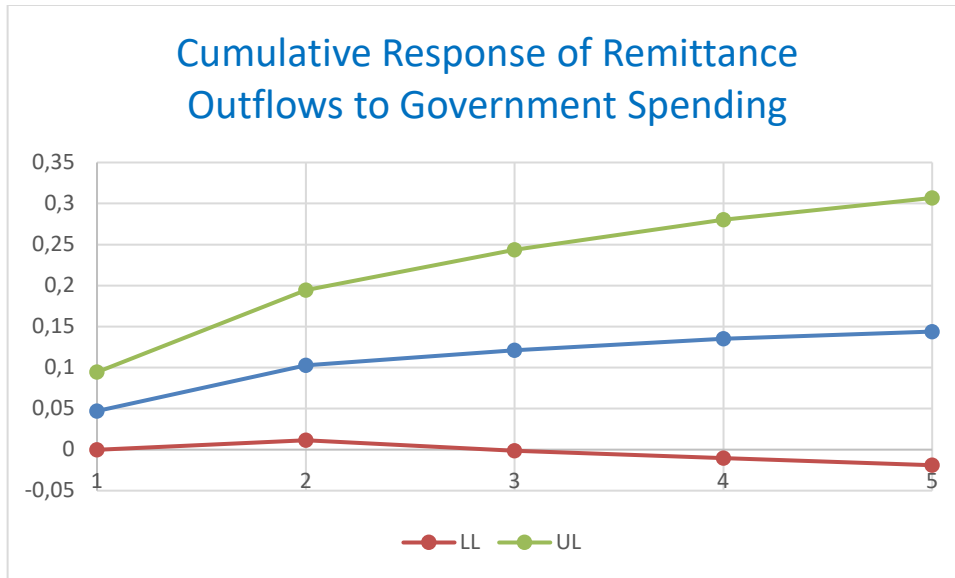
11

Figure 3b. Response of the growth rate of Remittance Outflows to Government Spending (upper) and Response of the growth rate of Remittance Outflows to Non-oil GDP. LL and UL represent the lower and upper boundaries for a 95 percent confidence interval derived using a bootstrapping technique.

3.3 Discussion of the Results

Our findings suggest that remittance outflows have a weak effect on fiscal spending multiplier. As alluded to above, in terms of Saudi riyals, we always find that a one riyal increase in government spending improves non-oil GDP by less than a riyal one year after the shock,

irrespective of the experiment carried out above. That is to say, government spending multiplier has a limited impact on the non-oil GDP, and its effect wanes beyond a year. Also considering remittances, outflows have a weak effect on fiscal spending multiplier, and consequently on the GDP.

We can explain our findings as follows. First, although remittance outflows from Saudi Arabia have placed it as the second remitter in the world for the last several years, the share of outflows to the size of the local economy is still relatively small with an average of 5 percent in the last 5 years. Secondly, the fiscal spending multipliers depend mostly on the effectiveness and efficiency of spending. More that 80 percent of government spending in Saudi Arabia (as is the case in other GCC countries) are current outlays in the form of defense spending and salaries and wages to the public sector (Sturm et al., 2009). Such expenditures have no impact on real activities in the first place.

4. Conclusions

In this paper, we used data from Saudi Arabia, one of the top remitting countries in the world, to study the macroeconomic effects of government spending on output growth with and without explicitly considering the role of the remittance outflows. We use a reduced form VAR and computed impulse response functions.

Our findings, which are discussed above at length, suggest that remittance outflows have a weak effect, if any, on government spending, and consequently on output growth in Saudi Arabia. This result has some important policy implications. Among which is the debate of whether the potential distortionary effects of remittances on real output and investment should be mitigated with diverse policy instruments, such as taxes and capital controls. Given the limited

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role of the government spending, and even smaller impact, if any, of the remittances, major policy changes to restrict remittance outflows (for instance, taxing remittance outflows) must be thoroughly studied in order not to subject the local economy to undue pressure. For example, introducing new measures of capital control (such as taxes or fees) on remittance outflows could lead to deterioration in Saudi Arabia's international competitiveness.

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