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IMF Working Paper

Fiscal Adjustment in the Gulf Countries: Less Costly than
Previously Thought

by Armand Fouejieu, Sergio Rodriguez, Sohaib Shahid

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IMF Working Paper

Middle East and Central Asia (MCD)

Fiscal Adjustment in the Gulf Countries: Less Costly than Previously Thought

Prepared by Armand Fouejieu, Sergio Rodriguez, Sohaib Shahid*

Authorized for distribution by Tim Callen

June 2018

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Abstract

This paper estimates fiscal multipliers for the Gulf Cooperation Council (GCC) countries. Using OLS panel fixed effects on a sample of six countries from 1990-2016, results indicate that GCC fiscal multipliers have declined in recent years which would make the on-going fiscal consolidation less costly than previously thought. Though both capital and current multipliers have declined in recent years, capital multipliers are larger than current multipliers, which implies that reducing (less productive) current spending will help limit the adverse impact of such measures on growth.

JEL Classification Numbers: E62, H60, N15

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| Contents | Page |
|---|------------------|
| ABSTRACT _____ | <u>2</u> |
| I. INTRODUCTION _____ | <u>4</u> |
| II. LITERATURE _____ | <u>5</u> |
| III. DATA AND PRELIMINARY DISCUSSION _____ | <u>5</u> |
| IV. GCC FISCAL MULTIPLIERS _____ | <u>12</u> |
| A. Growth Projections Based on Existing Fiscal Multipliers _____ | <u>12</u> |
| B. Re-estimating the Multipliers: Methodology _____ | <u>14</u> |
| C. Re-estimating the Multipliers: Results _____ | <u>15</u> |
| D. Robustness Checks _____ | <u>19</u> |
| V. CONCLUSIONS _____ | <u>21</u> |
| REFERENCES _____ | <u>26</u> |
| FIGURES | |
| 1. Real Government Spending and Non-oil GDP Growth in the GCC _____ | <u>9</u> |
| 2. Total Spending Growth and Non-oil GDP Growth, 1990–2016 _____ | <u>11</u> |
| 3. GCC: Impact of Fiscal Adjustment on Economic Growth, Based on Existing Fiscal Multipliers _____ | <u>13</u> |
| 4. GCC: Impact of Fiscal Adjustment on Economic Growth, Based on New Fiscal Multipliers _____ | <u>18</u> |
| TABLES | |
| 1. Structure of GCC Economies, Average 2011–16 _____ | <u>6</u> |
| 2. Simple Correlations: Government Spending Growth and Non-oil GDP Growth, ____ | <u>8</u> |
| 3. Spending and Non-oil GDP, Growth Rates _____ | <u>10</u> |
| 4. Simple Correlations: Government Spending Growth and Non-oil GDP Growth, 2008–16 _____ | <u>10</u> |
| 5. Existing Fiscal Multipliers for the GCC Countries _____ | <u>12</u> |
| 6. Estimate Results: Government Spending and Economic Activity _____ | <u>16</u> |
| 7. Implied Fiscal Multipliers _____ | <u>16</u> |
| 8. Robustness to Inclusion of Additional Controls _____ | <u>19</u> |
| 9. Controlling for the Leakages _____ | <u>20</u> |
| ANNEX | |
| I. Empirical Regularities for Spending and Non-oil GDP Growth _____ | <u>22</u> |

I. INTRODUCTION

The ongoing fiscal adjustment in the Gulf Cooperation Countries (GCC) could be less costly than suggested by prior estimates of fiscal multipliers for the region.¹ This paper estimates multipliers for GCC countries using expanded data on government spending that captures more recent economic developments in the region, including policy responses to the fall in global oil prices since mid-2014. The paper illustrates the impact of fiscal adjustment on non-oil growth, and provides relevant policy implications, based on a new set of estimated multipliers.

GCC countries heavily depend on oil. During 2000–2014 (commodity boom era) GCC average oil revenue was 81 percent of total fiscal revenues. However, oil prices started to drop in mid-2014, bottoming at \$30 per barrel in January 2016. Lower oil prices significantly deteriorated the fiscal positions of GCC countries—from an average fiscal surplus of 12.7 percent of non-oil GDP in 2014 to a deficit of 14.5 percent by 2016. The deterioration in fiscal balances triggered large fiscal adjustments. Between 2015–16 GCC countries on average consolidated by 13.8 percent. Since fiscal adjustments can have a negative impact on growth, it is important to study the impact such adjustment has had on growth in the GCC.

Government spending has traditionally been a key driver of growth in the GCC’s non-oil sector. Fiscal multipliers from existing studies for the GCC (Espinoza and Senhadji 2011; Cerisola and others 2015) suggest that the impact of ongoing consolidation on growth is large. The link between government spending and non-oil activity, however, appears to have weakened in recent years (Figure 1). We delve deeper into the relationship between government spending and non-oil growth by exploring the impact of fiscal policy on non-oil output using updated estimates of the fiscal multiplier.

Using a panel OLS with fixed effects estimated over different time periods, our results indicate that fiscal multipliers have declined in recent years. This implies that fiscal consolidation may be less costly than previously thought. Though both capital and current multipliers have declined, capital multipliers remain larger than current multipliers, which indicates that cuts in capital spending could hurt growth more than cuts in current spending.

The rest of the paper is organized as follows; Section II reviews the relevant literature. A preliminary discussion of the data is contained in Section III. Section IV presents the main findings and several robustness checks of the empirical results. Section V concludes by summarizing the main findings and providing policy implications.

¹ The terms “GCC” and “Gulf” are used interchangeably throughout this paper. GCC countries include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and UAE.

II. LITERATURE

The existing literature has extensively discussed the estimation of fiscal multipliers, although there is limited consensus on the estimation method and size of multipliers. The empirical evidence is extensive for advanced economies, but not as much for emerging markets. Blanchard and Perotti (2002), Mountford and Uhlig (2009), and Ilzetzki et al. (2013) provide estimates of fiscal multipliers for advanced economies. Recent studies for emerging markets include Kraay (2012) and Hory (2016).

A literature review by Batini et al. (2014b) emphasizes that fiscal multipliers are found to be lower in emerging and low income countries than in advanced economies.² The literature has also looked into non-linearities of the impact of fiscal policy (Alesina et al., 2016; Ramey and Zubairy 2016), the relationship between the exchange rate and the multiplier (Ilzetzki et al., 2013), recessions versus expansions (IMF 2012; Auerbach and Gorodnichemko 2013), variation of multiplier size over time and countries (Baum and others 2012; Blanchard and Leigh 2013; Delong and Summers 2012; Huidrom and others 2016), and change in multipliers over time (Kirchner et al. 2010; Pereira and Lopes 2014).

Literature on fiscal multipliers for Middle Eastern countries is limited. The sample of studies becomes even smaller when looking at GCC countries. The paucity of studies on the GCC is due to a lack of high-frequency data and sufficiently long time-series, which greatly constrains the use of econometric tools.³

Studies on GCC countries suggest that fiscal multipliers are smaller than in most countries and that multipliers are larger for capital than for current spending. For the GCC, Espinoza and Senhadji (2011) using a variety of models provide long-run multiplier estimates of between 0.3–0.7 for current spending and 0.6–1.1 for capital spending. Cerisola and others (2015), employing a conventional VAR and using a sign-restrictions approach (à la Faust, 1998) for identification purposes, find a long-run multiplier between 0.7–1.3 for current spending and 1.4 for capital spending.⁴

III. DATA AND PRELIMINARY DISCUSSION

The analysis in this paper is based on non-oil GDP and government spending using annual data for the six GCC countries during 1990–2016. Non-oil GDP is reported in the national

² Short-term spending multipliers for advanced economies range between 0.6 and 1.4 and for emerging markets between 0.2 and 0.5.

³ Some GCC countries have recently improved the frequency with which they report fiscal data. For example, Saudi Arabia has recently made efforts to publish its quarterly budget performance reports and has published a detailed 2018 budget report.

⁴ For Saudi Arabia, Joharji and Starr (2010) and Alshahrani & Alsadiq (2014) find that though total expenditures have a positive short-run effect on production, this effect originates mainly from current expenditures.

accounts and data on spending (current and capital) corresponds to the central government. For the econometric analysis we also include an indicator of global GDP growth.

GCC economies continue to depend on oil as the main source of export and fiscal revenues (Table 1). The government plays a significant role in the economy. Oil revenues are the main source of fiscal revenues, the effect of which is seen in the non-oil economy through the government spending these revenues on compensation to public sector employees, subsidies and transfers, and investment in infrastructure, real estate, education, and health.⁵ During 2011–16, oil revenues for the GCC were on average 78 percent of government revenues; oil exports amounted to 62 percent of exports; and oil GDP represented 42 percent of GDP; government spending amounted to about 70 percent of non-oil GDP, of which about 80 percent corresponded to current spending.

| | Bahrain | Kuwait | Oman | Qatar | Saudi Arabia | UAE | GCC |
|---|---------|--------|--------|--------|--------------|--------|--------|
| Oil dependence | | | | | | | |
| Oil exports/Exports of goods and services | 41.39 | 85.05 | 60.70 | 77.81 | 78.39 | 26.76 | 61.68 |
| Oil fiscal revenues/Total revenues | 82.02 | 78.29 | 83.43 | 79.42 | 83.07 | 63.46 | 78.28 |
| Oil GDP/Total GDP | 20.77 | 58.25 | 49.78 | 48.72 | 40.96 | 31.30 | 41.63 |
| Spending relevance | | | | | | | |
| Current expenditure/Total expenditure | 85.52 | 88.03 | 76.07 | 68.67 | 65.89 | 90.45 | 79.11 |
| Capital expenditure/Total expenditure | 14.48 | 11.97 | 23.93 | 31.33 | 34.11 | 9.55 | 20.89 |
| Government expenditure/Non-oil GDP | 40.90 | 109.75 | 94.38 | 66.18 | 63.64 | 46.30 | 70.19 |
| Fiscal balances | | | | | | | |
| Overall fiscal balance/Total GDP | -9.08 | 21.26 | -3.28 | 6.30 | -1.24 | -0.14 | 2.30 |
| Non-oil primary balance/Non-oil GDP | -33.42 | -99.69 | -70.33 | -47.50 | -56.75 | -28.79 | -56.08 |
| <i>Memo</i> | | | | | | | |
| Imports of goods and services/Non-oil GDP | 98.46 | 81.75 | 98.82 | 63.75 | 55.35 | 115.37 | 85.58 |
| Remittances/Non-oil GDP | -9.01 | -26.74 | -25.68 | -12.43 | -8.21 | -9.29 | -15.23 |

Sources: Country authorities and IMF staff estimates.

Higher oil prices during 2003–14 helped governments finance rapid increases in spending while also recording large fiscal surpluses in most cases. During this period, the GCC region witnessed a significant expansion in public infrastructure, public sector wage bills, and social transfers, which led to robust growth in non-oil activity: higher spending growth was positively associated with higher non-oil growth. The sharp and abrupt decline in oil prices in mid-2014 deteriorated significantly the fiscal positions across the GCC as the region lost annual fiscal oil revenue of about \$240 billion between 2014 and 2015. When compared with

⁵ Husain and others (2008) find that for oil exporting countries fiscal policy is the mechanism by which oil price shocks are transmitted to the non-oil economy.

2013, on average the 2016 overall fiscal balance (as a share of non-oil GDP) deteriorated by 40 percentage points, while the non-oil primary balance declined by 15 percentage points.

For addressing the deterioration in fiscal positions that resulted from lower oil prices, GCC governments have developed and started to implement fiscal consolidation plans (IMF 2015; IMF 2016; IMF 2017).⁶ Sizeable fiscal consolidation since 2014 has helped contain the deterioration in the overall fiscal balance and improve the non-oil primary balance. Further consolidation is planned over the medium term.

Fiscal consolidation policies are having a negative impact on non-oil growth in the region. Fiscal consolidation efforts, by reducing government spending, will reduce aggregate demand and economic activity. This is particularly relevant for the GCC, where public consumption and investment in 2016 on average represented about 30 percent of GDP and over 40 percent for Oman and Saudi Arabia. Moreover, a tight fiscal environment could affect consumer and business confidence which may negatively affect private consumption and investment and economic activity.

Data show that lower spending growth is associated with lower non-oil GDP growth in the GCC. Table 2 displays estimated simple correlation coefficients using annual data for 1990–2016. Correlations are estimated between non-oil GDP growth and total, current, and capital spending; non-oil growth is correlated with contemporaneous spending growth as well as with spending growth lagged by one and two periods. For the GCC, correlations are statistically significant for the three definitions of spending; only the first lag of current spending growth does not appear strongly related to non-oil growth. Correlations suggest that contemporaneous values of spending growth are more strongly related to non-oil growth than lagged values of spending growth. There seems to be a degree of inertia in the relationship between non-oil growth and contemporaneous and lagged values of spending growth (correlations are broadly similar, particularly for capital spending).

⁶ GCC countries have implemented reforms to mitigate the impact of fiscal consolidation. For example, Saudi Arabia introduced a citizen's account and a private sector stimulus package.

Table 2. Simple Correlations: Government Spending Growth and Non-oil GDP Growth, 1990–2016

| | Bahrain | Kuwait | Oman | Qatar | Saudi Arabia | UAE | GCC |
|-------------------------|---------|---------|----------|---------|--------------|----------|---------|
| Total spending | | | | | | | |
| Contemporaneous | 0.1171 | 0.2359 | 0.0812 | 0.4426* | 0.6148* | -0.2180* | 0.2735* |
| One-year lag | 0.0202 | 0.0519 | 0.4205* | 0.5433* | 0.3729* | -0.5508* | 0.0999* |
| Two-year lag | 0.3393* | -0.0252 | 0.2797* | 0.5236* | 0.0842 | -0.6237* | 0.1527* |
| Capital spending | | | | | | | |
| Contemporaneous | 0.1048 | 0.3496 | 0.3805* | 0.1007 | 0.5681* | -0.1605* | 0.1818* |
| One-year lag | -0.0436 | 0.1376 | 0.2870* | 0.5806* | 0.4398* | -0.1073 | 0.2013* |
| Two-year lag | 0.4374* | -0.0084 | -0.2179* | 0.4569* | 0.2172* | -0.2673* | 0.1754* |
| Current spending | | | | | | | |
| Contemporaneous | 0.0646 | 0.1836 | -0.04 | 0.4240* | 0.4205* | -0.1932* | 0.2307* |
| One-year lag | 0.071 | 0.0063 | 0.3266* | 0.2623* | 0.1836* | -0.5564* | 0.0234 |
| Two-year lag | 0.143 | -0.0319 | 0.3751* | 0.2940* | 0.0141 | -0.5963* | 0.0920* |

Source: Staff estimations

* Statistically significant at 5 percent significance level.

Correlations for the GCC, however, mask significant differences across countries, which may reflect the effect of extreme observations (see Figures 1A—1D in Annex I). For Bahrain, only lagged spending growth (total and capital spending) is statistically associated with non-oil growth, whereas for Kuwait government spending does not appear to be associated to non-oil growth in a significant manner—at least at the 5 percent significance level and using a metric of linear association. Correlations for Oman, Qatar, and Saudi Arabia are more in line with correlations for the GCC, suggesting econometric outcomes for the region may be driven by developments in these three countries. Correlations for the UAE display the opposite expected sign, indicating that higher spending growth co-exists with lower non-oil GDP growth. This feature of the data appears to be driven by developments between 1995 and 2005. This could be caused by the significant amount of fiscal spending that occurs through Government Related Entities (GREs) rather than the central budget.

The link between government spending and non-oil activity appears to have weakened in the recent past (Figure 1 and Figure 2). While the variations in government spending appear to be closely related to changes in non-oil GDP before 2008, the significant increase in government spending since then seems to have had only a limited impact on non-oil growth. This empirical regularity is more clearly illustrated by analyzing non-oil GDP and spending growth during different periods.

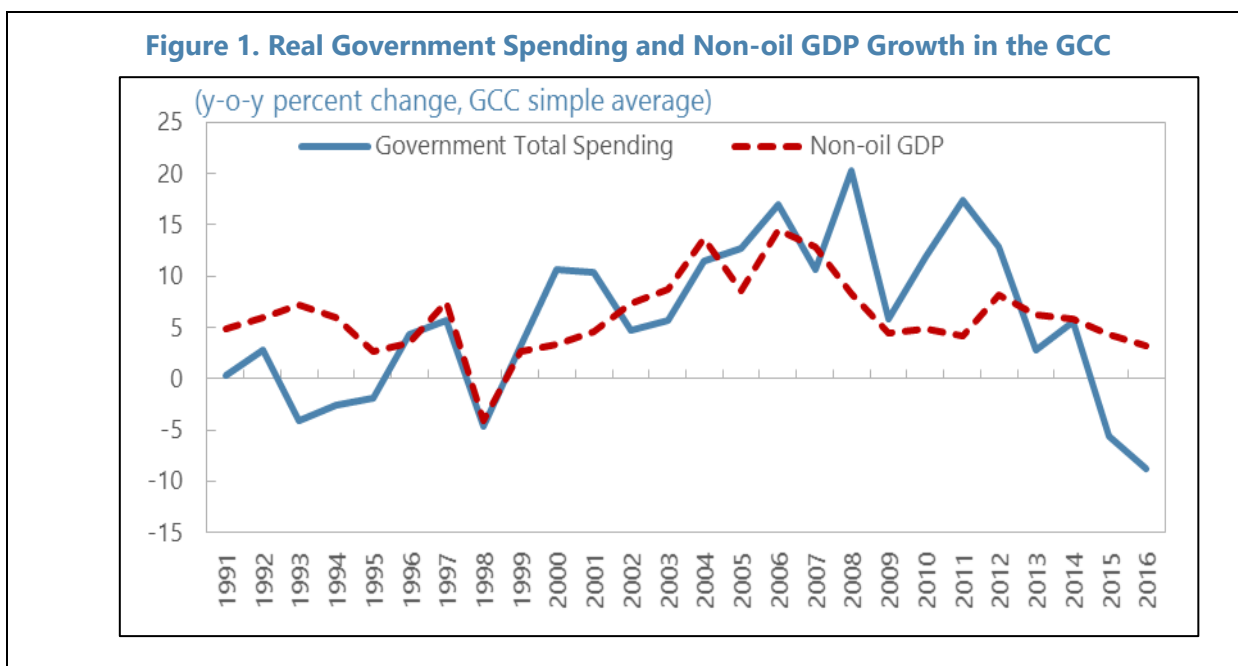


Table 3 displays average growth rates for the four variables discussed earlier for different periods as well as the ratio of non-oil GDP growth to spending growth:

- For the whole period (1990–2016), one percentage point growth in total spending was associated with 1.1 percentage points of growth in non-oil GDP (average annual non-oil growth was 6.6 percent, whereas total government spending grew on average 5.9 percent per year).
- The ratio fell from 1.4 during 1990–2007 to 0.6 during 2008–16. For 2008–10 and 2011–12 the ratio was even lower at 0.5 and 0.4 respectively, although the ratio turned negative during 2015–16 considering the significant contraction in nominal spending, particularly in Saudi Arabia, Kuwait, and Oman.
- These findings suggest a weakening in the relationship between non-oil GDP growth and spending growth. Note that the relationship is driven by government spending growth as suggested by the significantly larger coefficient of variation for spending growth than for non-oil GDP growth. Simple correlations in Table 4 also support a less strong links between spending growth and non-oil GDP growth in recent years: 1990–2017 versus 2008–16.

Table 3. Spending and Non-oil GDP, Growth Rates
(In percent, unless otherwise indicated)

| | 1990-2016 | | 1990-2007 | | 2008-2016 | |
|------------------------|----------------|--------------------|----------------|--------------------|----------------|--------------------|
| | Average growth | Standard deviation | Average growth | Standard deviation | Average growth | Standard deviation |
| Non-oil GDP | 6.6 | 5.9 | 7.1 | 6.3 | 5.7 | 4.9 |
| Spending | | | | | | |
| Total | 5.9 | 13.0 | 5.2 | 11.5 | 8.9 | 15.4 |
| Capital | 10.1 | 26.4 | 11.5 | 27.3 | 8.2 | 24.5 |
| Current | 5.5 | 14.5 | 4.5 | 11.7 | 9.6 | 17.9 |
| Ratio of growth rates | | | | | | |
| GDP / Total spending | | 1.1 | | 1.4 | | 0.6 |
| GDP / Capital spending | | 0.7 | | 0.6 | | 0.7 |
| GDP / Current spending | | 1.2 | | 1.6 | | 0.6 |

Source: IMF staff estimations.

Table 4. Simple Correlations: Government Spending Growth and Non-oil GDP Growth, 2008–16

| | Bahrain | Kuwait | Oman | Qatar | Saudi Arabia | UAE | GCC |
|-------------------------|---------|----------|---------|---------|--------------|---------|--------|
| Total spending | | | | | | | |
| Contemporaneous | 0.3509 | 0.0815 | -0.0265 | 0.3429 | 0.7770* | -0.1476 | 0.1561 |
| One-year lag | -0.2685 | -0.7201* | 0.6717* | -0.2069 | 0.6302 | -0.4947 | 0.0209 |
| Two-year lag | 0.5436 | -0.0152 | 0.3266 | 0.293 | 0.0171 | -0.4111 | 0.1444 |
| Capital spending | | | | | | | |
| Contemporaneous | 0.5734 | 0.4169 | -0.1703 | -0.0221 | 0.7849* | -0.2658 | 0.1541 |
| One-year lag | -0.6617 | -0.3164 | 0.4367 | 0.0879 | 0.7029* | -0.6532 | 0.0035 |
| Two-year lag | 0.8151* | -0.5565 | -0.3911 | 0.6213 | 0.0051 | -0.5749 | 0.0662 |
| Current spending | | | | | | | |
| Contemporaneous | -0.0599 | 0.0499 | -0.0152 | 0.3581 | 0.3243 | -0.1032 | 0.0995 |
| One-year lag | 0.2474 | -0.7159* | 0.5072 | -0.2332 | 0.1779 | -0.4177 | 0.0065 |
| Two-year lag | -0.0993 | 0.029 | 0.4587 | 0.0022 | 0.1202 | -0.3003 | 0.1359 |

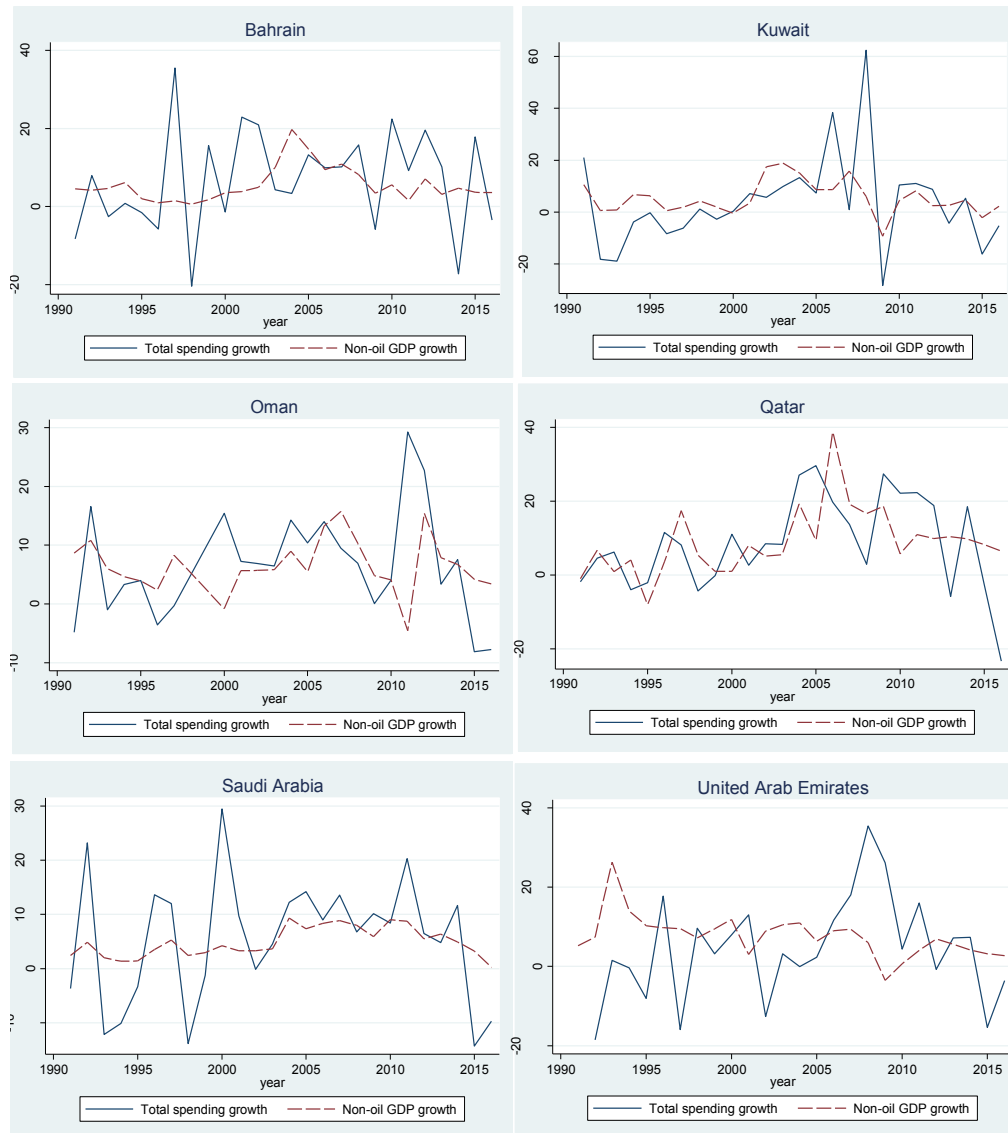
Source: Staff estimations

* Statistically significant at 5 percent significance level.

The weaker link between government spending and non-oil growth could be due to greater “leakages” in the economy. In principle, government spending supports economic activity by increasing aggregate demand. However, if there are “leakages” to the impact on aggregate demand, the increase in GDP does not materialize. Leaks occur if the increase in government spending translates, for instance, into larger imports of goods and services. For the GCC, these leakages have increased in recent years. Imports of goods during 1990–16 amounted to

about 55 percent of non-oil GDP; during 2008–16 they amounted to almost 80 percent of non-oil GDP. Remittances in percent of non-oil GDP were about 11 percent (1990–16 average) but 13 percent (2008–16). GCC residents are also traveling more abroad; data indicates that outbound tourism expenditure in percent of non-oil GDP increased from about 7 percent during 1995–2015 to almost 8 percent during 2008–15. Low efficiency of public investment, supply-side bottlenecks, and other implementation constraints may also help explain the weaker relationship between spending growth and non-oil GDP growth.

Figure 2. Total Spending Growth and Non-oil GDP Growth, 1990–2016



Source: IMF staff estimations

IV. GCC FISCAL MULTIPLIERS

A. Growth Projections Based on Existing Fiscal Multipliers

Espinoza and Senhadji (2011) and Cerisola and others (2015) provide estimates of fiscal multipliers for the GCC countries (Table 5). The results from Espinoza and Senhadji (2011) are based on a panel (linear) regression model, with long-term current spending multipliers estimated to range from 0.3 to 0.7 and long-term capital spending multiplier from 0.6 to 1.1. The VAR approach used in Cerisola and others (2015) yields long term multipliers of 0.7 and 1.4 for current and capital spending, respectively.

| | | Capital spending | Current spending |
|----------------------------|------------|------------------|------------------|
| Espinoza & Senhadji (2011) | Short-term | 0.2 - 0.3 | 0.2 - 0.4 |
| | Long-term | 0.6 - 1.1 | 0.3 - 0.7 |
| Cerisola et al. (2015) | Short-term | | |
| | Long-term | 1.4 | 0.7 |

Short term refers to 1 year, and long term refers to 3 years in Espinoza and Senhadji (2011), and 4 years in Cerisola et al. (2015).

Using the given multipliers, we attempt to derive the impact of ongoing fiscal consolidation in the GCC on non-oil growth. Fiscal consolidation is measured by the annual changes in government expenditures in percentage of non-oil GDP. It is assumed that government spending shocks at time t affect economic activity over three periods (t , $t+1$, and $t+2$).⁸ We further assume that current spending shocks have a stronger short-term impact on non-oil growth (in the first year), while capital spending shocks are spread out more progressively, affecting growth over a longer term (peak of the impact in the third year). This exercise is conducted over the period 2015–22. For comparison, projections of non-oil GDP growth in IMF (2014) are used as baseline.⁹ We consider this to be an appropriate baseline since those projections were made before the oil prices fell in mid-2014, and therefore do not incorporate subsequent fiscal adjustment measures.

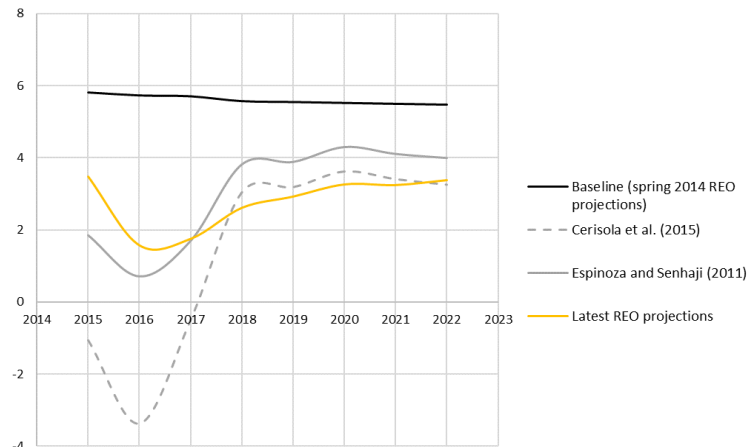
The simulations based on existing fiscal multipliers suggest a significant negative impact of fiscal consolidation on non-oil growth (Figure 3). The first set of simulations are based on the actual composition of government spending adjustment in the GCC. Given the size of the multipliers reported in Table 5, and the extent of fiscal adjustment, the implied impact on non-oil growth is sizable, with non-oil growth falling into negative territory between 2015

⁸ This follows the empirical assessment of the impact of government spending on growth in Espinoza and Senhadji (2011), and in our empirical framework discussed in the next section.

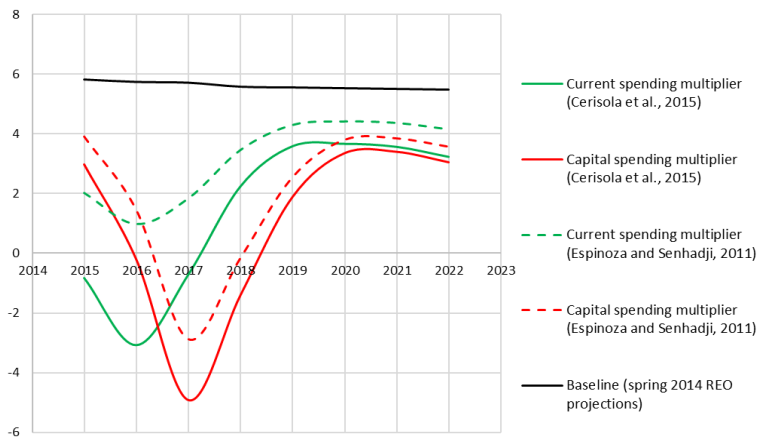
⁹ IMF Spring 2014 MCD Regional Economic Outlook

and 2017, when using multipliers from Cerisola et al. (2015). Based on these multipliers, non-oil GDP growth could have fallen as low as -3 percent in 2016. In the best-case scenario, with the lowest fiscal multipliers from Espinoza and Senhadji (2011), non-oil growth would have been predicted at 0.7 percent in 2016 (compared to 5.7 percent in the baseline and an outcome of 1.6 percent), before recovering progressively. To better assess and isolate the contributions of each type of government spending on economic activity, we further explore scenarios where fiscal consolidation is entirely on either capital or current spending. The results highlight the stronger adverse effect of capital spending adjustment on non-oil growth. Although in general the impact on non-oil growth remains substantial, multipliers from the two studies suggest that current spending adjustment would be relatively less costly, compared to capital spending cuts.

Figure 3. GCC: Impact of Fiscal Adjustment on Economic Growth, Based on Existing Fiscal Multipliers
(In percent)



Note: The chart shows simulations of non-oil GDP growth projections, following fiscal consolidation and given the multipliers. The simulations are based on the composition government spending adjustment (current and capital expenditure).



Note: The chart shows simulations of non-oil GDP growth projections, following fiscal consolidation and given the multipliers. It compares scenarios where fiscal adjustment is entirely either on current spending or on capital spending.

As discussed in the previous section, data suggest that the relationship between fiscal spending and non-oil growth might have changed in recent years. This suggests that fiscal multipliers might be different (lower) than previously thought. The impact of public spending on non-oil growth therefore needs to be reassessed. In what follows, we shed light on this issue by providing some empirical evidence.

B. Re-estimating the Multipliers: Methodology

Our empirical approach for estimating GCC fiscal multipliers draws on Espinoza and Senhadji (2011). The analysis estimates two models, a linear and a non-linear model. The linear model takes the form of equation (1):

$$Y_{it} = \alpha + B \sum_{l=0}^2 G_{it-l} + \lambda Ggdp + \varphi_i + \varepsilon_{it} \quad (1)$$

Where Y is real non-oil GDP. G is real government expenditures (capital or current spending). We control for contemporaneous as well as first and second lags of government spending to assess its impact on economic activity in the medium/long term. These variables are expressed in first log difference, to ensure stationarity. Since GCC countries are open economies and can be affected by global shocks, we also control for global GDP growth ($Ggdp$). φ_i are country fixed effects, which capture other country specific (time-invariant) characteristics not explicitly controlled for in equation (1). ε is the error term, and α , B , and λ are parameters to be estimated.

The non-linear model specified in equation (2) investigates to what extent the non-oil growth impact of government spending may have changed over time. D is a dummy variable which takes the value of 1 for the period 2008–16 or 2011–16, and 0 otherwise. The interaction terms between government spending and the dummy variable therefore captures potential non-linearities in the relationship between spending and non-oil growth.

$$Y_{it} = \alpha + B \sum_{l=0}^2 G_{it-l} + \Theta \sum_{l=0}^2 D.G_{it-l} + \lambda Ggdp + \varphi_i + \varepsilon_{it} \quad (2)$$

Equations (1) and (2) are estimated using OLS panel fixed effects, for the period 1990–2016. These estimates can suffer from an endogeneity bias due to reverse causality between government spending and economic activity. The so-called *automatic stabilizer* is one possible channel of bias, while an endogenous fiscal policy (for example, a systematic countercyclical fiscal policy) is another possible channel. In both cases, the bias will result in an underestimation of the fiscal multipliers. As argued by Espinoza and Senhadji (2011), those channels can be ruled out in the case of the GCC since fiscal policy affects non-oil growth mainly through government spending, essentially driven by oil revenue, which in turn

is driven by international oil prices, which are assumed to be exogenous. In addition, there is evidence that fiscal policy is procyclical in oil exporting countries (Husain and others, 2008). The estimated equations might also suffer from an omitted variable bias since we only control for spending variables. However, as discussed in Section II, the public sector is a key driver of economic activity in the GCC, and other macroeconomic variables are strongly correlated with government expenditures. Nevertheless, to test the robustness of our results, extended versions of the model controlling for additional macro-factors (including inflation, imports, oil prices, remittances outflows, and tourism expenditures) are discussed.

Implied fiscal multipliers are computed as $X = [\beta / (G/Y)]$. Where X is the fiscal spending multiplier, β is the elasticity estimated in equation (1) or (2). We refer to the short-term fiscal multiplier as the contemporaneous impact of spending on non-oil growth, while the long-term multiplier is the cumulative impact over three years.

C. Re-estimating the Multipliers: Results

Table 6 provides results using equation (1) and (2). Global GDP growth is positively and significantly related with economic activity in the GCC, suggesting that these economies benefit from positive global economic shocks. Results from the linear regression in column (1) highlight the persistence of the impact of capital spending on non-oil growth. The statistically significant coefficients associated with the contemporaneous, the first, and second lags suggest that capital spending shocks affect economic activity at least over the first three years. The impact of current spending seems to last over a shorter period (two years), as only coefficients associated with the contemporaneous and the first lag of government spending are statistically significant (column 4). The non-linear models produce mixed findings. In columns (2) and (5), the coefficients associated with the interaction terms are not statistically different from zero, suggesting no significant impact of government spending on economic activity over the period 2008–16.¹⁰ When restricting the sample period to 2011–16 (columns 3 and 6), both current and capital spending are found to be positively and significantly correlated with non-oil growth, although the coefficients point to a lower (cumulative) impact compared to estimates based on the full sample period in columns (1) and (4).

¹⁰ The lack of significant values for some coefficients may have come about due to data limitations, for example, due to a small sample size, both across countries (six countries) and over time (annual data between 1990–2016) which limited the degrees of freedom; spending metric used; larger volatility in spending (when compared to non-oil growth), particularly during the latter years. Furthermore, the relatively small post-2008 and 2011 sample sizes might affect the results when assessing the non-linearities.

Table 6. Estimate Results: Government Spending and Economic Activity

| | Dependent variable: non-oil GDP | | | | | |
|-----------------------|---------------------------------|------------------------|------------------------|---------------------|------------------------|------------------------|
| | Capital spending | | | Current spending | | |
| | Linear | Nonlinear (2008-16) | Nonlinear (2011-16) | Linear | Nonlinear (2008-16) | Nonlinear (2011-16) |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Contemporaneous | 0.044** (0.019) | 0.042* (0.019) | 0.041 (0.024) | 0.088*** (0.032) | 0.147 (0.073) | 0.136* (0.065) |
| First lag | 0.066*** (0.019) | 0.092* (0.038) | 0.069 (0.038) | 0.063* (0.034) | 0.159* (0.068) | 0.069 (0.060) |
| Second lag | 0.049** (0.019) | 0.064** (0.022) | 0.048 (0.031) | 0.026 (0.033) | 0.069 (0.063) | 0.023 (0.062) |
| Contemporaneous*Dummy | | 0.036 (0.033) | 0.050** (0.013) | | 0.054 (0.037) | 0.015 (0.034) |
| First lag*Dummy | | -0.016 (0.044) | 0.051* (0.021) | | -0.011 (0.049) | 0.080* (0.031) |
| Second lag*Dummy | | -0.024 (0.042) | 0.032 (0.020) | | 0.000 (0.065) | 0.024 (0.043) |
| Global GDP growth | 0.012*** (0.003) | 0.012** (0.003) | 0.012** (0.004) | 0.010*** (0.003) | 0.007 (0.004) | 0.010* (0.004) |
| Constant | 0.018* (0.010) | 0.020* (0.008) | 0.018 (0.010) | 0.025** (0.011) | 0.032*** (0.005) | 0.025*** (0.006) |
| Observations | 139 | 139 | 139 | 139 | 139 | 139 |
| R-squared | 0.197 | 0.197 | 0.199 | 0.139 | 0.217 | 0.165 |
| Adjusted R-squared | 0.141 | 0.141 | 0.156 | 0.0795 | 0.176 | 0.120 |
| Number of countries | 6 | 6 | 6 | 6 | 6 | 6 |

OLS panel fixed effects estimates. Robust standard errors in parentheses.

***, **, * indicate statistical significant at 1, 5 and 10% respectively.

The dummy variable takes the value of 1 for the period 2008 - 2016 (or 2011 - 2016), and 0 otherwise.

In Table 7, we derive the corresponding fiscal multipliers. Over the full sample period, current spending multipliers are estimated to be 0.2 and 0.4 in the short-term and long-term, respectively. Capital spending multipliers are estimated to be 0.4 in short-term, and 1.3 in the long-term. These estimates are consistent with the empirical literature which suggests that capital spending has a stronger and more persistent impact on economic activity. When focusing on the most recent period (2011–16), there seems to be no significant short-term impact of current spending on non-oil growth, while the long-term current spending multiplier is 0.2. Capital spending multipliers are 0.4 in the short-term, and 0.9 in the long-term. Overall, the multipliers are lower compared to those estimated over the full sample period. Our empirical analysis confirms that the impact of government spending on economic activity has weakened in the recent years.

Table 7. Implied Fiscal Multipliers

| | | Capital spending | Current spending |
|-------------|------------|------------------|------------------|
| 1990 - 2016 | Short-term | 0.4 | 0.2 |
| | Long-term | 1.3 | 0.4 |
| 2008 - 2016 | Short-term | ... | ... |
| | Long-term | ... | ... |
| 2011- 2016 | Short term | 0.4 | ... |
| | Long-term | 0.9 | 0.2 |

"..." indicates cases where the elasticities are not statistically significant.

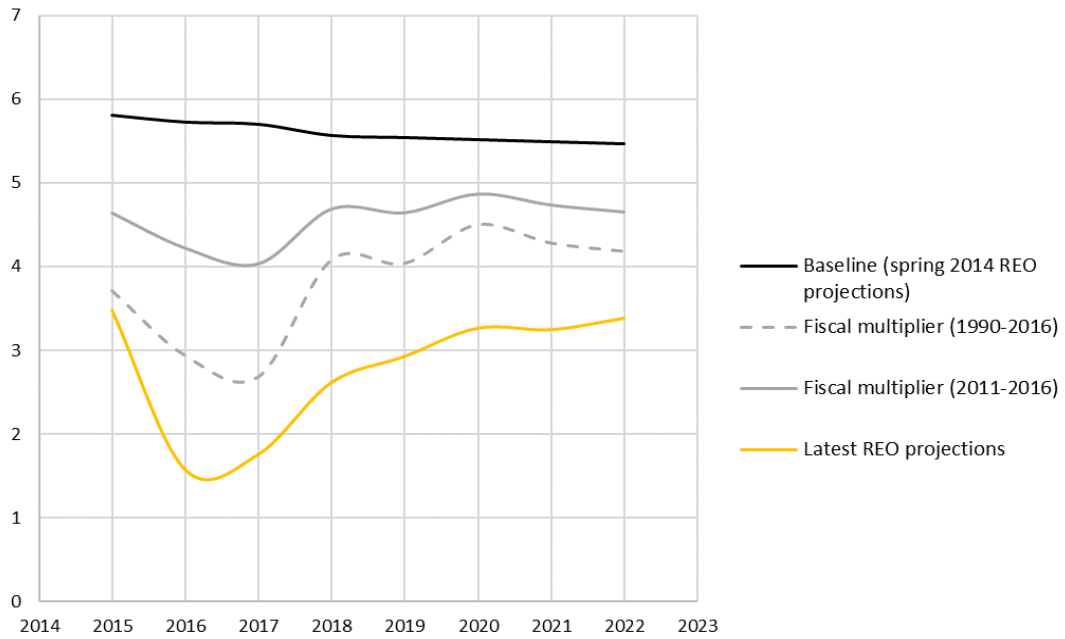
Short term and long term refer to 1 year and 3 years, respectively.

A weaker relationship between fiscal spending and non-oil growth points to lower economic costs of fiscal adjustment currently underway in the GCC. Figure 4 provides a new set of simulations of non-oil GDP growth, based on updated estimates of fiscal multipliers (keeping the same underlying assumptions, as described above). These simulations confirm that the substantial reduction in government expenditure in the GCC will likely have a more limited adverse effect on their economies. Based on the actual composition of the fiscal consolidation, the simulations predict the trough of non-oil GDP growth in 2017 at 2.7 percent, or 4 percent when using multipliers for the most recent period (2011–16), compared to 5.7 in the baseline. The non-oil growth impact of consolidation could be lower if the adjustment weighs primarily on current spending. Based on estimates of fiscal multipliers for the period 2011–16, if spending adjustment were to fall solely on current expenditure, non-oil growth would be at the maximum 1.2 percentage points lower in 2017 (non-oil GDP growth would be 4.5). However, if the adjustment were to fully translate into cuts in capital spending, the impact on non-oil growth would be much larger, in which case, non-oil growth could be as low as -1 percent in 2017.

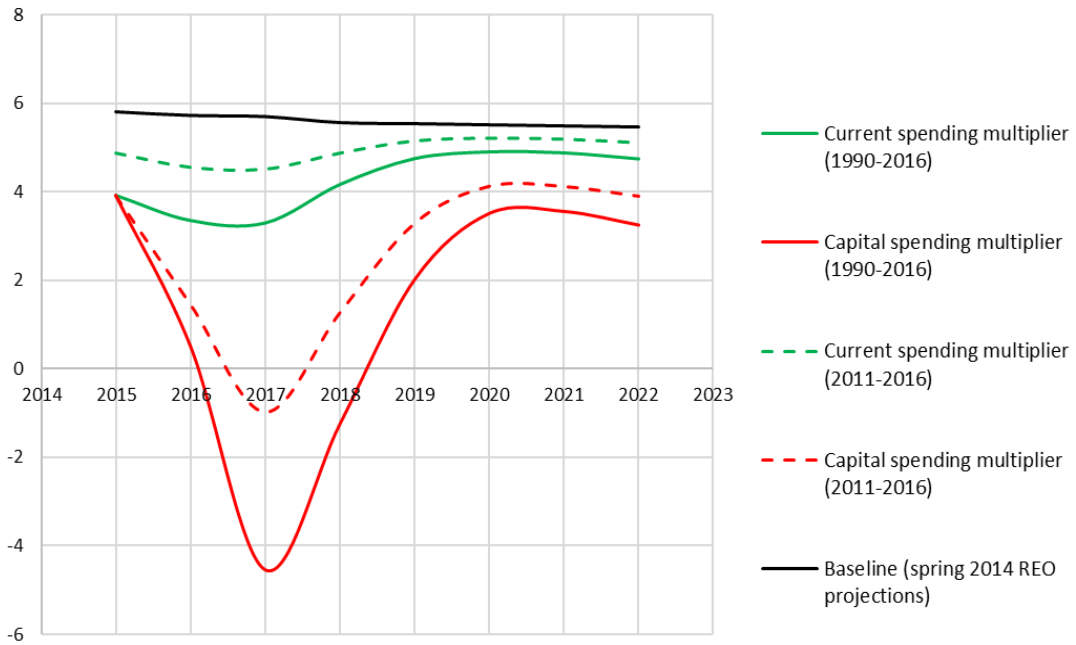
Our empirical assessment suggests that, as the Gulf countries have embarked on significant fiscal consolidation measures, reducing (less productive) current spending will help limit the adverse impact of such measures on economic activity. Given the larger and more persistent impact of capital spending on non-oil growth, (efficient) investment expenditures need to be protected.¹¹

¹¹ See IMF (2017) for a detailed discussion on designing growth-friendlier expenditure-based fiscal adjustment.

Figure 4: GCC: Impact of Fiscal Adjustment on Economic Growth, Based on New Fiscal Multipliers
(In percent)



Note: The chart shows simulations of non-oil GDP growth projections, following fiscal consolidation and given the multipliers. The simulations are based on the composition government spending adjustment (current and capital expenditure).



Note: The chart shows simulations of non-oil GDP growth projections, following fiscal consolidation and given the multipliers. It compares scenarios where fiscal adjustment is entirely either on current spending or on capital spending.

D. Robustness Checks

To test the robustness of the results discussed above, we perform two additional empirical exercises. First, we follow Espinoza and Senhadji (2011) and include additional control variables in the regressions, namely inflation and oil prices. Both linear and non-linear models are re-estimated, followed by estimating the implied fiscal multipliers. Table 8 provides the estimated results. Neither inflation nor oil prices are found to have a statistically significant impact on non-oil growth.¹² Overall, these results are in line with our main findings and confirm that (i) fiscal multipliers are much lower in the most recent years, and (ii) current spending has a much lower impact on the economic activity, compared to investment expenditures.¹³

| | Dependent variable: non-oil GDP | | | | | | | |
|------------------------------|---------------------------------|------------------------|---------------------|------------------------|--------------------|------------------------|---------------------|------------------------|
| | Capital spending | | | | Current spending | | | |
| | Linear | Nonlinear (2011-16) | Linear | Nonlinear (2011-16) | Linear | Nonlinear (2011-16) | Linear | Nonlinear (2011-16) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | |
| Contemporaneous | 0.038* (0.023) | 0.038 (0.028) | 0.043** (0.019) | 0.042 (0.023) | 0.088** (0.038) | 0.143 (0.074) | 0.088*** (0.033) | 0.137 (0.069) |
| First lag | 0.094*** (0.024) | 0.105 (0.059) | 0.066*** (0.021) | 0.066 (0.037) | 0.080** (0.040) | 0.092 (0.084) | 0.063* (0.035) | 0.062 (0.064) |
| Second lag | 0.050** (0.024) | 0.043 (0.041) | 0.059*** (0.020) | 0.061 (0.035) | 0.019 (0.039) | 0.015 (0.071) | 0.013 (0.035) | 0.010 (0.066) |
| Contemporaneous*Dummy | | 0.031 (0.020) | | 0.044*** (0.011) | | 0.020 (0.036) | | 0.015 (0.033) |
| First lag*Dummy | | 0.059** (0.022) | | 0.051** (0.020) | | 0.073* (0.036) | | 0.096** (0.031) |
| Second lag*Dummy | | 0.049* (0.022) | | 0.033 (0.020) | | 0.010 (0.051) | | 0.004 (0.048) |
| Global GDP growth | | 0.016** (0.004) | | 0.012** (0.004) | | 0.014** (0.004) | | 0.010* (0.004) |
| Inflation | -0.001 (0.006) | -0.001 (0.006) | | | 0.004 (0.006) | 0.003 (0.003) | | |
| Oil prices (lag) | | | 0.003 (0.020) | 0.003 (0.014) | | | 0.026 (0.020) | 0.028 (0.017) |
| Constant | 0.010 (0.012) | 0.010 (0.014) | 0.019* (0.011) | 0.019 (0.011) | 0.018 (0.013) | 0.018 (0.013) | 0.024** (0.012) | 0.023** (0.007) |
| Observations | 109 | 109 | 133 | 133 | 109 | 109 | 133 | 133 |
| R-squared | 0.277 | 0.282 | 0.205 | 0.207 | 0.188 | 0.211 | 0.140 | 0.167 |
| Number of countries | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Adjusted R-squared | 0.203 | 0.225 | 0.140 | 0.155 | 0.106 | 0.148 | 0.0695 | 0.113 |
| <i>Short-term multiplier</i> | 0.3 | 0.3 | 0.4 | 0.4 | 0.2 | ... | 0.2 | ... |
| <i>Long-term multiplier</i> | 1.5 | 0.9 | 1.4 | 0.8 | 0.4 | 0.2 | 0.4 | 0.2 |

OLS panel fixed effects estimates. Robust standard errors in parentheses.
 ***, **, * indicate statistical significant at 1, 5 and 10% respectively.
 The dummy variable takes the value of 1 for the period 2011 - 2016, and 0 otherwise.

¹² A possible explanation could be that, given the importance of government spending in the GCC economies, spending variables are strongly correlated with inflation. Government spending is mostly driven by available revenues, which depend on oil prices. Furthermore, oil prices are closely associated with global GDP growth which is already included in the regressions as a control variable.

¹³ Batini and others (2014a) propose the “bucket approach” to calculate fiscal multipliers for countries with limited data availability. Their approach bunches countries into groups (or “buckets”) with similar multiplier values, based on their characteristics. It also accounts for the impact of temporary factors, such as the state of the business cycle. Our multiplier estimates are robust to the “bucket approach” which provides a range of 0.4-0.6 for the GCC multipliers.

The second exercise aims at controlling directly for factors that could have contributed to weakening the relationship between government spending and non-oil growth. The leakages discussed in Section III (i.e. imports of goods and services, remittances outflows, and tourism expenditures) are included in the regressions as control variables. These variables are likely to be positively correlated with government spending, but negatively correlated with non-oil GDP growth, which suggests that these variables tend to reduce the impact of public expenditure on non-oil growth. For our econometric exercise, this implies that we should expect higher elasticities associated with government spending, when these variables are controlled for (because doing so will expunge the adverse effects of the leakages from spending variables). Table 9 provides the estimated results of this new set of regressions. Although none of the additional controls appear to have a statistically significant impact on non-oil GDP, the (cumulative) impacts of capital and current spending are stronger. These results are in line with our discussion on the role of imports, remittances, and tourism expenditure, as factors that could weaken the relationship between government expenditure and economic activity.

Table 9. Controlling for Leakages

| | Dependent variable: non-oil GDP | | | |
|----------------------|---------------------------------|---------------------|---------------------|---------------------|
| | Capital spending | | Current spending | |
| | (1) | (2) | (3) | (4) |
| Contemporaneous | 0.044** (0.019) | 0.073*** (0.026) | 0.088*** (0.032) | 0.083* (0.044) |
| First lag | 0.066*** (0.019) | 0.080*** (0.027) | 0.063* (0.034) | 0.093* (0.049) |
| Second lag | 0.049** (0.019) | 0.064** (0.028) | 0.026 (0.033) | 0.060 (0.046) |
| Global GDP growth | 0.012*** (0.003) | 0.012*** (0.004) | 0.010*** (0.003) | 0.012*** (0.004) |
| Imports | | -0.005 (0.041) | | 0.008 (0.045) |
| Remittances | | -0.022 (0.035) | | -0.026 (0.038) |
| Tourism expenditures | | -0.052 (0.033) | | -0.046 (0.034) |
| Constant | 0.018* (0.010) | 0.010 (0.013) | 0.025** (0.011) | 0.013 (0.015) |
| Observations | 139 | 71 | 139 | 71 |
| R-squared | 0.197 | 0.315 | 0.139 | 0.221 |
| Number of countries | 6 | 5 | 6 | 5 |
| Adjusted R-squared | 0.141 | 0.187 | 0.0795 | 0.0756 |

OLS panel fixed effects estimates. Robust standard errors in parentheses.
 ***, **, * indicate statistical significant at 1, 5 and 10% respectively.
 Imports, remittances, and tourism expenditures are expressed in percentage of non-oil GDP

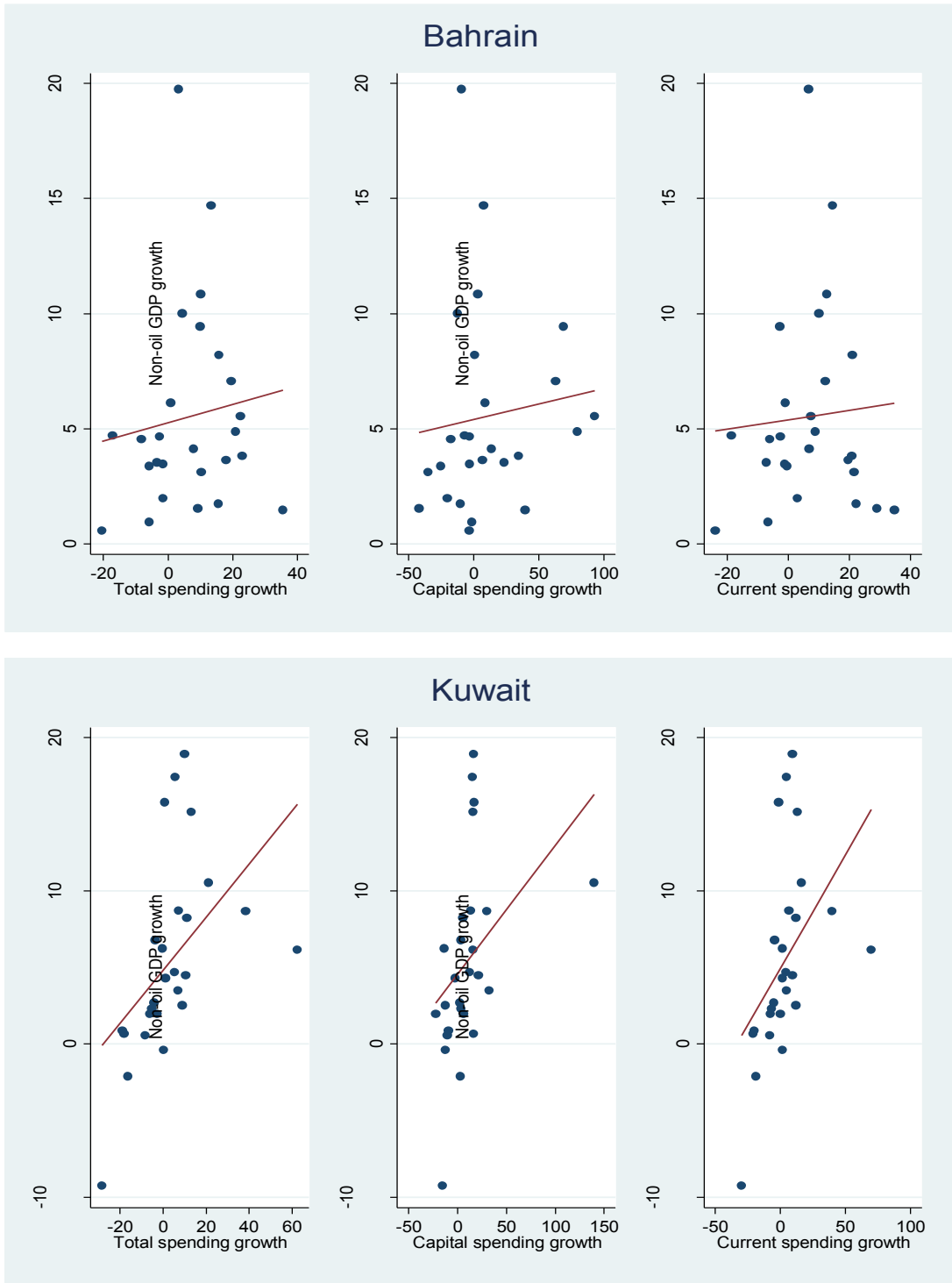
V. CONCLUSIONS

This paper has calculated fiscal multipliers by linear and non-linear estimation procedures using panel OLS with fixed effects. The results provide two important findings; first, fiscal multipliers in the GCC have declined in recent years; second, though both capital and current multipliers have declined, capital multipliers are larger than current multipliers.

Our results have implications for the current economic climate of the GCC region. Ongoing fiscal adjustment could be less costly than suggested by prior estimates of fiscal multipliers for the region. Since GCC countries have embarked on significant fiscal consolidation measures, reducing (less productive) current spending will help limit the adverse impact of such measures on economic activity. Given the larger and more persistent impact of capital spending on non-oil growth, (efficient) investment expenditures need to be protected.

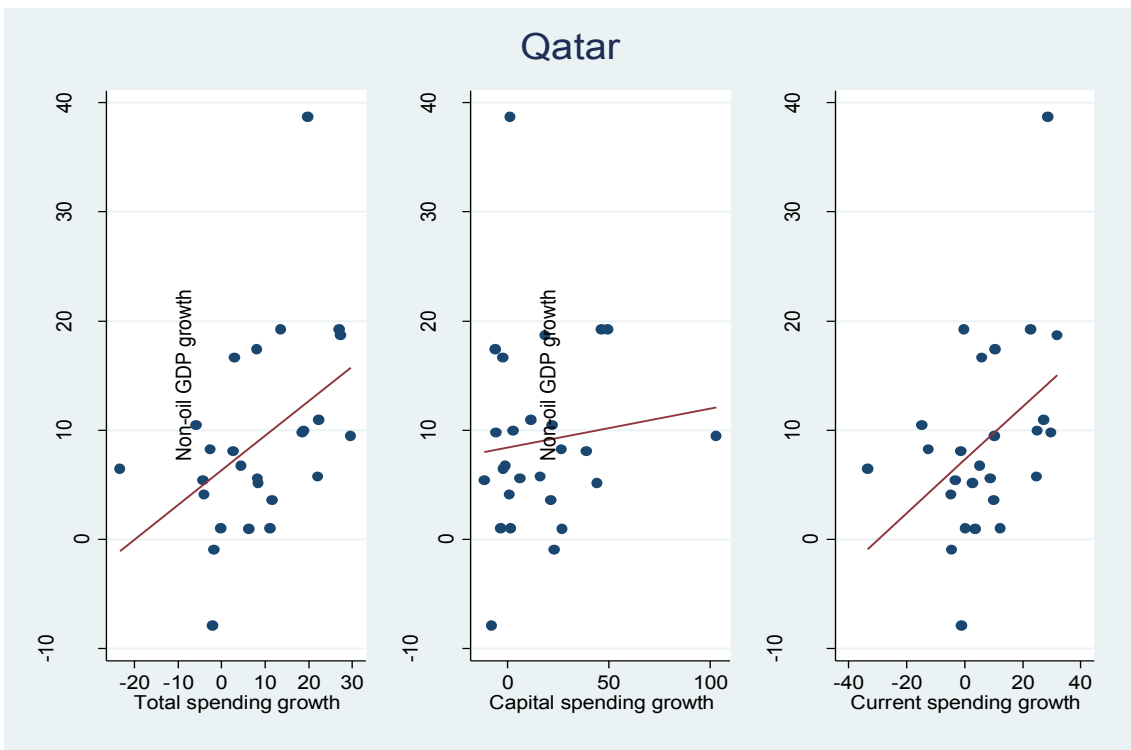
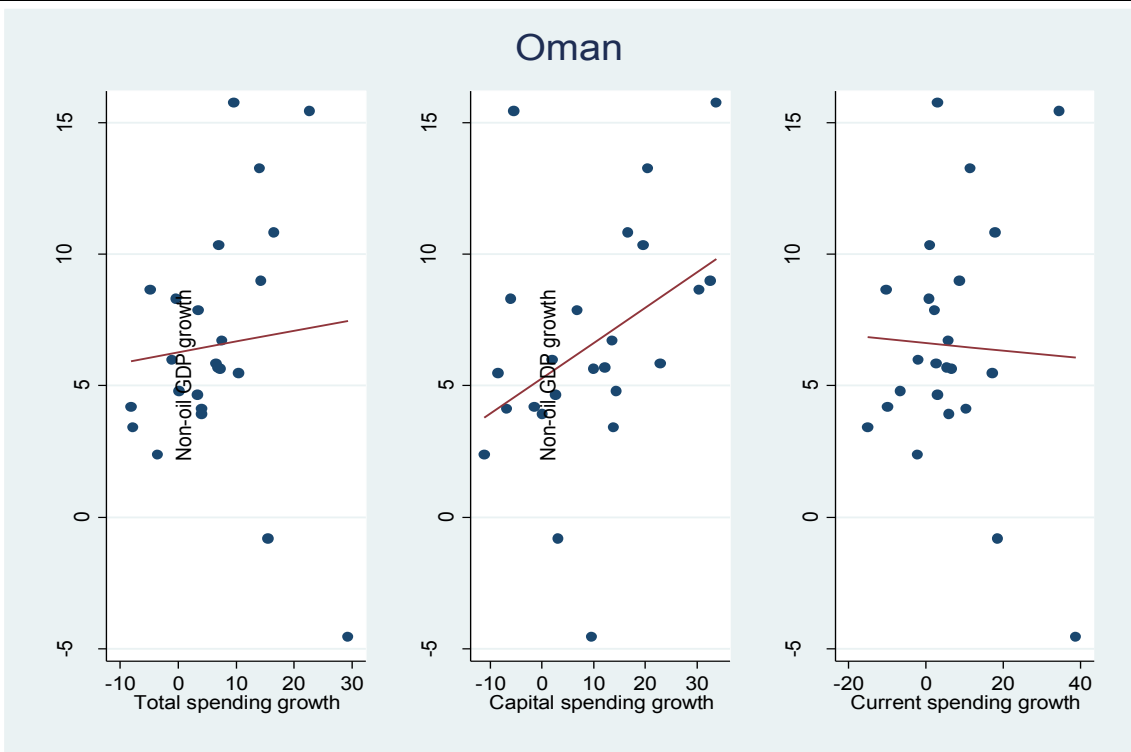
Annex I. Empirical Regularities for Spending and Non-oil GDP Growth

Figure 1A. Spending Growth and Non-oil GDP Growth, 1990–2016



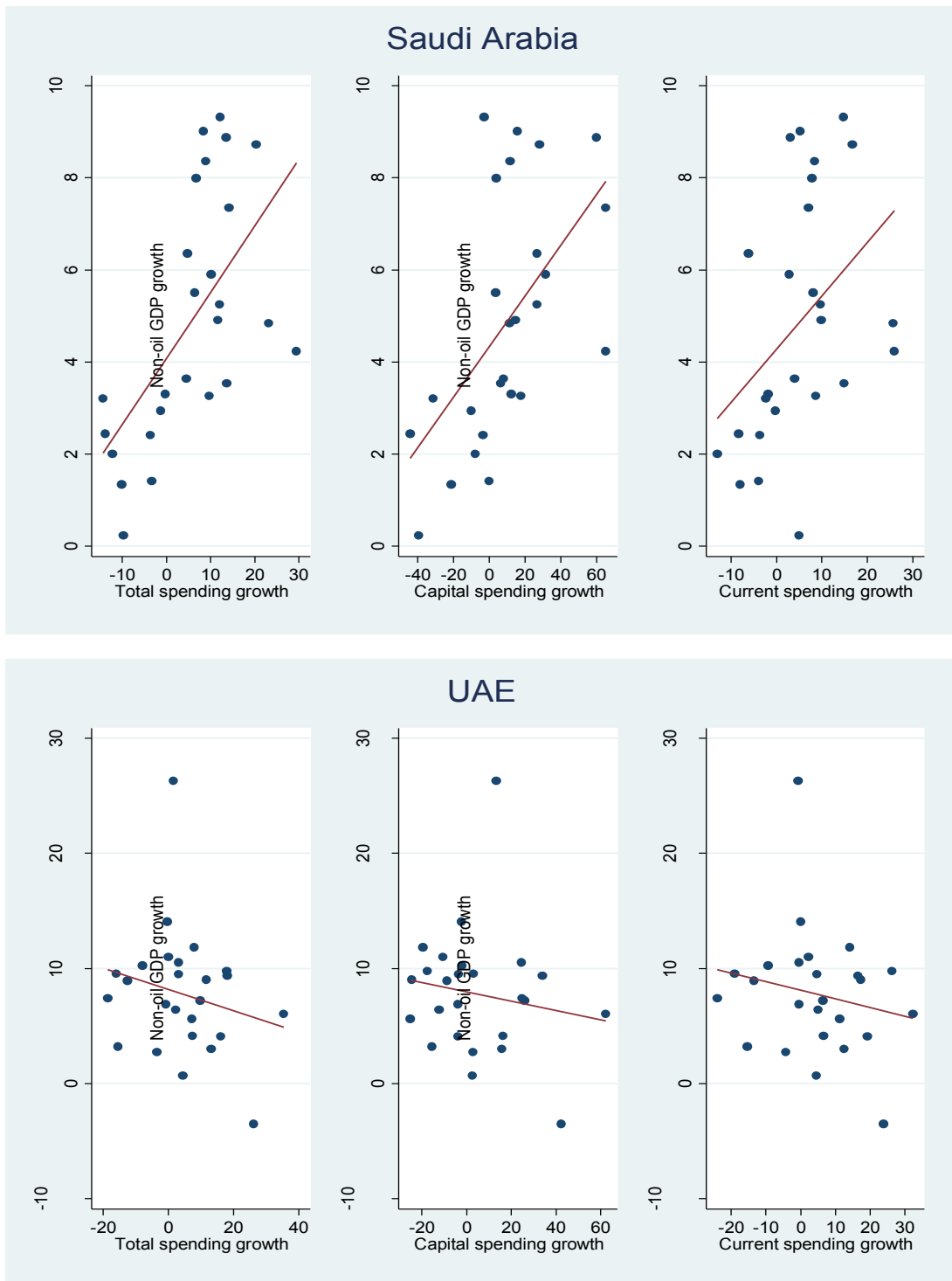
Source: IMF staff estimations

Figure 1B. Spending Growth and Non-oil GDP Growth, 1990–2016



Source: IMF staff estimations

Figure 1C. Spending Growth and Non-oil GDP Growth, 1990–2016



Source: IMF staff estimations

Figure 1D. Spending Growth and Non-oil GDP Growth, 1990–2016



Source: IMF staff estimations

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