Financial liquidity, geopolitics, and oil prices

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Abstract

This paper aims simultaneously to study the global dynamic relationship of oil prices, financial liquidity, and geopolitical risk, on the one hand, and the economic performance of oil-exports-dependent economies on the other. Global and country-specific dynamics are studied together in a Global Vector Autoregression (*GVAR*) model that allows different lag structures for different variables in different countries. Global impulse response functions from the estimated model suggest that new waves of high oil prices are unlikely, despite the likely continuation of high global financial liquidity and heightened geopolitical risk, which had driven earlier episodes of very high oil prices. With oil remaining at modest to low prices by recent historical standards, we study the prospects for economic growth in oil-export-dependent economies through dramatic increases in domestic investment, as planned under Visions 2030 of some Arab countries, and conclude that, unfortunately, success is unlikely.

Keywords: Geopolitics, Global Liquidity, Oil Prices, MENA Region, Arab Spring, Global VAR
JEL code: C32, E17, F44, F47, O53, Q43

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1. Introduction

A number of Arab economies are undergoing or about to undergo a painful transition period necessitated by fundamental transformations in oil markets, large revenue windfalls from which had shaped these economies over several decades. The effect of petrodollars has been pronounced, not only in shaping their primary recipients, which are the major oil-exporting countries with relatively small populations, but also their labor-exporting neighbors. Economies of the latter have largely been shaped by workers' remittances from oil-exporting countries, as well as the investment patterns (mostly in real estate) favored in these latter countries, which are the primary origin countries of their foreign investment.

In recent years, countries in the Middle East have finally come to accept the dawning of a post-petrodollar world, as the OPEC cartel lost significant market-supply power due to shale production from the United States, and forecast oil demand continues to decline with technological advances and environmental regulations, especially in the transportation and power generation sectors. Thus, a number of Arab countries have begun to construct medium to long-term economic plans that emphasize diversification to wean their economies away from direct and indirect dependence on crude-oil sales revenues. Most notable among these are the highly publicized Vision 2030 of Saudi Arabia (the largest Arab economy) and its earlier namesake sibling in Egypt (the largest Arab country by population).[1]

Both visions rely on the forecast success of massive infrastructure and other investment programs to transform regional economies, provide job opportunities for their alarmingly-fast-growing labor forces, and enhance their prospects in an increasingly competitive global economy. The massive capital needs of those investment programs are envisioned to be met through privatization (including a possible, albeit repeatedly delayed, initial public offering for Saudi Aramco, which may be the largest in history); through foreign direct investment, which has not been forthcoming; or, increasingly, through debt issuances. The latter have helped to finance fiscal deficits, in part to fuel public infrastructure investments in the hope of spurring future private investment.

[1]The Egyptian Vision was unveiled during the ramp-up to a major investor conference in March 2015. The Saudi Vision was unveiled in a highly publicized announcement in April 2016, but heavily based on an earlier document published by McKinsey Global Institute in December 2015.

Success or failure in the design and implementation of these optimistically transformative economic visions is of critical importance, not only for the Middle East and North Africa region, but also for the entire world, because, as some have put it, only partly in jest: "What happens in the Middle East does not stay in the Middle East." The econometric methodology that we use in this paper takes this notion seriously. Global and domestic variables interact in significant and often complicated ways that we need to understand empirically. In turn, because, as Shakespeare put it, "what's past is prologue," it is necessary to use the best available empirical methods to extract maximal information from available historical data. This allows us to examine various scenarios that shed light on the potential success or failure of the region's economic attempts to adjust to a post-petrodollar world. In this regard, our estimated long-term domestic, regional, and global economic relationships serve as context and de facto constraints.

We investigate the interactions of three main variables at both global and domestic levels, using a large quarterly dataset that we compiled to cover fifty-three countries over the period from the first quarter of 1979 to the second quarter of 2017. The main global variables in our model are oil prices, global financial liquidity, and geopolitical risk, which we complement with domestic data on gross domestic product (GDP), investment (measured as gross capital formation), international reserves, and geopolitical risk at the country level. To the best of our knowledge, this is the first paper to consider all three global variables simultaneously, and we do so using a Global Vector Autoregression (*GVAR*) framework that allows us to investigate the aggregate effects of collective economic fluctuations at the domestic level, and vice versa. In this regard, Mohaddes and Pesaran (2016) and some earlier papers cited therein have shown the usefulness of the *GVAR* framework in identifying possibly very different impacts of country-specific fluctuations on global variables, and vice versa.

The reason for considering simultaneously oil prices, financial liquidity, and geopolitical risk should be clear to those who have studied any of these three variables in global and Middle East economics contexts. For example, the advent of the petrodollar age in the period 1973–79 would not have been possible were it not for the simultaneous occurrence of (i) transformation in the international financial system to a high-liquidity Dollar-based post-Bretton-Woods regime, and (ii) the geopolitical catalysts of the Vietnam War (the cost of which forced the United States to unpeg the Dollar from gold in 1971), the Arab-

Israeli War of October 1973, and the Iranian Revolution of 1979. In turn, the recycling of petrodollars from oil exporting countries with limited absorptive economic capacities contributed to global financial liquidity and the ensuing sovereign debt crises of the 1980s. A similar pattern occurred during the later wave of petrodollars starting in 2003, and contributed to the financial crisis in 2007–8, as discussed extensively in El-Gamal and Jaffe (2009). The latter considered the roles of petrodollars and Middle East geopolitics in endogenizing financial cycles, as Barsky and Kilian (2004) had endogenized energy price fluctuations, and following the logic of financial boom and bust cycles explained in the seminal works of Kindleberger and Aliber (2005) and Minsky (1982).

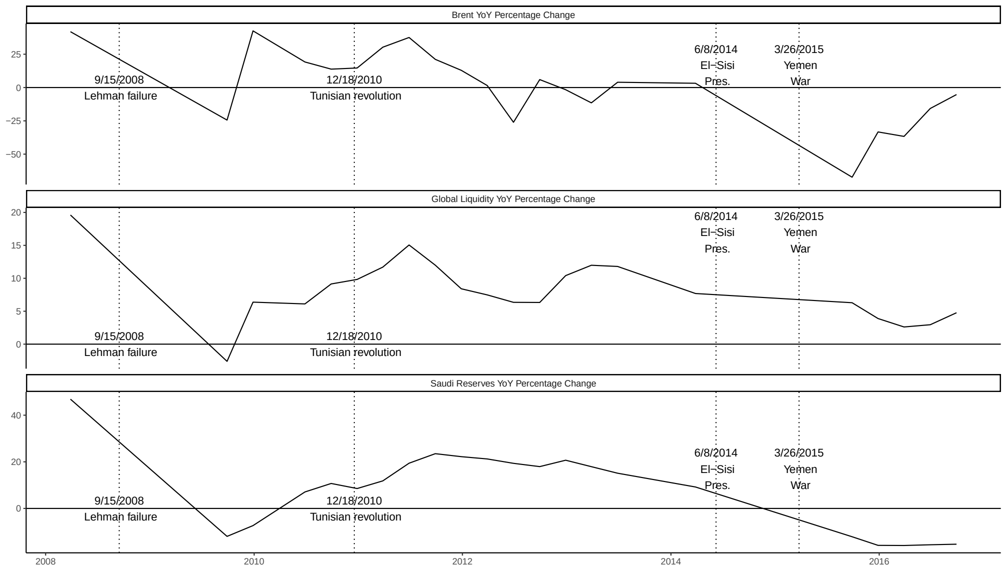
It should be clear that recent geopolitical events within our sample period, from 1979 to 2017, cannot be separated from global financial conditions and oil prices. The first Iraq War, and the ensuing meteoric rise of Islamist terrorist groups, would not have been as likely were it not for low oil prices starting in the mid-1980s. In his letter to the late King Fahd of Saudi Arabia, and later in a message to his supporters, Ossama bin Laden highlighted this connection by calling the precipitous decline of oil prices from near \$100 per barrel to \$9 "the greatest theft in history" (Lawrence, 2005, p. 272). Conversely, the phenomenal increase in oil prices starting in 2003 would not have been as likely were it not for the second Iraq War that year, as well as a global financial liquidity surge facilitated in part by petrodollars. Acknowledging the latter connection, albeit in the opposite direction, the Bank for International Settlements (BIS) concluded in its February 2015 review of global liquidity that "recent changes in production and consumption are not enough by themselves to explain the extent and timing of the drop in oil prices. One should consider the nature of crude oil as a financial asset."[2]

Finally, the advent of Arab Spring uprisings, especially starting in Tunisia and Egypt, which had been considered exemplary economic success stories between 2005 and 2010, may not have materialized were it not for economic frustrations in the aftermath of the 2007–8 financial crisis that resulted from excessive global financial liquidity (the catastrophically embarrassing misstatement by the International Monetary Fund in the 2010 Egypt Article IV consultation that the country was resilient to the financial crisis notwithstanding.[3] In turn, the heightened geopolitical risk in the aftermath of those Arab

[2] `http://www.bis.org/statistics/gli/gli_feb15.pdf`, page 1.

[3] `http://www.imf.org/external/np/ms/2010/021610.htm`.

Figure 1: Percentage Changes in Saudi Reserves, Global Liquidity, and Oil Price



uprisings contributed, together with the financial liquidity considerations raised by BIS in 2015, to keeping oil prices high despite a glut in the physical market. This is illustrated in Figure 1, which shows year-on-year annual percentage change in two of our three global variables of interest (global liquidity and oil prices): Following the financial crisis, oil prices recovered and then rose significantly upon the advent of the Arab Spring in late 2010, despite a continued physical-market glut. Prices fell back only after the geopolitical status quo ante was restored in mid 2014 (when Egyptian President El-Sisi took office), and only partially, as the Yemen war resurrected part of the geopolitical risk premium.

Figure 1 also illustrates the significant growth in Saudi Arabia's reserves during the period of Arab Spring turbulence and political uncertainty (December 2010 to June 2014), which coincided, characteristically, with accelerating global financial liquidity. The combination of low oil revenues and increased costs of the Yemen war and other military spending has caused Saudi Arabia and other major oil exporters to reverse their contributions to global financial liquidity, at a time when the Federal Reserve had begun to reverse its policy of quantitative easing. Thus, it is clear that one cannot understand the domestic and regional prospects of Middle East economies, and their inevitable global spillover effects, without understanding the joint interactions of oil prices, financial liquidity, and geopolitical risk. Moreover, as we have already suggested in this introduction, causality runs in both directions for all bivariate and trivariate combinations of those variables. Our *GVAR* framework allows us to investigate the domestic and global simultaneous and lagged effects of those interactions.

Because the United States (U.S.) has the largest economy, financial sector, and military, our baseline model uses the U.S. as the reference country for global financial liquidity and geopolitical risk. Technically, we assume that the U.S. is the only country that can unilaterally influence each of those two global variables of interest, while the remaining fifty two countries are affected by those global variables but can only influence them collectively. Motivated by the results of Mohaddes and Pesaran (2016) on the long-term effect of Saudi production shocks on prices, we model oil prices as endogenous to Saudi Arabia. This is also consistent with the U.S. Energy Information Agency (EIA) recent analysis,[4] which highlights the endogeneity of oil prices for Saudi Arabia. The literature on market power of Saudi Arabia, and the OPEC cartel that it leads, has also generally agreed with the view that they have exercised market power to keep prices higher than they would be otherwise; c.f. Golombek et al. (2018) and the references therein.

In Appendix A.2, we consider a robustness check on our main analysis by differentiating between demand and supply driven oil price shocks, using the identification strategy of Cashin et al. (2014), based on sign restrictions, finding that our main results continue to hold, although the results for negative oil shocks without sign restrictions resemble more closely the results under supply-driven oil price decline, which has been the most important development in oil markets over the past decade. We also conducted robustness checks to the assumption of oil prices being endogenous for Saudi Arabia, by allowing it to be endogenous instead in the U.S. or in the collective GCC. Although we would have liked to conduct an additional robustness check forcing oil prices to be exogenous for all countries, numerical instability of the model did not allow us to do so. Nonetheless, coefficients of domestic variables in the oil price equation in the baseline and robustness check models, which allowed, but did not force, oil prices to be endogenous in Saudi Arabia and the U.S., respectively, were mostly statistically insignificant, which explains, in part, why our results were invariant to this specification. We note also that, unlike Mohaddes and Pesaran (2016), who included country-specific productions in their

[4] `https://www.eia.gov/finance/markets/crudeoil/supply-opec.php`, accessed on April 30, 2019; the first graph is entitled: "Changes in Saudi Arabia crude oil production can affect oil prices."

model, our analysis is restricted to global effects, which means that we are unable to study the effect, for example, of geopolitical risk shocks on any specific country's oil production.

The rest of the paper proceeds as follows. We summarize some of the notable recent contributions in the literature to understanding the causal mechanisms underlying our *GVAR* analysis in Section 2. We describe the data and highlight the stylized facts motivating our analysis in Section 3. We provide a brief description of the econometric methodology and model specification in Section 4. The main empirical results are summarized in Section 5, and Section 6 concludes the paper.

2. Literature on Interactions of Oil Prices, Financial Liquidity, and Geopolitics

The largest extant literature on links between global financial conditions and oil markets has focused on the traditional causal links from oil supply shocks to economic activity and financial markets (Bernanke, 1983; Hamilton, 2003; Kilian, 2008, 2009; Jo, 2014, for example). This literature began by investigating the effect of ostensibly exogenous oil price shocks on aggregate economic activity, but progressed to more sophisticated analysis that differentiated between supply and demand driven oil-price movements, and to consider feedback effects through financial market booms and busts. However, some of the earlier results in this literature have not withstood the test of time. For example, Miller and Ratti (2009) have suggested that the previously detected strong link between stock market and oil market bubbles during the 1980s and 1990s had broken down in the 2000s. Likewise, Alsalman (2016) has found no effect of oil-price uncertainty on US financial market returns in recent years, although sectoral stocks were, in fact, differentially affected by directional movements in oil prices. Similarly, Arouri et al. (2012) have found differentially significant effects of oil-price fluctuation on sectoral stock returns in European markets.

The reverse link, from economic activity and financial market conditions, especially speculative behavior by investors, to oil prices, has also been extensively studied, for example, in Kilian and Murphy (2014); Askari and Krichene (2008); Chevillon and Rifflart (2009); Coleman (2012); Cifarelli and Paladino (2010); and Ratti and Vespignani (2013), although the feedback mechanism from oil prices through contributions to global financial liquidity was not a focal point of this research. A series of papers using money supply as a proxy for global financial liquidity (Belke, Bordon and Hendricks, 2010; Belke, Orth and Setzer, 2010; Belke et al., 2012), including the use of *GVAR* methodology in the last paper, point to this link from liquidity to inflation in commodity and asset prices, as documented historically in Kindleberger and Aliber (2005), who stipulated, along with Minsky (1982), the economic laws that (i) there can be no inflation without monetary expansion, and (ii) there cannot be an asset market bubble without credit expansion.

We seek to contribute to this literature by formally including geopolitical risk factors in the analysis of interactions between oil prices and global financial liquidity. Although our modeling methodology is reduced form, like the literature reviewed above, the theoretical and empirical literatures on potential causal mechanisms from oil prices to geopolitical risk, and vice versa, inform our analysis. In this regard, although research by Ross (2006) and Cotet and Tsui (2013), for example, shows that oil-export dependence of an economy does not necessarily cause political violence, it does make the state an attractive target for extralegal activity, which, combined with state weakness, may indeed result in increased geopolitical risk. Unfortunately, states can be attacked through acts of random violence against civilians, which result in reductions in tourism, investment, and overall trust in the government, contributing further to economic pressure on the latter. In the meantime, reduced commodity prices strain the fiscal abilities of governments to reduce dissent and increase security through public spending on welfare and law enforcement, respectively. In this regard, studies by Dube and Vargas (2013) and Miguel et al. (2004), for example, have shown, respectively, how low commodity prices have intensified civil conflict in Columbia, and how commodity-price-driven negative growth shocks have led to increased civil conflict in sub-Saharan Africa.

Finally, there is a growing literature investigating the causal direction from intensified geopolitical risk to oil prices, although Blomberg et al. (2009) have found that the declining market power of OPEC in recent years has reduced the magnitudes of resulting geopolitical risk premia in oil prices. Nonetheless, as Lee (2016) has argued, major oil producers, especially in the Middle East, which is the focus of our attention in this paper, remain particularly attractive targets for terrorists, because significant economic harm can result from a major disruption of oil production and/or transport from the region. Thus, Noguera-Santaella (2016) found a strong positive effect of geopolitical strife (measured by event analysis using a limited list of 32 major events culminating in the Arab Spring period) on oil prices, although, as already noted in the above cited studies, the effect has become less pronounced in recent years. We aim to contribute also to this literature by incorporating in our analysis the secondary effects of geopolitical risk on oil prices, through the financial-liquidity channel influenced by petrodollar flows and reverse flows. We also use a more continuous measure of global geopolitical risk levels, which is conducive to incorporation in our GVAR analysis.

Thus, our study follows the traditional time series analysis methods of earlier literatures that had investigated each pairwise interaction between our three sets of variables: oil prices, global financial liquidity, and geopolitical risk. The innovation in this paper is to bring all three factors together with measures of economic activity (gross domestic product, investment, and trade) to study the feedback effects of the global cycle of our three variables of interest, as discussed in the introduction, both at the global and country levels. Although we consider the distinction between oil price shocks caused by supply and demand in our robustness checks in Appendix A.2, using the sign restrictions suggested in Cashin et al. (2014), by adding worldwide oil supply as a global variable, we do not explicitly model oil supply and demand at the country level in our *GVAR*, to keep the model tractable – computationally and conceptually.

3. Data and preliminary analysis

For the country-specific component of our analysis, we use quarterly data from the first quarter of 1979 to the second quarter of 2017 for the 53 countries listed alphabetically in Table B.1. The bulk of this data is obtained through DataStream. For countries wherein GDP data were not available, we used industrial production as a proxy for GDP. For investment in each country, we used gross capital formation series. International reserves are the official reported figures for each country. To construct the weighting matrix described in Section 4, we used official bilateral trade data.

For the three main global variables in our analysis: Brent price of crude oil (in USD per Barrel) was the obvious first choice. For our measure of global financial liquidity, instead of following the literature cited in Section 2, which has generally used money supply measure M2 as a proxy for financial liquidity, we decided to follow the logic championed by the BIS, c.f. Caruana (2014), and used the BIS series (Bank for International Settlements, March 2017) for credit from all sectors to the private non-financial sector as our measure of global financial liquidity. For our measure of global geopolitical risk, we used the index constructed by Caldara and Iacoviello (2016) constructed from news article data. Where available, we also used the Caldara and Iacoviello country-level geopolitical risk index for various countries. We estimated the global and country-level models simultaneously using the Global Vector Autoregression (GVAR) model described in some detail in Section 4.

As a first investigation toward the general expected results, we check two simple correlations. The first correlation between global financial liquidity and Brent prices is expected to be positive, with causation working in both directions (high financial liquidity contributes to speculation on commodity prices, including oil, and petrodollar recycling flows contribute to high financial liquidity). In fact, the sample correlation between quarterly year-on-year percentage changes in Brent and global liquidity is 0.17, which is significant at the 5% level. The second total correlation between Brent prices and global political risk is less obvious, because causation works in opposite ways for the two directions (low oil prices may result in higher global political risk, but higher political risk would result in higher oil prices). The total sample correlation between quarterly year-on-year percentage changes in Brent prices and our global political risk index is -0.18, which is also significant at the 5% level.

Figure 2 illustrates the comovements of the three main global series by showing four-quarter moving averages (smoothing) of the annual percentage change (year-on-year) for the series. The contemporaneous negative correlation between oil price changes and geopolitical risk index changes is quite strongly evident. In the meantime, lagged effects that may have contributed to the mutual perpetuation in the bivariate cycle require investigation through the richer autoregression model. Nonetheless, we can note that the contemporaneous positive correlation between oil prices and global liquidity becomes much more pronounced in the later part of our sample, when the effects of speculative investment in commodities became more pronounced.

Needless to say, a deeper understanding of the co-movements of our three global variables, and their interactions with various domestic variables of interest, will only be obtained once we review the results of our GVAR model estimation in Section 5. In the meantime, for one last intermediate check on our hypothesis, we report in Table 1 the Wald statistics for Granger causality tests of various directions of causation between the three variables using a simple Vector Autoregression model on Hodrick-Prescott-filtered data for the three variables. Except for the Granger-causal effect of lagged liquidity on geopolitical risk, to which we shall return in Sections 5 and 6, the lagged effects of each of our variables on the other two is statistical significant.

Figure 2: Four-Quarter Moving Averages of Annual Percentage Changes in Oil Prices, Geopolitical Risk Index, and Global Financial Liquidity Index

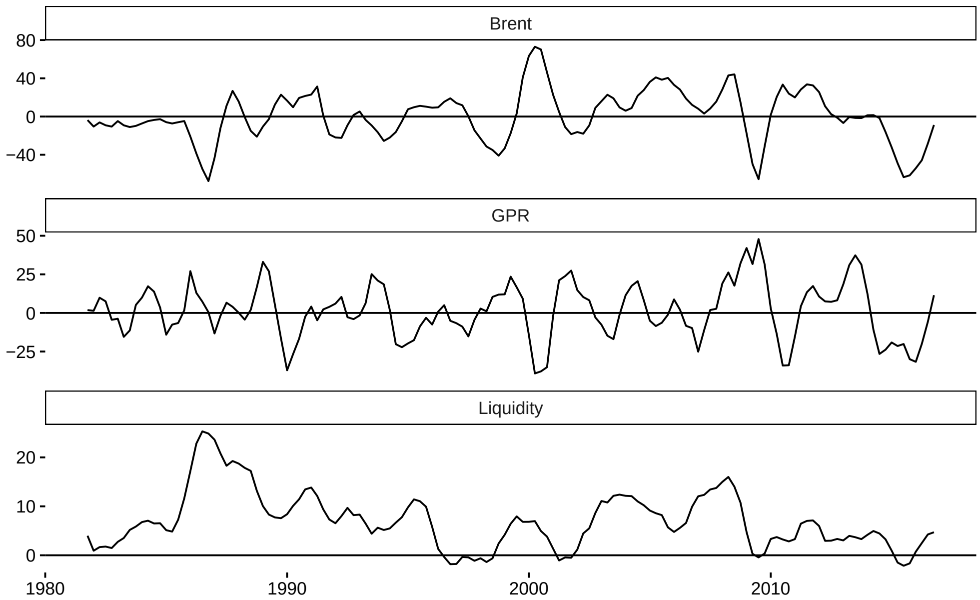


Table 1: Granger causality test

Equation	**Oil price**	**Liquidity**	**Geo. Risks**
Oil price	-	23.000***	48.000***
Liquidity	5.627***	-	2.584**
Geo. Risks	4.168***	0.354	-
All	4.040***	24.000***	85.000***

4. Econometric Model

4.1. GVAR Model

The GVAR model, originally proposed by Pesaran et al. (2004), consists of a set of country-specific VAR models, which are conditioned on cross-country average weighted foreign variables as well as unweighted global variables. The model is estimated on a country-by-country basis and the estimated parameters are then stacked to form the global model which can be used for scenario analysis through impulse response functions.

Formally, consider a system of N country-specific models each of which includes k_i variables over the time period T. Let x_{it} be a $k_i \times 1$ vector of variables in individual country i and time t models and construct $x_t = (x'_{1t}, x'_{2t}, \ldots, x'_{Nt})'$ as a $k \times 1$ vector of all variables for all countries in the system at time t. A given country-specific equation typically includes domestic (endogenous) variables x_{it} alongside a $k^* \times 1$ vector of (weakly exogenous) foreign variables x^*_{it}. Using a $k \times x^*$ matrix of country-specific weights ($\tilde{\mathbf{W}}'_i$), based on bilateral trade, the later variables are constructed such that

$$\mathbf{x}^*_{it} = \tilde{\mathbf{W}}'_i \mathbf{x}_t \tag{1}$$

Country-specific VAR models with weakly exogenous foreign variables (VARX*) can be presented as follows:[5]

$$\mathbf{x}_{it} = \sum_{\ell=1}^{p_i} \mathbf{\Phi}_{i1} x_{i,t-\ell} + \mathbf{\Lambda}_{i0} x^*_{it} + \sum_{\ell=1}^{q_i} \mathbf{\Lambda}_{i\ell} x^*_{i,t-\ell} + \epsilon_{it} \tag{2}$$

where $\mathbf{\Phi}_{i1}$ and $\mathbf{\Lambda}_{i\ell}$ are $k_i \times k_i$ and $k_i \times k^*_i$ matrices of parameters to be estimated. p_i and q_i are the lag orders of country i's domestic and foreign variables, respectively, and ϵ_{it} are $k_i \times 1$ vectors of idiosyncratic, serially uncorrelated, country-specific shocks.

Thus, a country-specific model contains a $k_i + k^*$ vector $\mathbf{z}_{it} = (x'_{it}, x^{*\prime}_{it})'$ of domestic and foreign variables, as described in Eq. 2, and can be written as follows:

$$\mathbf{A}_{i0} \mathbf{z}_{it} = \sum_{\ell=1}^{p} \mathbf{A}_{i\ell} \mathbf{z}_{it-\ell} + \epsilon_{it} \tag{3}$$

where

[5] For simplicity, we drop deterministic terms and common effects when presenting country-specific VARX* models, but these can be easily added.

$$\mathbf{A}_{i0} = (\mathbf{I}_{ki}, -\Lambda_{i0}),\ \mathbf{A}_{i\ell} = (\Phi_{i\ell}, \Lambda_{i\ell}) \text{ for } \ell = 1, 2, \ldots, p$$

and $p = \max_i(p_i, q_i)$, $\Phi_{i\ell} = 0$ for $\ell > p_i$, and $\Lambda_{i\ell} = 0$ for $\ell > q_i$

Using $(k_i + k^*) \times k$ link matrices $W_i = (E_i', \tilde{\mathbf{W}}_i')$, where E_i is a $k \times k_i$ selection matrix such that $x_{it} = E_i' x_t$, then

$$\mathbf{z}_{it} = \mathbf{W_i x}_t \tag{4}$$

And Eq. 3 can be written as follows

$$\mathbf{\Lambda}_{i0}\mathbf{W}_i\mathbf{x}_t = \sum_{\ell=1}^{p} \mathbf{\Lambda}_{i\ell}\mathbf{W}_i\mathbf{x}_{t-\ell} + \epsilon_t. \tag{5}$$

Thus, the stacked model can be written thus:

$$\mathbf{G_0 x_t} = \sum_{\ell=1}^{p} \mathbf{G}_\ell \mathbf{x}_{\mathbf{t}-\ell} + \epsilon_t, \tag{6}$$

where $\epsilon_t = (\epsilon_{1t}', \epsilon_{2t}', \ldots, \epsilon_{Nt}')'$, and

$$\mathbf{G}_\ell = \begin{pmatrix} \mathbf{A}_{1,\ell}\mathbf{W}_1 \\ \mathbf{A}_{2,\ell}\mathbf{W}_2 \\ \vdots \\ \mathbf{A}_{N,\ell}\mathbf{W}_N \end{pmatrix}$$

Multiplying by $\mathbf{G}_0^{-1}$, the solution of the GVAR model can be obtained as follows:

$$\mathbf{x}_t = \sum_{\ell=1}^{p} \mathbf{F}_\ell \mathbf{x}_{t-\ell} + \mathbf{G}_0^{-1}\epsilon_t \tag{7}$$

where $\mathbf{F}_t = \mathbf{G}_0^{-1}\mathbf{G}_\ell$ for $\ell = 1, 2, \ldots, p$.

4.2. Model Specification

As discussed briefly in the introduction, GVAR modeling allows each global variable to be endogenous only in one country. Even though the variable would be exogenous for each of the remaining 52 countries, the latter can still influence that global variable collectively. Our modeling strategy in this paper is to consider global financial liquidity and geopolitical risk to be endogenous to the United States, because of the Dollar's continued status as global currency and the Federal Reserve Bank's prominence in global

Monetary policy, as well as the prominence of U.S. direct military and indirect policy influence throughout the world. For oil prices, we followed Mohaddes and Pesaran (2016) and the Energy Information Agency's April 2019 view that Saudi production levels can unilaterally influence global oil prices.[6] In Appendix A.2.3, we report the results from alternative model endogeneity specifications, including those in Cashin et al. (2014) and find that our results are qualitatively robust to these assumptions.

5. Empirical Results

In order to capture possible unobserved common factors, the global component of our *GVAR* model includes the cross-country averages of all endogenous variables. Moreover, in order to estimate equation 2, our *GVAR* model assumes that the country-specific foreign and global variables are weakly exogenous and $I(1)$ (integrated of order one), and that the parameters of the individual models are stable over time. To defend these model specifications and assumptions, as well as to determine the lag orders for various model components, we conducted a battery of diagnostic hypothesis tests.

We provide a brief summary of these diagnostic test results in Appendix A.1. Before-estimation diagnostics include unit root tests, tests for lag order of the various models, and cointegration tests. After-estimation diagnostics include tests of residual serial correlation in *VECMX* models, as well as tests of weak exogeneity of foreign and global variables in various country-level models. On the whole, our diagnostic tests support our I(1), cointegration, and exogeneity assumptions under which we estimated the model.

The most insightful empirical results of our estimated GVAR are summarized in two sections, 5.1 and 5.2, respectively, for global variables and country-level variables in Middle-East and North Africa (MENA) countries. The latter are of particular interest because they are simultaneously major contributors to global geopolitical risk, possessors of economies that are particularly sensitive to oil prices, and frequent contributors to global financial liquidity movements through petrodollar recycling (when oil prices are high) and its reversal (when oil prices are low). The reported results in both subsections take the form of generalized impulse response functions (GIRFs) to shocks in each of our three global variables (oil price, liquidity and geopolitical risks).

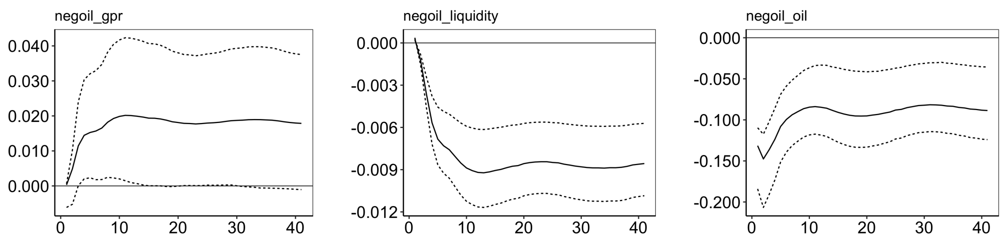
[6] https://www.eia.gov/finance/markets/crudeoil/.

5.1. Dynamic analysis: Global shocks and responses

Throughout the remainder of this section, we report results of our estimated GVAR(2) model graphically as plotted generalized impulse response functions (GIRFs) for various shocks and response variables. Each graph includes the median GIRF and its 95% confidence interval from 5000 replications of the bootstrapped model. In this subsection, we begin by studying shocks to each of our three global variables and the resulting GIRFs for each of the other global variables.[7]

The GIRF graphs for the impacts on global liquidity and geopolitical risk from a one standard deviation negative shock in oil prices are shown in Fig. 3. The first panel from the left shows that, starting one year after the shock, geopolitical risk increases significantly, around 1-to-2%, and persists in response to a one s.d. negative oil price shock. This confirms our prior hypothesis that periods of low oil prices contribute to increased geopolitical strife. In the meantime, the second panel shows that global financial liquidity declines significantly (reaching 0.9% in about three quarters, and staying there), both immediately and persistently, in response to a one s.d. negative oil price shock. This also confirms our prior hypothesis that a decline in oil price reduces or reverses petrodollar flows to the international financial system, thus decelerating global financial liquidity.

Figure 3: Impulse = One s.d. Negative Shock to Oil Price

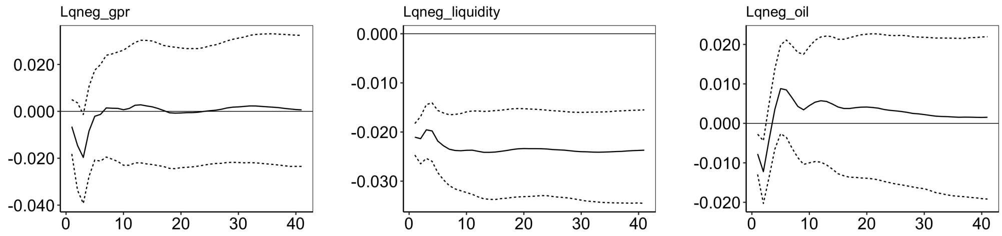


Geopolitical risk GIRF — Global Liquidity GIRF — Oil Price GIRF

The GIRFs for the impacts on geopolitical risk and oil prices from a one s.d. negative shock in global financial liquidity are shown in Fig. 4. The first panel shows that geopolitical risk response to the negative liquidity shock is statistically insignificant after the second quarter. The third panel shows that oil prices are likely to drop (by approximately

[7]Some of the global-variable GIRFs in this section replicate the results reported in Abdel-Latif and El-Gamal (2019) for a larger sample.

Figure 4: Impulse = One s.d. Negative Shock to Global Financial Liquidity

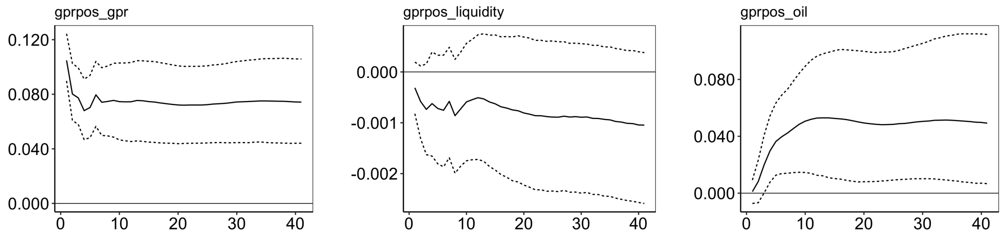


Geopolitical risk GIRF | Global Liquidity GIRF | Oil Price GIRF

1%) in response to the negative shock in global financial liquidity. However, this effect is also short-lived and statistically significant only for approximately three quarters. Beyond that time horizon, investors who may have speculated on oil (along with other commodity) prices during periods of accelerating financial liquidity growth switch to other asset classes, and, thus, the effect of decelerating financial liquidity merely pricks the bubble in oil prices, but does not result in long term suppression thereto, as long term prices in the absence of wide speculative activity resume their normal path based on supply and demand economic fundamentals.

Thus, although the effects of financial liquidity shocks have the signs that we had hypothesized in the introduction, their isolated effects are not as statistically significant in the medium to long term as the other two shocks (to oil prices and to geopolitical risk) that we have considered earlier in the Section. We interpret this result (in Figure 4) to suggest that tight monetary policy cannot materially affect oil prices and geopolitical risk in the medium to long run: Although expansionary monetary policy does serve as a catalyst in amplifying the cycle of increased oil prices, potentially for prolonged periods through petrodollar recycling feedback, contractionary monetary policy results in a one-time negative shock, as the speculative-investment component switches to other asset classes.

Figure 5: Impulse = One s.d. Positive Shock to Geopolitical Risk Index



Geopolitical risk GIRF | Global Liquidity GIRF | Oil Price GIRF

The GIRFs for the impacts on global liquidity and oil prices from a one standard deviation positive shock in global geopolitical risk are shown in Fig. 5. The second panel shows a persistently negative (approximately 0.1%) but statistically insignificant decline in global financial liquidity, which is consistent with our Section 2 result of insignificant Wald test statistic for the Granger-causal impact of geopolitical risk on global liquidity. The third panel shows a persistently positive (approximately 4%) and statistically significant response of oil prices to a one s.d. positive shock in geopolitical risk. This is consistent with the second part of our motivational hypothesis on oil price and geopolitical risk cycles: lower oil prices trigger higher geopolitical risk (as we have seen in the first panel of Fig. 3), and the latter leads to later increases in oil prices, perpetuating the coupled cycles of geopolitical risk and oil prices discussed in El-Gamal and Jaffe (2009, 2018).

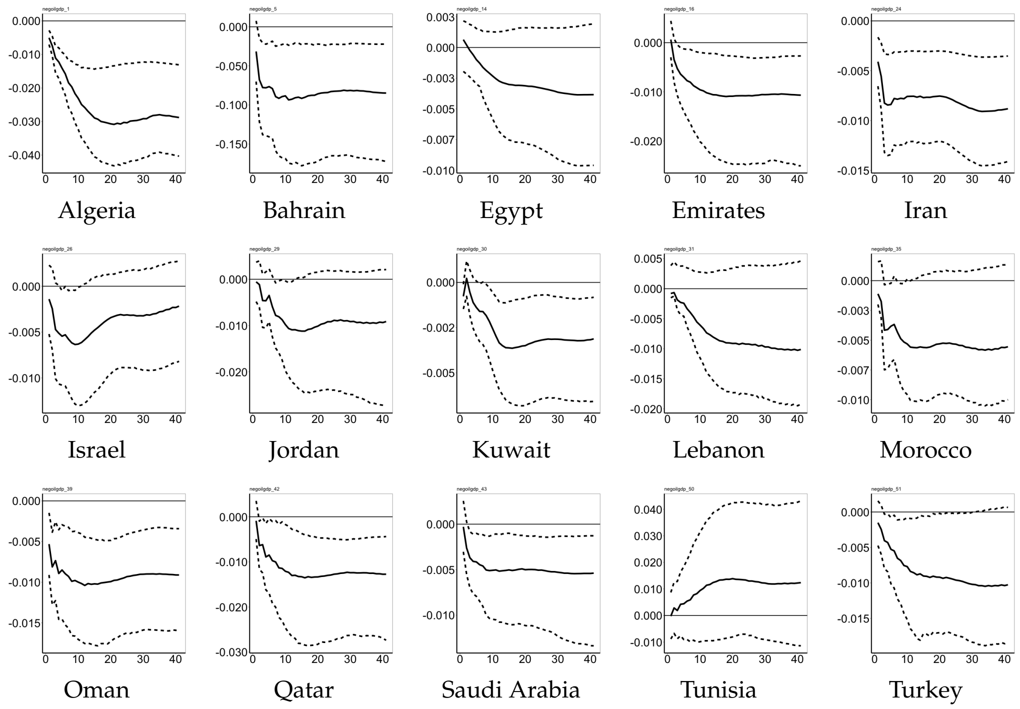
5.2. Dynamic Analysis: MENA-Country-Specific Responses

We now focus primarily on the MENA region, which is particularly sensitive to oil prices, both for oil exporting countries and their labor exporting neighbors, a major epicenter of geopolitical risk factors, and a frequent contributor to financial liquidity changes due to petrodollar recycling and its reversal.[8] As we have done in the previous section, we report results graphically in the form of median GIRFs and 95% confidence bands generated through 5000 bootstrapping simulations from the GVAR(2) model.

MENA country GDP GIRFs to a one s.d. negative oil price shock are shown in Figure 6. Median GDP GIRFs to oil price drops are generally negative for most countries in the region, as we would expect. Moreover, the negative impact is persistent and statistically

[8] Oil exporting countries in the MENA region are Algeria, Libya, Iraq, Saudi Arabia, Kuwait, Yemen, Oman, Bahrain, Qatar, Emirates.

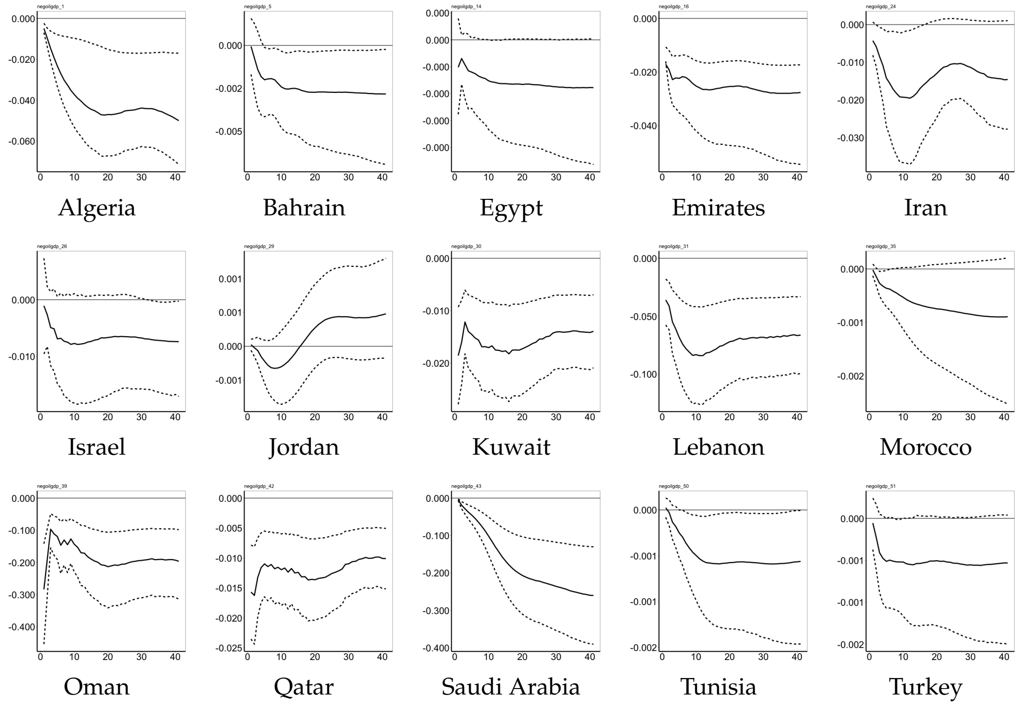
Figure 6: MENA GDP Response to One s.d. Negative Oil Price Shock



significant in countries that depend significantly on oil exports, namely, Algeria, Bahrain, United Arab Emirates, Iran, Kuwait, Oman, Qatar and Saudi Arabia. Interestingly, the GIRF is also negative and statistically significant for Turkey, which has relied on petrodollar flows to grow both its export and international investment markets. Comparing to GIRFs for non-MENA countries, as shown in Figure C.2, we note that the dramatic direct effects of negative oil shocks on the GDPs of Saudi Arabia are also observed for Brazil and Chile (which is dependent on exports of other commodities), and the indirect effects on Turkey's GDP is somewhat similar to, albeit weaker than, that of Thailand, which was, likewise, one of the major recipients of petrodollar-funded investments.

Figure 7 shows that investment GIRFs to a negative shock in oil prices are much more uniformly persistent and statistically significant for oil exporters. The median GIRF is also negative and significant for other MENA countries. This reflects the procyclical nature of investment in MENA oil exporters, as investment programs serve to enhance absorptive (or wealth sharing) capacity during boom years and their suspension helps to ameliorate fiscal deficit problems during lean years. Figure C.3 in the Appendix shows that investment in some other non-oil-exporting countries outside MENA, e.g. Italy and

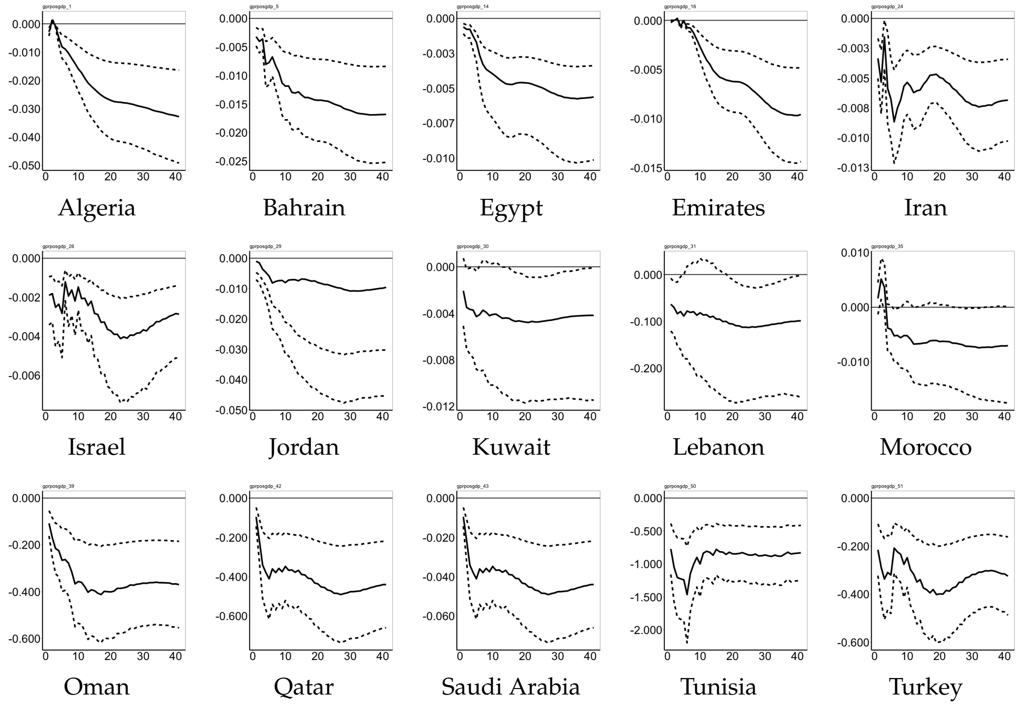
Figure 7: MENA Investment Response to One s.d. Negative Oil Price Shock



Thailand, are also impacted significantly by negative oil shocks. Moreover, the impacts on oil exporters outside MENA seem to vary by the degree of diversification of the economy. Thus, the negative impact on investment is significant in Chile (which relies heavily on commodity exports), but not in Brazil.

We report the GDP and investment GIRFs to a one s.d. increase in geopolitical risk, respectively, in Figures 8 and 9. Not surprisingly, an increase in geopolitical risk is associated with negative effects on GDP in most countries, and the effect is statistically significant. In the meantime, with the exception of Qatar, Bahrain and Saudi Arabia, we do not observe the same negative and significant impact of geopolitical risk on investment. Outside of MENA, there are a number of other countries whose GDP GIRFs to geopolitical risk shocks are negative and statistically significant, including Argentina, Australia, Brazil, China, Colombia and New Zealand, U.S. and U.K., as shown in Figure C.4. Consistent with the evidence for MENA, Figure C.5 shows that investment in non-MENA countries is much more resilient to geopolitical risk shocks, and is not affected in the same manner as GDP.

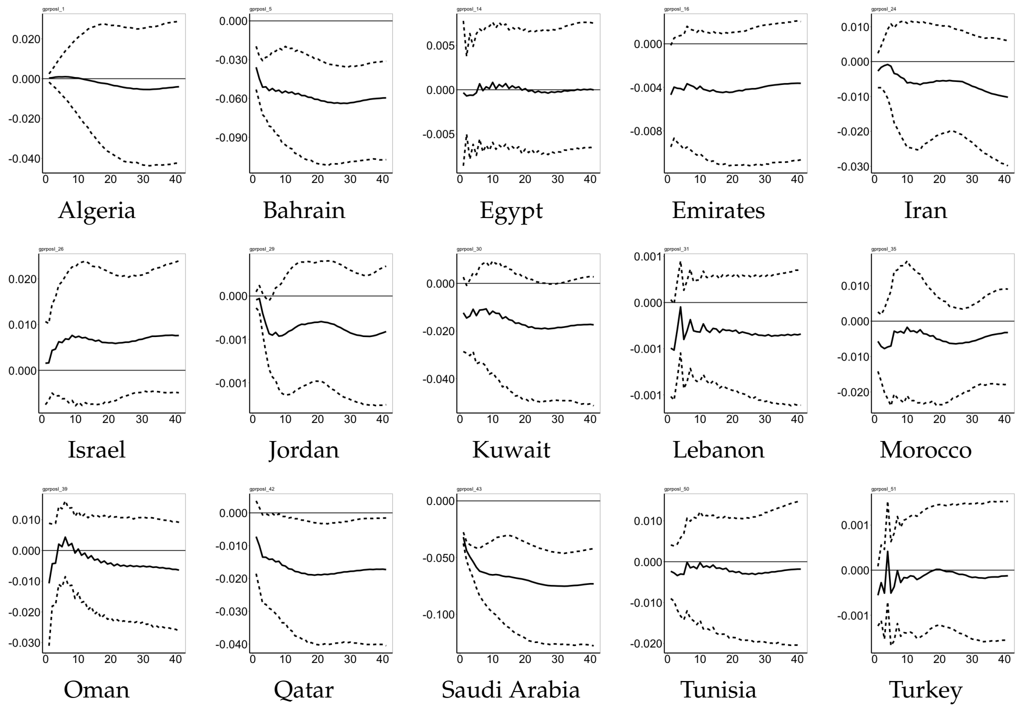
Figure 8: MENA Country GDP Response to One s.d. Geopolitical Risk Shock



The GIRFs reported in Fig. 9 show that investments in the MENA countries (except for Israel) are expected to drop as a result of a positive shock to geopolitical risks. For example investment is likely to drop by 0.4% in Bahrain, 0.1% in Jordan, 0.15% in Kuwait, 0.1% in Lebanon, 1% in Oman, 2% in Qatar, and by in 0.04% in Tunisia. Although investment drops are likely to be the case in other MENA countries as well, the plotted GIRFs in Fig. 9 suggest that such response is not statistically significant in most MENA countries.

Figures 10 and 11 show, respectively, the GIRFs of GDP and investment to a negative shock to global financial liquidity. Although we estimate that a negative liquidity shock would have short-lived negative effects on GDP in Saudi Arabia and significant effects on Egypt, Morocco and Turkey (the first a major provider of global liquidity through petrodollar recycling, and the latter three recipients of significant portions of petrodollar investment and spending), most MENA countries' GDPs do not react significantly negatively to negative financial liquidity shocks. The main notable exception among oil-exporting countries is Bahrain, whose GDP declines very significantly as a consequence of a negative financial liquidity shock, in large part because of its specialization

Figure 9: MENA Country Investment Response to One s.d. Geopolitical Risk Shock



in petrodollar recycling as a financial hub.

GIRFs in Figure C.6 show a similar pattern of only brief or no significant effect of a negative financial liquidity shock on most countries' GDPs. In this regard, Bahrain's GDP-dependence on financial liquidity is the obvious anomaly throughout our sample. Investment in MENA countries is generally not affected significantly by a negative liquidity shock, with the exceptions of the effects in Morocco, Tunisia and Turkey. Likewise, Figure C.7 shows that the effect of a negative liquidity shock is minimal and short lived in most countries outside MENA, with the notable exception of Luxembourg, whose role as an international financial center makes its investment significantly dependent on financial liquidity, like Bahrain's GDP.

Before we close this section, we consider the current historical episode and its potential effects on Saudi investment and GDP. As we have seen in Figure 6, Saudi GDP was the most negatively affected by negative oil price shocks. In the meantime, we have seen in the first panel of Figure 3 and the second panel of Figure 5, respectively, that low oil prices lead to heightened geopolitical risk, and the latter, in turn, leads to higher oil

Figure 10: MENA Country GDP Response to One s.d. Negative Financial Liquidity Shock

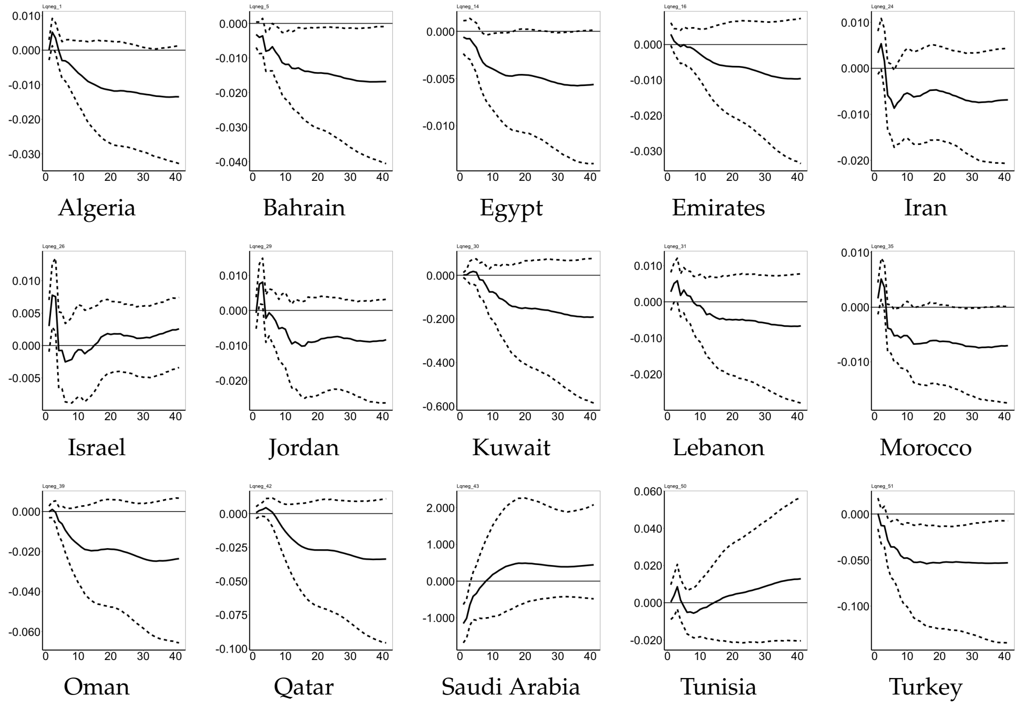
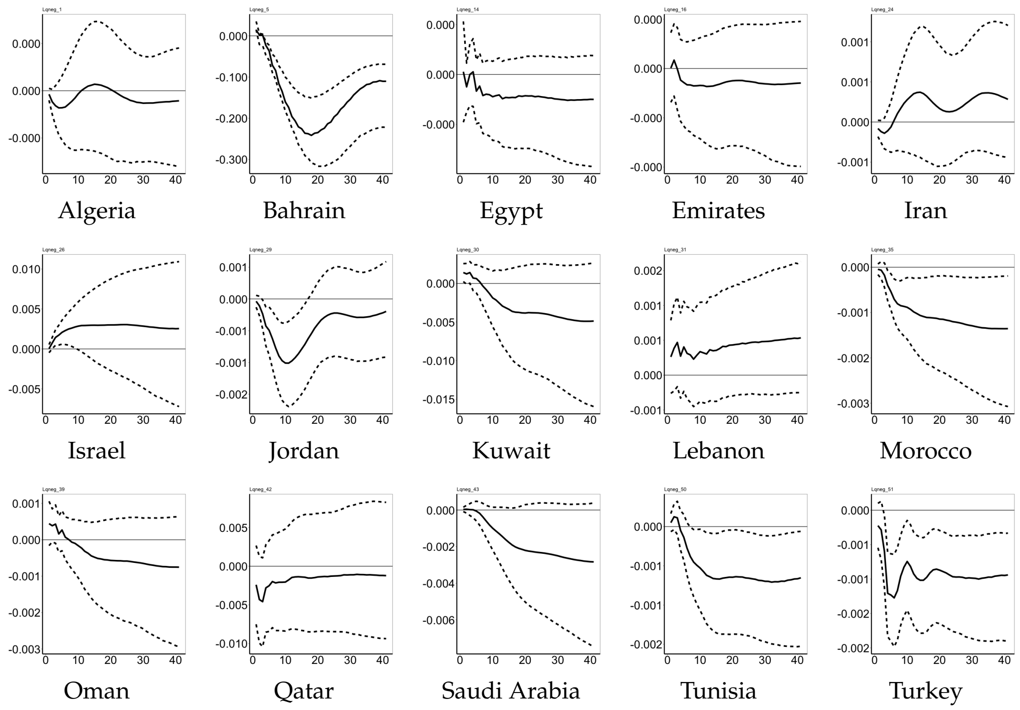


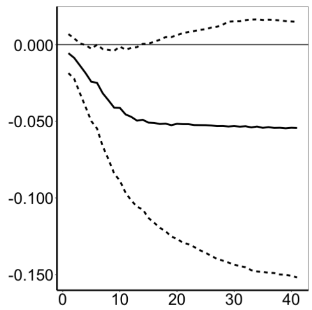
Figure 11: MENA Country Investment Response to One s.d. Negative Financial Liquidity Shock



prices. Indeed, this was evident in our motivational Figure 1: The decline in oil prices following the financial crisis contributed to the revolutionary wave, including the Arab Spring, which, in turn, added a very significant geopolitical risk premium to oil prices. Once the Arab Spring revolts ended, oil prices fell dramatically, but the fiscal pressure this put on the Yemeni government, which depended on oil exports for the bulk of its revenues and exports, contributed to success of Houthi rebels, and the ensuing war. The war, in turn, has contributed to a partial rebound in oil prices, as risk increased for tanker traffic through the strait of Bab El-Mandab.

The Kingdom of Saudi Arabia is embarking on a remarkably ambitious program to reconfigure its economy away from dependence on oil, in what is known as Vision 2030 and the shorter-term Transformation Program. The program requires a massive infusion of investment spending to build the non-oil sector of the Saudi economy, but this requires fast swimming against the natural tide of the economy. Indeed, data until the time of writing show a contracting GDP in the Saudi non-oil sector, which has been historically derivative of the oil sector. Furthermore, Figure 12 shows that the resulting decline in private Saudi investment is likely to cause further significant decline in Saudi GDP.

Figure 12: Saudi GDP Response to One s.d. Negative Shock to Saudi Investment



Saudi GDP GIRF

Needless to say, our econometric estimates are driven by patterns in historical data, while the bold Saudi Vision promises a dramatic break with historical norms, including massive public investments that may counterbalance the short-term decline in private investment, and spur long-term private investment that benefits from planned infrastructure projects. Nonetheless, the estimated GIRFs contain valuable information on private sector investment and economic activity responses to low oil prices, and this information suggests that the envisioned plan's chances of success are not high, especially as the increased elasticity of U.S. tight-oil supply has prevented oil prices from rising significantly.

6. Conclusion

The simple VAR-based Granger-causality test conducted in Section 3 confirmed our hypothesis that the triad of oil prices, geopolitical risk, and financial liquidity are closely linked in a self perpetuating cycle. Our primary GVAR model in Section 5 assumed that the U.S. was the only country that can unilaterally influence global financial liquidity and geopolitical risk, and that Saudi Arabia was the only country that can unilaterally influence oil prices, but the large number of countries in our sample were allowed collectively to influence all three global variables. Generalized impulse response functions from the GVAR model confirm our hypothesis that a negative shock to oil prices results in higher geopolitical risk and lower global financial liquidity, as petrodollar recycling decelerates or reverses direction. The GIRFs also show that a positive shock to geopolitical risk results in higher oil prices.

Thus, we reconfirm the perpetuation of the cycle of low oil prices (e.g. in the late 1980s) leading to geopolitical strife (e.g. first Iraq War), which, in turn, leads to higher oil prices. We also confirm the catalytic role of financial liquidity in accelerating oil price bubbles and crashes, as petrodollar recycling fuels speculative demand for all commodities, including oil. This effect is asymmetric, as we have also shown that negative shocks to financial liquidity, including due to lower oil prices and deceleration or reversal of petrodollar recycling, does not result in secondary longer term reduction in oil prices. Robustness checks that allow for differential effects of supply vs. demand-driven oil-price shocks, following the methodology of Cashin et al. (2014) reconfirmed that the results of our baseline GVAR model are not sensitive to these considerations, although the baseline results resemble more closely the results from a supply-driven negative shock to oil prices, which is consistent with the increasing market effect of unconventional oil over the past decade.

The full power of our GVAR analysis is exhibited in its ability to study the effects of global variables on individual country variables, as well as the collective effects of country-level variable changes on global variables. In this regard, we focused our attention on the most likely scenario given global variable dynamics, which is a prolonged period of relatively moderate oil prices, moderately heightened geopolitical risk, and relatively constant or decelerating financial liquidity growth. Under this scenario, we found that, as long as historical evidence remains a good guide for the future, countries heavily dependent on oil exports, like Saudi Arabia, are unlikely to succeed in generating significant economic growth in other sectors to compensate for the inevitable economic downturn.

The conclusions of our empirical analysis are at once sobering and cautionary. In the absence of any major global shocks, the current conditions of moderate oil prices, moderately heightened geopolitical risk, and moderate to high financial liquidity are likely to persist, and call for accommodation of the long-term realities of slower global growth, reduced security, and lower standards of living in oil-exporting countries. A heightening of geopolitical risk, which may be caused by direct intervention or reaction to the inevitable lower standards of living in MENA countries, may propel another phase of the cycle of higher oil prices, acceleration through financial liquidity, and a brief reduction in geopolitical risk. However, reversion to the long-term "new normal" is likely to follow soon, and to be more painful than the last phase. Wise management and lowered expectations may be the most advisable social and economic policies to manage a soft landing following the past half-century of petrodollars, financial crises, and wars.

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Appendices

A Diagnostics and Robustness

A.1 Diagnostic Tests

We examine the integration properties of our series using the Augmented Dickey Fuller (ADF) unit root test on the level (with and without trend) as well as on first differences of all variables. Since unit root tests are inherently of low power, we also perform the weighted symmetric ADF test (ADF-WS) proposed by Park and Fuller (1995). For space considerations, we report here only the ADF test results. Table B.3 lists the results of the ADF tests for our three global variables (oil price, GPR, liquidity), which justify the assumption that those variables are integrated of order one. ADF test results for each country's domestic and foreign variables, respectively, are reported in Tables B.4 and B.5. With very few exceptions (e.g. for investment in a handful of countries, where the order of integration may be higher), the I(1) assumption is also justified for virtually all country-variable pairs in our model.

Table B.6 lists the results of our various country-level test for the order of the VARX models and the number of cointegrating relationships therein, based on the maximum eigenvalue and trace statistics at the 5% significance level. All country-specific models are estimated to have either one or two cointegrating relationships.

Table B.7 lists the various F-statistics (indicating significance at the 5% level) by country and variable for tests of residual-serial-correlation in VECMX models. We fail to reject the null hypothesis of no serial correlation for almost all country and variable pairs.

Table B.8 lists the results of F tests of the weak exogeneity of foreign and global variables in each country-level model. This exogeneity is an essential assumption for the validity of our GVAR model, because it precludes any long-term feedback effects from the endogenous variables to the foreign or global variables. The formal tests of weak exogeneity were conducted by testing the joint significance of estimated error-correction terms in auxiliary regressions wherein foreign and global variables are included in the various country-variable auxiliary regressions as if they were endogenous. Almost all the F tests for these various country-variable regressions fail to reject the null hypothesis of $R^2 = 0$ in the corresponding auxiliary regression.

Finally, Figure C.1 shows the persistence profiles of our estimated model, showing high speeds of convergence to long-term equilibrium relationships, thus confirming the validity of our estimated cointegrating vectors (Pesaran and Shin, 1996). In this regard, eigenvalues of the constructed GVAR were forced to lie on or within the unit circle, to ensure model convergence, but the estimated rate of convergence was not restricted. The resulting estimates of persistence profiles shows convergence to the long-term relationships within two to three years, which is quite fast, thus suggesting that our model specification is valid for the set of modeled variables.

A.2 Robustness Checks

In our preceding analysis, we considered the effects of oil price negative shocks on global financial liquidity and geopolitical risks without any attempt to identify whether oil price drops are caused by supply or demand shocks. Although it is not the main purpose of this study, one can argue that we should identify the source of the oil price shock (i.e., whether it is demand driven or supply driven). The latter was important in earlier studies that focused on *positive* oil shocks that were driven by growth-induced demand vs. supply disruptions. Our interest is mainly on the effect of negative oil price shocks on MENA economies, which as we shall see in this section, is not as sensitive to supply vs. demand considerations.

To conduct our robustness check, we follow the identification strategy of Cashin et al. (2014), wherein they used data on oil price and oil production along with a set of sign restrictions within a GVAR framework. Therefore, we add oil production ($qoil$) as a fourth global variable into our GVAR model. Using a set of sign restrictions on the model's impulse responses, we devise two scenarios (supply-driven or demand-driven) in which oil price would fall. First, a positive supply shock is constructed as (i) a drop in oil price ($poil < 0$) and (ii) an increase in global oil production levels ($qoil > 0$). Second, a negative demand shock is one in which the demand curve shift to the left causing a drop in both (i) oil price ($poil < 0$) and (ii) oil production ($qoil < 0$). We impose the restrictions that these sign combinations in each scenario hold for four quarters after the shocks. Since we are interested in how geopolitical risk and global liquidity react to oil price fall (whether demand driven or supply driven), we do not impose restrictions on other global variables in the system. Following Fry and Pagan (2011), we report here the single model that produced impulse responses as close to the median values of the impulse vector as possible (this is called the median target). It is important to recognize that the distribution here is across different models and is *not* a consequence of sampling uncertainty.

A.2.1 Demand-driven negative oil price shock:

We use our GVAR model along with the above sign restrictions to stimulate a negative demand shock to oil prices. This is motivated by recent falls in oil prices which have been explained, at least in part, by declined forecast of oil demand as a result of improved efficiency, environmental regulations, especially in the transportation and power generation sectors, and sluggish global growth. A negative demand shock implies a leftward shift of demand curve causing both oil price and production to fall. We impose these restrictions on the impulse response functions. Figure C.8 shows the GIRFs for our four global variable to a negative demand shock. Consistent with our results reported in the main text, Figure C.8 shows that a demand driven oil price shock is likely to cause heightened geopolitical risks and deceleration in global financial liquidity. We also report the MENA countries individual GIRFs for GDP and investment as a result to a negative oil demand shock (see Fig. C.9 and C.10). These results also confirm our previous findings of negative effects on GDP and investment in MENA region, as reported in Figures 6 and 7, although the negative effects are not as long lived for most MENA countries under the sign restrictions of a demand-driven negative shock to oil prices.

A.2.2 Supply-driven negative oil price shock:

Of course, the more important source of lower oil prices in recent years has been the growth of non-conventional oil production, especially in the United States, which has begun to produce more oil than Russia and Saudi Arabia, and is poised to become a net exporter in the near future. In this subsection, we report GIRFs for global variables as well as MENA-country GDP and investment under the sign restrictions of higher oil supply and lower prices. Figure C.11 shows the GIRFs for our four global variables following a positive supply shock that lowers oil prices. As before, it shows that a supply driven oil price decline is likely to lead to an increase in geopolitical risks and deceleration of financial liquidity, which is again consistent with our baseline-model findings without the sign restrictions. We also report the MENA countries individual GIRFs for GDP and investment as a result to a positive oil supply shock (see Fig. C.12 and C.13). These results mirror those reported in Figures 6 and 7 in the main text, showing significant decline in output and investment in oil-producing countries and countries like Turkey, which depend on petrodollars for investment. The stronger resemblance of supply-driven negative oil price shocks to the unconstrained baseline case is not surprising, since the dominant story in oil markets over the past decade has been the rise of non-conventional oil production, especially in the U.S.

A.2.3 Alternative assumptions on global variables:

Our baseline model treated oil prices as endogenously determined within the Saudi Arabia model but exogenous to all other countries. Similarly, geopolitical risk and global financial liquidity variables were treated as exogenous to all country models except the U.S. The oil price endogeneity specification was motivated by the fact that Saudi Arabia is the largest oil exporter, and its production decisions were recognized in recent EIA analysis to affect prices, and the financial liquidity and geopolitical risk endogeneity specifications were motivated by the sheer size and development of the U.S. economy, financial sector, and military.

As a robustness check, we estimated an alternative GVAR model in which global variables specification follows that of Cashin et al. (2014). Specifically, we consider four global variables: oil price, global oil production, geopolitical risk and global financial liquidity, and we group the Gulf Cooperation Council (GCC) countries into a single region. Since these countries are major exporting countries, we include oil production as endogenous in GCC region model, and exogenous in all other country models. Moreover, following Cashin et al. (2014), who show the importance of the U.S. oil consumption which exerts an influence on price, we include oil price as endogenous in the U.S. country model. Finally, we impose sign restrictions on the impulse response functions as follows: negative oil demand shock is defined as $poil < 0$ and $qoil < 0$, and positive oil supply shock is defined as $poil < 0$ and $qoil > 0$. Finally, a positive GRP shock is defined by sign restrictions $GRP > 0$ and $qoil < 0$. We report the GIRFs for these shocks in figures C.14, C.15 and C.16, showing similar results to our baseline model. In an earlier versions of the paper, we had specified all three global variables (oil price, geopolitical risk and financial liquidity) as endogenous only in the US model. The results of this model were still qualitatively similar. Thus, we conclude that our results are robust to the endogeneity modeling specification.

B Tables

Table B.1: Country List

Algeria	Denmark	Indonesia	Mexico	South Korea
Argentina	Ecuador	Iran	Morocco	Spain
Australia	Egypt	Ireland	Netherlands	Sweden
Austria	El Salvador	Israel	New Zealand	Switzerland
Bahrain	Emirates	Italy	Norway	Thailand
Belgium	Finland	Japan	Oman	Tunisia
Brazil	France	Jordan	Philippines	Turkey
Canada	Germany	Kuwait	Portugal	UK
Chile	Greece	Lebanon	Qatar	US
China	Hungary	Luxembourg	Saudi Arabia	
Colombia	India	Malaysia	Singapore	

Table B.2: Weight Matrix

Country	DZA	ARG	AUS	AUT	BHR	BEL	BRA	CAN	CHL	CHN	COL	DNK	ECU	EGY	SLV	ARE	FIN	FRA	DEU	GRC	HUN	IND	IDN	IRN	IRL	ISR	ITA	JPN	JOR	KWT	LBN	LUX	MYS	MEX	MAR	NLD	NZL	NOR	OMN	PHL	PRT	QAT	SAU	SGP	KOR	ESP	SWE	CHE	THA	TUN	TUR	GBR	USA
DZA	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.03	0.02	0.00	0.00
ARG	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
AUS	0.00	0.01	0.00	0.01	0.02	0.01	0.00	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.03	0.00	0.01	0.01	0.01	0.02	0.00	0.01	0.00	0.00	0.04	0.00	0.00	0.00	0.26	0.00	0.00	0.01	0.00	0.01	0.00	0.04	0.02	0.01	0.01	0.01	0.05	0.00	0.00	0.01	0.02
AUT	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.06	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.03	0.00	0.00	0.01	0.01	0.00
BHR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BEL	0.03	0.01	0.01	0.02	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.02	0.02	0.02	0.00	0.01	0.03	0.08	0.05	0.02	0.02	0.03	0.01	0.01	0.16	0.06	0.03	0.01	0.00	0.00	0.03	0.13	0.00	0.00	0.02	0.14	0.01	0.03	0.00	0.01	0.03	0.02	0.01	0.01	0.01	0.03	0.04	0.02	0.01	0.02	0.02	0.05	0.02
BRA	0.04	0.25	0.01	0.01	0.00	0.01	0.00	0.01	0.06	0.02	0.03	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.02	0.01	0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03
CAN	0.06	0.02	0.01	0.01	0.00	0.01	0.01	0.00	0.02	0.02	0.01	0.01	0.00	0.00	0.02	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.04	0.00	0.00	0.01	0.02	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.02	0.21
CHL	0.00	0.08	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.04	0.00	0.07	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
CHN	0.02	0.09	0.27	0.02	0.05	0.02	0.18	0.04	0.27	0.00	0.05	0.03	0.02	0.03	0.00	0.03	0.05	0.03	0.06	0.02	0.02	0.08	0.11	0.24	0.02	0.04	0.03	0.22	0.02	0.10	0.01	0.01	0.14	0.01	0.02	0.01	0.13	0.02	0.28	0.11	0.01	0.03	0.15	0.12	0.28	0.02	0.03	0.04	0.13	0.00	0.02	0.03	0.08
COL	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
DNK	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.04	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.07	0.01	0.00	0.00	0.01	0.01	0.00
ECU	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EGY	0.01	0.02	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.02	0.03	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.03	0.00	0.01
SLV	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ARE	0.00	0.00	0.01	0.00	0.09	0.01	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.04	0.01	0.10	0.01	0.02	0.00	0.01	0.01	0.01	0.00	0.11	0.01	0.00	0.05	0.01	0.01	0.01	0.01	0.00	0.01	0.02	0.01	0.03	0.02	0.01
FIN	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.01	0.00
FRA	0.09	0.01	0.01	0.04	0.01	0.18	0.02	0.01	0.02	0.02	0.01	0.05	0.01	0.04	0.00	0.01	0.04	0.00	0.10	0.04	0.06	0.02	0.01	0.02	0.05	0.03	0.13	0.01	0.00	0.01	0.02	0.16	0.01	0.00	0.25	0.10	0.01	0.07	0.00	0.01	0.14	0.01	0.02	0.02	0.01	0.20	0.05	0.08	0.01	0.32	0.07	0.08	0.02
DEU	0.01	0.03	0.01	0.33	0.01	0.19	0.05	0.01	0.02	0.05	0.01	0.18	0.03	0.03	0.04	0.01	0.11	0.17	0.00	0.13	0.28	0.03	0.02	0.01	0.07	0.03	0.14	0.03	0.00	0.00	0.01	0.21	0.03	0.01	0.03	0.27	0.02	0.12	0.00	0.05	0.15	0.00	0.00	0.02	0.02	0.12	0.11	0.20	0.02	0.09	0.12	0.11	0.04
GRC	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.02	0.01	0.00
HUN	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00
IND	0.02	0.02	0.07	0.01	0.08	0.02	0.02	0.01	0.03	0.03	0.02	0.01	0.00	0.07	0.00	0.18	0.01	0.01	0.01	0.00	0.00	0.00	0.07	0.13	0.00	0.05	0.01	0.01	0.14	0.17	0.01	0.00	0.04	0.00	0.07	0.00	0.02	0.00	0.11	0.01	0.00	0.10	0.09	0.04	0.03	0.01	0.01	0.01	0.03	0.02	0.01	0.02	0.02
IDN	0.00	0.02	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.02	0.03	0.02	0.00	0.00	0.03	0.00	0.00	0.00	0.02	0.00	0.01	0.01	0.00	0.01	0.02	0.12	0.02	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.01
IRN	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
IRL	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.01
ISR	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.01
ITA	0.14	0.03	0.01	0.08	0.02	0.05	0.02	0.00	0.04	0.02	0.02	0.03	0.04	0.09	0.01	0.01	0.03	0.09	0.06	0.14	0.06	0.02	0.02	0.06	0.03	0.02	0.00	0.01	0.01	0.00	0.01	0.07	0.01	0.00	0.05	0.05	0.01	0.03	0.00	0.01	0.04	0.00	0.02	0.00	0.01	0.09	0.03	0.08	0.01	0.22	0.07	0.04	0.01
JPN	0.00	0.01	0.21	0.01	0.00	0.01	0.04	0.02	0.12	0.09	0.01	0.02	0.02	0.01	0.01	0.21	0.02	0.02	0.01	0.00	0.01	0.02	0.18	0.13	0.02	0.01	0.01	0.00	0.02	0.17	0.01	0.00	0.12	0.01	0.01	0.01	0.08	0.01	0.10	0.18	0.00	0.30	0.16	0.05	0.07	0.01	0.01	0.04	0.12	0.00	0.00	0.02	0.05
JOR	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
KWT	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LBN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
LUX	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MYS	0.00	0.01	0.02	0.00	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.06	0.01	0.01	0.01	0.00	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.03	0.00	0.01	0.01	0.14	0.01	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.01
MEX	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.01	0.03	0.01	0.02	0.00	0.01	0.00	0.03	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.02	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.14
MAR	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.01	0.00	0.00
NLD	0.07	0.04	0.01	0.02	0.02	0.13	0.06	0.01	0.05	0.04	0.05	0.05	0.03	0.02	0.00	0.01	0.07	0.04	0.07	0.03	0.04	0.04	0.03	0.03	0.04	0.04	0.03	0.03	0.00	0.04	0.01	0.04	0.03	0.01	0.03	0.00	0.01	0.12	0.00	0.06	0.04	0.01	0.02	0.02	0.01	0.03	0.05	0.03	0.02	0.02	0.03	0.08	0.03
NZL	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NOR	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.11	0.00	0.00	0.00	0.00	0.01	0.00
OMN	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHL	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.01	0.02	0.01	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.01
PRT	0.02	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.01	0.01	0.00	0.00	0.00	0.01	0.00
QAT	0.00	0.00	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAU	0.00	0.01	0.01	0.00	0.27	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.00	0.07	0.00	0.03	0.01	0.01	0.01	0.01	0.00	0.02	0.01	0.00	0.01	0.00	0.01	0.01	0.11	0.01	0.08	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.02	0.01	0.01
SGP	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.05	0.01	0.01	0.01	0.02	0.01	0.06	0.10	0.01	0.01	0.01	0.01	0.04	0.00	0.05	0.00	0.00	0.15	0.00	0.02	0.01	0.02	0.01	0.03	0.11	0.00	0.08	0.05	0.00	0.04	0.00	0.01	0.01	0.06	0.00	0.01	0.01	0.02
KOR	0.02	0.01	0.09	0.01	0.00	0.00	0.02	0.01	0.06	0.05	0.01	0.01	0.00	0.02	0.01	0.08	0.01	0.01	0.01	0.00	0.00	0.02	0.08	0.09	0.00	0.02	0.01	0.09	0.00	0.19	0.01	0.00	0.04	0.00	0.00	0.01	0.04	0.01	0.13	0.05	0.00	0.17	0.11	0.05	0.00	0.00	0.01	0.01	0.02	0.00	0.00	0.01	0.03
ESP	0.11	0.04	0.00	0.02	0.00	0.03	0.02	0.00	0.02	0.01	0.03	0.03	0.03	0.06	0.02	0.00	0.02	0.08	0.04	0.03	0.03	0.01	0.02	0.05	0.04	0.02	0.06	0.00	0.00	0.00	0.01	0.03	0.00	0.01	0.21	0.03	0.01	0.02	0.00	0.00	0.30	0.04	0.02	0.00	0.00	0.00	0.02	0.03	0.01	0.04	0.04	0.04	0.01
SWE	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.12	0.01	0.02	0.01	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	0.07	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.02	0.00
CHE	0.00	0.01	0.00	0.05	0.00	0.01	0.01	0.00	0.01	0.00	0.03	0.01	0.00	0.02	0.00	0.00	0.01	0.03	0.05	0.01	0.01	0.00	0.00	0.00	0.04	0.02	0.05	0.01	0.01	0.00	0.14	0.04	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.01	0.00	0.03	0.01	0.03	0.05	0.02
THA	0.00	0.01	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.00	0.01	0.00	0.05	0.00	0.01	0.00	0.00	0.06	0.00	0.00	0.00	0.02	0.00	0.07	0.04	0.00	0.03	0.02	0.04	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01
TUN	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
TUR	0.04	0.01	0.00	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.05	0.00	0.01	0.01	0.02	0.02	0.09	0.02	0.01	0.01	0.09	0.01	0.03	0.03	0.00	0.01	0.00	0.06	0.02	0.00	0.00	0.02	0.01	0.00	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.01
GBR	0.03	0.01	0.04	0.03	0.01	0.07	0.03	0.04	0.01	0.03	0.03	0.09	0.01	0.04	0.00	0.01	0.05	0.07	0.07	0.06	0.06	0.04	0.01	0.00	0.16	0.05	0.05	0.02	0.00	0.03	0.01	0.08	0.01	0.01	0.03	0.08	0.04	0.27	0.00	0.01	0.06	0.06	0.00	0.02	0.01	0.07	0.08	0.05	0.02	0.04	0.07	0.00	0.09
USA	0.24	0.12	0.07	0.22	0.09	0.11	0.17	0.77	0.13	0.41	0.52	0.15	0.59	0.22	0.82	0.04	0.25	0.13	0.21	0.19	0.25	0.23	0.13	0.05	0.26	0.47	0.19	0.27	0.41	0.10	0.32	0.08	0.18	0.83	0.08	0.11	0.14	0.10	0.06	0.26	0.07	0.02	0.17	0.22	0.25	0.10	0.16	0.19	0.22	0.09	0.24	0.21	0.00

Table B.3: Unit Root Tests for the Global Variables

	oil price			GPR			Lq			Oil Production		
Global	trend	no trend	Dpoil	trend	no trend	DGPR	trend	no trend	DLq	trend	no trend	Dqoil
Critical Val.	-3.24	-2.89	-2.89	-3.45	-2.89	-2.89	-3.45	-2.89	-2.89	-3.45	-2.89	-2.89
Statistic	-1.99	-0.99	-6.72**	-2.82	-2.82	-7**	-1.08	-2.01	-8.52**	0.63	-1.03	-4.56**

Table B.4: Unit Root Tests for Domestic Variables

	Y			I			Rs		
	trend	no trend	DY	trend	no trend	DI	trend	no trend	DRs
DZA	-3.17	-0.91	-5.54**	-1.6	-2.26	-0.72	-1.92	-0.03	-8.44**
ARG	-2.72	-0.87	-6.31**	-3.3	-1.64	-4.41**	-2.71	-1.19	-10.09**
AUS	-5.69**	-1.12	-8.45**	-1.74	-1.21	-9.87**	-3.36	-2.52	-9.27**
AUT	-3.27	-1.25	-7.9**	-2.03	-0.36	-11.69**	-1.64	-1.82	-10.04**
BHR	-4.24**	-3.28	-8.05**	-1.64	-0.38	-12.28**	-2.51	-1.51	-8.73**
BEL	-2.77	-0.27	-8.51**	-2.72	-0.47	-7.06**	-2.23	-1.96	-6.82**
BRA	-2.09	-1.24	-11.5**	-2.71	-1.05	-5.8**	-3.1	-0.4	-7.19**
CAN	-3.32	-0.4	-9.47**	-7.94**	-0.88	-5.81**	-2.03	-0.89	-10.17**
CHL	-2.41	-0.25	-5.5**	-2.62	-1.09	-10.25**	-4**	-2	-9.37**
CHN	-10.31**	-0.07	-11.31**	1.45	-2.21	-6.9**	-2.76	-1.88	-5.85**
COL	-2.73	-0.64	-8.06**	-2.06	-1.27	-4.48**	-4.16**	-0.8	-4**
DNK	-1.66	-1.62	-8.51**	-2.01	-2.25	-6.04**	-2.84	-1.42	-7.63**
ECU	-6.54**	-1.62	-8.16**	-1.92	-1.66	-2.28	-3.31	-1.44	-6.21**
EGY	-3.14	-1.06	-9.05**	-2	-0.33	-4.55**	-0.78	-1.49	-6.18**
SLV	-2.49	-0.9	-6.75**	-2.06	0.47	-7.11**	-4.34**	-1.34	-7.28**
ARE	-2.03	-1.65	-5.86**	-2.33	-0.97	-6.58**	-1.43	-1.32	-8.46**
FIN	-1.17	-1.72	-6.46**	-3.13	-1.96	-11.07**	-2.25	-2.15	-7.99**
FRA	-1.53	-1.66	-8.22**	-2.53	-2.67	-12.96**	-4.35**	-2.45	-6.98**
DEU	-3.81**	-1.1	-9.79**	-1.99	-1.01	-10.3**	-1.77	-1.73	-6.64**
GRC	-1.92	-1.91	-4.94**	-2.33	-1.51	-3.48**	-1.5	-1.49	-9.41**
HUN	-1.8	-0.83	-4.29**	-4.37**	-1.52	-6.42**	0	0	0
IND	-6.09**	-1.25	-9.39**	-1.15	-0.81	-7.91**	-1.91	-0.95	-6.26**
IDN	-1.77	-0.91	-10.03**	-1.65	-2.39	-6.31**	0.49	-1.59	-1.33
IRN	-3.06	-2.51	-8.45**	-2.5	-1.58	-5.11**	0	0	0
IRL	-2.4	-0.73	-10.01**	-1.96	-0.16	-8.32**	-0.48	-0.93	-6.25**
ISR	-3.33	-1.1	-8.64**	-12.17**	-13.78**	-3.99**	-2.43	-0.81	-9.61**
ITA	-1.4	-1.8	-8.74**	-2.2	-3.82**	-12.48**	-1.18	0.04	-3.8**
JPN	-2.48	-2.82	-7.59**	-1.61	-2.04	-8.07**	2.13	-1.4	-1.52
JOR	-2.72	-2.44	-9.92**	-2.5	-1.18	-5.43**	-3.15	-0.74	-5.43**
KWT	-4.68**	-2.41	-16.46**	-2.04	-0.24	-9.97**	-0.91	-1.83	-2.46
LBN	-3.03	-1.37	-9.98**	-3.04	-2.18	-8.64**	-2.76	0.22	-5.39**
LUX	-2.27	-1.19	-7.58**	-3.15	-1.41	-9.37**	-2.53	-0.74	-11.33**
MYS	-1.19	-1.77	-11.19**	-1.44	-1.92	-7.38**	-1.42	-1.09	-8.31**
MEX	-2.84	-1	-7.94**	-3.69**	-1.05	-7.14**	-4.49**	-1.68	-7.93**
MAR	-2.65	-0.6	-10.19**	-2.21	-0.94	-5.43**	-1.64	-0.58	-15.47**
NLD	-2.81	-0.76	-10.87**	-2.63	-0.73	-10.35**	-1.7	-1.83	-5.3**
NZL	-3.33	-3.91**	-8.89**	-3.82**	-0.89	-6.89**	-1.99	-1.72	-7.31**
NOR	-0.91	-2.17	-12.47**	-1.74	-0.38	-5.9**	-2.77	-2	-10.56**
OMN	-1.93	-3.95**	-8.77**	-1.78	-0.63	-9.17**	-3.29	-0.57	-8.3**
PHL	-2.71	-1.33	-5.36**	-7.26**	-1.39	-6.25**	-3.24	-0.44	-6.23**
PRT	-1.43	-2.48	-11.32**	-1.32	-1.46	-5.43**	-1.2	-1.21	-8.97**
QAT	-3.21	-1.32	-8.17**	-3.49**	-1.45	-5.47**	-1.7	0.48	-9.96**
SAU	-3.28	-2.33	-9.44**	-2.73	-1.58	-3.85**	-1.27	0.02	-7.99**
SGP	-1.95	0.81	-8.35**	-1.69	-1.78	-12.76**	-0.53	-2.93	-11.21**
KOR	-1.1	-1.87	-11.89**	-1.43	-2.03	-5.93**	-1.29	-1.02	-5.19**
ESP	-1.22	-1.68	-8.08**	-1.32	-1.43	-4.64**	-1.75	-1.74	-6.84**
SWE	-1.45	-1.48	-5.66**	-5.88**	-0.89	-6.87**	-1.58	-1.18	-11.01**
CHE	-5.07**	-5.16**	-6.16**	-2.36	-1.77	-8.76**	-1.75	-0.09	-3.87**
THA	-5.1**	-4.52**	-8.57**	-2.08	-2.09	-5.84**	-1.1	-1.46	-4**
TUN	-2.42	-2.28	-10.28**	-1.2	-0.87	-9.41**	-2.87	-1.06	-3.6**
TUR	-3.41	-0.98	-7.31**	-2.62	-1.33	-7.59**	-1.67	-1.45	-10.03**
GBR	-1.11	-1.44	-6.56**	-2.32	-1.07	-6.62**	-1.78	-0.17	-7.72**
USA	-1.66	-0.98	-9.67**	-0.9	-2.33	-13.26**	-2.49	-2.43	-9.85**

Table B.5: Unit Root Tests for Country-Specific Foreign Variables

	Ys			Is			Rss	
trend	no trend	Dys	trend	no trend	Dis	trend	no trend	DRss
-3.45	-2.89	-2.89	-3.45	-2.89	-2.89	-3.45	-2.89	-2.89
-1.64	-0.94	-11.09**	-0.6	-1.66	-11.71**	-1.61	-0.68	-9.2**
-3.4	-0.14	-10.15**	-0.36	-1.15	-4.47**	-1.81	-0.91	-9.4**
-2.74	-0.16	-10.71**	0.84	-2.41	-9.99**	2.39	-1.93	-6.38**
-2.99	-0.88	-10.44**	-2.17	-0.72	-6.06**	-1.78	-0.76	-9.41**
-2.65	-0.22	-7.67**	-4.53**	-4.29**	-6.31**	-1.03	-0.66	-8.49**
-2.27	-1.03	-10.59**	-0.89	-2.01	-12.11**	-1.96	-1.03	-9.65**
-3.26	0.03	-10.94**	0.9	-1.89	-10.5**	-0.78	-1.53	-10.27**
-1.74	-0.82	-8**	-0.12	-2.62	-13.39**	-2.03	-2.24	-10.26**
-2.85	-0.15	-10.89**	1.13	-2.29	-10.26**	1.07	-1.98	-9.33**
-2.32	-0.96	-10.58**	-0.55	-1.72	-12.85**	-0.06	-1.91	-8.4**
-2.14	-0.59	-9.06**	0.24	-2.69	-10.56**	-1.96	-1.75	-10.94**
-1.62	-0.89	-9.22**	-2.2	-0.69	-6.06**	-1.65	-1.29	-9.75**
-2.05	-0.77	-7.83**	0.5	-1.82	-11.37**	-1.98	-1.84	-11.29**
-1.67	-0.7	-10.22**	-0.61	-1.91	-11.41**	-2.74	-0.36	-11.02**
-1.71	-0.96	-9.72**	-0.66	-1.94	-13.06**	-2.14	-2.26	-10.19**
-4.4**	-0.92	-10.81**	-0.91	-1.69	-10.35**	1.48	-1.44	-5.29**
-2.02	-0.67	-9.11**	-1.03	-1.25	-10.79**	-1.59	-1.48	-9.9**
-2.6	-0.71	-8.7**	-0.59	-1.54	-11.41**	-1.61	-0.59	-9.39**
-2.1	-0.65	-9.16**	-0.59	-1.57	-11.76**	-1.86	-1.13	-9.98**
-2.5	-0.89	-8.8**	-0.68	-2.65	-10.44**	-2	-0.54	-9.64**
-2.55	-0.98	-10.46**	-0.72	-2.17	-12.03**	-1.7	-1.13	-9.7**
-3.06	0.11	-10.5**	-0.59	-0.74	-6.85**	-0.42	-2.19	-6.76**
-3.93**	-0.17	-9.67**	0.25	-2.1	-11.78**	1.99	-1.91	-7.73**
-3.39	-0.25	-10.97**	0.71	-2.4	-10.69**	0.91	-2.06	-8.75**
-2.31	-0.9	-10.66**	-0.84	-1.52	-11.4**	-1.67	-1.09	-6.07**
-2.25	-0.68	-8.89**	-0.32	-1.78	-12.55**	-1.74	-1.53	-10.17**
-2.37	-0.79	-8.56**	-0.66	-1.6	-11.7**	-1.63	-1.18	-9.59**
-5.38**	0.04	-10.31**	0.96	-2.24	-10.94**	0.49	-2.46	-6.77**
-2.39	-0.54	-10.24**	-0.92	-2.78	-9.09**	-0.32	-1.23	-7.2**
-2.63	-0.74	-10.19**	0.02	-2.28	-11.99**	1.86	-1.69	-5.91**
-2.51	-0.53	-11.12**	-2.61	-1.31	-9.24**	-1.77	-1.17	-10.13**
-2.63	-1.05	-10.23**	-1.22	-1.4	-11.06**	-1.79	-0.67	-5.9**
-6.69**	0.2	-9.47**	0.43	-2.15	-12.01**	1.79	-2.38	-7.5**
-1.84	-0.87	-10.01**	-0.09	-1.8	-12.88**	-2.14	-2.12	-10.25**
-1.78	-1.18	-10.98**	-0.86	-1.98	-12.09**	-1.83	-0.8	-8.98**
-2.96	-0.95	-10.71**	-1.07	-1.43	-11.27**	-1.75	-0.84	-6.02**
-3.31	-0.17	-10.53**	0.54	-1.82	-11.23**	-0.23	-2.5	-9.94**
-1.84	-1.09	-10.38**	-1.63	-0.94	-10.44**	-1.63	-0.83	-8.99**
-7.58**	-0.1	-10.37**	1.04	-2.37	-9.54**	2.13	-2.35	-7.2**
-4.25**	-0.07	-9.37**	0.49	-2.66	-12.55**	1.31	-2.49	-7.03**
-1.54	-1.27	-9.43**	-0.81	-1.62	-11.19**	-1.38	-0.83	-8.08**
-3.41	-0.92	-8.96**	-0.59	-1.89	-11.74**	1.74	-1.55	-4.99**
-3.97**	-0.28	-10.23**	0.46	-2.32	-11.78**	2.12	-1.83	-7.08**
-3.18	-0.5	-9.53**	0.47	-2.1	-10.95**	2.09	-1.81	-4.96**
-8.41**	0.12	-11.05**	1.34	-2.23	-9.97**	1.29	-2.47	-5.31**
-1.94	-1.2	-10.67**	-0.76	-2	-12.31**	-1.7	-0.66	-9.38**
-1.52	-0.95	-9.11**	-1.08	-1.62	-11.52**	-1.66	-1.4	-6.77**
-2.83	-0.73	-8.76**	-0.47	-1.96	-12.38**	-1.69	-1.19	-10.02**
-3.42	-0.04	-10.57**	0.58	-2.01	-11.21**	1.82	-1.93	-6.74**
-1.6	-1.44	-9.29**	-1.59	-2.6	-12.75**	-2.21	0	-7.73**
-1.98	-0.71	-11.21**	-1.18	-3.69**	-11.3**	-1.85	-0.79	-10.1**
-2.61	-0.57	-8.15**	-0.83	-1.36	-11.19**	-1.77	-0.9	-9.42**
-5.37**	-0.1	-8.88**	-3.66**	-0.33	-5.06**	-1.47	-1.27	-9.54**

Table B.6: Lags and Number of Cointegration Relations

Country	p	q	Cointeg.	Country	p	q	Cointeg.	Country	p	q	Cointeg.
DZA	2	2	2	DEU	2	2	2	NZL	2	4	2
ARG	4	1	1	GRC	4	1	1	NOR	2	1	1
AUS	2	1	1	HUN	4	4	1	OMN	2	1	1
AUT	4	2	2	IND	1	1	2	PHL	4	4	2
BHR	4	2	1	IDN	3	3	1	PRT	1	1	1
BEL	4	4	2	IRN	4	1	2	QAT	1	1	1
BRA	1	1	2	IRL	4	1	2	SAU	2	3	1
CAN	4	4	1	ISR	1	1	1	SGP	3	1	1
CHL	4	4	3	ITA	1	1	1	KOR	3	3	2
CHN	4	4	3	JPN	1	2	1	ESP	2	2	1
COL	4	4	2	JOR	4	4	2	SWE	4	1	1
DNK	4	2	2	KWT	4	2	1	CHE	2	1	1
ECU	1	1	1	LBN	2	1	1	THA	3	1	2
EGY	3	1	1	LUX	1	2	1	TUN	3	3	1
SLV	4	1	3	MYS	2	1	1	TUR	4	1	1
ARE	3	1	1	MEX	4	4	2	GBR	1	1	1
FIN	4	4	2	MAR	4	3	2	USA	2	1	1
FRA	2	2	1	NLD	1	1	2				

Table B.7: F-statistics for the serial correlation tests

Cou.	Y	I	Rs	Cou.	Y	I	Rs	Cou.	Y	I	Rs
DZA	2.21	0.9	0.36	DEU	2.41	1.12	1.44	NZL	0.41	0.59	0.08
ARG	2.11	3.83**	0.25	GRC	7.28**	0.72	0.25	NOR	0.66	2.15	1.19
AUS	0.87	1.34	2.08	HUN	14.25**	4.08**	0	OMN	2.4	2.79**	1.13
AUT	0.14	0.54	1.05	IND	2.38	1.11	0.63	PHL	1.35	2.42	1.62
BHR	2.38	2.06	1.07	IDN	0.32	1.48	0.98	PRT	0.61	2.4	0.57
BEL	2.41	3.86**	1.76	IRN	2.44	1.36	0	QAT	1.3	4.44**	1.85
BRA	1.01	1.87	0.21	IRL	0.32	0.88	0.49	SAU	0.81	2.37	0.98
CAN	0.72	6.15**	3.1**	ISR	2.01	3.95**	1.2	SGP	2.71**	2.43	0.1
CHL	0.58	0.83	2.39	ITA	1.36	2	0.82	KOR	1.94	4.88**	1.07
CHN	6.43**	0.43	2.44	JPN	2.41	1.34	0.42	ESP	1.7	0.55	0.99
COL	2.27	4.84**	6.94**	JOR	0.64	2.13	1.38	SWE	6.27**	5.58**	1.26
DNK	1.7	2.06	1.13	KWT	0.85	1.27	1.47	CHE	2.42	0.09	6.28**
ECU	0.67	4.73**	5**	LBN	0.69	0.77	1.25	THA	1.24	1.38	0.13
EGY	1.36	1.62	0.66	LUX	2.03	1.04	2.12	TUN	1.21	0.45	1.34
SLV	0.65	10.14**	2.02	MYS	4.11**	2.35	0.54	TUR	0.28	1.05	1.57
ARE	0.55	0.62	2.95**	MEX	1.11	2.49**	0.39	GBR	0.93	0.86	2.64**
FIN	3.73**	0.38	0.97	MAR	1.75	2.08	3.93**	USA	3.19**	2.75**	0.37
FRA	0.84	0.98	0.98	NLD	0.7	0.15	0.86				

Table B.8: Tests for Weak Exogeneity

Cou.	Ys	Is	Rss	poil	GPR	Lq	Cou.	Ys	Is	Rss	poil	GPR	Lq
DZA	0.45	0.36	0.52	0.44	2.90	0.68	JPN	2.77	0.00	0.62	0.66	0.08	0.02
ARG	0.00	0.49	1.52	0.00	1.25	0.04	JOR	1.53	0.63	0.04	0.78	1.32	1.94
AUS	2.47	2.66	0.07	2.20	0.33	0.00	KWT	0.44	1.64	0.05	0.01	1.33	0.91
AUT	0.55	0.71	1.91	0.74	0.15	2.40	LBN	0.08	0.71	0.23	0.91	0.92	0.34
BHR	3.1**	1.38	0.09	0.06	2.07	0.19	LUX	0.00	0.00	0.34	3.43**	1.46	0.71
BEL	1.04	2.21	2.34	2.11	0.73	1.86	MYS	0.00	0.14	0.03	0.00	2.06	0.74
BRA	2.32	2.88	2.62	1.66	1.20	0.38	MEX	1.38	3.36**	6.01**	8.74**	1.27	1.26
CAN	0.03	0.07	0.04	0.30	0.82	0.71	MAR	0.59	1.03	0.30	0.98	2.41	0.13
CHL	10.2**	0.43	0.73	4.92**	0.40	0.58	NLD	0.03	0.10	0.48	0.02	0.99	0.88
CHN	2.14	1.32	2.41	0.96	1.53	3.62**	NZL	1.32	1.07	0.83	3.84**	2.57	1.78
COL	0.26	0.66	3.39**	2.83	0.90	8.21**	NOR	0.62	1.45	0.30	1.50	2.62	0.18
DNK	0.21	2.38	0.18	2.53	1.04	0.29	OMN	2.54	0.28	0.26	0.20	2.27	1.55
ECU	0.02	0.13	0.06	0.91	0.02	1.73	PHL	2.85	0.80	4.85**	1.43	2.23	3.22**
EGY	0.23	0.58	0.73	0.10	0.03	0.71	PRT	1.87	0.45	0.09	1.23	0.00	1.07
SLV	2.31	4.89**	3.26**	2.54	0.19	0.69	QAT	0.20	1.67	0.07	1.14	0.75	0.95
ARE	0.10	1.05	0.03	0.49	0.10	0.01	SAU	5.13**	0.07	1.12	4.81**	0.83	2.78
FIN	3.11**	1.94	7.51**	3.42**	2.91	2.67	SGP	4.75**	13.52**	14.17**	2.13	2.20	1.53
FRA	0.33	0.22	0.98	0.05	2.97	0.12	KOR	2.02	1.37	2.37	3.41**	0.30	2.10
DEU	0.92	0.05	2.48	1.97	2.43	4.54**	ESP	0.58	0.02	0.02	1.04	3.02	0.00
GRC	0.32	0.09	3.97**	0.60	0.42	0.15	SWE	5**	1.93	11.32**	10.64**	2.60	2.97
HUN	0.06	0.22	0.18	3.97**	2.41	1.83	CHE	5.08**	3.95**	0.12	0.09	0.21	1.15
IND	2.56	2.21	3.1**	1.56	1.41	0.29	THA	0.79	2.21	2.29	3.89**	0.23	0.44
IDN	0.75	0.03	0.00	9.06**	0.83	5.01**	TUN	10.37**	13.88**	3.55**	2.79	2.62	2.49
IRN	2.56	0.29	1.26	0.24	1.13	1.10	TUR	0.23	0.32	0.16	0.41	0.09	2.51
IRL	2.63	0.90	3.74**	0.55	2.57	3.17**	GBR	0.81	1.31	0.30	0.02	0.26	1.78
ISR	0.10	0.51	0.01	0.63	2.33	2.88	USA	1.39					
ITA	0.02	0.90	2.37	4.6**	1.59	0.46							

C Figures

Figure C.1: Persistence Profile of the Effect of System-Wide Shocks

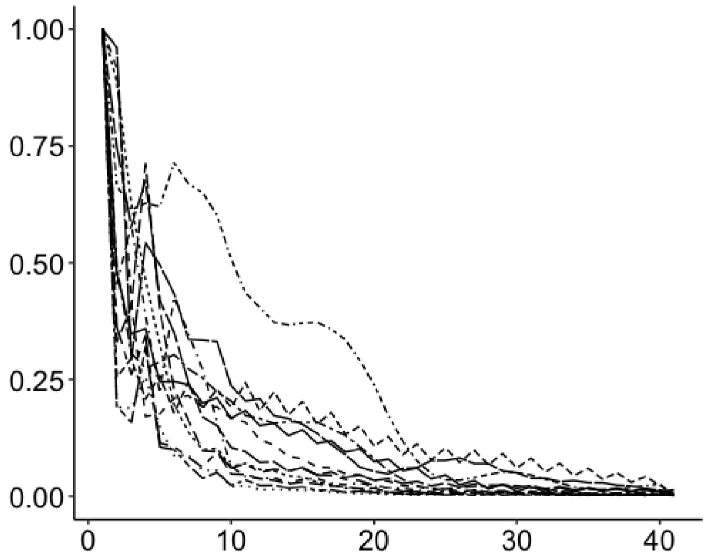


Figure C.2: Country GDP Response to One s.d. Negative Oil Price Shock

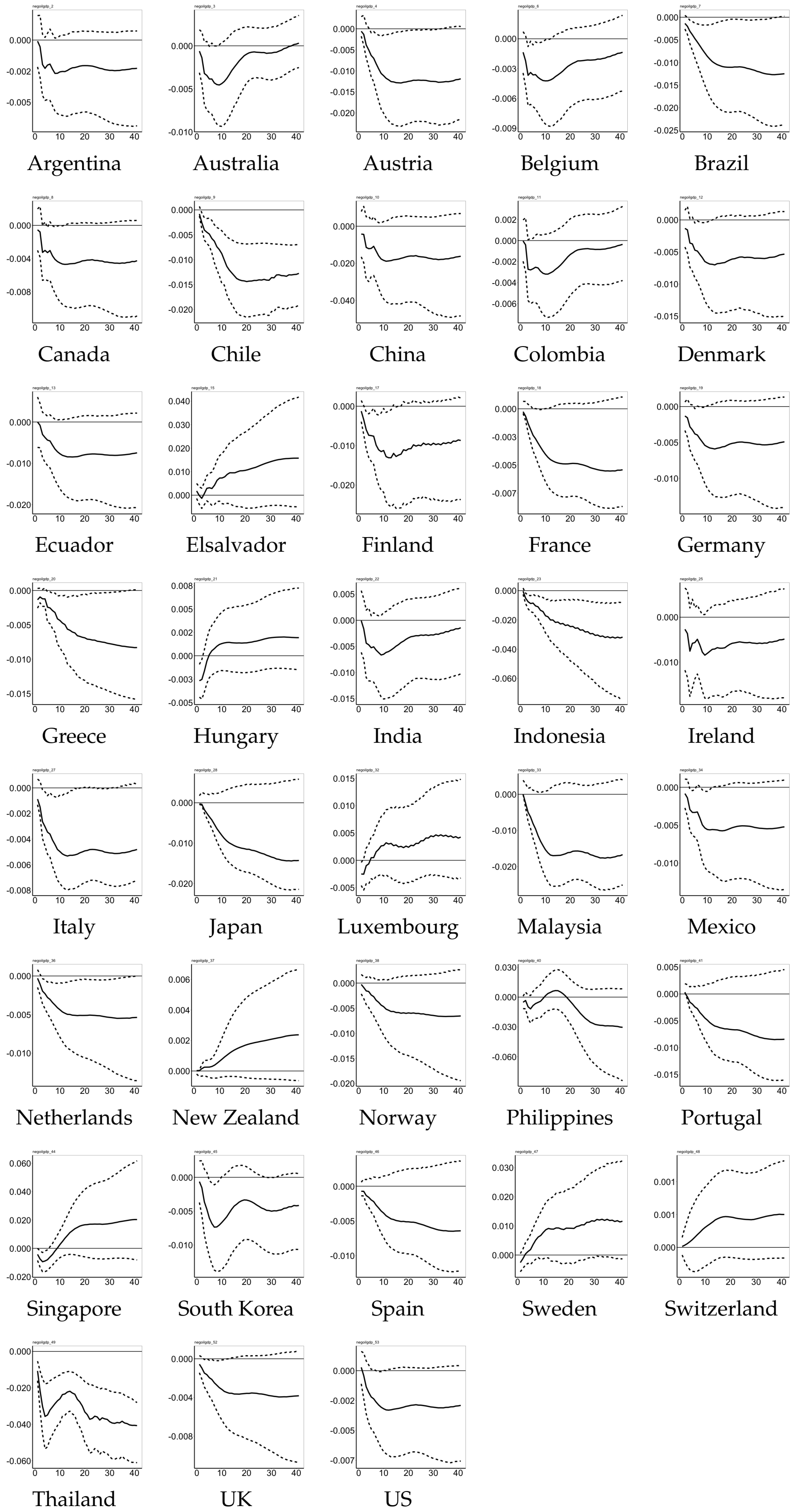


Figure C.3: Country Investment Response to One s.d. Negative Oil Price Shock

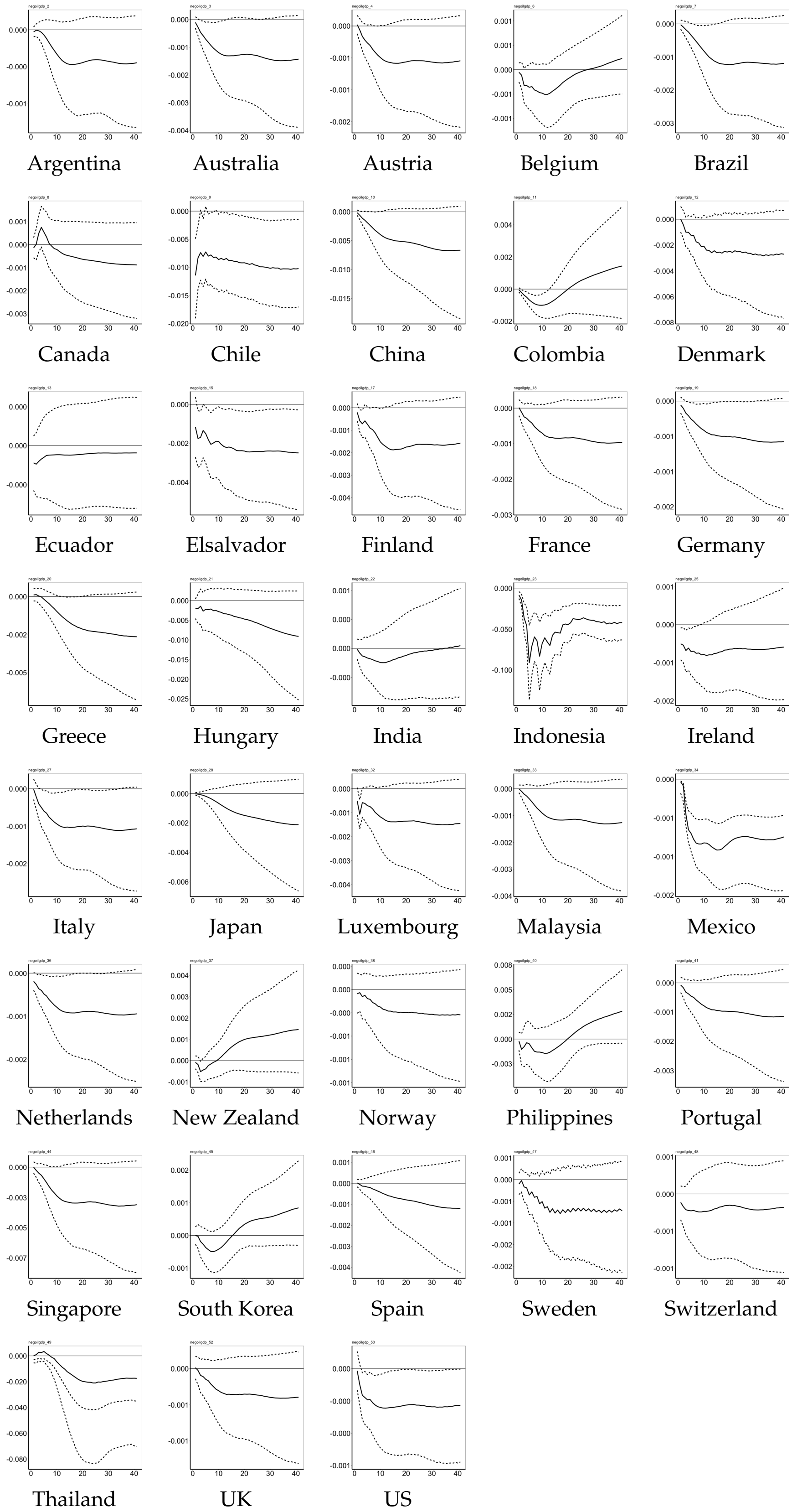


Figure C.4: Country GDP Response to One s.d. Positive GPR Shock

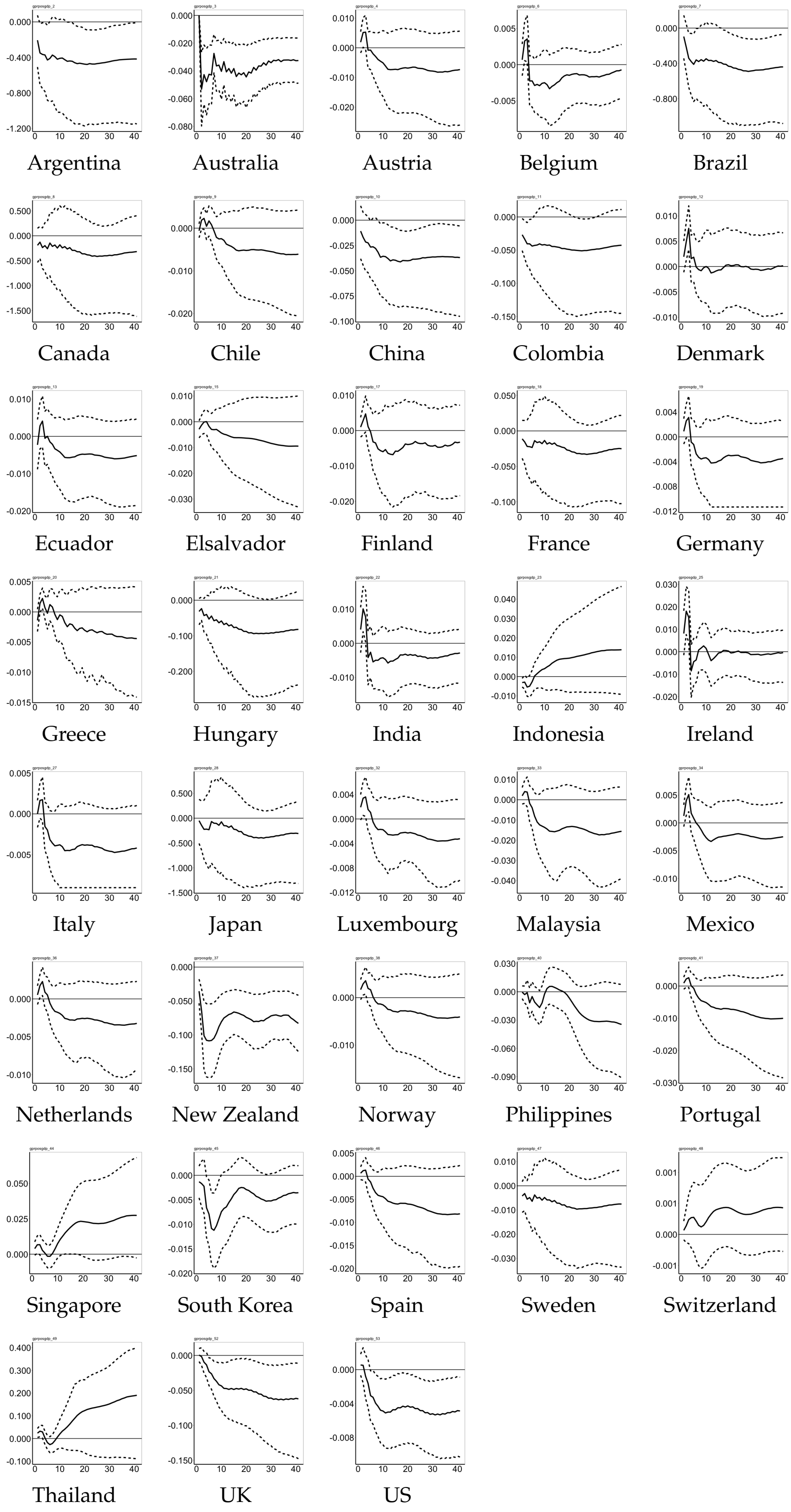


Figure C.5: Country Investment Response to One s.d. Positive GPR Shock

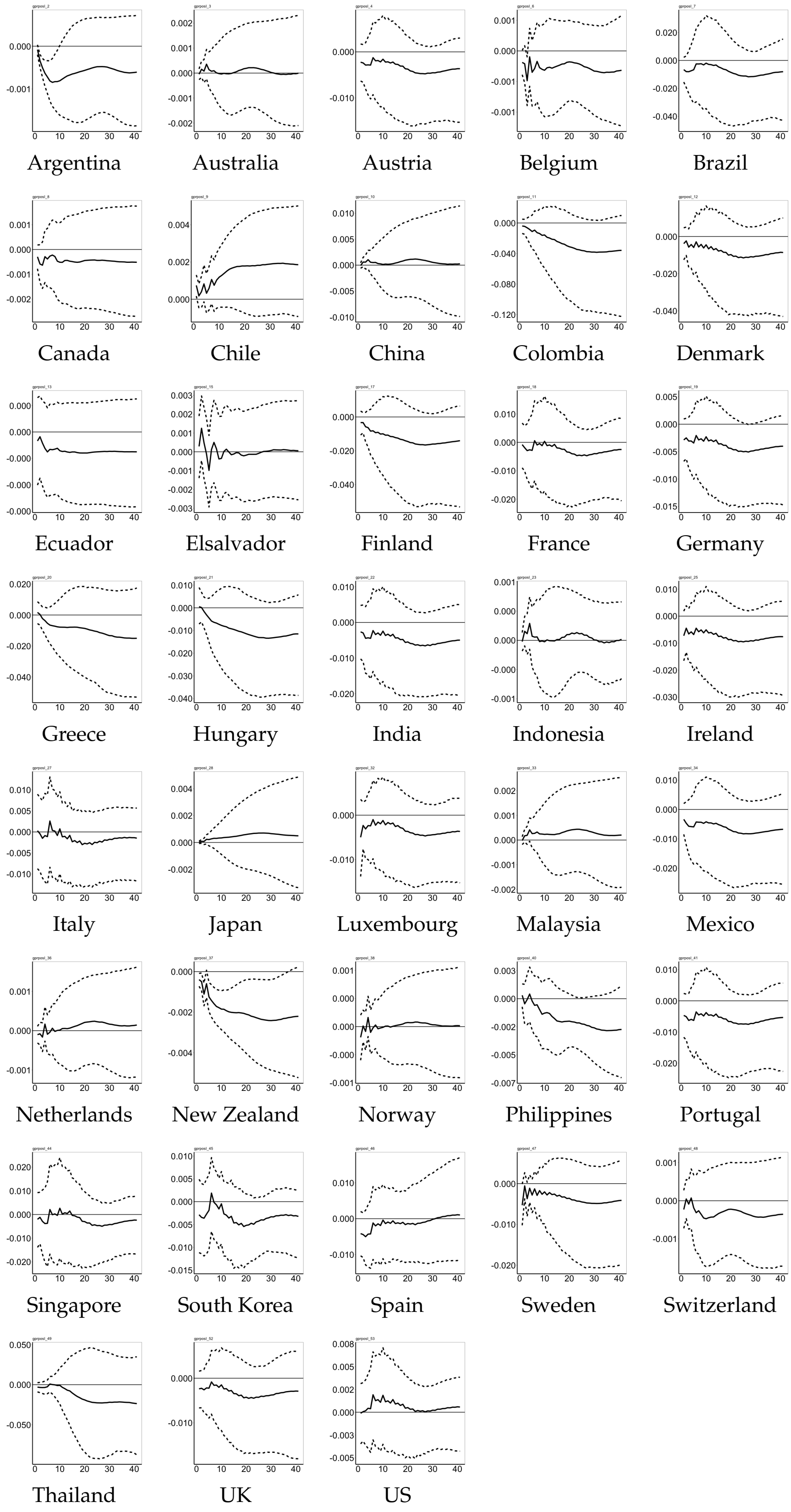


Figure C.6: Country GDP Response to One s.d. Negative Liquidity Shock

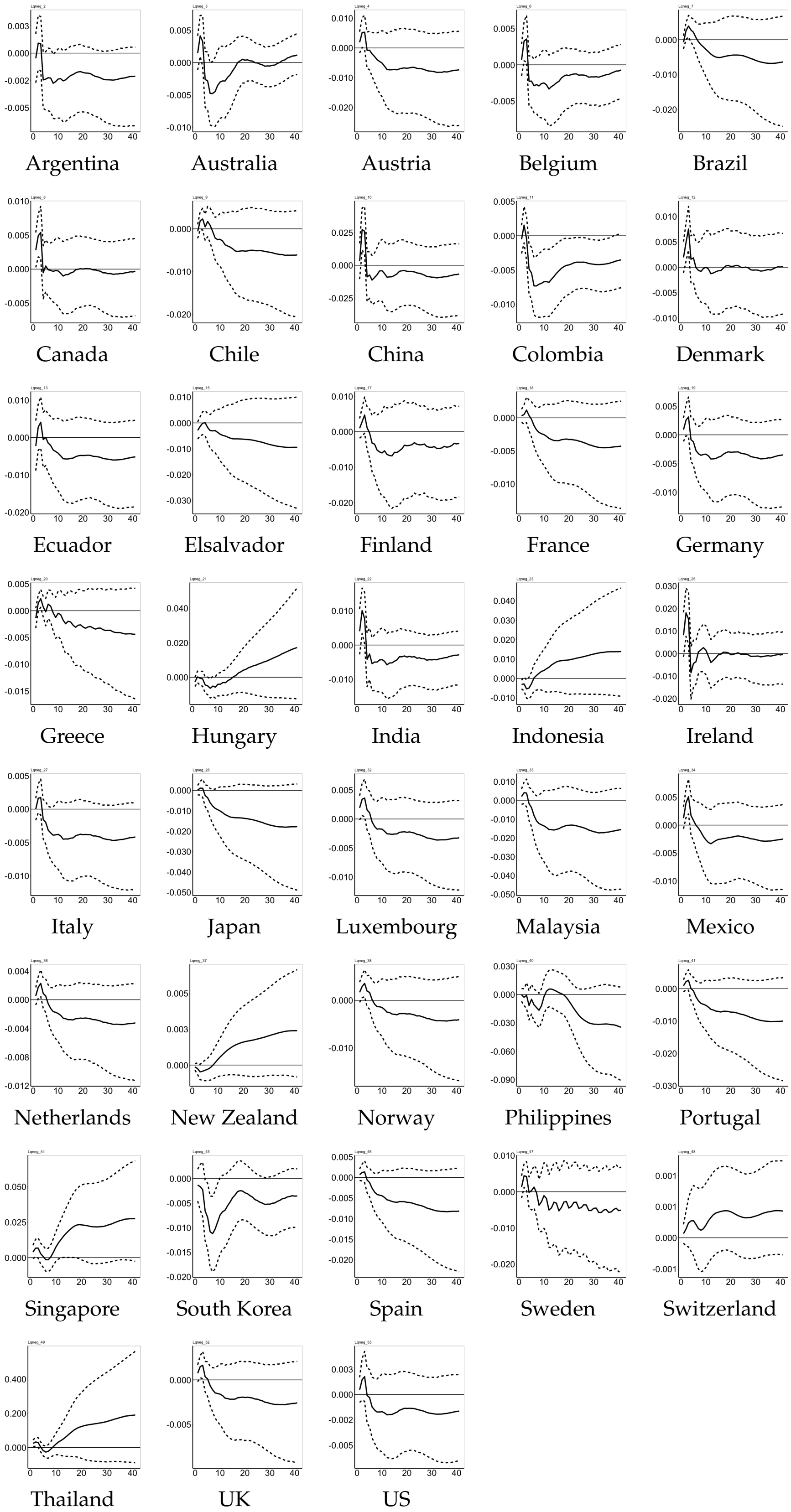


Figure C.7: Country Investment Response to One s.d. Negative Liquidity Shock

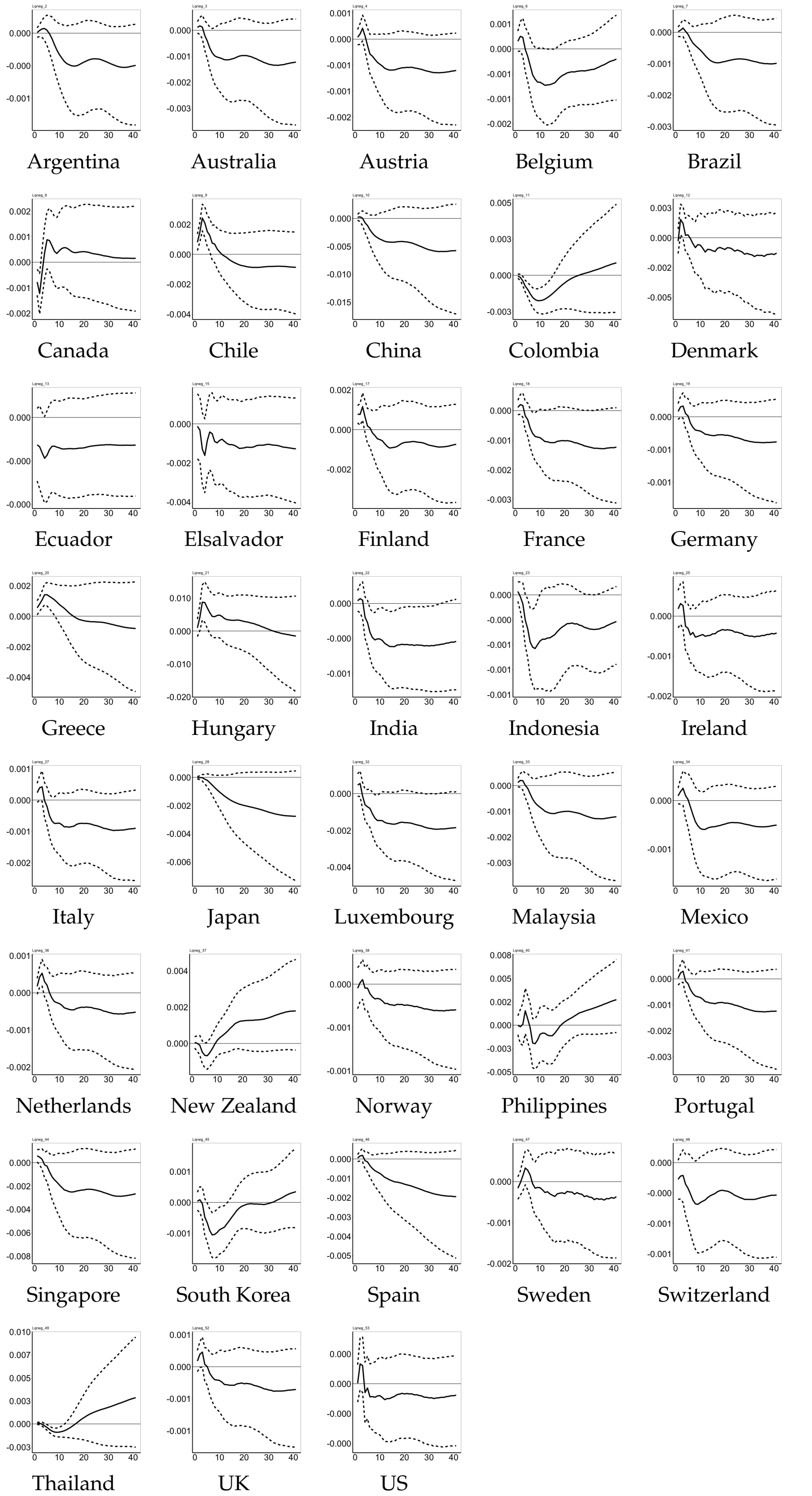
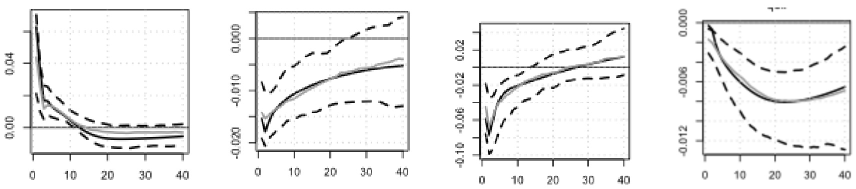
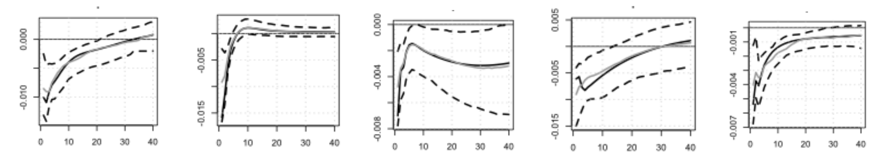


Figure C.8: Responses to One s.d. Negative Oil Demand Shock

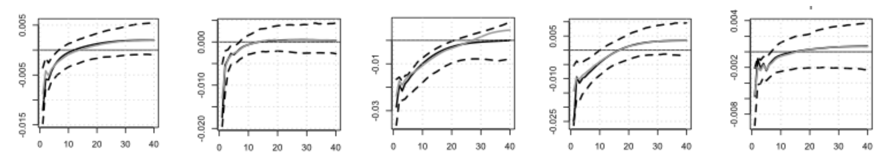


Geopolitical risk GIRF | Global Liquidity GIRF | Oil Price GIRF | Oil Production GIRF

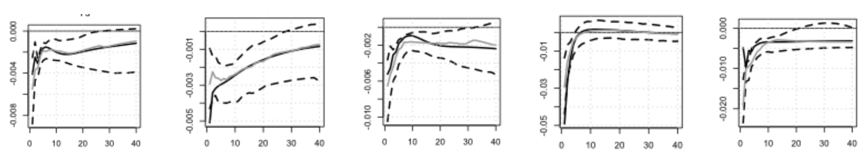
Figure C.9: MENA GDP Response to One s.d. Negative Oil Demand Shock



Algeria | Bahrain | Egypt | Emirates | Iran



Israel | Jordan | Kuwait | Lebanon | Morocco



Oman | Qatar | Saudi Arabia | Tunisia | Turkey

Figure C.10: MENA Investment Response to One s.d. Negative Oil Demand Shock

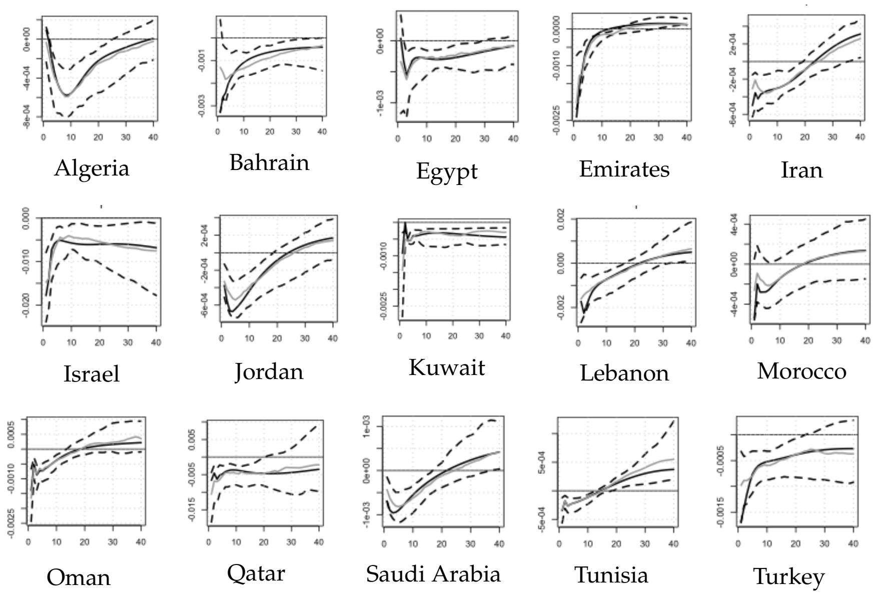


Figure C.11: Responses to One s.d. Positive Oil Supply Shock

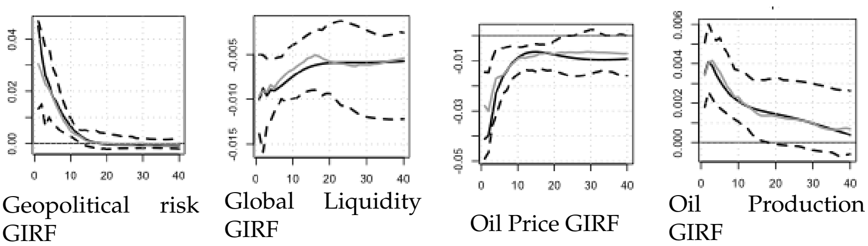


Figure C.12: MENA GDP Response to One s.d. Positive Oil Supply Shock

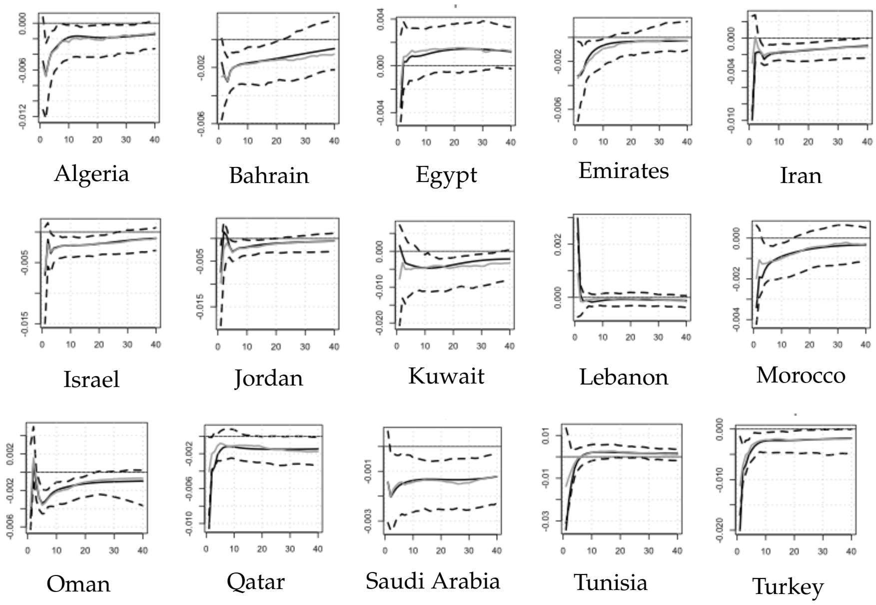


Figure C.13: MENA Investment Response to One s.d. Positive Oil Supply Shock

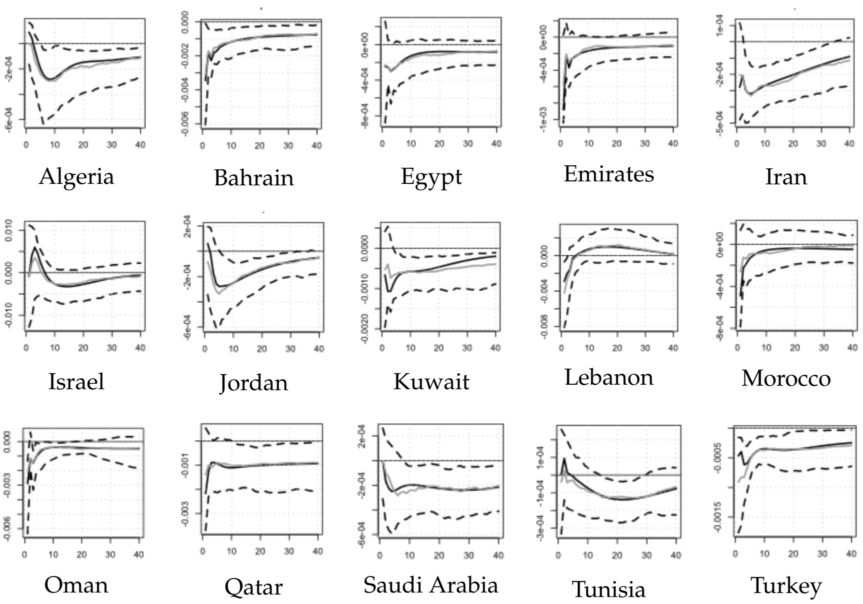
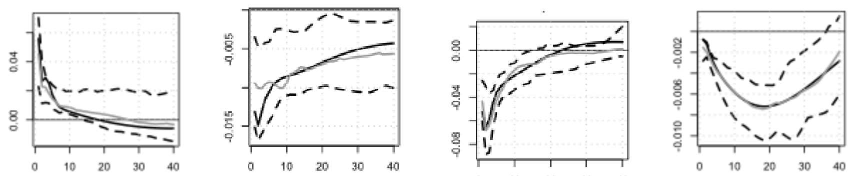
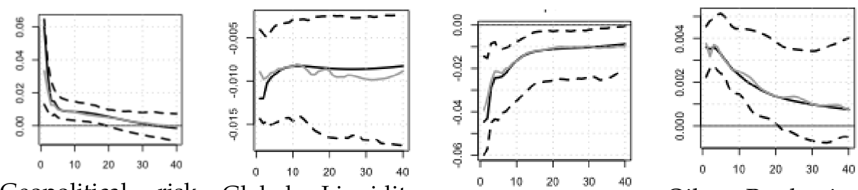


Figure C.14: Responses to One s.d. Negative Oil Demand Shock - Oil Production Endogenous in GCC Region



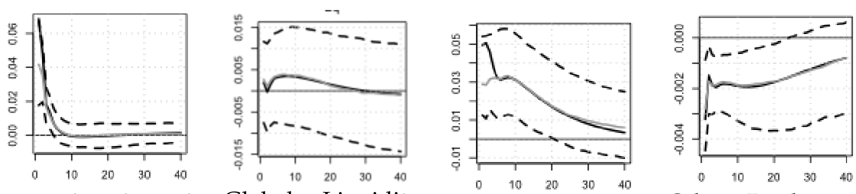
Geopolitical risk GIRF | Global Liquidity GIRF | Oil Price GIRF | Oil Production GIRF

Figure C.15: Responses to One s.d. Positive Oil Supply Shock - Oil Production Endogenous in GCC Region



Geopolitical risk GIRF | Global Liquidity GIRF | Oil Price GIRF | Oil Production GIRF

Figure C.16: Responses to One s.d. Positive Geopolitical Risk Shock - Oil Production Endogenous in GCC Region



Geopolitical risk GIRF | Global Liquidity GIRF | Oil Price GIRF | Oil Production GIRF