Revisiting the Resource Curse in the MENA region

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Fateh Belaid, Leila Dagher, and George Filis

Abstract:

This paper aims to investigate whether oil revenues in the MENA region lead to economic growth or whether the resource curse is evident. To do so, we employ a panel Vector Auto-Regressive (PVAR) model comprising not only the economic growth and oil revenues but also the government expenditure. The latter variable is considered to examine whether the oil revenue leads to economic growth via the fiscal policy channel. We further assess whether heterogeneous findings exist depending on the quality of the political institutions of the MENA countries. Our findings suggest that irrespectively of whether a MENA country is democratic or not, the resource-blessing (rather than the resource curse) is evident. More importantly, though, we show that the resource curse is revealed when we consider the status of the chief of state, i.e., whether it is a military officer or not. In particular, we show that countries with military executives suffer from the resource curse, since the oil rents do not lead to economic growth. A number of alternative measures for the quality of political institutions, sample size, and estimation procedures render our findings robust.

Keywords: MENA region, oil revenue, economic growth, political institutions, Panel VAR
JEL codes: C33, O47, Q32

1. Introduction

Why is it that the economies of some resource-rich countries seem to perform worse than relatively less-endowed countries, while the economies of other similarly resource-rich countries seem to be healthy and doing well? Examples of the former type of countries include Angola, Congo, Nigeria, and Venezuela, while examples of the latter type include Australia, Botswana, Canada and Norway. Moreover, for the countries found to suffer from the resource curse, how important is it and to what extent, if any, can it be mitigated? Hundreds of studies starting in the early 1990s have attempted to seek answers to these critical questions.

According to Havranek et al. (2016), who conduct a meta-analysis based on 43 empirical studies, 40% find a negative effect (resource curse), 20% find a positive effect (resource blessing), and 40% find no effect whatsoever. In general, studies that have found some effect have been able to identify a few underlying determinants or causal mechanisms for the natural resource curse. The first one has to do with the type of resource, where it has been found that point-source non-renewable resources such as fuels appear to be more related to the natural resource curse (Isham et al., 2005; Boschini et al., 2007; Dauvin and Guerreiro, 2017). The other causal mechanisms constitute a broad spectrum ranging from pure economic to pure political, and everything in between. These are namely, the "Dutch Disease," crowding-out of manufacturing, disincentives to education, the volatility of prices, long-term trends in world commodity prices, economic mismanagement, rent-seeking, civil war, and corruption and poor institutional quality (Badeeb et al., 2017; Frankel, 2010).

More than 51 percent of global oil reserves and 42 percent of natural gas reserves are located in the Middle East and North Africa (MENA) region (BP, 2019). In spite of this fact, there is a dearth of studies investigating the resource-growth nexus for the MENA countries. Many studies that examine a large number of countries have found significant heterogeneity among the countries they study (Ben-Salha et al., 2018), so grouping the MENA countries together makes

sense since they share many common characteristics. Arezki and Nabli (2012) investigate the economic performance of resource-dependent countries in the MENA region over the 1960 to 2008 period. The main shortcoming of the study is that it is descriptive in nature and does not employ an econometric model. Apergis and Payne (2014), on the other hand, use a time-varying cointegration analysis for MENA countries and find that the relationship between oil and growth is time varying; their findings indicate evidence of the oil curse up to the year 2003, but evidence of an oil blessing thereafter. The main drawback of Apergis and Payne's (2014) study is that they use the level of GDP per capita instead of growth rates as a dependent variable, making their results not directly comparable to the vast majority of studies which use growth rather than level measures for income.

Even more, most of the existing studies only consider one-way causality between the effects of the resources revenues and economic growth, whereas the potential endogeneity issues and reverse causality are largely ignored (see for example Eregha and Mesagan, 2016; Khanna, 2017). Thus, in this study, we employ a panel VAR approach, which is developed to address the aforementioned issues since it treats the variables under consideration as being endogenous (Antonakakis et al., 2017).

We investigate the existence of the resource curse in 10 MENA countries, namely, Algeria, Egypt, Iran, Jordan, Morocco, Oman, Saudi Arabia, Tunisia, United Arab Emirates, and Yemen, using data spanning the period 2000 to 2017. Both the selected countries and time period are dictated by the data availability. Our panel VAR specification includes GDP growth, oil rents, and government final consumption expenditure along with some control variables, namely, gross fixed capital formation, labor force participation rate, and trade openness. To assess the existence of the resource curse, we employ interaction terms between oil rents and proxies for the quality of the political institutions in the selected countries. In particular, we use the Polity IV index, which

represents the state's level of democracy, to distinguish between democratic and non-democratic regimes and the constraints to the executives to accommodate the fact that even in non-democratic regimes, such constraints can reduce the powers of the "ruler." Even more, we assess whether the fact that a country's leader is a military executive could provide additional insights into the resource curse discussion. The latter is considered for the first time in this line of research. For robustness purposes, we expand our sample to include 27 major oil-producing countries. In addition, we use additional proxies for the quality of the political institutions, such as the Freedom status of political rights and civil liberties.

Hence, our contribution to the literature is two-fold. First, we fill a significant gap which is the lack of a robust study on the oil-rich MENA region using data that includes the low oil price regime since 2014. Second, it is the first study to examine the impact of having a military executive at the head of the state. This variable is used as an additional dimension to gauge the strength of political institutions since there may be non-democratic regimes in which strong constraints are imposed on the executive, weakening the executive's powers. Likewise, a military leader in power can potentially have the same effect as a corruption control mechanism, as it is easier for him or her to control corruption and enforce accountability, which may be particularly true in the case of a country under democratic rule (e.g., the case of Indonesia).

Contrary to the majority of the existing literature, our findings reveal that for the MENA countries, there is no evidence of a resource curse. On the contrary, irrespectively of whether the countries are classified as democratic or not, oil rents tend to lead to economic growth; hence we find that the resource blessing hypothesis holds. Nevertheless, when countries are classified according to the status of their political leader, i.e., whether the chief of state is a military officer or not, then the results provide evidence in favour of the resource curse hypothesis. The latter

finding renders it important to take into consideration the status of the chief of state in this line of research.

The remainder of this paper is organized as follows. Section 2 provides an exhaustive review of the existing resource curse literature. This is followed by an exposition of the data and methodology used in section 4. In section 5, the main findings are presented and discussed. Finally, section 6 provides some concluding remarks.

2. Literature Review

The literature on the phenomenon known as the resource curse is large and varied; since the seminal study of Sachs and Warner (1995), hundreds of studies have investigated the existence of the resource curse. This body of literature has also been extended to include research that examines the effect of resource abundance on factors other than economic performance such as efficiency, educational attainment, democracy, etc. However, these are not within the scope of this work. We focus in this section on studies that have investigated the effect of resource abundance on economic growth using panel data analysis, hence excluding earlier studies that used cross-sectional analysis because such techniques have been found to lead to biased and misleading results (Alexeev and Conrad, 2009; Apergis and Payne, 2014; Van der Ploeg, 2011). Two earlier studies (Lederman and Maloney, 2003; Tella and Ades, 1999) in which both types of data have been used found that the results vary drastically between cross-sectional data and panel data. More specifically, we focus on oil, gas, and precious metals which are known as point-source resources, as opposed to diffuse resources such as rice, wheat, and livestock. (Havranek et al., 2016).

The results found in the literature are pretty much mixed, ranging from finding no effect from natural resource abundance on economic growth to finding a positive effect to finding a negative effect, also known as the resource curse. Recently, Havranek et al. (2016) conduct a meta-analysis on 43 empirical studies and find that overall support for the resource curse is weak when

publication bias and method heterogeneity are controlled for. Moreover, they find that studies that control for institutional quality are more likely to obtain evidence of a resource blessing and that among point-source resources, oil is less prone to the natural resource curse than other commodities. Dauvin and Guerreiro (2017) conducted a meta-analysis on 69 empirical studies and found that while there is a soft curse in developing countries, natural resources do not harm growth in developed ones.

In general, studies that have found some effect have been able to identify a few underlying determinants or causal/explanatory mechanisms for the natural resource curse. First, the type of resource matters; point-source non-renewable resources such as fuels appear to be more related to the natural resource curse (Isham et al., 2005; Dauvin and Guerreiro, 2017; Boschini et al., 2007). Second, it has been found that the definition of natural resources (abundance versus dependence) is critical, as the findings will depend on the choice of measure used (Dauvin and Guerreiro, 2017; Kropf, 2010). Havranek et al. (2016) find that almost 85% of studies use resource dependence, a measure known to be endogenous to economic activity, while only 15% use resource abundance, a measure considered to be exogenous to economic activity. According to Dauvin and Guerreiro (2017), most studies that use abundance as a measure find a positive effect, while the vast majority of those who use dependence find a negative effect. Third, natural resources can negatively affect economic growth by crowding out physical and social capital (an important aspect of what is known as the Dutch Disease), i.e., investing less in manufacturing, human capital, etc. (Gylfason and Zoega, 2006). Support for this result was also found by Havranek et al. (2016). However, no effect was found in a recent study by Arin and Braunfels (2018), who tested for this hypothesis by adding an interaction term of oil rents with the share of manufacturing in GDP.

Fourth, an increased risk of conflict such as civil war has been occasionally mentioned as one of the channels by which resources affect economic growth (Ross, 2004; Collier, 2010;

Frankel, 2010). Although the seminal work of Alesina et al. (1996) shows a negative effect of political instability on economic growth, but more recent work such as Arin and Braunfels (2018) does not find any effect.

Fifth, the quality of institutions has been found to play a very important role. Havranek et al. (2016) report that two-thirds of the 43 studies they consider control for institutional quality. A wide range of proxies has been used (ranging from political to legal to economic), which is frequently also interacted with the natural resource variable. One group of studies have found that resource abundance can in itself lead to poor institutions (Acemoglu et al., 2003; Bulte et al., 2005; Isham et al., 2005; Robinson et al., 2006), while another group of studies finds that countries with low institutional quality are more prone to the resource curse (Al-Ubaydli, 2012; Mehlum et al., 2006). A recent study by Antonakakis et al. (2017) seconds the latter argument, convincingly showing that the quality of the political institutions indeed matters for the development of the resource curse. Consequently, it has been suggested that how natural resources affect economic growth (positively or negatively) is contingent on the institutional quality prevailing in a country (Mehrara et al., 2010). Moreover, institutional quality appears to be a key factor in mitigating or even avoiding the curse (Dauvin and Guerreiro, 2017; Horvath and Zeynalov, 2014). As such, it has been concluded that "institutions are decisive" for the resource curse and that "countries with a low institutional quality face a double burden" (Mehlum et al., 2006, p. 1129).

Sixth, it has also been found that larger transfers (such as oil rents, for example) increase corruption (Khan, 1994; Brollo et al., 2013), while corruption in its turn has been found to harm economic growth (Rama, 1993; Poirson, 1998). Interestingly, Adams et al. (2019) established that corruption control mechanisms could significantly help Ghana escape the natural resources curse.

Last but not least, it has been suggested that politicians may misuse economic resources in an attempt to stay in power and benefit more from the windfalls (Ansari, 2016). This point is highly

related to economic mismanagement and rent-seeking and might take various forms depending on whether the regime is democratic or more authoritarian. In the former type of governance, this could take the form of lower taxes (McGuirk, 2013) or invest in white elephant projects (Robinson and Torvik, 2005), while in the latter type of governance, the ruler can benefit an important group of stakeholders in exchange for their backing (Assaad, 2014) in a quid pro quo manner.

Overall, despite the wealth of literature on the resource curse hypothesis, we maintain that existing studies mainly consider one-way causality between the effects of the resources revenues and economic growth, whereas they do not account for the potential reverse causality and endogeneity issues. Hence, motivated by Antonakakis et al. (2017), our study takes these two issues into consideration and employs a panel VAR approach, since it treats the variables under consideration as being endogenous. Even more, the current empirical findings concentrate their attention on the quality of the political institutions, but they have largely ignored the potential impact of the ruler in power being a militant or not on the development of the resource curse. We motivate this choice in the following section.

3. Data description and empirical approach

3.1 Data description

We consider a balanced panel of annual data from 10 selected Middle East and North Africa (MENA) countries, and our study period spans between 2000 and 2017 (180 country-year observations). Both the choice of countries and sample periods are dictated by the data availability for a balanced panel. Table 1 shows the selection of the countries within our sample, where we also separated them into democratic and non-democratic, as well as, between those that have a military officer as a Chief Executive and those that do not. We note that apart from the 10 MENA countries, we also consider 27 top oil-producing countries (which are ranked among the top 40 oil producing countries and the choice was purely based on the data availability), which serve for our

robustness section so as to confirm that our results are not driven by the relatively low country-year observations.

[TABLE 1 HERE]

To assess the potential resource curse hypothesis for the selected MENA countries, we consider the following variables, which are based on those already used or suggested in the existing literature (see, for instance, Collier and Hoeffler, 2009; Arezki and Brückner, 2011; Antonakakis et al., 2017; Arin and Braunfels, 2018, among others). The two main variables of interest are the economic growth and the oil dependence, where the former is approximated by the annual growth rate of the GDP per capita for each country (GDPPCGR) and the latter by each country's oil rents, as a percentage of GDP (RENT). To avoid the type of bias noted by Alexeev and Conrad (2009) and Cotet and Tsui (2013), we normalize oil rents by the population, while acknowledging the fact that this might lead to an upward bias since oil has a positive impact on population growth via higher fertility and more migrants (Cotet and Tsui, 2013, Damette and Seghir, 2018). Due to data limitations for the specific region, we could not consider any alternative measures of oil dependence, such as oil share and oil revenues (as % of GDP), which have been previously considered by the current literature (see for example, Antonakakis et al., 2017).

Even more, we consider the general government's final consumption expenditure as a proxy for fiscal policy (GGFC). Unlike previous studies that do not investigate the exact transmission mechanism between oil dependence and economic growth, we maintain that if the former transmits effects to the latter, then a key propagation mechanism should be via the country's fiscal policy (due to data availability issues, we could not consider additional proxies for fiscal policy, such as budget deficits, for robustness purposes).

In addition, we use the Polity IV index to identify the democratic versus non-democratic countries, given that the resource curse hypothesis is assessed on the premise that weak

institutional qualities that typically exist in non-democratic countries do not allow the revenues from a country's resources to boost economic growth, as discussed in Section 2. In particular, we categorize a country as being democratic when the Polity IV index value is between 6 and 10, whereas any values below 5 would indicate that the country is non-democratic. Apart from the main value of the Polity IV index, we further consider the XREG variable (also provided by the Polity IV project), which considers the existence of any constraints to the executives. We use this variable as an additional element to measure the quality of the political institutions, given that there could be non-democratic regimes for which strong constraints are imposed on the executives, weakening the powers of these executives.

Finally, for the first time in this line of research, we make a further classification of our sample countries, considering whether the executive of the state is a military officer or not. This is a rather important distinction, given that the head of state can potentially mitigate the existence of a resource curse since this type of ruler does not need to spend as much resources as the other types mentioned above to protect his position. Also, a military ruler in power can potentially have the same effect as a corruption control mechanism, as it is easier for him to contain corruption and enforce accountability, which can particularly hold in the case that the country is under a democratic regime (e.g., the case of Indonesia). On the other hand, a military officer in non-democratic regimes could suggest the existence of a military dictatorship, which could exert a worse rent-seeking behaviour compared to a different non-democratic regime, such as a kingdom or an oligarchy, leading to the development of a resource curse. The fact that military dictatorships may exhibit a higher tendency for rent-seeking behaviour stems from the fact that they need to finance the support of the military (so to exercise control over the armed forces), since it is fairly common that dictatorships are overthrown by other high-ranked military officials (see, for instance, Tullock, 1987; Kimenyi and Mbaku, 1996). To our knowledge, no other study has looked

into the effect of having a military officer as head of state on the relationship between natural resources and economic growth.

Based on the Polity IV index, the constraints to the executives, and the use of military officers as a state's chief executives, we construct three interaction terms, which will allow us to assess the resource curse hypothesis. In particular, we construct interaction terms (i) between the Polity IV dummy and oil rents, (ii) among the two aforementioned variables and the constraints to the executives, and (iii) between the military officer dummy and oil rents. Linear models with interaction terms are an ad-hoc way of introducing nonlinearities (Durlauf et al., 2005). For robustness purposes, we also use the Freedom status of political rights and civil liberties, where we distinguish between free (including the partial free) and non-free countries. We assign the value of zero (0) for the free countries and one (1) for the non-free. The dummy variable is then interacted with the oil rents, serving as our fourth interaction term.

Finally, we also consider three commonly used exogenous control variables, namely the gross fixed capital formation (GFCF, approximating the investments), the labour force participation (LFP), and trade openness (OPEN). Table 2 details the variables we consider in this study, a brief description, their acronyms, and the related sources.

[TABLE 2 HERE]

3.2 Empirical methodology

The study uses a panel VAR (PVAR) methodology, which combines the advantages of the time-series VAR models, as well as, the panel approach. All variables in the PVAR are considered endogenous, eliminating the concerns for endogeneity. In addition, the PVAR model allows for unobserved individual heterogeneity. Even more, the impulse response functions of the PVAR model allow for the identification of any delayed effects. Finally, the PVAR model can incorporate

both the country fixed effects, as well as, the time fixed effects. Given these, the general form of the PVAR model is:

$$\boldsymbol{Y}_{it} = A_0 + A_1\boldsymbol{Y}_{it-j} + A_2\boldsymbol{X}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

where Y_{it} is a vector of our key endogenous variables, $\boldsymbol{Y}_{it} = (GDPPCGR, GGFC, RENT, INTER\_k)'$, with $k = 1,2,3,4$. $\boldsymbol{X}_{it}$ denotes the vector of the exogenous variables, $\boldsymbol{X}_{it} = (GFCF, OPEN, LFP)'$.[1] μ_i and λ_t account for the country and time fixed-effects, respectively. Finally, ε_{it} is the error term.

We should mention that in our initial PVAR specification, we do not include any interaction term ($INTER\_k$). Subsequently, we estimate three additional PVAR specifications, where in each case, we add one of the interaction terms. The critical interest in our analysis is the panel impulse response functions, which allow for the investigation of the dynamic interaction among our variables. We highlight that we estimate a generalized PVAR model, for which the forecast error variance decomposition is invariant to the ordering of the variables.[2] An additional PVAR specification is also estimated using the fourth interaction term for robustness purposes.

Descriptive statistics of our main variables for the full sample are reported in Table 3. The results indicate that GDP per capita growth rate in our panel range from -38.71 to 12.1 with an average of 0.72%. General government final consumption expenditure expands from 6.73 to 30.67 with an average of 16.49. Oil rent ranges from 0 to 53%, with an average of 16.38%. Oil rent factor appears to be more volatile compared to real GDP per capita growth. According to the statistics presented in table 3, the selected MENA countries in the sample, on average, represent a high degree of openness (81.97%), a medium human capital (50.38%), and a moderate capital input

[1] We opted to use these three variables as exogenous so not to inflate the parameters that need to be estimated given the small number of observations in the PVAR model.
[2] We have also considered a Structural Panel VAR model so to account for the potential contemporaneous effects between the variables in the system. Results remain qualitatively similar to the ones presented in Section 4.

(22.89%). Panel unit root tests suggest that all the series are stationary, which confirm the validity of using them in the PVAR analysis.

[TABLE 3 HERE]

In order to justify the proposed methodology, as a first step, we applied the Block exogeneity test in order to investigate exogeneity/endogeneity of the main factors used in this study. A factor is considered to Granger cause another factor whenever there is sufficient evidence of the null hypothesis rejection, indicating that the coefficient on the lags of the vector of the factors Y_{kt-j} in the PVAR equation of Y_{it} are all equal to zero, where $i \neq k$. Table 4 reports the results of the tests. The result of the Block exogeneity/Granger causality tests clearly suggest the existence of Granger causality among the four variables, including oil dependence, short-term economic growth, and general government spending. This confirms that these factors should be treated as endogenous and have been treated accordingly in this study.

[TABLE 4 HERE]

4. Empirical results

4.1 Panel impulse-response functions: Full sample without interaction term

This subsection describes the estimation results of the panel impulse response functions (PGIRFs). Generally, we focus our analysis on three key variables of interest, real per capita GDP, oil rents, and global government expenditure. Accordingly, we estimate Eq. (1) using a lag order of 4 as determined by the Schwarz Bayesian Criterion (SBC).

Our analysis starts with the baseline Panel VAR, where the quality of the political institutions is not considered. Subsequently, we assess the impact that the interaction terms have on our baseline findings.

Interestingly, Figure 1 suggests that a positive shock in RENTS has a positive effect on short-term economic growth, which is above the average annual GDP growth rate (as depicted

from Table 3). This initial finding provides evidence of a resource blessing in the MENA region, when the quality of political institutions are not accounted for. Our findings coincide with the proposition of Antonakakis et al. (2017), who documented the positive role of oil rent in spurring economic growth, based on a panel of 76 countries, when the political institutions are not considered in their modelling framework. This result, however, contradicts the resource-curse theory found in several previous empirical studies (see, inter alia, Bulte et al. (2005); Papyrakis and Gerlagh (2007), Raddatz (2007), Alexeev and Conrad (2009), Brunnschweiler and Bulte (2008)). Our results from Figure 1 also suggest that there is a feedback mechanism from the short-term economic growth to the oil rent in MENA region. These findings further emphasize the importance of using a system of simultaneous equations to account for the interdependence between GDP growth and rent (Collier and Goderis, 2012; Antonakakis et al. 2017).

[FIGURE 1 HERE]

Looking at the relationship between RENTS and the fiscal policy variable (GGFC), a positive shock to the former seems to have a negative effect on the latter, while at the same time, a positive shock to the GGFC negatively impacts, although very short-lived, short-term GDP growth.

As far as, the negative response of the GGFC to RENTS is concerned, we maintain that this might be suggestive of the fact that the fiscal expansion in monetary terms, due to higher oil rents, could be lower compared to the economic expansion in the same terms. Hence, the fiscal expansion (as % of GDP) could may well decrease when there is a positive shock to RENTS. Another plausible explanation of the negative responses of GGFC to positive RENTS shocks could be related to the fact that higher oil rents could allow governments to promote more private investments, rather than expanding the government size in order to achieve growth.

Even though we might have expected that the higher government expenditures (as % of GDP) should stimulate growth (Mauro, 1995; Folster and Henrekson, 1999), another view finds that increasing government expenditures (as % of GDP) when governments are inefficient and bureaucratic can hinder growth (Grier and Tullock, 1989; Engen and Skinner, 1992). The findings of the few existing studies on MENA countries concur with the findings of the latter strand of the literature. This can be due to different reasons. It is believed that a large portion of government expenditures in such countries is devoted to inefficient white elephant projects, as well as wages, subsidies, and defense procurements (Al Faris, 2002; Hamdi and Sbia, 2013; Khanna, 2017).

Hence, overall, the two impulse responses (GGFC to RENTS shocks and GDPPCGR to GGFC shocks) are suggestive of the fact that the positive effects of RENTS to short-term GDP growth also propagate indirectly through the fiscal policy channel.

4.2 Panel impulse-response functions: Analysis with interaction terms

In order to investigate the role of the quality of political institutions, we now add each interaction term (INTER_1, INTER_2, and INTER_3) in turn and examine the results. The results in Figure 2, which take into consideration the Polity IV interaction term (INTER_1), reveal that for a non-democratic country, oil rents may impede the short-term economic growth, while equivalently, a positive shock to economic growth does not lead to a positive reaction in RENTS, as documented by the insignificant responses of INTER_1 and per capita real GDP growth. These findings suggest that poor institutions can eliminate the positive effect of natural resources. The results highlight the crucial role of the institutions' quality in shaping the relationship between resources dependence and short-term economic growth (Mehlum et al., 2006; Boschini et al., 2013). Interestingly enough, the potential positive effects of RENTS on short-term economic growth, even in non-democratic regimes, may be apparent, given the impulse responses of GGFC to INTER_1 shocks and the GDPPCGR responses to GGFC shocks. This is a rather important

finding, which has not been reported in the relevant literature, given that the fiscal policy channel has not been considered previously. Hence, overall, despite the fact that the direct effects of INTER_1 on GDPPCGR are not evident, we maintain that for the MENA countries, the resource-blessing holds, via the fiscal policy channel, even for the non-democratic regimes.

[FIGURE 2 HERE]

Next, we investigate the effect of adding the executive constraint variable to the interaction term. From Figure 3 it is evident that the results are identical to the previous set of results of Figure 2, suggesting that the constraints to the executives do not really play a role in explaining the effects of natural resources on short-term economic growth. Once again, such findings contradict those by the existing literature (see, for instance, Antonakakis et al., 2017), who provide evidence that on one hand, non-democratic regimes give rise to the resource curse, while the constraints to the executives help to reduce the rent-seeking behavior of the autocratic rulers, which subsequently leads to the alleviation of the resource curse.

[FIGURE 3 HERE]

Finally, we consider the previous model with another interaction term (INTER_3), depicting whether the country is under a military executive or not. Interestingly enough, the results in Figure 4 allow us to conclude that the presence of a military executive has a negative effect on the relationship between natural resources and short-term economic growth. Our finding provides support to the arguments that a military chief of state in non-democratic regimes could exert a worse rent-seeking behaviour compared to a different non-democratic regime, such as a kingdom or an oligarchy, which could lead to the development of a resource curse. As mentioned in Section 3.1, military dictatorships tend to have a higher tendency for rent-seeking behaviour given their need to accumulate financial resources that could be used to exercise control over the armed forces.

Tullock (1987) and Kimenyi and Mbaku (1996) show that this is typical behavior for military dictatorships since they tend to be overthrown by other high-ranked military officials.

Our findings here provide new insights into this line of research and provide evidence of the importance of the chief of state status in examining the resource curse hypothesis.

To sum up, this analysis shows that oil rents may not necessarily hinder the short-term economic growth of a non-democratic country, given the presence of the fiscal channel through which oil rents could promote economic prosperity. In addition, evidence points to the crucial role of institutional quality in shaping the relationship between resource dependence and short-term economic growth. Furthermore, the results indicate that executive constraints do not really play a role in explaining further the effects of natural resources on short-term economic growth. Finally, our results are consistent with claims that a military head of state may engage in rent-seeking behavior, which could lead to the emergence of a resource curse.

[FIGURE 4 HERE]

4.3 Robustness check

To assess the sensitivity of our results to a variety of factors, we conduct robustness tests as follows: (i) the addition of freedom status of political rights and civil liberties as an alternative to the POLITY IV; (ii) expand the sample to include all major oil producers and MENA; (iii) use the major oil producers sample without the MENA countries; and (iv) use orthogonalized IRFs instead of the generalized IRFs.

As we mentioned above, we extend the analysis using an additional interaction term (INTER_4), illustrating another aspect of democracy. This is the freedom status of political rights and civil liberties, which are two different attributes of democracy (as approximated by the FREEDOM variable defined in Table 2). Political rights refer to fair and free elections, while civil

liberties relate to the protection of individual rights, e.g., freedom of assembly, freedom of speech, and equal treatment under the law. The results are reported in Figure 5. We notice that the response of economic growth to RENTS is positive even when the political status of the countries is not free, which support the findings obtained from the polity IV interaction term. Furthermore, we observe that a positive shock to the per capita real GDP growth generates a positive response from the oil rents. Once again, the fiscal policy channel is also evident, suggesting that the positive effects of RENTS are also propagated via this channel.

[FIGURE 5 HERE]

Next, we add more countries to our sample so to assess whether our results are driven by the relatively small sample size of the 10 MENA countries. As we mentioned in Section 3.1. we consider the 40 largest oil-producing countries, of which 10 are our original MENA countries. In total, our new sample includes 37 countries (due to the data availability issues) and 666 country-year observations. Having added the additional data, we repeat the same estimations. The results in Figures 6 to 10 are based on the extended sample of the 37 countries (27 major oil-producers and 10 MENA countries), whereas the findings that concentrate only on the 27 major oil-producers are shown in Figures 11 to 15.

[FIGURES 6 to 15 HERE]

As shown in Figures 6 and 11, oil rents have a positive effect on short-term economic growth in both all major oil producers, including MENA and only major oil-producing countries, although this effect is of higher magnitude for the major producer countries without MENA sample. In addition, we observe that a positive shock on per capita real GDP growth triggers a positive response from the oil rents.

We now turn to the analysis with interaction terms. Results in Figures 7 and 12 indicate that Policy factor have a marginal positive effect on short-term economic growth in both all major

oil producers, including MENA, and only major oil producing countries. In addition, we also notice that a positive shock to short-term economic growth leads to a positive response from the oil revenue. Once we consider the constraint to the executive for the case of all oil-producing countries and oil-producing countries without MENA, results document a positive response of the short-term economic growth to a positive shock of the oil revenue (See Figures 8 and 13).

However, when we consider the interaction term INTER_3, depicting whether the country is under military executive or not, results in Figures 9 and 14 are quite similar to the previous findings in the case of MENA countries. Finally, the last observation is also valid when we estimate the PVAR models with the interaction term INTER_4, referring to the freedom status of political rights and civil liberties (See Figures 10 and 15).

In all cases, our results related to the fiscal policy channel for the potential resource curse or resource blessing hypothesis remain robust, suggesting that our findings for MENA countries are not influenced by the relatively small sample size.

As a final robustness check, we also use orthogonalized IRFs instead of the generalized IRFs with the following ordering (RENT, GGCF, GDPPCGR, INTERACTION TERM) and the same results still hold.

5. Conclusions

This study presents a new perspective on the relationship between resource dependence and short-term economic growth in selected MENA countries. Its insights are driven by considering well-established, as well as new channels to explore the resource curse hypothesis, i.e., the relationship between natural resource dependence and economic growth. The empirical analysis is based on PVAR model along with PGIRFs applied to data on per capita GDP growth rate, oil rents, and General government final consumption expenditure. Unlike previous studies

that focus on the direct channel between natural resources and oil dependence, we further examine the potential fiscal policy channel via which the effects of natural resources proceeds are propagated to short-term economic growth. Even more, our study assesses whether the quality of the political institutions could provide additional evidence for the resource curse hypothesis. More importantly, though, our study assesses whether the status of the chief of state, namely, whether there is a military executive or not in power, could offer additional insights in explaining the said hypothesis. Our main analysis is based on 10 selected MENA countries for the period 2000 to 2017.

Unlike previous evidence, the empirical results show the relative unimportance of the political institutions' quality in determining whether MENA countries witness higher economic growth from their natural resource abundance or suffer from the curse. In fact, irrespectively of a country's status as democratic or not, the evidence provide support towards the resource blessing hypothesis. Furthermore, our results highlight that the positive impact of oil rents on short-term economic growth is also propagated via the government spending channel.

More importantly, though, our study highlights the importance of the executive status in shaping the relationship between oil abundance and short-term economic growth. More specifically, the findings document that in the non-democratic countries and in the presence of military executive, resource abundance do not lead to economic growth. As far as we know, this is the first study considering the endogeneity of political-institutional quality factors in exploring the growth-resources nexus, importantly by clustering our sample by the presence of military officer or not. Therefore, this study offers an additional channel through which the nature of executive should be considered when examining the resource curse hypothesis.

A battery of different tests where we consider (i) alternative measures for the quality of political institutions; (ii) a larger sample size which includes all major oil producing countries; and (iv) the use of orthogonalized IRFs instead of the generalized IRFs, renders our findings robust.

The findings of this study provide valuable insights for policymakers in quest of efficient policy interventions related to the role played by natural resource in accelerating short-term economic growth. In addition, the findings will be helpful for countries in implementing policies to mitigate or avoid the resource abundance curse and step on the path of significant economic growth.

Acknowledgments

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References

Acemoglu, D., Johnson, S., Robinson, J.A., 2003. An African success story: Botswana. In: Rodrik, D. (Ed.), Search of Prosperity: Analytical Narratives on Economic Growth. Princeton University Press, Princeton, NJ, pp. 80–119.

Adams, D., Ullah, S., Akhtar, P., Adams, K., & Saidi, S. (2019). The role of country-level institutional factors in escaping the natural resource curse: Insights from Ghana. Resources Policy, 61, 433-440.

Al-Faris, A. F. (2002). Public expenditure and economic growth in the Gulf Cooperation Council countries. *Applied Economics*, *34*(9), 1187-1193.

Al-Ubaydli, O. (2012). Natural resources and the tradeoff between authoritarianism and development. Journal of Economic Behavior & Organization, 81(1), 137-152.

Alesina, A., Özler, S., Roubini, N. & Swagel, P. 1996. Political instability and economic growth. Journal of Economic growth, 1, 189-211.

Ansari, D. (2016). Resource curse contagion in the case of Yemen. Resources Policy, 49, 444-454.

Alexeev, M., & Conrad, R. (2009). The elusive curse of oil. The Review of Economics and Statistics, 91(3), 586-598.

Antonakakis, N., Cunado, J., Filis, G., & De Gracia, F. P. (2017). Oil dependence, quality of political institutions and economic growth: A panel VAR approach. Resources Policy, 53, 147-163.

Apergis, N., & Payne, J. E. (2014). The oil curse, institutional quality, and growth in MENA countries: Evidence from time-varying cointegration. Energy Economics, 46, 1-9.

Arin, K. P., & Braunfels, E. (2018). The resource curse revisited: A Bayesian model averaging approach. Energy Economics, 70, 170-178.

Arezki, R., & Brückner, M. (2011). Oil rents, corruption, and state stability: Evidence from panel data regressions. European Economic Review, 55(7), 955-963.

Arezki R, Nabli MK (2012) Natural resources, volatility, and inclusive growth: perspectives from the Middle East and North Africa, International monetary fund working paper WP/12/111.

Assaad, R. (2014). Making sense of Arab labor markets: the enduring legacy of dualism. IZA Journal of Labor & Development, 3(1), 6.

Badeeb, R. A., Lean, H. H., & Clark, J. (2017). The evolution of the natural resource curse thesis: A critical literature survey. Resources Policy, 51, 123-134.

Ben-Salha, O., Dachraoui, H., & Sebri, M. (2018). Natural resource rents and economic growth in the top resource-abundant countries: a PMG estimation. Resources Policy.

Boschini, A. D., Pettersson, J., & Roine, J. (2007). Resource curse or not: A question of appropriability. Scandinavian Journal of Economics, 109 (3), 593–617.

Boschini, A., Pettersson, J., & Roine, J. (2013). The resource curse and its potential reversal. World Development, 43, 19-41.

Brollo, F., Nannicini, T., Perotti, R., & Tabellini, G. (2013). The political resource curse. American Economic Review, 103(5), 1759-96.

BP Energy Outlook, 2019. Accessed at https://www.bp.com/content/dam/bp/country-sites/de_at/austria/home/wer-wir-sind/bp-gruppe/pdfs/bp-energy-outlook-2019.pdf

Brunnschweiler, C. N., & Bulte, E. H. (2008). The resource curse revisited and revised: A tale of paradoxes and red herrings. Journal of environmental economics and management, 55(3), 248-264.

Bulte, E., Damania, R., & Deacon, R. (2005). Resource intensity, institutions, and development. World Development, 33, 1029-1044.

Collier, P. (2010). The political economy of natural resources. Social research, 77(4), 1105-1132.

Collier, P., & Goderis, B. (2012). Commodity prices and growth: An empirical investigation. European Economic Review, 56(6), 1241-1260.

Collier, P., & Hoeffler, A. (2009). Testing the neocon agenda: Democracy in resource-rich societies. European Economic Review, 53(3), 293-308.

Cotet, A. M., & Tsui, K. K. (2013). Oil and conflict: What does the cross country evidence really show?. American Economic Journal: Macroeconomics, 5(1), 49-80.

Damette, O., & Seghir, M. (2018). Natural resource curse in oil exporting countries: A nonlinear approach. International economics, 156, 231-246.

Dauvin, M., & Guerreiro, D. (2017). The paradox of plenty: a meta-analysis. World Development, 94, 212-231.

Durlauf, S. N., Johnson, P. A., & Temple, J. R. (2005). Growth econometrics. Handbook of economic growth, 1, 555-677.

Engen, E. M., & Skinner, J. (1992). Fiscal policy and economic growth (No. w4223). National Bureau of Economic Research.

Eregha, P. B., & Mesagan, E. P. (2016). Oil resource abundance, institutions and growth: Evidence from oil producing African countries. Journal of Policy Modeling, 38(3), 603-619.

Fölster, S. and M. Henrekson (1999) "Growth and the Public Sector: A Critique of the Critics." European Journal of Political Economy 15(2): 337–358.

Frankel, J. A. (2010). The natural resource curse: a survey (No. w15836). National Bureau of Economic Research.

Grier, K. B., & Tullock, G. (1989). An empirical analysis of cross-national economic growth, 1951–1980. Journal of monetary economics, 24(2), 259-276.

Gylfason, T., & Zoega, G. (2006). Natural resources and economic growth: The role of investment. World Economy, 29(8), 1091-1115.

Hamdi, H., & Sbia, R. (2013). Dynamic relationships between oil revenues, government spending and economic growth in an oil-dependent economy. *Economic Modelling*, *35*, 118-125.

Havranek, T., Horvath, R., & Zeynalov, A. (2016). Natural resources and economic growth: A meta-analysis. World Development, 88, 134-151.

Horváth, R., & Zeynalov, A. (2014). The natural resource curse in post-soviet countries: the role of institutions and trade policies (No. 341). IOS Working Papers.

Isham, J., Woolcock, M., Pritchett, L., Busby, G., (2005). The varieties of resource experiences: how natural resource export structures affect the political economy of economic growth. World Bank Economic Review 19 (2).

Khan, S. A. (1994). Nigeria: The political economy of oil (p. 10). Oxford: Oxford University Press.

Khanna, A. A. (2017). Revisiting the Oil Curse: Does Ownership Matter?. *World Development*, *99*, 214-229.

Kimenyi, M. S., & Mbaku, J. M. (1996). Rents, military elites, and political democracy. *European Journal of Political Economy*, *11*(4), 699-708.

Kropf, A. (2010). Resource abundance vs. resource dependence in cross-country growth regressions. *OPEC Energy Review*, 34(2), 107–130.

Lederman D. and W.F. Maloney (2003) "Trade structure and growth." World Bank Policy Research Working Paper No 3025.

Mauro, P. (1995) "Corruption and Growth." Quarterly Journal of Economics 109: 681–712.

McGuirk, E. F. (2013). The illusory leader: natural resources, taxation and accountability. Public choice, 154(3-4), 285-313.

Mehlum, H., Moene, K., & Torvik, R. (2006). Cursed by resources or institutions?. World Economy, 29(8), 1117-1131.

Mehrara, M., Maki, M., & Tavakolian, H. (2010). The relationship between oil revenues and economic growth, using threshold methods (the case of Iran). OPEC Energy Review, 34(1), 1-14.

Papyrakis, E., Gerlagh, R., (2007). Resource abundance and economic growth in the U.S. European Economic Review 51 (4), 1011–1039.

Poirson, H., 1998, "Economic Security, Private Investment, and Growth in Developing Countries."IMF Working Paper 98/4 (Washington, DC: International Monetary Fund).

Raddatz, Claudio. 2007. "Are External Shocks Responsible for the Instability of Output in Low-Income Countries?" Journal of Development Economics, 84: 155-187

Rama, M., 1993, "Rent Seeking and Economic Growth: Alternative Model and Some Empirical Evidence." Journal of Development Economics (42): 35-50.

Robinson, J. A., & Torvik, R. (2005). White elephants. Journal of public economics, 89(2-3), 197-210.

Robinson, J. A., Torvik, R., & Verdier, T. (2006). Political foundations of the resource curse. Journal of development Economics, 79(2), 447-468.

Ross, Michael. (2004). How Do Natural Resources Influence Civil War? Evidence from Thirteen Cases. International Organization. 58. 35-67. 10.1017/S002081830458102X.

Sachs, Jeffrey D., Warner, Andrew M., 1995. Natural resource abundance and economic growth. NBER Working Paper No 5398. National Bureau of Economic Research, Cambridge, MA.

Tella, R. D. & A. Ades (1999): "Rents, Competition, and Corruption." American Economic Review 89(4): pp. 982–993.

Tullock, G., 2012. Autocracy. Springer Science & Business Media.

Van der Ploeg, F. (2011). Natural resources: curse or blessing? Journal of Economic Literature, 49(2), 366-420.

TABLES

Table 1. Countries included in the sample

Panel A: Selected countries			
Algeria	Angola	Argentina	Australia
Azerbaijan	Brazil	Canada	Colombia
Ecuador	Egypt	Gabon	India
Indonesia	Iran	Jordan	Kazakhstan
Kuwait	Libya	Malaysia	Mexico
Morocco	Nigeria	Norway	Oman
Republic of Congo	Romania	Russia	Saudi Arabia
Sudan	Thailand	Tunisia	United Arab Emirates
United Kingdom	United States	Venezuela	Vietnam
Yemen			
Panel B: Level of Democracy			
		Democracies	
Algeria	Argentina	Australia	Brazil
Canada	Colombia	India	Indonesia
Iran	Mexico	Norway	Romania
Thailand	Tunisia	United Kingdom	United States
Yemen			
		Non-Democracies	
Algeria	Angola	Azerbaijan	Ecuador
Egypt	Gabon	Jordan	Kazakhstan
Kuwait	Libya	Malaysia	Morocco
Nigeria	Oman	Republic of Congo	Russia
Saudi Arabia	Sudan	United Arab Emirates	Venezuela
Vietnam			
Panel C: Military executive			
		Non-military executive	
Algeria	Angola	Argentina	Australia
Azerbaijan	Brazil	Canada	Colombia
Ecuador	Gabon	India	Iran
Jordan	Kazakhstan	Kuwait	Malaysia
Mexico	Morocco	Nigeria	Norway
Oman	Romania	Russia	Saudi Arabia
Thailand	United Arab Emirates	United Kingdom	United States
Vietnam			
		Military executive	
Egypt	Indonesia	Libya	Republic of Congo
Sudan	Tunisia	Venezuela	Yemen
Panel D: Freedom status of political rights and civil liberties			
		Free	
Argentina	Australia	Brazil	Canada

Colombia	Ecuador	India	Indonesia
Kuwait	Malaysia	Mexico	Morocco
Nigeria	Norway	Romania	Thailand
United Kingdom	United States	Venezuela	
		Not free	
Algeria	Angola	Azerbaijan	Egypt
Gabon	Iran	Jordan	Kazakhstan
Libya	Oman	Republic of Congo	Russia
Saudi Arabia	Sudan	Tunisia	United Arab Emirates
Vietnam	Yemen		

Note: Underlined countries denote that they belong to the MENA group of countries. The remaining countries are among the top oil producing countries.

Table 2. Variable description and sources (Annual data from the chosen countries for the period 2000-2017)

Variable	**Acronym**	**Description**	**Source**
GDP per capita growth rate (constant US$)	GDPPCGR	Log difference of per capita GDP	World Bank
Oil rents (% GDP)	RENTS	Difference between the value of crude oil production at world prices and total costs of production	World Bank
General government final consumption expenditure (constant US$, % GDP)	GGFC	Value of General government final consumption expenditure as % of GDP	World Bank
Polity IV index	POLITY	Dummy variable: 0 for non-autocratic, 1 for autocratic	Polity IV project
Constraints to the executive	XRREG	It is a component of the Polity IV index, and measures the "Regulation of Chief Executive Recruitment" mechanism	Polity IV project
Chief Executive a military officer	MILITARY	Dummy variable: 0 for non-military executive, 1 for military executive	Database of Political Institutions
Freedom status of political rights and civil liberties	FREEDOM	Dummy variable: 0 for Free and Partial Free, 1 for Not Free	Freedom House
Gross Fixed Capital Formation (%GDP)	GFCF	Gross Fixed Capital Formation expressed as percentage of GDP	World Bank
Labour force participation	LFP	Expressed as a percentage of total population of ages 15+	World Bank
Trade openness	OPEN	The sum of exports and imports as a percentage of GDP	World Bank

Oil rents (% GDP) * Polity IV index	INTER_1	Calculated as the product of Oil rents and Polity IV dummy	Authors' calculation
Oil rents (% GDP) * Polity IV index * XREG	INTER_2	Calculated as the product of Oil rents, Polity IV dummy and XRREG	Authors' calculation
Oil rents (% GDP) * Military	INTER_3	Calculated as the product of Oil rents and military dummy	Authors' calculation
Oil rents (% GDP) * Freedom	INTER_4	Calculated as the product of Oil rents and freedom dummy	Authors' calculation

Table 3. Descriptive statistics

	Mean	**Minimum**	**Maximum**	**Std.Dev.**	**J-B**	**LLC**
	MENA Countries					
GDPPCGR	0.7241	12.1010	-38.7110	5.4358	5392.3191***	-4.2770***
GGFC	16.4952	30.6700	6.7300	5.0130	4.9006*	-10.1424***
RENTS	16.3802	52.9989	0.0007	14.4508	13.5445***	-3.1744***
GFCF	22.8947	53.5190	0.4320	7.6501	41.4552***	-7.2161***
OPEN	81.9734	176.7500	25.1000	31.8790	26.1038***	-2.3052***
LFP	50.4866	82.2400	36.9500	11.5252	90.5366***	-3.3377***
	Major Oil Producing Countries (excluding those that belong to MENA countries)					
GDPPCGR	2.8427	33.0818	-12.6648	4.3409	1356.5090***	-7.2065***
GGFC	13.7198	25.7059	0.9517	4.6247	3.7535	-2.8976***
RENTS	11.0019	67.5278	0.0083	14.2164	391.6394***	-2.2022**
GFCF	63.5770	77.9050	45.7730	7.4541	7.6386**	-3.0804***
OPEN	0.6707	2.4700	0.1600	0.3804	226.0071***	-1.7765**
LFP	68.9111	82.6240	48.1640	8.7870	49.7827***	-1.2983*

Note: *, *** denote significance at the 10% and 1% level, respectively. J-B denotes the Jarque-Bera test for normality. LLC is the panel unit root test of Levin, Lin and Chu (2002), which test the null hypothesis of a unit root, against the alternative that the panel is stationary.
GDPPCGR=GDP per capita growth rate (constant US$), GGFC= General government final consumption expenditure (constant US$, % GDP), RENT= Oil rents (% GDP), GFCF= Gross Fixed Capital Formation (% GDP), OPEN= Trade openness, LFP=Labour force participation.

Table 4. Block exogeneity/Granger-causality tests

	Dependent variable		
	GDPPCGR	GGFC	RENTS
GDPPCGR (excluded)		8.8785*	10.5854**
GGFC (excluded)	6.4667		3.8773
RENTS (excluded)	17.221***	15.8767***	
All variables	22.0119***	22.3207***	14.3876*

Note: The numbers in the table are the Chi-square block exogeneity Wald tests. Under the null hypothesis, the excluded variables do not Granger-cause the dependent variable. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.
GDPPCGR=GDP per capita growth rate (constant US$), GGFC= General government final consumption expenditure (constant US$, % GDP), RENT= Oil rents (% GDP).

FIGURES

Figure 1. Impulse response functions: No interaction term (MENA countries)

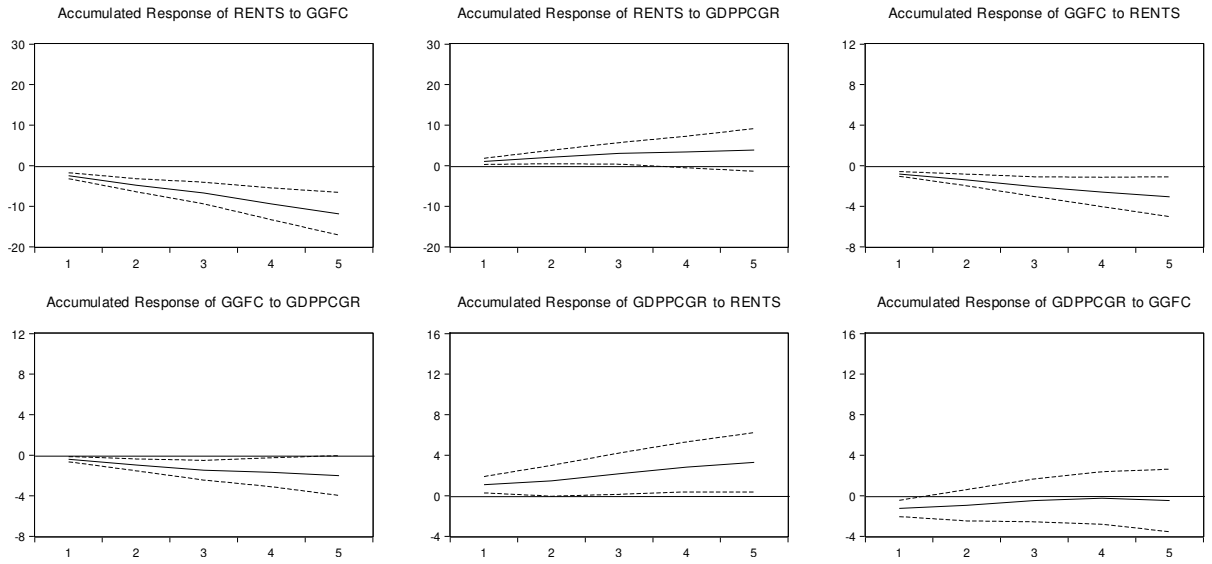

Figure 2. Impulse response functions: Interaction term with Polity IV dummy (INTER_1) (MENA countries)

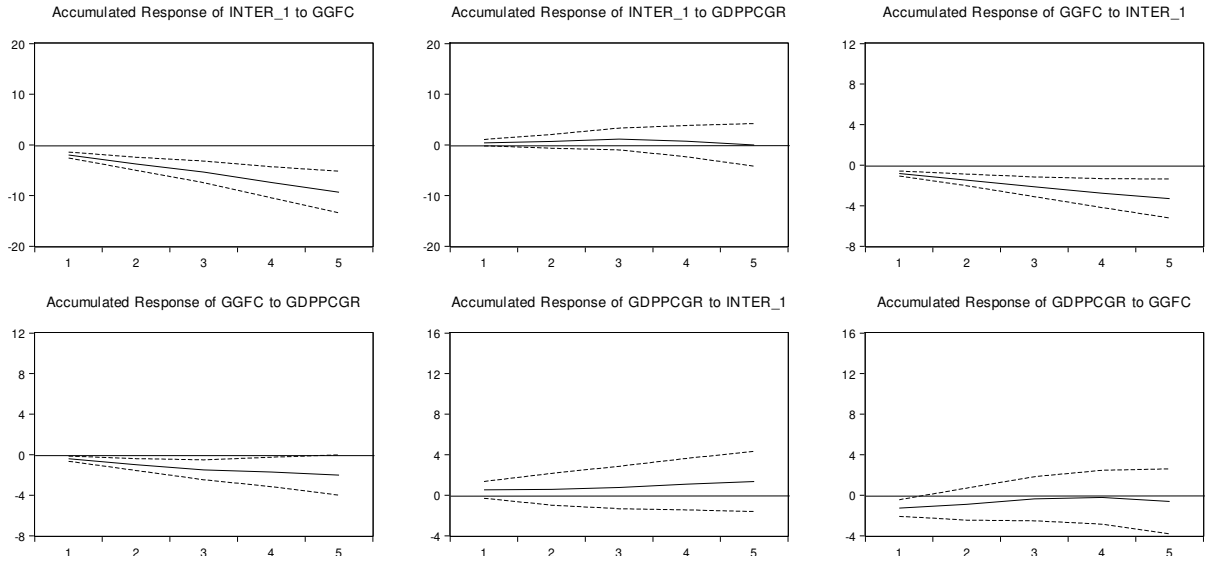

Figure 3. Impulse response functions: Interaction term with Polity IV dummy and constraints to the executives (INTER_2) (MENA countries)

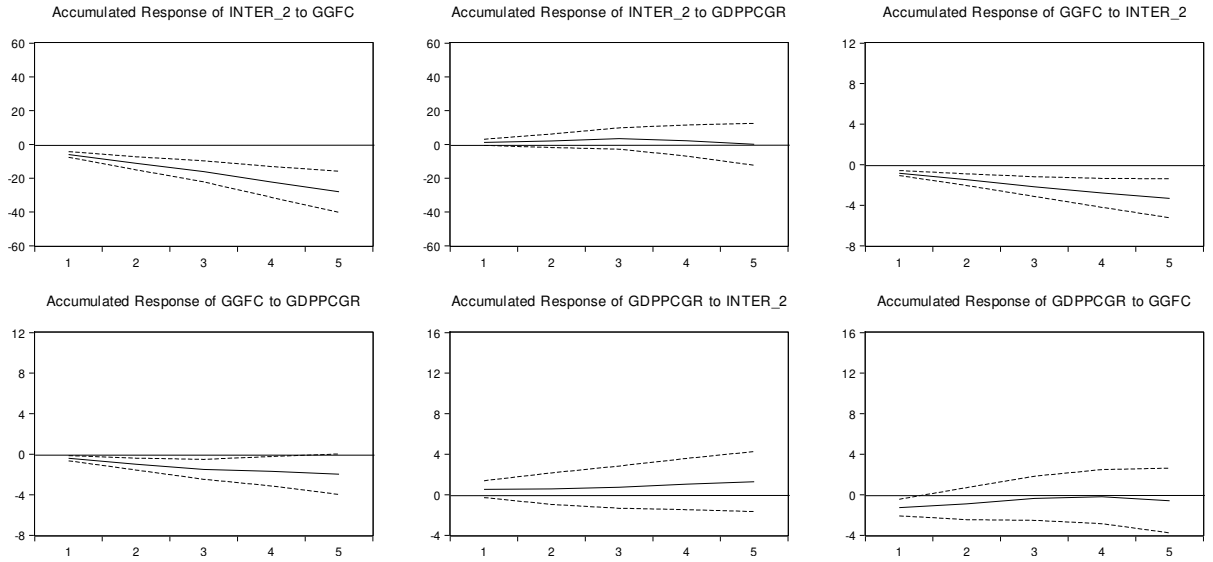

Figure 4. Impulse response functions: Interaction term with the Chief Executive being a military officer dummy (INTER_3) (MENA countries)

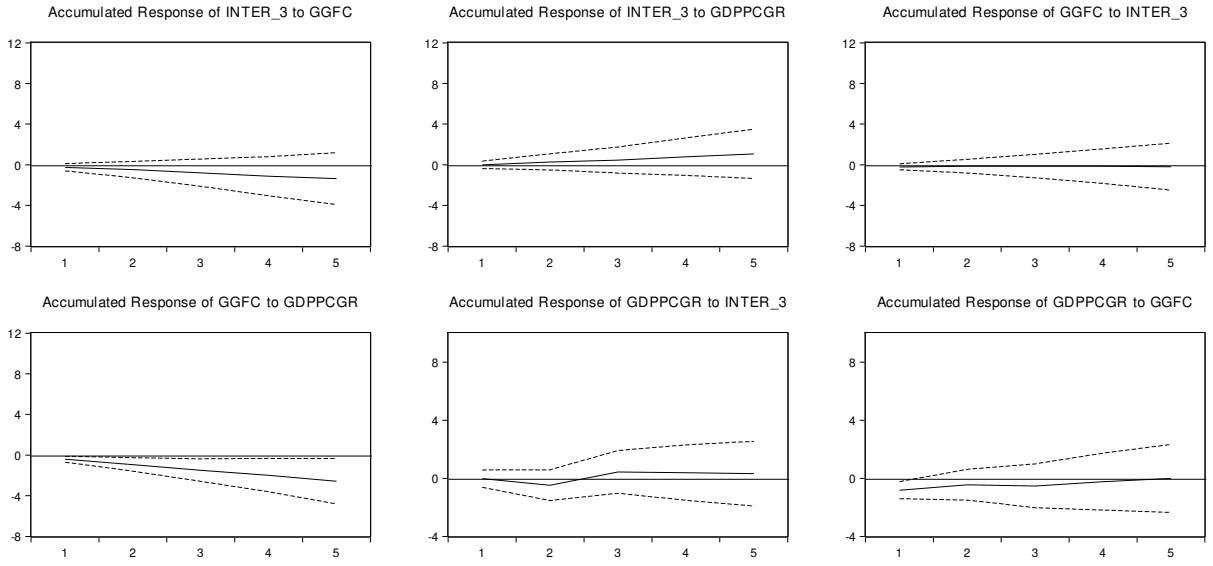

Figure 5. Impulse response functions: Interaction term with the Freedom status of political rights and civil liberties dummy (INTER_4) (MENA countries)

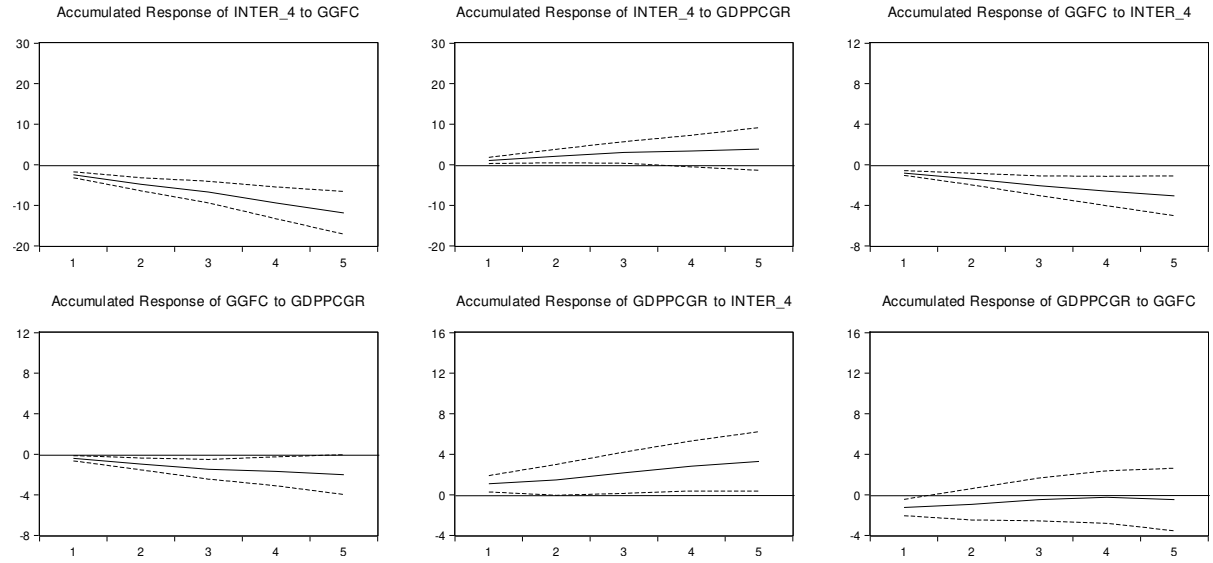

Figure 6. Impulse response functions: No interaction term (All countries)

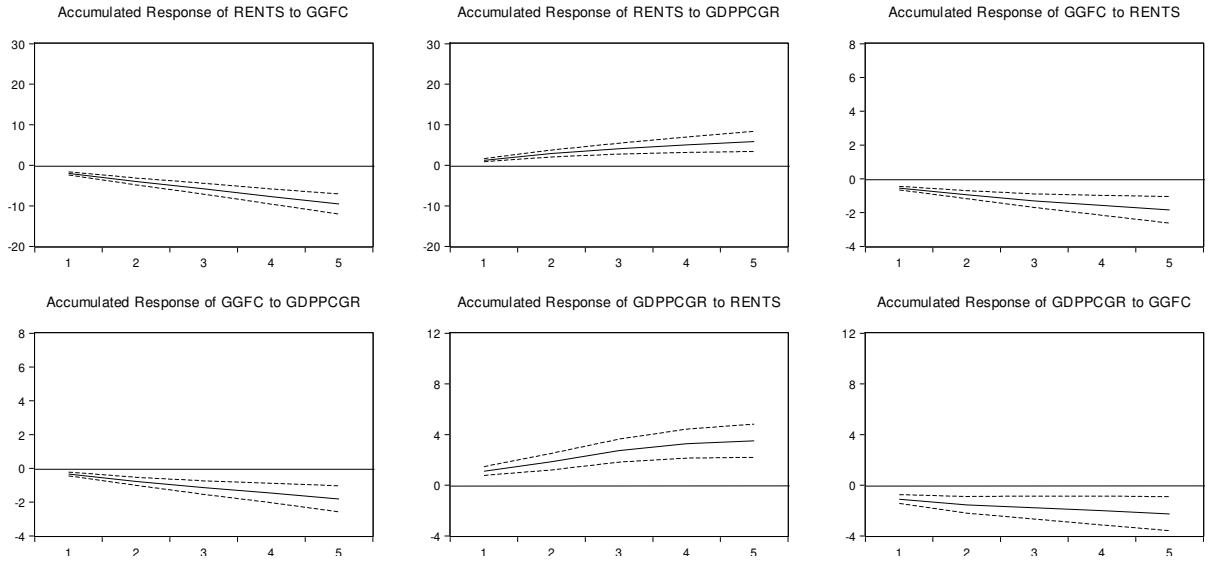

Figure 7. Impulse response functions: Interaction term with Polity IV dummy (INTER_1) (All countries)

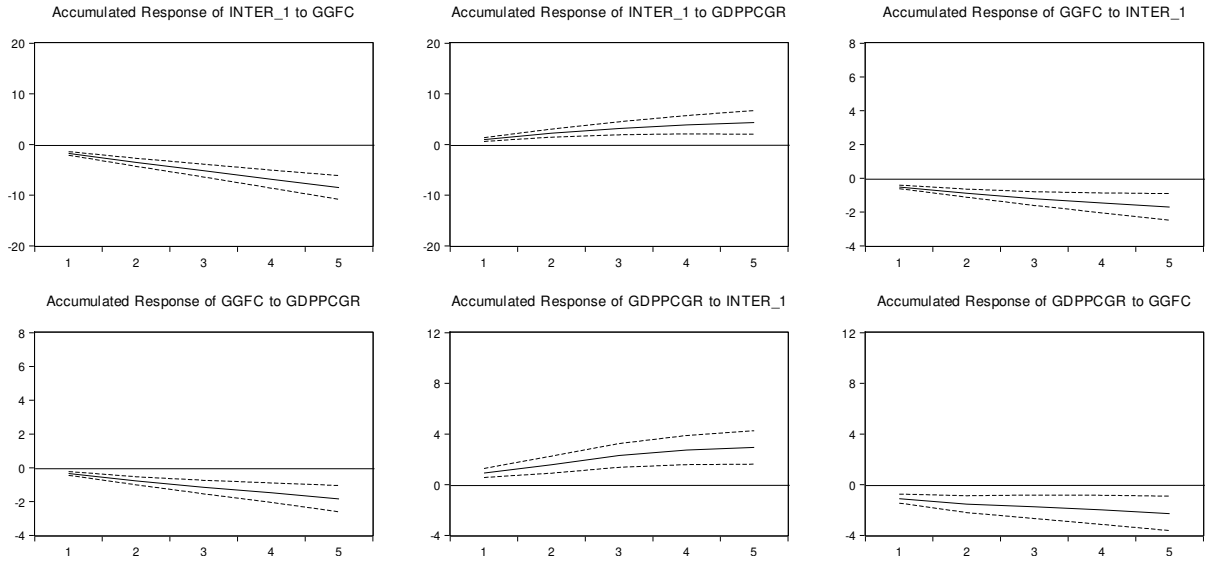

Figure 8. Impulse response functions: Interaction term with Polity IV dummy and constraints to the executives (INTER_2) (All countries)

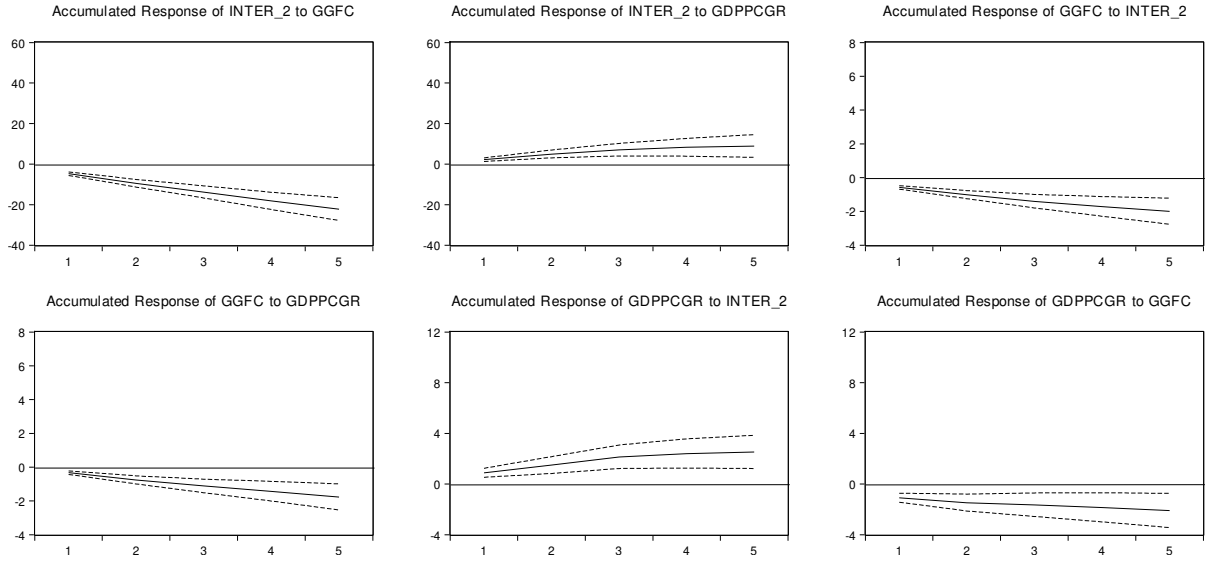

Figure 9. Impulse response functions: Interaction term with the Chief Executive being a military officer dummy (INTER_3) (All countries)

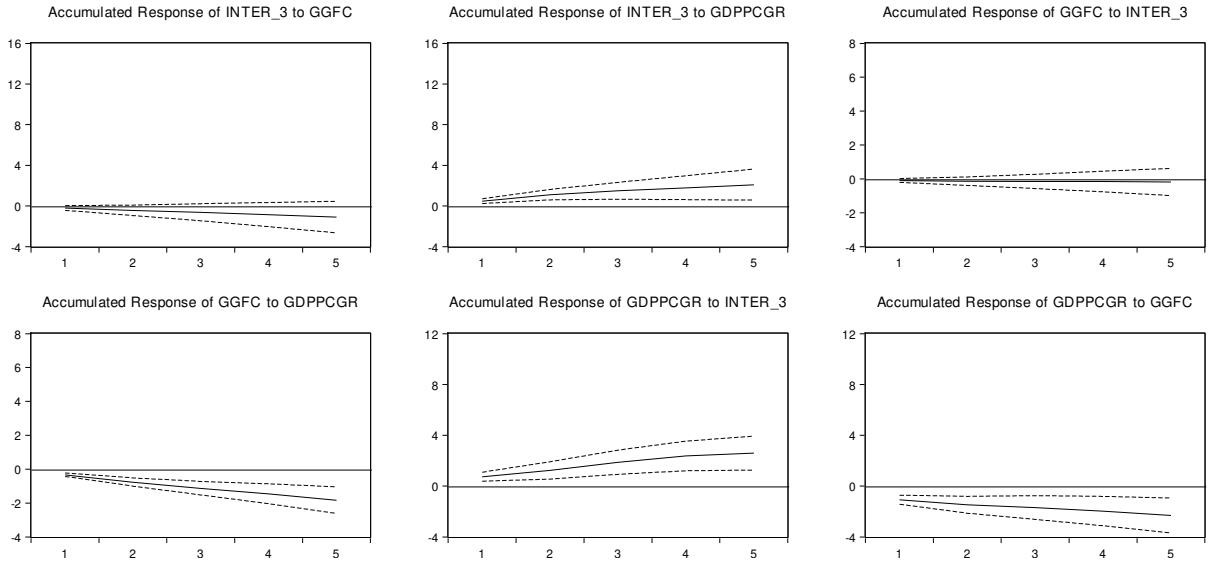

Figure 10. Impulse response functions: Interaction term with the Freedom status of political rights and civil liberties dummy (INTER_4) (All countries)

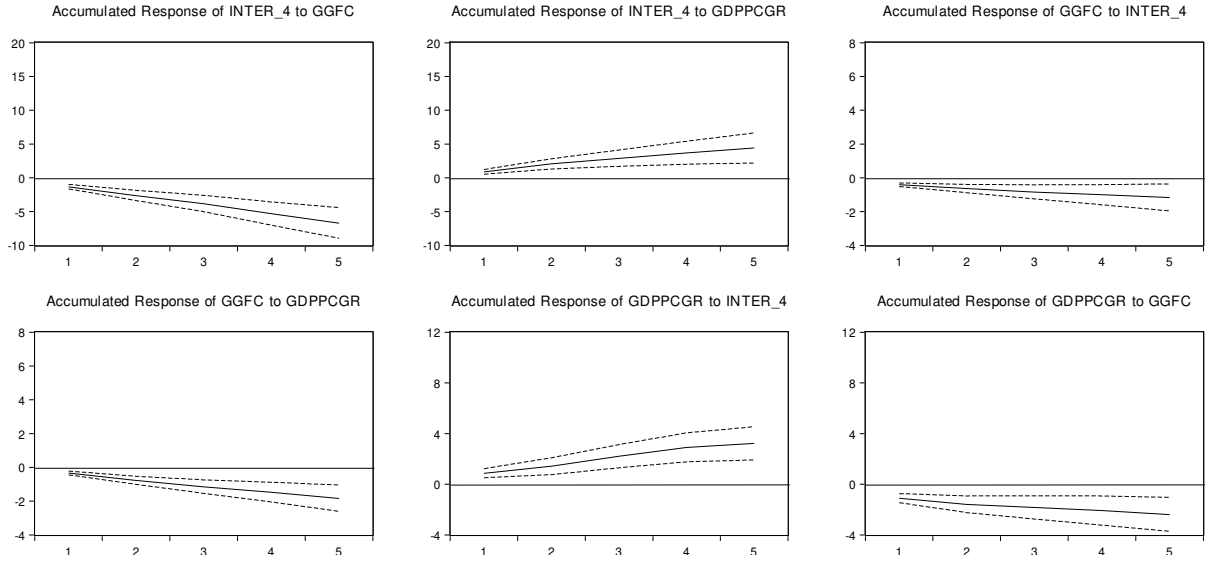

Figure 11. Impulse response functions: No interaction term (Major oil producing countries – excluding those that belong to MENA countries)

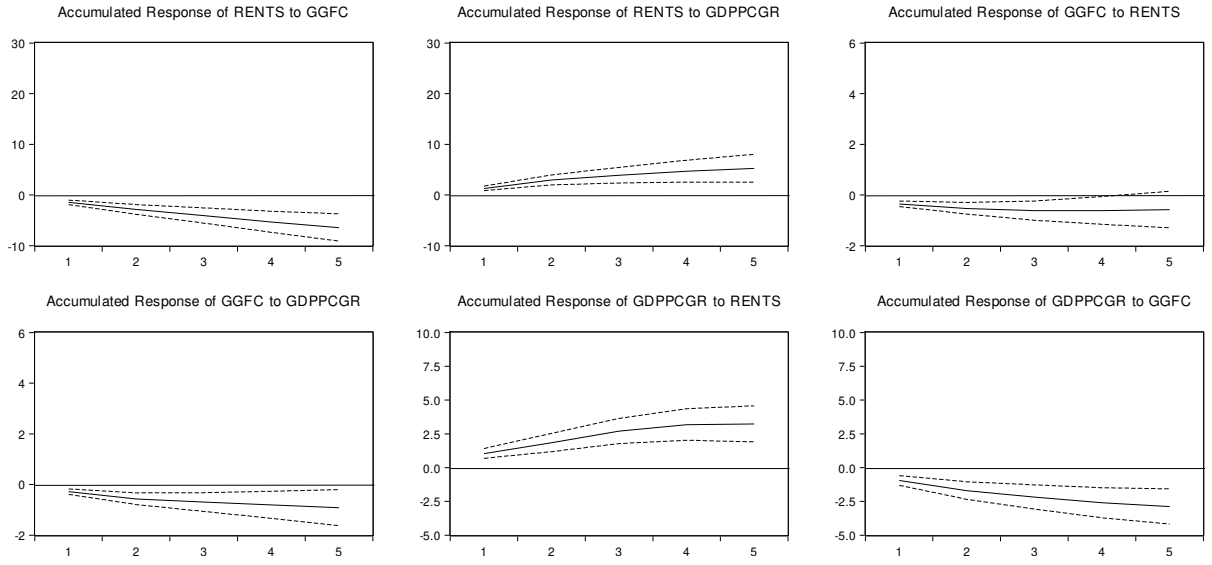

Figure 12. Impulse response functions: Interaction term with Polity IV dummy (INTER_1) (Major oil producing countries – excluding those that belong to MENA countries)

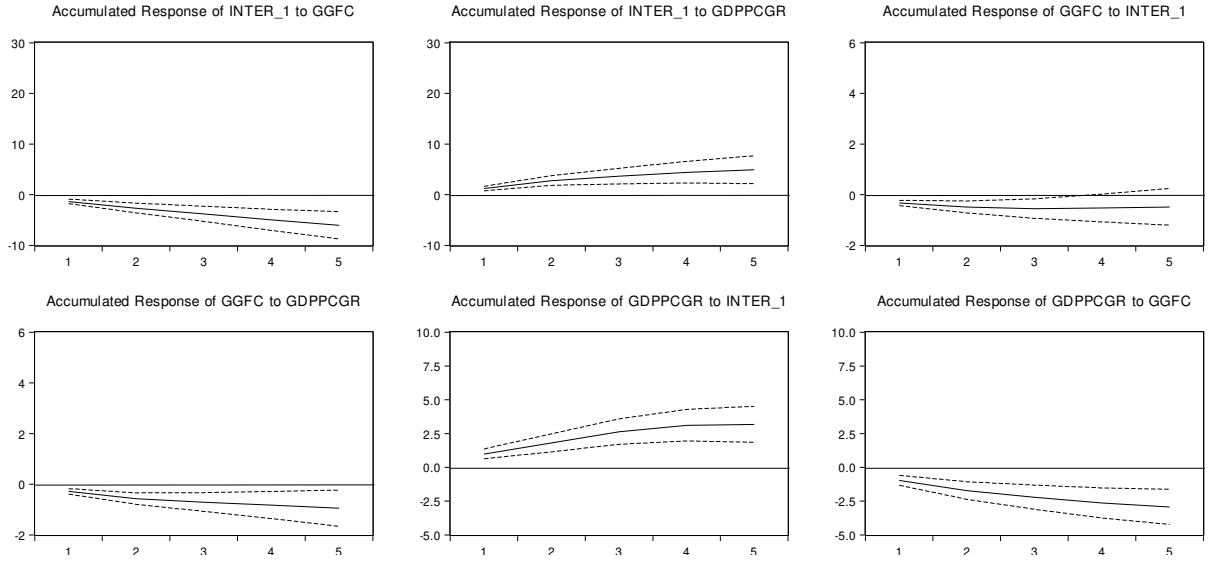

Figure 13. Impulse response functions: Interaction term with Polity IV dummy and constraints to the executives (INTER_2) (Major oil producing countries – excluding those that belong to MENA countries)

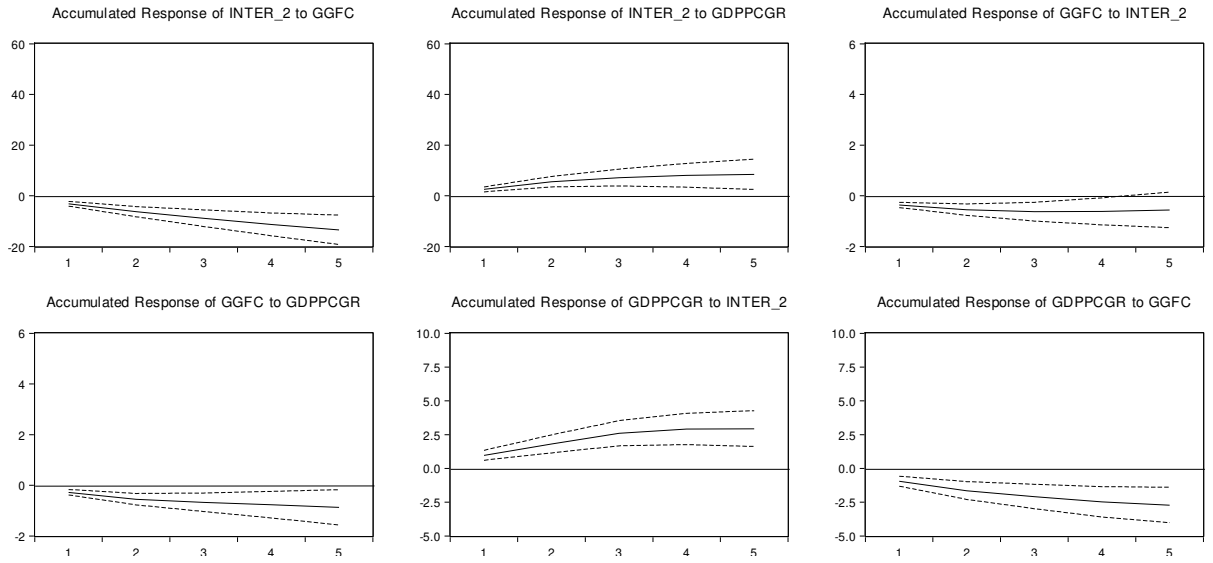

Figure 14. Impulse response functions: Interaction term with the Chief Executive being a military officer dummy (INTER_3) (Major oil producing countries – excluding those that belong to MENA countries)

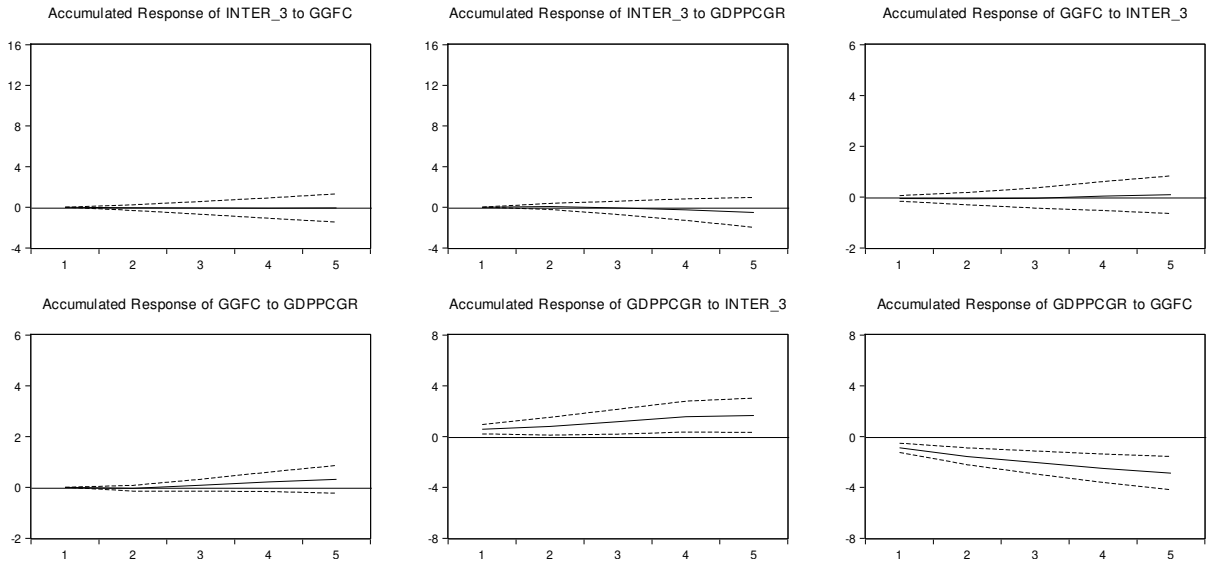

Figure 15. Impulse response functions: Interaction term with the Freedom status of political rights and civil liberties dummy (INTER_4) (Major oil producing countries – excluding those that belong to MENA countries)