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THE INSTITUTIONAL CURSE OF NATURAL
RESOURCES IN THE ARAB WORLD

Hoda Selim and Chahir Zaki

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Abstract

This paper argues that the resource curse in the Arab world is primarily an “institutional curse”, even though it has several macroeconomic manifestations. An empirical investigation, using an augmented growth model, confirms the conditional resource curse hypothesis. The results suggest that on their own; political institutions do not always have an effect on growth but, when these interact with natural resources, they reduce the negative effect of natural resources on growth but do not offset it. The analysis also shows that the curse has operated in different ways within the Arab world. In the GCC, large rents per capita have been utilized to increase government legitimacy and foster regime stability. Indeed, the curse is expressed *subtly* through a clear segmentation of the labor markets, which acts as an efficient mechanism of rent distribution in the form of well-remunerated public sector jobs and other generous social welfare schemes to national citizens. In contrast, the populous group comprised of poorer rentier states, have experienced conflict, violence and social unrest. Moreover, the limited resources seem to have led to more dire economic consequences; resource busts tend to drive the poor rentier states to engage in excessive borrowing while booms seem to have almost eliminated their manufacturing sectors. Moreover, in a context of low rent per capita, excessive consumption resulted in massive deficiencies in infrastructure investments and an underdeveloped financial sector.

JEL Classifications: N15, O43, P48.

Keywords: Oil curse, Natural Resources, Institutions, Arab region, Growth.

ملخص

ترى هذه الورقة أن لعنة الموارد في العالم العربي هي في المقام الأول "لعنة المؤسسة"، على الرغم من أن لديها العديد من مظاهر الاقتصاد الكلي. يؤكد التحقيق التجريبي، وذلك باستخدام نموذج النمو المعزز، مشروطة لعنة الموارد الفرضية. وتشير النتائج من تلقاء نفسها إلى أن المؤسسات السياسية لا تملك دائما التأثير على النمو، ولكن عندما تتفاعل مع الموارد الطبيعية، فإنها تقلل من التأثير السلبي للموارد الطبيعية على النمو ولكنها لا تعوضه. ويظهر التحليل أيضا أن لعنة الموارد عملت بطرق مختلفة داخل العالم العربي. في دول مجلس التعاون الخليجي، وقد استخدمت الإجراءات الكبيرة من نصيب الفرد إلى زيادة شرعية الحكومة وتعزيز استقرار النظام. وفي الواقع، يتم التعبير عن هذه اللعنة بمهارة من خلال تجزئة واضحة لأسواق العمل، والذي يعمل بمثابة آلية فعالة لتوزيع الربح في شكل أجر جيد في وظائف القطاع العام وخطط الرعاية الاجتماعية السخية الأخرى للمواطنين. وفي المقابل، فإن مجموعة السكان الأكثر فقرا الموجودة في الدول الريعية شهدت صراعات وعنف واضطرابات اجتماعية. وعلاوة على ذلك، يبدو أن محدودية الموارد أدت إلى عواقب اقتصادية وخيمة أكثر. فنصفية الموارد تميل إلى دفع الدول الريعية الفقيرة للانخراط في الاقتراض المفرط في حين يبدو أن الطفرات في التخلص تقريبا من قطاعاتها التصنيعية. وعلاوة على ذلك، وفي سياق الإيجار المنخفض للفرد الواحد، أدى الاستهلاك المفرط إلى قصور ضخم في الاستثمارات في البنية التحتية ووجود قطاع مالي متطور.

1. Introduction

The Arab region has been endowed with large natural resource wealth, with resource discoveries taking place since the first half of the twentieth century since the first half of the twentieth century. Currently, 11 countries of the 22 members of the “League of the Arab States” are natural resource exporters and seven are members of the Organization of the Petroleum Exporting Countries (OPEC). The region holds close to half of global oil reserves and a quarter of natural gas reserves. It controls almost a third of oil production and 14 percent of natural gas production. The hydrocarbon sector dominates most of these economies, accounting on average for 50 percent of GDP and fuel exports represent around three-quarters of merchandise exports. Moreover, these countries derive at least two-thirds of their fiscal revenues from hydrocarbons.

Despite this blessing, resource-rich countries Arab countries have neither achieved economic prosperity nor became developed countries. And even though the per capita income of some of them is high, their growth performance has been extremely volatile and raises the question of whether their current levels of income are sustainable.

The early literature considered natural resource abundance as a source of economic development because of its ability to generate income, savings and investment and therefore growth and thus enable governments to provide public goods (Nurkse 1953). A following strand of the literature has put forward the “resource curse” theory, showing that resource abundance is associated with poor development outcomes (Gelb 1988).¹ Led by Sachs and Warner (1995), empirical work showed that resource-abundant countries have slower growth than resource-poor countries (Collier and Goderis 2007). A second avenue of research, which emerged in the early 2000’s, has linked natural resources to institutions. And while initial work showed that oil hurts democracy (Ross 2001), the current literature has almost reached a convergence that the resource curse is conditional on the quality of institutions, i.e. that resource-rich economies with strong political checks and balances are able to turn the resource curse into a blessing (Elbadawi and Soto,). Moreover, the literature has shown that the curse is manifested through several channels: (i) overall macroeconomic volatility (Hausman and Rigobon 2003; Ploeg and Poelhekke 2009) and excessive borrowing during resource busts (Manzano and Rigobon 2001), (ii) Dutch disease (Collier and Goderis 2007), (iii) excessive consumption, low or inefficient total investment (Collier and Goderis 2007), and (iv) lack of financial sector development (Beck 2011).

The chapter argues that the resource curse in the Arab world is primarily an “institutional curse”, even though it has several macroeconomic manifestations. It also undertakes an empirical investigation in resource-rich economies, using an augmented growth model, to assess the impact of natural resources on growth. The model accounts for the quality of institutions in order to test the conditional resource curse hypothesis.

Due to data constraints, the qualitative analysis is limited to only 10 resource-rich economies. The 6 GCC countries (Bahrain, Kuwait, Oman, Saudi Arabia, Qatar and the United Arab Emirates (UAE)) are endowed with large natural resource rents resulting in high rent per capita. Rent per capita is significantly lower in 4 populous countries, these being Algeria, Sudan, Syria and Yemen. The analysis will search for similarities and differences between both groups.

The analysis showed that weak institutions in the Arab World are the root cause of the resource curse with macroeconomic ramifications. In other words, while macroeconomic mismanagement and oil abundance are important determinants of performance, these factors are shaped primarily by the prevailing political institutions which predated resource discovery.

¹The name resource curse is attributed to Auty (1993).

Over time, the interaction between these factors became intertwined, preventing these countries from embarking on a sustainable development path.

The empirical model confirms that the resource curse is conditional on poor institutions. Resource rents have a negative effect on economic growth, a result that remains robust after controlling for initial income, trade policy, investment rates and schooling. More interestingly; on their own political institutions do not always have an effect on growth. However, when they interact with natural resources, they reduce the negative effect of natural resources on growth.

While weak governance is responsible for the region's lack of development, the curse has operated in different ways in both groups. In the GCC, large rents per capita have been utilized to increase government legitimacy and foster regime stability. Indeed, the curse is expressed *subtly* through a clear segmentation of the labor markets, which acts as an efficient mechanism of rent distribution in the form of well-remunerated public sector jobs and other generous social welfare schemes to national citizens. In contrast, in the populous group, which can only be considered as much poorer rentier states, rents are not sufficient to provide a stipend to citizens, and these countries have experienced conflict, violence and social unrest (Ali and Elbadawi 2012).

The macroeconomic manifestations of the curse are also expressed through different channels. On the one hand, the GCC group's growth performance is more severely affected by resource volatility but they have managed in recent years to diversify their non-oil economy, even though their manufacturing sectors still remain below predicted levels. They have engaged in excessive public consumption but high rents per capita allow them to allocate ample resources for investments, particularly in infrastructure, and to develop their financial sector. On the other hand, limited resources may have shielded the more populous economies from extreme volatility but seem to have led to more dire economic consequences. Resource busts tend to drive them to engage in excessive borrowing while booms seem to have almost eliminated their manufacturing sectors. Most importantly, in a context of low rent per capita, excessive consumption resulted in massive deficiencies in infrastructure investments and an underdeveloped financial sector

The remainder of the paper is structured as follows. Section 2 gives an overview of natural resource wealth in the economies of the region and then describes various aspects of their resource dependence. Section 3 shows the different interactions between institutions and natural resources. Section 4 investigates the different manifestations of the curse: overall macroeconomic volatility and excessive borrowing, the Dutch disease, excessive consumption and low investment, and lack of financial development. Section 5 empirically tests the resource curse hypothesis. Section 6 attempts to draw some policy recommendations in order to help Arab countries avoid the curse. The final section concludes.

2. Overview of Resource-Rich Economies in the Arab Region

2.1 Natural resource endowments

In terms of natural resource endowments, the GCC group clearly stands out as the better-off group, resulting in significantly higher rent and income per capita. In order to assess wealth, we look at 3 indicators: natural resources reserves, production, and natural resource rents as a share to GDP.

2.2 Reserves and production

Three GCC countries, Saudi Arabia, Kuwait and the UAE, hold approximately a third of world proven oil reserves. Saudi Arabia alone has the second largest proven reserves, accounting for 18 percent of global oil reserves (Table 1). These reserves are also easily accessible giving Saudi Arabia the ability over a short amount of time to substantially increase its supply to the global oil market. Moreover, it accounts for over 50 percent of global spare production capacity

and can raise global oil production by over 2 percent within 30 days (IMF 2013a). Moreover, all GCC countries but Bahrain are among the top 30 global oil producers (Table 1). Saudi Arabia is also the largest producer of total petroleum liquids (13 percent of global production) and is the largest crude oil exporter in the world. Moreover, Qatar, Saudi Arabia and the UAE are among the top 10 countries with proven natural gas resources (Table 2). Qatar has third-largest proven reserves of natural gas in the world, is the world's fifth largest producer, and the largest exporter of liquefied natural gas (LNG). Bahrain and Oman are considered small producers with limited reserves and shorter horizons before depletion.

As for the second “populous” group, their wealth is significantly smaller and it is therefore facing the prospect of resource depletion in the not-too-distant future. It holds less than 2 percent of oil reserves and control less than 3 percent of production. Algeria is among the top 20 global oil producers but with a production comparable only to Qatar, which is already among the lowest in the OPEC. More importantly, Algeria has the tenth largest natural gas reserves in the world and is the second largest in Africa. It also accounts for almost 3 percent of world production, similarly to Saudi Arabia (Table 2). However, production has been in steady decline since 2005 on the back of maturing fields. Sudan, Syria and Yemen are considered relatively small oil producers, similar to Bahrain. More worryingly, production has been declining in Sudan and Yemen because of natural declines at maturing fields.²

2.3 Natural resource rents

The share of total natural resource rents to GDP in the GCC fluctuated on average around 42 percent between 1970 and 2011, more than double the average for the populous economies (Figure 1). On the one hand, Kuwait, Saudi Arabia, Oman and Qatar are considered richer, with rents accounting for close to half of the GDP (Figure 1). On the other, Bahrain and UAE are relatively less endowed, with rents representing respectively a third and quarter of the GDP, which is comparable to Yemen and slightly higher than in Algeria. The poorest in terms of natural resource wealth is Sudan where rents account for only 6 percent of GDP. An interesting observation is that even though the GCC remain richer, their resource rents have declined over time but they have increased in the populous economies reflecting discoveries in the late 1980s (Table 3).

Given the GCC's sheer amount of wealth and their national populations are relatively small (Table 3), average natural resource rent per capita is currently close to US\$ 64,000 per year while it is only US\$ 618 in the populous group. Within the GCC, Qatar's rent per capita is estimated at around 190 thousand dollars per year (Figure 2), which is more than 3 times the level in Kuwait, which comes in second, and almost 17 times the figure for Bahrain where rent per capita is the lowest, estimated at around 11 thousand dollars. Algeria's modest rent per capita (US\$ 1,385), which is the highest among its group, is one-eighth that of Bahrain. In both groups, rent per capita has significantly increased over time (except in Bahrain where it remained fairly stable).

Consequently, all GCC countries belong to the high-income category (according to the World Bank Atlas method) with an average income around US\$ 34,510, which is almost 17 times the average of the populous group with an average income of only US\$ 2,345. To bring out the contrast even further, Algeria's income per capita is only a third that of Bahrain (Table 3). Among the GCC, Qatar has the highest GNI per capita, around US\$ 74,340, and it is 5 times that of Bahrain and 4 times that of Oman. Meanwhile, all the populous countries belong to the middle-income category. Only Algeria belongs to the upper-middle income countries, with a

²The secession of South Sudan resulted in a permanent shock with the loss of 75 percent of its oil production, nearly 55 percent of its fiscal revenues, and about two-thirds of its foreign exchange earnings (IMF 2013b).

GNI per capita above US\$ 4,000, which is almost 4 times that of Yemen, the poorest country in the group.

2.4 Resource dependence

This section shows that natural resources dominate several aspects of the economies under study but to varying degrees. To assess resource dependence, we look at three indicators: the share of hydrocarbons in value -added as well as its contribution to merchandise exports and fiscal revenues.

2.5 Structure of value-added and exports

The hydrocarbon sector dominates more the structure of exports than of value-added. Three groups with different patterns can be identified. In Kuwait, Saudi Arabia and Algeria, hydrocarbons account for half or more of value-added, and fuel exports account for at least 90 percent of merchandise exports and this share rises to 98 percent in Algeria (Figure 3). Bahrain, UAE, Qatar and Oman form a second relatively less resource-dependent group. In particular, UAE currently generates around 60 percent of GDP in the non-hydrocarbon sector and non-oil exports account for 40 percent of total merchandise exports. Impressively, Bahrain stands out as the most diversified in terms of non-oil GDP, which accounts for 75 percent of GDP but exports still remain dominated by fuel. The third group that includes Sudan, Yemen and Syria, shows mixed characteristics from the previous groups. Similar to the first group, fuel exports dominate overall exports (except for Syria). However, the share of hydrocarbons in the GDP is very low between 8 and 23 percent of GDP, even lower than the share in countries belonging to the second group.

2.6 Fiscal revenues

Finally, figure 4 shows that hydrocarbon revenues are a critical source of fiscal revenues in all countries except Syria. Saudi Arabia and Oman are extremely dependent on hydrocarbon revenues and non-hydrocarbon revenues accounted for barely a fifth of total revenues between 1992 and 2012. In Bahrain and Kuwait, hydrocarbon revenues constitute on average three-quarters of total revenue. Reflecting a similar share of resource rents to the GDP, the share of hydrocarbon revenues to total revenues is similar in Qatar, UAE, Algeria and Yemen, which is around two-thirds of total revenues.

Naturally, hydrocarbon fiscal revenues mirror oil price developments except in Qatar and Syria. They increased from an average of 17 percent of GDP in 1998 - when oil prices hit a low of US\$13 a barrel, to 30 percent of GDP in 2008, when they climbed to close US\$100 a barrel. In particular, in Saudi Arabia, they increased from 14 percent of GDP in 1998 to 50 percent of GDP in 2008 (Figure 5). They also doubled in Bahrain, UAE, Algeria and Yemen. The same trend (though less dramatic) can be observed in Oman. An interesting observation is that hydrocarbon revenues in the GCC during busts reached around 19 percent of GDP in 1998, which is comparable with the boom figure in the populous group of 23 percent of GDP.

Moreover, these large hydrocarbon revenues have allowed the GCC and Algeria to achieve on average fiscal surpluses between 1992 and 2012. These surpluses were around 2% of GDP or higher in most countries, except in Kuwait where they were higher than 15 percent of the GDP. In contrast, Syria and Yemen have posted deficits in the neighborhood of 4-5 percent of the GDP (Figure 5). However, the non-hydrocarbon balance has consistently been in deficit in all countries, averaging more than 20 percent of the GDP, except in UAE and Syria where it was lower (Figure 6).³

³This measure is a better indicator of the impact of fiscal policy on domestic demand since hydrocarbon revenues mainly originate from abroad and therefore does not subtract from the resources of the domestic private sector. If the non-resource deficit is getting smaller, fiscal policy provides less support for the non-oil economy (IMF 2013c).

The volatility of hydrocarbon revenues is also reflected in the volatility of fiscal balances. In fact, GCC countries (with the exception of Kuwait which managed to achieve a generous fiscal surplus of 7 percent of the GDP during the bust of 1998 which more than doubled in 2008) and Algeria ran deficits around 4 percent of the GDP in 1998, which transformed into surpluses of more than 12 percent of the GDP in 2008. However, the GCC group appears more vulnerable to oil price fluctuations. For instance, Saudi Arabia's deficit was close to 9 percent of the GDP in 1998 versus a surplus of close to 30 percent of the GDP in 2008 (Figure 7). In Yemen and Syria, fiscal deficits have persisted during oil booms. In Syria, they were slightly higher during booms than busts.

This section briefly described resource wealth and dependence in Arab economies. The GCC group may be richer in terms of endowments than the populous group but the degree of resource dependence does not seem to be related to the level of wealth. For instance, Kuwait, Saudi Arabia and Algeria form a highly resource-dependent group in terms of the three indicators used despite significant differences in wealth between Algeria and the other two countries. Moreover, Qatar, UAE, Bahrain and Oman have undertaken some diversification efforts (with a faster pace in the first two countries) and have therefore become relatively less resource-dependent. Finally, resource dependence is particularly worrying, especially in relation to exports, among two of the poorest countries, Sudan and Yemen. Syria appears to be a more moderate case where natural resource wealth did not significantly hinder economic diversification.

3. The Institutional Curse of Natural Resources

A claim in the literature made in the seminal article of Ross (2001) was that natural resources hurt democracy and enable governments to maintain their authoritarian rule. Ross's findings were further strengthened by a number of cross-country studies (Jensen and Wantchekon 2004). Some research work found that Ross's hypothesis has ambiguous effects (Herb 2005) or does not always hold (Haber and Menaldo 2011). Very recently, the literature has shown that the resource curse is conditional on weak institutions. Disaggregating governance, Collier and Hoeffler (2009) show that the implementation of a system of checks and balances is necessary to limit abuse of political power and hence the misuse of resource rents, even in the presence of a democratic system. Elbadawi and Soto show that resource-rich economies with a high degree of inclusiveness (a measure of democracy) and strong political checks and balances turn the resource curse into a blessing. Studies focusing on the Arab region reach a similar conclusion (Andersen 1987; Salti 2008; Elbadawi et al. 2012). Ross et al. (2011) show that resources and regimes have intersected to provide stability and limited violent conflict in the region, but that past development patterns have reached their limits and may be unsustainable in the future.

This section argues that resource dependence is endogenous to the region's overall political and economic development, meaning that institutions are the root of the curse. Galal and Selim (2013) argue that weak political institutions in the region seem to have predated the discovery of oil. In other words, the institutional set-up was initially weak and its effects have lingered over time.

Figure 8 shows that there is a positive correlation between natural resource rents and limited freedom in political rights and civil liberties. More worryingly, it shows that resource-rich Arab countries lag behind using these two measures. In 2013, out of the 195 countries covered by Freedom House, 88 were considered "free", of which none is an Arab oil-rich economy. Only one country is considered partly free, Kuwait. Moreover, most countries, especially in the GCC have not undertaken any political reform since the 1970s.

Tornell and Lane (1999) suggest a plausible explanation of why weak governance crucially contributes to the occurrence of the curse. They proposed a 'voracity effect' whereby the high

value of resource rents would induce competing political groups to ‘gauge’ in the process not merely wasting the rents as in conventional rent seeking, but actually reducing income. Mehlum et al. (2006) show that natural resource abundance perversely affects growth when institutions are “grabber-friendly”, i.e. they shift activities from productive into unproductive rent-seeking activities. In other words, resource rents may breed corruption and rent-seeking behavior (Leite and Weidman 1999 and Arezki and Brückner (2011). Alternatively, Robinson et al. (2006) show that permanent resource booms when government accountability is lacking allow politicians to increase incentives (expanding inefficient public sector employment and/or boosting consumption) to remain in power.

The last explanation coincides with Beblawi and Luciani (1987)’s “rentier-state” proposition. Natural resources provide their governments with the means to benefit their supporters and buy off political consensus with privileges. In addition to this channel, Ross (2001) explores two additional channels through which natural resources contribute to authoritarianism. First, they provide governments with the means to “repress” the population. Second, they are often used to slow down the cultural and social values that promote “modernization”.

On the first channel related to the “rentier state”, as governments derive large rents from natural resources, they can afford not only to apply low tax rates but also to redistribute these rents through public sector jobs, subsidies and other social welfare transfers and therefore reduce the pressure for accountability. Resource rents thus break the link between taxation and representation suggested by Tilly (1975). In investigating this link, Ross (2004) finds that the larger is the share of government expenditure, which is financed through taxation, the more likely is the government to become representative. The early literature failed to provide conclusive evidence about whether resource wealth would consolidate authoritarianism or lead to violence and conflict. On the one hand, Smith (2004) provides robust evidence that that oil wealth generally increased the durability of political regimes, even when controlling for repression, and with lower likelihoods of civil war and anti-state protest. The author also finds that neither the boom nor bust periods exerted any significant effect on regime durability in the states most dependent on exports, even while those states saw more protests during the bust. On the other hand, Collier and Hoeffler (2004) show that resource abundance could be associated with an increase in the incidence of violence or elevated risks of civil wars. In an effort to reconcile both ends, Basedau and Lay (2009) provide empirical evidence that the relationship between oil dependence and civil war onset is U-shaped. In other words, very high resource wealth per capita tends to be associated with less violence and is therefore the determining factor for achieving internal stability. They also find that political stability is maintained thanks to a combination of large-scale distribution, high spending on the security apparatus and protection by outsiders. This conclusion echoes with the game-theoretic analysis of Ali and Elbadawi (2012) showing from a political economy perspective that it is optimal for resource-rich authoritarian regimes who rule over small populations (like the GCC) to offer investment in infrastructure and public sector jobs to effectively remove the incentive to revolt. Alternatively, when natural resource endowments are limited (as in the populous group), it is optimal for governments to set up a repressive security apparatus and only employ a smaller proportion of the population.

Against this background, the following analysis confirms that large resource rents have been used to consolidate authoritarianism and maintain social stability in the GCC which could be considered nondemocratic but stable and durable regimes but limited resources have not been associated with violence and political unrest in the populous economies.

An earlier section in this paper has shown that hydrocarbons fiscal revenues are significant, and Table 4 also confirms this. By virtue of these revenues, some resource-rich economies,

such as Saudi Arabia, the UAE, and Kuwait, are able to apply tax rates as low as 1 percent of the GDP, which are only slightly higher in other GCC countries. In populous economies like Algeria, they account for close to 9 percent of the GDP.

The large rents enable the GCC to use fiscal spending to maintain political support and social stability through high-levels of public employment and a generous welfare system directed towards nationals. In fact, countries like Kuwait and Qatar employ around two-thirds of their nationals in the public sector. This ratio goes down to a bit less than 50 percent in Saudi Arabia, Oman and Bahrain (IMF 2013d). The wage bill of civil servants is quite inflated in Bahrain, Kuwait and Saudi Arabia, averaging 11 percent of GDP (Table 4). Hodson (2011) describes these jobs as lifetime employment, paying high wages and entailing short working hours and generous fringe benefits. The average salary of Saudi civil servant is three times the average wage for Saudis in the private sector. Pension packages are also generous. The choice of the GCC governments to provide high pay and benefits to nationals has led to high-reservation wages and creates a disincentive for nationals to invest in skills that are demanded by the private sector. This labor market segmentation crowds out private business and contributing to high unemployment in the case of Saudi Arabia (Al-Sheikh and Erbas, 2015).

More generally, citizens of some GCC countries benefit from substantial subsidies and transfers. Between 1997 and 2012, they accounted for as high as 11 percent of GDP in Kuwait where citizens are entitled to receive annual transfers from oil rents. Beyond explicit subsidies and transfers, citizens in the GCC are provided free healthcare, education and social security. Utilities (electricity, water and fuel) are also subsidized.

Clearly, these transfers increase citizens' welfare, but they are also politically motivated. Large resource rents were used to appease citizens, in particular during times of threats to the regime. When political unrest mounted in 2011, the GCC governments used resource rents to appease citizens. Kuwait and Bahrain responded by giving out cash, Bahrain and Oman provided public sector jobs, and Saudi Arabia and Oman raised workers' wages and benefits. According to Hertog (2012), Saudi Arabia approved an increase in expenditure by US\$130 billion to finance the creation of 120,000 new public sector jobs, building 500,000 houses, setting a minimum wage of US\$800 in the public sector, a one-time bonus to incumbent civil servants and the creation of a general unemployment assistance scheme.

Meanwhile, most countries of the populous group witnessed violence at some point in time during their history. And while it is difficult to ascertain for certain that natural resources were the main driver of the violence, they were significant contributors, or at the very least, they were not sufficient to sustain the same durable stability experienced in the GCC. Algeria was prone to violence even before the discovery of oil, first for its independence from France (1954–1962), and then during most of the 1990s because of violent confrontations between Islamists groups and the state. Bellin (2004) argues that in the midst of the civil war, which has ravaged the country's economy, natural resource rents provided financial support to the army. Sudan endured a brutal civil war that broke out between North and South in 1983. Moreover, it was often claimed that the lack of transparency in wealth sharing and unsustainable resource management were often trigger factors of violence before the secession of South Sudan. Finally, Syria and Yemen have been experiencing armed conflicts since 2011.

Turning to the “repression” channel, governments tend to resort to the security apparatus to contain any real opposition, as shown by the 2011 reaction to pro-democracy protests that took in Oman and Bahrain. More broadly, some resource-rich economies (like Oman and to a lesser extent Kuwait, Saudi Arabia and Bahrain) spend between 7 and 12 percent of GDP on the military and security police forces.

With respect to the “modernization effect”, certain occupational specializations, urbanization and better education are supposed to accompany economic development and these changes should produce a population that is better able to organize and bargain for greater political demands (Inglehart 1997). However, natural resources could prevent or at least slow down these social changes. In particular, natural resources can also crowd out human capital by diverting resources from education, due to a high level of non-tax income and social spending and transfers. Citizens of resource-rich economies may also find themselves “locked in low-skilled natural resource-based industries” that weaken the incentives for good education and earning power (Gylfason 2004).

In this context, large rents in Qatar have been associated with education spending as low as 3 percent of the GDP, almost half of what much poorer Yemen spends. However, in countries with comparable wealth like Saudi Arabia and Kuwait, education spending is double that level. More generally, Table 4 shows that public spending on education and health combined has never exceeded 7 percent of GDP in the majority of countries, which has in most cases been lower than spending on civil servants wages, subsidies or defense.

4. Macroeconomic Manifestations of the Natural Resource Curse

The literature has shown that the curse is manifested through several channels: (i) overall macroeconomic volatility (Hausman and Rigobon 2003; Ploeg and Poelhekke 2009) and excessive borrowing (Manzano and Rigobon 2001), (ii) Dutch disease (Collier and Goderis 2007), (iii) excessive consumption, low or inefficient total investment (Collier and Goderis 2007), and (iv) lack of financial sector development (Beck 2011). Collier and Goderis (2007) and Elbadawi and Soto (2012) provide empirical evidence that the curse operates through three main channels: excessive consumption, low or inefficient total investment and an overvalued exchange rate. This section examines the different manifestations of the curse in the Arab World, contrasting the experiences of the economies of GCC with the populous group.

4.1 Macroeconomic volatility and excessive borrowing

Led by Sachs and Warner (1995), empirical work has shown that resource-abundant countries have slower growth than resource-poor countries. This finding is also confirmed by recent work, which highlights that the curse operates in the long run as commodity booms have positive short-term effects on output but adverse and substantial long-term effects (Collier and Goderis 2007). Moreover, natural resource abundance often exposes countries to macroeconomic volatility derived from commodity price volatility. Ploeg and Poelhekke (2009) find that volatility of natural resource prices is a major determinant of growth performance, and that the positive direct effect of resource dependence on growth is swamped by its adverse effect via increased volatility. Hausmann and Rigobon (2003) estimate that a one standard deviation shock to the price of oil (of 30–35 percent) can generate an income shock as high as 6 percent of GDP in an economy where oil accounts for 20 percent of GDP. In addition, Manzano and Rigobon (2001) showed that it was the use of commodity prices as debt collateral during the 1970s that drove many resource-rich countries to debt crisis in the 1980s.

In line with this literature, Figure 9 shows that the majority of resource-rich Arab economies have had lower GDP per capita growth between 1981 and 2011 than what is predicted by their share of natural resource rents to the GDP. Moreover, countries with large resource dependence (with a share of rents larger than 40 percent of the GDP) like Kuwait and Qatar have exhibited overall negative and volatile growth (measured by the standard deviation) (Figure 10). The UAE has the same record despite being less endowed. Oman seems the only country, which managed to achieve relatively higher growth coupled with relatively lower volatility. Sudan is another exception posting very high and very volatile growth among comparators.

In this context, the GCC exhibited a low per capita growth-high volatility pattern in the long-term. The populous resource-rich countries did better; averaging 1 percent per capita GDP

growth during the period 1981-2011 while the GCC posted no growth during the same period. Moreover, their volatility was almost half that of the GCC (Table 5).

Moreover, the region's macroeconomic performance remains vulnerable to the ebbs and flows of oil prices. Table 6 presents selected macroeconomic indicators during the years 1998 and 2008. The first year represents a year when oil price plummeted to US\$ 13, which was the lowest price between 1980 and 2012. The year 2008, when the price of oil soared to US\$ 97, is chosen before the recessionary effects of the global financial crisis were felt. On the one hand, GCC growth seems more exposed than the populous group to the ebbs and flows of the oil price cycle, experiencing very high spells during booms (including their non-hydrocarbons sector) and are also able to achieve large savings and investment ratios, accumulate significantly higher reserves and external surpluses. During busts, their GDP growth is almost halved and non-hydrocarbon GDP growth is lower by a third. Interestingly, the non-hydrocarbon sector expands during oil busts to compensate the sharp contraction in the hydrocarbon sector. On the other hand, the impact of oil price fluctuations on the domestic economies of the populous group seems to be somewhat mitigated, except for one aspect: these countries tend to engage in excessive borrowing during oil busts, with external debt stocks exceeding 100 percent of GNI in 1998 compared to only 20 percent in 2008. They seem to perform relatively better during busts, posting higher growth including the non-hydrocarbons sector. Nevertheless, they are able to slightly increase their savings and investments during oil booms, though by much less than their GCC counterparts, and turn their internal and external deficits into weak surpluses.

4.2 The Dutch disease and limited diversification

Hausmann and Rigobon (2003) show that the resource curse tends to be weaker in economies with more diversified trade structures. The diversification challenge is more difficult in resource-rich countries, due to the Dutch Disease. Corden (1984) provides a theoretical framework for the Dutch disease in which the appreciation of the real exchange rate due to increased resource revenues spent on non-tradable goods leads to a decline in the competitiveness of the non-resource sector, thus reducing manufacturing. This section examines to what extent this occurred in the Arab rich oil economies.

According to the IMF exchange rate arrangements, most Arab resource-rich economies have opted for fixed exchange rate regimes (Al-Abri). In the case of the GCC, an exchange rate anchor seems to have worked well in maintaining low inflation. Similarly, all countries in the populous group also rely on a fixed change rate except Yemen, which has a monetary aggregate target.

There is some evidence of real exchange rate overvaluation between 1975 and 2005 in resource-rich economies of the region. Table 7 reports the estimated deviations from equilibrium real exchange rates. Column 1 gives the average deviation over sub-periods (ranging from 5 to 8 years, depending on the country) and column 2, the percentage of periods with overvaluation.⁴ Although not all countries suffered from overvalued real exchange rates on average, most countries did at some point in time between 1975 and 2005. Three groups can be distinguished. The first group includes Algeria, Kuwait and Saudi Arabia – which are the least diversified countries - for which exchange rates have been consistently overvalued over the years, even though overvaluation was not necessarily significant, if any. In Oman and Syria, overvaluation was larger but was less persistent over time. Finally, Bahrain, Qatar, the UAE and Yemen are the countries that belong to the relatively more diversified group. The exchange rates are estimated on average to be undervalued but have been overvalued for only some years.

⁴ Diop et al. (2012) follow Rodrik (2008) in estimating the equilibrium real exchange rate (RER). After estimating the real exchange rate equation where the RER is regressed on GDP growth, they take the log of the difference between the actual RER and the one estimated.

Yet, while Table 7 may indicate that the real exchange rate is overvalued in resource-rich economies, in practice, other factors that may not be taken into account, may contribute to a more depreciated real exchange rate. These elements include labor market flexibility and current account openness, which may be particularly relevant for exchange rate dynamics in the GCC.

Labor markets in the GCC are highly dependent on expatriate workers in the private sector. Indeed, the share of non-nationals in total private sector employment is above 80 percent in all GCC economies and this share goes up to 99 percent in Qatar (Figure 11). Open labor markets and increased workers' mobility render labor markets quite flexible as nominal wages adjustment is fairly quick. During oil busts, the government reduces spending and therefore the private sector is able to terminate the expatriate workers' contracts, which are mostly of a short-term nature. In this case, labor mobility can substitute for exchange rate flexibility (Al-Abri). When labor markets are rigid, they may add to the real appreciation of the exchange rate. Moreover, the unlimited labor supply allows keeping the labor cost rather low and, this disproportionately depresses the prices of non-tradables due to the fact that non-tradable sectors tend to be more labor-intensive; hence low labor cost further increases the relative prices of tradables relative to non-tradables, leading to a more depreciated real exchange rate.

Second, a large expatriate labor force suggests that the GCC economies experience substantial remittances outflows. In fact, all GCC economies (excluding the UAE for which data is unavailable) figured among the top 20 highest-remittance sending countries in 2013. Remittances outflows sent from the GCC accounted for US\$ 66 billion or 18 percent of total remittances outflows. In fact, Saudi Arabia was the third highest remittance sending country in the world in 2012, with an estimated value of remittances of \$30 billion. By reducing domestic absorption, the demand for non-tradables is also reduced leading to lower prices of these non-tradable goods and services.

Having said that, manufacturing remains remarkably suppressed in resource-rich Arab countries, including manufacturing exports, except in Bahrain for which these shares are respectively 15 percent of GDP and 24 percent in total merchandise exports (Figures 12 and 13). Moreover, large rents Kuwait, Oman, Qatar and Saudi Arabia have been associated with a share of the manufacturing of only 7 percent of GDP and a share manufactures exports of less than 10 percent of total exports. Meanwhile, even in poorer populous economies, the manufacturing sector underperforms its potential with a share of around 10 percent of the GDP. If we exclude Syria, which does remarkably well (18 percent), manufactured exports have accounted for less than 2 percent of total exports.

With the exception of Kuwait, GCC economies undertook some economic diversification away from oil over time but only a few were able to diversify into manufactured exports like Bahrain, Oman and Saudi Arabia (Figures 14 and 15). Qatar and the UAE did the former but not the latter. More importantly, the share of manufacturing to the GDP has either sharply gone down or stagnated in countries where exchange rate overvaluation was persistent and/or significant (Figure 14). This was the case in Kuwait and Saudi Arabia where manufacturing stagnated at respectively 5 and 10 percent of the GDP and Algeria where is shrunk considerably (from 17 to 4 percent of the GDP). Meanwhile, it would seem that undervalued exchange rates helped the manufacturing sector expand in Qatar and UAE. However, it is not clear how the overvalued exchange rate in Oman during the 1975-2005 period was associated with a spectacular increase in manufacturing to the GDP (rising by ten folds). Nevertheless, estimates of exchange rate misalignment since the early 2000s point to an undervalued exchange rate. Syria was able to diversify its export sector and within that increase the share of manufactured exports over time. Algeria has not undertaken any diversification efforts while in Sudan and Yemen, fuel exports were almost non-existent in the 1970s but as oil discoveries were made,

the non-fuel export sectors almost vanished. Moreover, Suliman () explains that the discovery of oil in Sudan in the late 1980s led to a sustained exchange rate appreciation, which quickly displaced cotton, as the leading export crop. In this sense, Sudan's export dependence shifted from a relatively diversified agricultural basket towards oil, which is a point resource.

Diop and de Melo () provide empirical evidence that natural resource rents in Arab countries is correlated with a declining share of services to the GDP, in other words, that the service sector is also victim of a Dutch Disease phenomenon. This explains why Arab resource-rich countries have become large importers of tradable services and why only domestic production of non-tradable services (such as real estate, retail trade, hotels, and restaurants) has really developed.

Most GCC countries have announced national industrial strategies with the aim of diversifying their economies over a medium-term horizon, with quantitative targets. For instance, Bahrain's 2030 vision aims to double real disposable income of households. So far, it was able to establish itself as a financial hub for the Gulf region and for the Arab world, particularly in Islamic banking. It is also supporting other sectors like tourism, transportation and related services. The UAE – led by Dubai – have initiated, since the oil bust of the 1990s, a diversification strategy balancing between domestic demand sectors (e.g., construction, real estate and business services and manufacturing) and overseas markets (financial sector, transport and storage, and wholesale and retail trade that is largely connected to tourism and duty free activities) (Hawas and Soto, 2015). According to Rodrik (2009), the success of this diversification strategy has hinged on several elements including: (i) government-led development and fast decision making combined with free-market policies, (ii) a flexible labor force through importing expatriates, (iii) bypassing industrialization and creating a service economy, (iv) internationalizing service provision, (v) creating investment opportunities, (vi) supply-generated demand, (vii) market positioning via branding, and (viii) development in cooperation with international partners. Saudi Arabia has also launched a national industrial strategy in 2009 with targets to expand the manufacturing sector from 11 percent to 20 percent by the end of 2014; double Saudi industrial employment to 30 percent; double industrial exports to 35 percent; and double the proportion of technology based manufactured products to 60 percent. The success of the diversification strategy has been more pronounced in recent years in the phenomenal development of hydrocarbons-based petrochemicals industries, as in the case of the petrochemical manufacturer Saudi Basic Industries Corporation (SABIC), that implemented several joint ventures with a number of major multinational companies.

4.3 Excessive consumption

One avenue of research shows that commodity booms tend to reduce investment levels and an increase in consumption (in the form of inefficient public employment in return for political support as explained above) (Gylfason and Zoega 2006). Arguing from an apolitical economy perspective; Collier and Goderis (2007) show that this occurs because commodity booms divert resources to less productive rent-seeking or public sector activities. Often, commodity booms also lead to a lower quality of investment projects. Robinson and Torvik (2005) provide a theory in which “white elephants”, investment projects with negative social surplus, are used as a means of inefficient redistribution aimed at influencing the outcomes of elections. However, another avenue of research provides a more nuanced view. Collier and Hoeffler (2009) show that whether resource discovery augments increases in the provision of public goods depends on two factors: (i) how much public revenue can be embezzled from its proper uses, and (ii) the proportion of resource rents in income. Their analysis shows that there is a critical level for the rate of embezzlement above which public goods provision actually deteriorates. Meanwhile, resource discoveries beyond a certain threshold improve the provision of public goods. In countries with modest resources and where democracy is well established with strong checks and balances, the rate of embezzlement is small and hence provision for

public goods is likely to increase with natural resource discoveries. The converse also holds. In some other countries, the resources are so large that they would still improve the provision of public goods even if the rate of embezzlement is large.

Figure 16 shows that a positive correlation between the shares of natural resource rents and government consumption. In countries with large rents, like most of the GCC, public consumption is around 20 percent of GDP. In Kuwait and Saudi Arabia, this ratio exceeds 25 percent. In the poorer populous economies of Sudan and Yemen, public consumption is below predicted levels.

Figure 17 suggests that the correlation between rents and investment is only slightly negative. The poorer economies of the populous group, Sudan, Yemen and Syria, have investment ratios significantly below predicted levels and thus suffer from major deficiencies in infrastructure including basic infrastructure such as roads, railways, ports, and electricity. In contrast, investment ratios are very high in many GCC countries, in particular, in Qatar, UAE and Bahrain, where they are close to 25 percent of the GDP. In the years following the 1970s oil boom, the GCC governments embarked on massive investment programs with the priority given to basic infrastructure. From 2002 to 2008 alone, they awarded approximately US\$720 billion worth of infrastructure projects (Abdelal et al. 2008). In Qatar and the UAE, investments were concentrated in the construction sector while in Saudi Arabia, they were oriented to the power sector. In recent years, the transport sector has also witnessed a significant boom with many GCC countries increasing investment spending to construct new railway systems and metros, increasing capacity of airports, and expand ports as many of them look to become major shipping hubs. Having said that, Kuwait and Oman, lag behind other GCC performance. Their large rents to GDP ratios are associated with low investment ratios (around 20 percent of GDP).

4.4 Financial development

In the case of resource-rich economies, Beck (2011) explains that natural resource abundance may have mixed effects on financial system development. On the demand side, natural resource windfalls and the consequent expansion of the non-traded goods sector could lead to higher demand for financial services, including consumer credit. However, in the context of a Dutch disease, the non-resource traded goods sector could suffer. Further, Gylfason (2004) explains that natural resource abundance could result in a lesser need for financial intermediation, as the resulting distortion the allocation of capital leads to a lower demand for financial services resulting in lower savings and investment rates. On the supply side, higher investments in the natural resource sector can lead to lower investments in the financial sector. However, the absence of sound institutional frameworks, including effective contractual frameworks, in resource-rich economies can hamper financial deepening.

The empirical literature in the context of resource-based economies is still nascent and results are not conclusive. Some studies find that there is no differential effect of natural resource wealth on the effect of financial development on economic growth in resource-rich versus resource-poor economies (Beck 2011). Others find that it has a positive impact on growth because it can help dampen the impact on volatility (Ploeg and Poelhekke 2009). Beck (2011) provides evidence that resource-based economies have less developed financial systems, and while their banks are more liquid, better capitalized, and more profitable, they give fewer loans to firms.

While Figure 18 shows that an increase in natural resource rents is associated with lower private sector credit, it does not show that there is a finance resource curse in Arab resource-rich economies. Indeed, the GCC would be considered more financially developed with private sector credit amounting to 55 percent of GDP. Moreover, all GCC economies, except Saudi Arabia, have a ratio of private sector credit to GDP higher than would be predicted by their

level of rents. In particular, Kuwait's private sector credit accounts for 60 percent of the GDP and in Bahrain, it is close to 50 percent of the GDP. This finding is not surprising given that the GCC benefit from large deposit bases and an average loan-to-deposit ratio of almost 100 percent (Figure 19). This performance is in line with the emergence of several GCC capitals (Bahrain, Dubai, and Qatar) as financial centers, with Bahrain leading in syndicated lending and cross border banking. In the populous group, the average is much lower, at 14 percent of GDP, reflecting lower incomes and larger volumes of public sector financing. Algeria's more financially developed than other countries of the populous group. In particular, private sector credit in Sudan and Yemen is less than 7 percent of GDP.

5. Empirical Evidence: Testing the Conditional Resource Curse Hypothesis

This section undertakes an empirical investigation in resource-rich economies in order to assess the impact of natural resources on growth. Moreover, it examines how the inclusion of institutions affects this relationship. An augmented growth model (Mankiw et al. 1992) is chosen because it allows including a host of variables such as institutional and human capital variables and most importantly, natural resources, in addition to including the traditional factors of production of the classical model (Solow 1956).

Growth regressions are estimated for a sample of 22 countries from the Arab region for the period 1960-2012 using different econometric techniques namely ordinary least squares (OLS) and panel estimations (fixed effects *FE*).⁵

The model can be written as follows:

$$Y_{it} = A_0 H_{it}^{\alpha} K_{it}^{\beta} L_{it}^{\gamma} O_{it}^{\eta} \quad (1)$$

where Y_{it} is the real GDP in country i at year t , A_0 a scale parameter, H_{it} human capital, K_{it} physical capital, L_{it} land and O_{it} natural resources rents. Equation (1) represents a Cobb-Douglas production function where natural resources can be bundled together with either labor or capital in the production process. The exponents in the aggregate production function (1) denote factor shares – hence the structure of the economy – while the factor inputs are absolute quantities.

By transforming (1) into a log-linear equation, the specification of the regression becomes:

$$\ln(Y_{it}) = \alpha_0 + \alpha \ln(H_{it}) + \beta \ln(K_{it}) + \gamma \ln(L_{it}) + \eta \ln(O_{it}) + \varepsilon_{it} \quad (2)$$

where α_0 is the constant term and ε is the discrepancy term.

Based on the pioneering work of Mankiw et al. (1992) who show that international differences in income per capita are best captured by an augmented Solow model, output is produced using physical capital, human capital and labor. All regressions include the following basic variables:

- the initial GDP ($\ln(GDP80)$) to control for conditional convergence or the fact that, ceteris paribus, poor countries should grow faster than rich ones because of decreasing returns to scale in production,
- real investment ($\ln INV$) to measure physical capital,
- the population growth rate ($Popgrowth$) and the secondary enrolment rate ($School$) to measure human capital,
- Arable land ($\ln LAND$) to have an comprehensive production function,
- Net exports ($Net\ exp./GDP$) to account for the impact of trade openness on growth,
- the share of natural resources rents to GDP ($Nat.\ res.\ rents/GDP$),

⁵See Appendix 1 for the list of the countries.

- A dummy variable (*Oil boom*) that takes the value of 1 in oil boom years and 0 otherwise is added to assess the effect of periods of high oil prices on growth.⁶
- A dummy variable (*Oil exporter*) that takes the value of 1 for oil exporters and 0 otherwise is included to examine the impact of oil on growth.
- An interaction term between natural resources and population growth. This interaction should capture how the impact of natural resources on growth would change for populous countries relative to other countries.⁷

Results of the panel estimations are reported in tables 8 and 9. Table 8 ignores institutional factors while table 9 incorporates them. The tables' first column displays the results of the OLS estimation and the second column present respectively the fixed effects estimations.⁸ In table 8, the left panel reports the basic regressions with the basic variables explained above while the right panel accounts for financial development measures by private sector credit (*Priv. Credit*). In table 9, the left panel reports results after adding the quality of institutions measured by the polity index (*Polity*), while the right panel reports the results using an alternative measure, the Freedom House (FH) index. The former index best captures democratization compared to the FH measure since it relies on objective questions rather than subjective classifications (Elbadawi et al.2011).

The results can be summarized as follows. They remain robust across estimation methods and econometric specifications.

First, the empirical evidence generally confirms that economic growth increases with improvements in education, investment and trade openness (columns 1-2), which is broadly consistent with previous results from the growth literature. Conforming to the prediction of Solow's model that resources are likely to be depleted by a larger population, the impact of population growth on growth is negative and significant.

Second and most importantly, the results provide strong support to the conditional resource curse hypothesis, which corroborates results from the recent literature in Collier and Goderis (2007) and Zawi and Soto (2012). Initially, results in table 8, which ignored institutional factors, generally suggested that resource rents have a negative effect on economic growth, even after controlling for initial income, trade policy, investment and schooling, which is consistent with Sachs and Warner (1995). This result is in line with results from growth models that include a non-renewable resource with depletable stock. In these models, scarce natural resources tend to cause diminishing returns to inputs of both factors of production, capital and labor, and thereby may lead to economic stagnation in the long run. It is worthwhile to note that this effect of slower growth is more likely to affect the populous oil-exporters more quickly than in GCC countries, as the latter enjoy much more resources and smaller population. Moreover, the coefficient of the oil boom shows that high oil prices are associated with higher growth rates and vice versa.

However, by including the quality of institutions, the results in table 9 show that the polity index has a positive and significant effect on growth. Moreover, the interaction term with resource rents yields a strong and negative estimated parameter, indicating that even when institutions' quality improves, natural resources still have a negative (but slightly lower) effect on growth. This result shows that the adverse effect natural resources have on growth dominates the effect of better institutions. One potential explanation for this is that existing institutions in most resource-rich countries' (and in particular Arab countries) are so weak that it would take a tangible improvement in institutions in order to ameliorate the

⁶Oil booms are defined as years where oil prices were above the average of the whole period.

⁷ Please see appendix 2 for variable sources and description.

⁸ We are unable to perform sub-sample estimations for both groups due to the small number of observations.

management of natural resources and offset their negative impact on growth. Figure 20 graphically illustrates this result by showing that the marginal effect of natural resources with political institutions on growth is negative as institutions improve. Similarly, when institutions are proxied by the freedom house index, their effect on growth becomes insignificant but the interaction with resource rents is positive and significant (since the higher the freedom index, the poorer the political environment)⁹.

Finally, when the share of private credit to GDP is added, it is found to have a weak but positive and significant impact on growth. Empirical results show that there is no clear consensus on the effect of financial development on economic growth in the MENA region because of the failure of financial liberalization and poor legal environment (De Gregorio and Guidotti 1995; Loayza and Ranciere 2005). Yet, this effect becomes insignificant when private credit is interacted with resource rents. This result holds for both estimations, with and without the inclusion of institutions. This is in line with Beck (2011) who shows that there is no differential effect of natural resource wealth on the effect of financial development on economic growth in resource-rich versus resource-poor economies.

6. Better Institutions in Order to Avoid the Curse

The main policy insight from this chapter is that better institutions are important in avoiding the resource curse. Moreover, the interdependence between politics and resource management is the essence of the resource curse where politics affects exploitation of resource wealth and in turn rents influence politics (Collier 2010). The analysis suggests that for Arab countries to achieve sustained growth and prosperity, they must adopt meaningful political reforms, encompassing a strong system of political checks and balances. Though this remains a challenge, it is hoped that the adherence to the Extractive Industries Transparency Initiative (EITI) and the National Resource Charter (NRC) have the potential of triggering some reforms on political accountability and more transparent and effective management of natural resources.

Assuming progress is made on this front, countries should first start addressing *sustainability issues* which means transforming their exhaustible natural resources into assets—human, domestic, and private capital and foreign financial assets—that will generate future income and support sustained development. Addressing sustainability goes hand *in hand with reforming fiscal institutions*. Without sound fiscal frameworks, Arab countries would be constantly exposed to the risk of easily squandering their natural resource wealth. It is hoped that the below fiscal reforms would contribute to higher savings, larger and more efficient investments, put public finances on a sustainable track and increase the countries' ability to adopt countercyclical fiscal policies. This section attempts to draw some policy recommendations that would contribute to a better management of their resources in order to reap the benefits of their wealth. These recommendations are related to the management of fiscal policy, increase the efficiency of public spending, the adoption of more transparency with respect to fiscal policy as well as public procurement.

6.1 Reforms for counter-cyclical fiscal policies

A wide literature recommends that resource-rich economies should smooth out consumption well beyond the period of peak resource and stock precautionary savings to ensure inter-generational equity. 2 (2013) explains that natural resources will deplete more rapidly in the populous group and so, despite being much poorer, they need higher savings than the GCC, or

⁹ One could claim that poor political institutions are a result of oil wealth (and not the opposite), which could lead to a bias in our findings. Yet, we believe that this claim could be downplayed due to two reasons. First, weak political institutions in the region seem to have predated the discovery of oil in most of the countries of our sample (Galal and Selim 2012). Second, country experiences (Norway and Chile) have shown that better institutions could lead improved management of natural resources and therefore reduce their negative effect on growth.

around 50 percent of the GDP starting in 2013 which would need to rise to 100 percent by exhaustion in 2043, or alternatively by nearly two percentage points each year. Meanwhile, the GCC which benefit from a longer time horizon to exhaustion, they need a lower initial savings rate – 30 percent – meaning they would need to increase their savings by one percentage point each year in order to reach 100 percent by 2083.¹⁰In reality, GCC economies are saving more than the populous group: around 48 percent of GDP and this ratio goes up to 60 percent in Kuwait and Qatar. However, savings accounted for only 23 percent of the GDP in the populous group and as low as 11 percent in Sudan.

In this context, fiscal policy has the daunting task of managing resource price volatility. Counter-cyclical fiscal policies could help governments save their wealth, prevent them from overspending during oil booms and also ensure that an unexpected decline in oil revenue would not lead to abrupt changes in government spending with adverse macroeconomic effects. In practice, however, pro-cyclicality has been a feature of fiscal policy in oil-exporting countries, as supported by the empirical analysis of Villafuerte and Lopez-Murphy (2010). Arab resource-rich countries are no exception (Abdih et al. 2010). Figure 21 depicts the correlation between (the cyclical components of) government spending and the GDP for the 10 countries between 1990 and 2012. All countries have witnessed an important shift in the cyclical behavior of their fiscal policy over the last decade, which used to be pro-cyclical in the 1970s until the early 2000s and became counter-cyclical afterwards. It is worthwhile to note that Qatar's fiscal policy remains almost neutral relative to economic activity. Moreover, fiscal policy in the GCC group seems to have performed better than the populous where it remains more subservient to the economic cycle.

However, there is recent preliminary evidence of counter-cyclicality in government spending with many countries adopting fiscal stimulus packages in the aftermath of the 2008 financial crisis. Nevertheless, most fiscal expansions took place through substantial increases in current spending which exceeded increases in than capital outlays (Figure 22). In Bahrain, capital expenditure as a share of the GDP actually declined. In contrast, Oman implemented the largest capital-spending stimulus, from 10 to 14.5 percent of GDP. In Syria, fiscal policy was neutral whereas in Yemen, the contraction in overall spending suggests a pro-cyclical pattern.

Several institutional reforms could contribute to countercyclical fiscal policies but the appropriate design depends on the resource horizon for which natural resources can be expected to generate revenues.

For countries with long resource horizons like the GCC, the main challenge should be to manage revenue price volatility. Collier (2015) judges that the creation of *Sovereign Wealth Funds (SWF)* that would save or invest a proportion of resource revenues in financial assets abroad *is sufficient to ride out revenue volatility* by varying their accumulation of foreign financial assets which have few opportunities for domestic investments.

In reality, GCC countries already possess 14 different SWFs, some of them established as early as 1953, like the Kuwaiti SWF. Most of the smaller GCC SWFs, however, appeared after 2000, when oil prices soared. Assets accumulated by SWFs of the GCC countries are estimated to account for over half of SWF assets globally and their activities continue to expand very rapidly after the crisis on the back of rising oil prices. Unfortunately, the limited availability of information with respect to their geographical composition or asset portfolio composition makes it hard to assess their performance or to know if and how much they save a fraction of oil revenues with the purpose of generating long-term returns for future generations. The largest Saudi SWF mostly invests in secure, liquid but low-yield United States bonds, which are used

¹⁰ This illustration is based on the assumption that suppose that the GCC have a horizon until exhaustion of oil and gas revenues of 70 years, while the populous countries have a horizon of 30 years.

for short- to mid-term stabilization and sterilization operations (Kohler 2013). Nevertheless, it is judged that compared to the oil booms of the 1970s, the GCC are being much more strategic about where they place their petrodollars. They have adopted ambitious investment strategies that include huge spending on domestic infrastructure, creating free-trade zones for manufacturing and developing services and facilities that will attract increasing numbers of businesses, skilled knowledge workers, and tourists. They are also making huge financial investments in the developed world, China, India and even Africa (Abdelal et al. 2008).

A second reform is *the adoption of fiscal rules*, which would account for year-to-year fluctuations in resource prices and thus contribute to smoothing revenues and allow the authorities to determine how much of their resource revenues they can safely spend through the annual budget. In addition, they could potentially mitigate discretionary interventions by governments (Daniel et al. 2013). The GCC would benefit from setting a target for the structural budget balance on the basis of an estimate of the long-term oil price. This indicator would net out the cyclical impact of the level of economic activity and hydrocarbon prices that affect central government income. Thus the structural balance equals structural revenues plus interest on net government assets minus actual expenditures on goods and services. It thus reflects the financial balances that the central government would have shown if the GDP had been at its trend level and hydrocarbon prices had been running at their long-term level. Qatar is the first GCC economy to have initiated steps to formally adopt a medium-term budget framework to enhance the predictability of spending decisions and link its medium-term development plans to the budget.

Countries of the populous groups are immediately confronted with shorter resource horizons and greater uncertainty about production volumes with drastic implications on public spending sustainability once resources are depleted. Moreover, they have so far not been successful in effectively deploying their rents to build a broad-based domestic capital base, in addition they have so far saved very little. Moreover, political instability in some countries and the violent conflicts that afflict some countries like Sudan and Yemen would tend to limit their access to international financial markets for borrowing purposes. To address this fundamental and pressing challenge, *countries of the populous group need both a SWF* that would save or invest a small proportion of resource revenues in external financial assets abroad in addition to a *Sovereign Development fund (SDF)* that would invest the majority of their wealth in domestic infrastructure either in the form of physical assets or in human capital through improving health care and education of citizens (Collier, 2015). Moreover, these countries would need to closely monitor their public finances. They could benefit from *setting a target for the non-resource fiscal balance* (which is an indicator of the capacity of the economy to absorb the resource revenues without causing inflation and a large current account deficit) at a level that can be maintained after resource revenues run out. This would avoid the need for abrupt breaks in government expenditures or tax increases after the natural resources have been depleted, given that the non-resource fiscal balance gradually converges to the overall balance as resource revenues decline (Daniel et al., 2013). So far, Algeria is the only populous country, which owns an oil stabilization fund, “Fonds de Regulation des Recettes (FRR).” However, the FRR can be freely drawn upon for budget support, so that expenditure is disconnected from the saving rule.

6.2 Improving the efficiency of public spending

It is often argued that the use of SDFs to finance domestic infrastructure holds significant challenges. Administrative systems may lack the technical ability to scale-up expenditure rapidly (to identify, implement, budget as well as monitor and evaluate projects) and coordination among government entities. In low-capacity and low-governance environments like those present in the populous group, this may lead to wasteful expenditure, budget fragmentation, among other things. In addition, even though the SDF also has the potential of acting as a means to improve the quality of public spending, and even to crowd in private

investors to strengthen investment discipline, it could become a vehicle for politically driven “investments” in a context of elite capture (Gelb et al. 2014). In order to bypass this problem and ensure that public spending is allocated towards high-quality public investment projects, *a more gradual increase in spending may be advisable for the populous group*, with an initial focus on investing resources to remove existing bottlenecks—a process sometimes called “investing in investing”, as defined by Collier et al. (2010).

To improve the efficiency of public spending, it is essential, to have strong public financial management systems, including the ability to provide reasonable forecasts of resource revenues and the capacity for medium-term budgeting which would help with the annual budget planning process and identify fiscal risks on both the revenue and expenditure sides.

6.3 Transparency about fiscal policy and public procurement

In addition, *more transparency with respect to fiscal policy and public procurement is also warranted*. In particular, fiscal transparency in the collection and utilization of natural resource revenues through appropriate accounting, reporting, and auditing is important. Meanwhile, in terms of public procurement, it is better if governments solicit interest from oil multinational companies to extract resources through open and transparent processes including competitive bidding in exploration and extracting. In order to increase transparency, it is important that Arab resource-rich economies follow good practices, including a clear assignment of roles and responsibilities of different government entities, establishment of an open budget process, publicly available information, and assurances of data integrity. Fiscal transparency could be a good means to combat corruption. The EITI provides a global standard for transparency in the oil, gas, and mining industries, while the NRC, which builds on the transparency initiative, offers more comprehensive principles for governments and societies on how to best harness the opportunities for development generated by extractive commodity windfalls. Those initiatives can serve as anchors for enhancing transparency and accountability in commodity-rich countries. More specifically, open publication of public procurement contracts can help improve investment quality and reduce contract costs and cost overruns (Kenny and Karver 2012).

7. Conclusion

Natural resources are a critical component of the Arab world’s export and government revenues. They have contributed to better standards of living and have most certainly widened the set of policy choices: they did do better than they would have done without resource rents. Notwithstanding this improvement, the economic performance of Arab resource-rich countries has been disappointing, even in the absence of a counterfactual.

This chapter has argued that the resource curse in the Arab world is primarily an “institutional curse”, even though it has several macroeconomic manifestations. In other words, politics affect economics or alternatively, they affect how resource rents are collected, allocated and used. Weak institutions in the Arab World have predated resource discovery and have had adverse implications on macroeconomic management. At the same time, natural resources have consolidated the weak institutional set-up. Over time, the interaction between these two factors became intertwined, preventing these countries from embarking on a sustainable development path. The empirical model confirms that resource rents have a negative effect on economic growth. More interestingly, political institutions may not always have an impact on growth. However, when political institutions interact with natural resources, they could reduce the negative effect of natural resources on growth.

The analysis has attempted to draw a distinction between the highly resource endowed GCC economies and populous economies. While bad governance is responsible for their lack of development, the manifestations of the curse are distinct. Indeed, they are subtler in the GCC where the sheer amounts of rent per capita have fostered regime stability or a form of durable

authoritarianism. To this end, rents have been efficiently redistributed through labor markets to national citizens in the form of well-remunerated public sector jobs and other generous social welfare schemes, which have preserved social stability. The absence of significant political unrest in all GCC economies over the past 3 years of turmoil in the region speaks for that. In contrast, the populous group with their low rent per capita and despite the recent discovery of a modest natural resource wealth, has experienced much more dire consequences such as conflict, violence and social unrest at some point in time.

The macroeconomic manifestations of the curse are also expressed through different channels. On the one hand, the GCC group's growth performance is more severely affected by resource volatility but it has managed in recent years to diversify its non-resource economy, even though the share of manufacturing still remains below predicted levels. GCC countries have engaged in excessive public consumption but high rents per capita still allow them to allocate ample resources for investments, particularly in infrastructure, and have maintained the quite liquid financial sector which has been extending credit to the private sector at growing rates. If one would pick a "best performer", it would be the UAE, which have certainly not been immune to the curse but has managed to make the benefits outweigh the negative outcomes, a conclusion that echoes with Haouas and Soto (2012). Meanwhile, Kuwait seems to lag behind most GCC economies. In comparison, it has very low investment ratios, a persistent exchange rate overvaluation, and a small manufacturing sector.

On the other hand, limited resources may have somewhat shielded the growth in populous economies from resource volatility but they have contributed to devastating economic consequences. Oil busts drove them to engage in excessive borrowing, and booms seem to have almost eliminated populous economies' manufacturing sectors. Unlike the GCC countries, they have failed to use their natural capital to develop the required physical capital to promote the much needed economic diversification of their economies. In a context of low rent per capita, excessive consumption resulted in massive deficiencies in infrastructure investments and an underdeveloped financial sector. In fact, the three least endowed economies of Syria, Sudan and Yemen, suffer from most of the macroeconomic symptoms of the curse.

Large oil resources, like those present in the Arab world, are a blessing. In order to benefit from them, governments have an important role to play in how these resources are used. The analysis suggests that for resource-rich Arab countries to avoid the oil curse and achieve sustained growth and development, they must introduce effective political reforms accompanied by a strong system of political checks and balances. It is hoped that stronger political institutions would trigger reform in macroeconomic institutions in general and in particular fiscal institutions that would improve the management of natural resources, achieve more savings and implement more effective public spending programs. These reforms are expected to release resources for the diversification of the non-resource sector. While GCC governments have become increasingly aware of the need for economic diversification in recent years, the main challenge they face is to re-orient their economies toward greater private-sector employment of nationals. Controlling public sector employment should be accompanied by raising educational quality and skills development to raise productivity in order to make nationals more competitive for private sector hiring. As for the populous countries, they need to initiate an aggressive program to encourage economic diversification. To this end, governments should focus on simplifying the complex procedures for doing business and improving infrastructure. Financial sector reform, especially of state-owned banks, is also crucial in order to allocate resources to their most productive use and finance diversification. Many of these countries may have to readjust their overvalued exchange rates, which are undermining export competitiveness.

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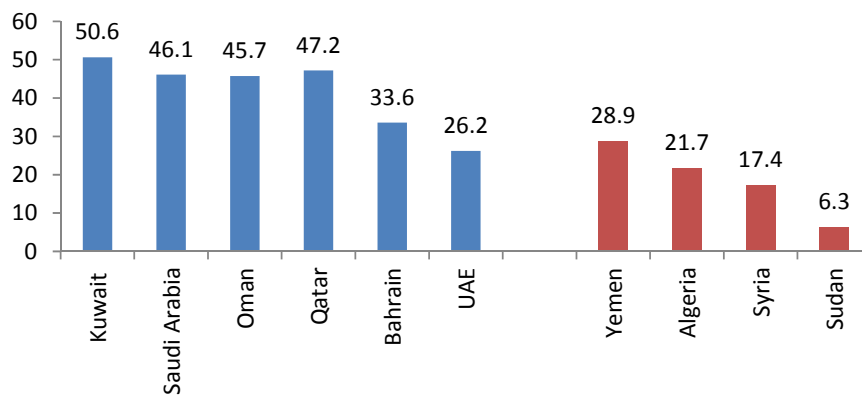
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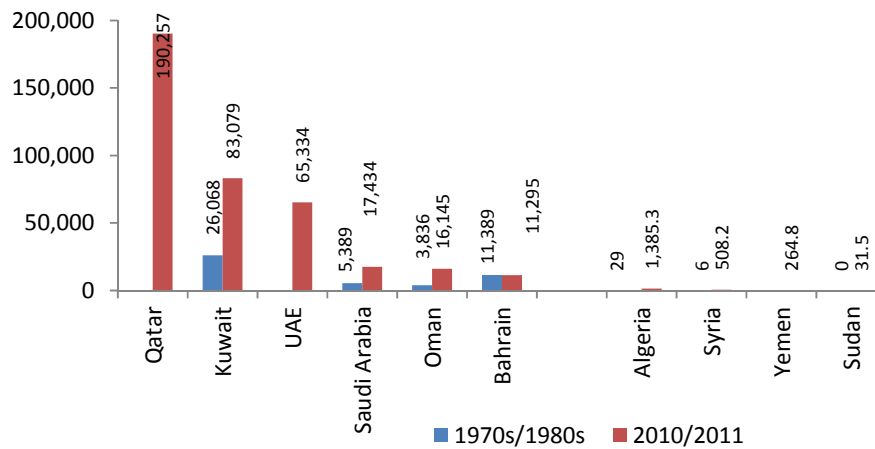
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Figure 1: Natural Resource Rents, Percent of GDP 1970-2011



Note: Data for Bahrain starts in 1980, for UAE 1975 and Yemen in 1990.
Source: World Development Indicators.

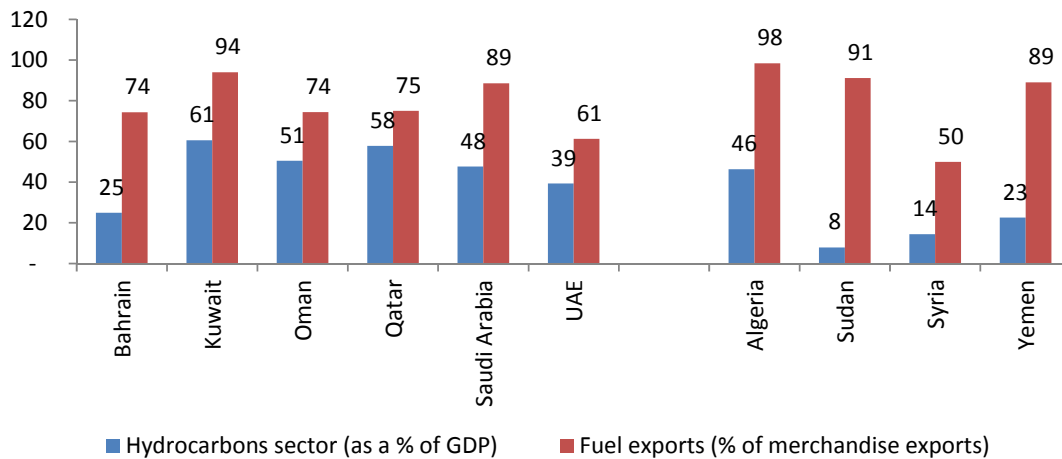
Figure 2: Natural Resource Rent Per Capita (current US\$)



Notes: No old data for Qatar and UAE.

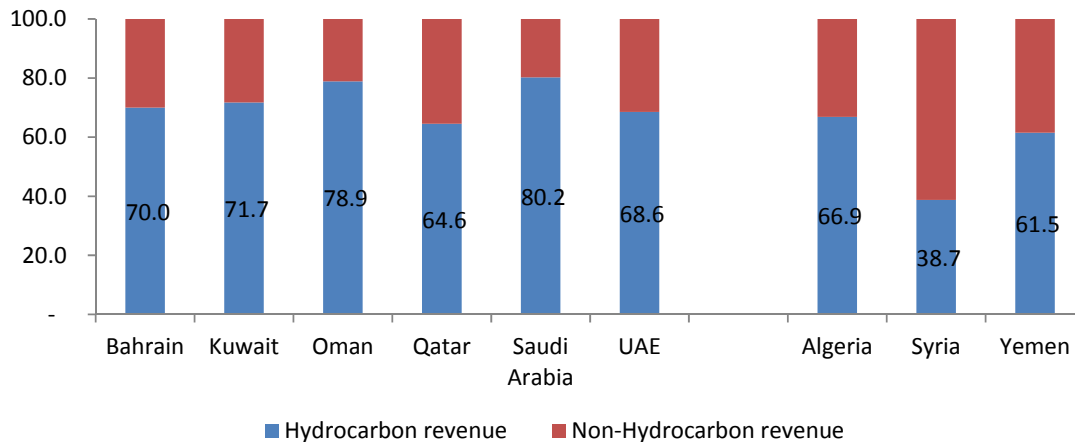
Source: Calculated by the authors based on data from the World Development Indicators and national statistical offices.

Figure 3: Structure of Value-Added and Exports, 2011 or 2012



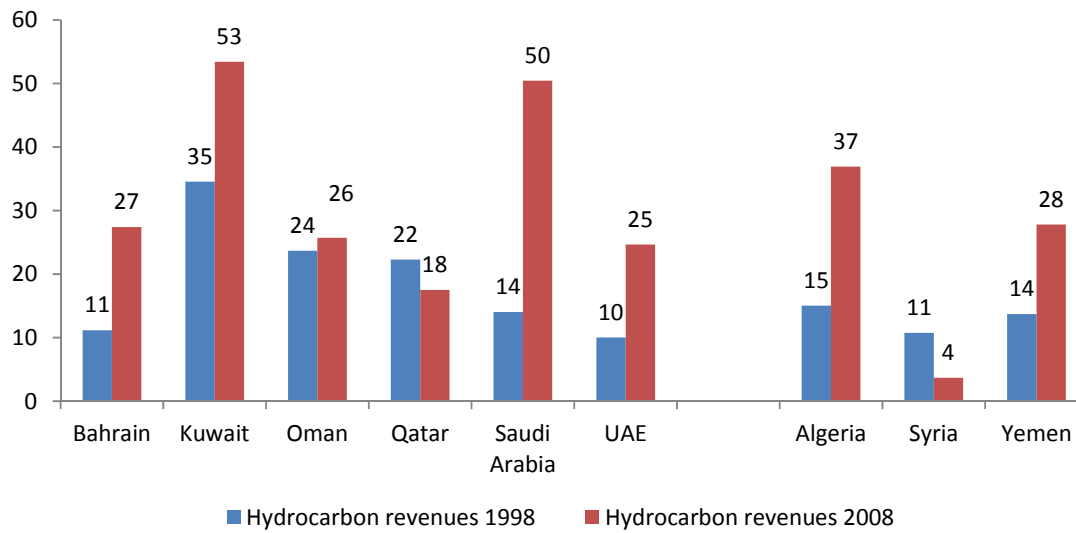
Source: The share of the hydrocarbons sector to GDP was calculated by the authors based on the following data: Bahrain: Central Informatics Organization and Arab Monetary Fund; Kuwait: Central Bank of Kuwait; Oman: Central Bank of Oman; Qatar: Central Bank of Qatar, Saudi Arabia: Central Department of Statistics and Information; UAE: National Bureau of Statistics. Authors from WDI calculate remaining figures.

Figure 4: Percent of Total Fiscal Revenues, Average (1992-2012)



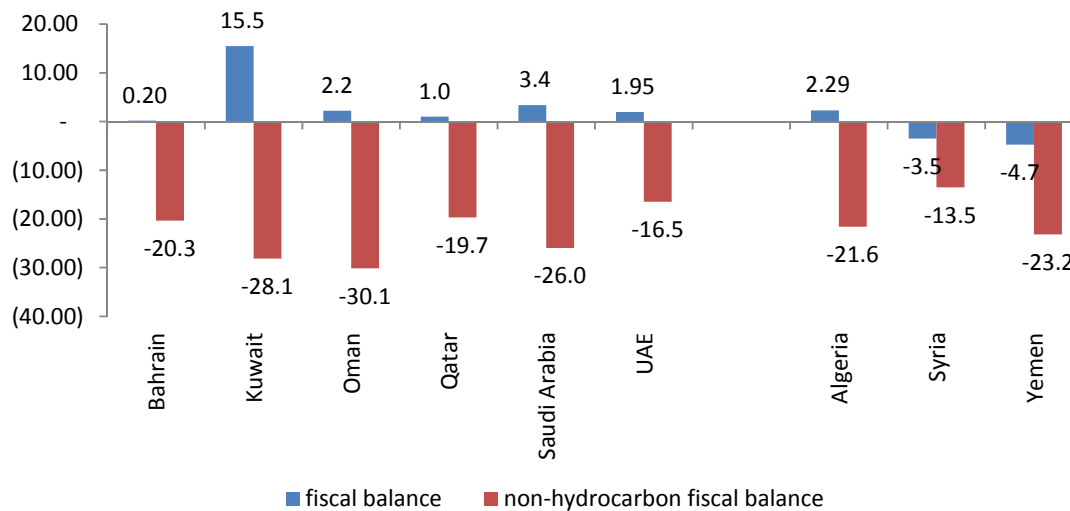
Source: Calculated by authors based on the dataset from Villafuerte and Lopez-Murphy (2010) which was updated by the authors from national sources or IMF article IV annex tables

Figure 5: Hydrocarbon Revenues during Booms and Busts, 1998 and 2008, Percent of GDP



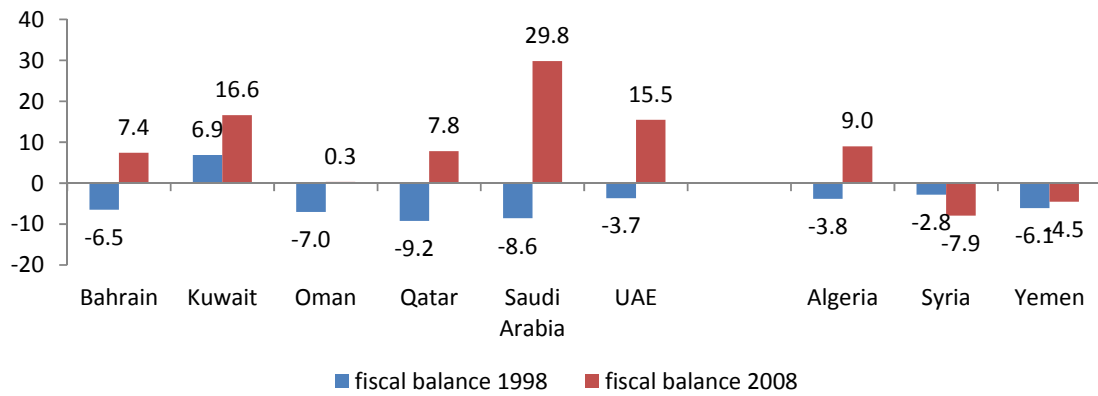
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Figure 6: Fiscal Balances, 1992-2012 (Average), Percent of GDP



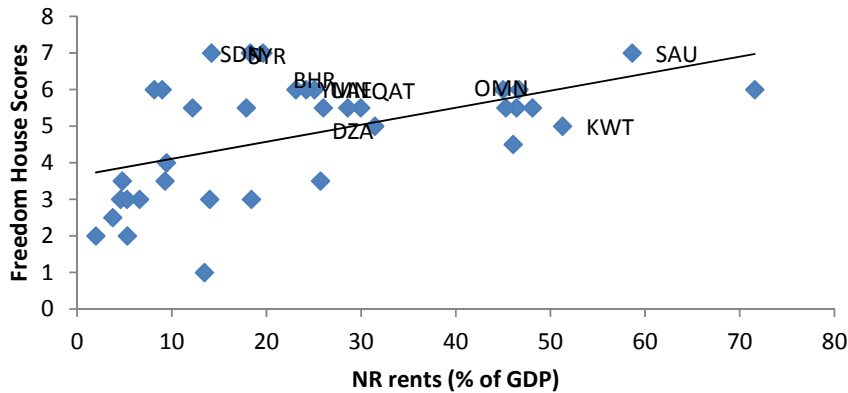
Source: Calculated by authors based on the dataset from Villafuerte and Lopez-Murphy (2010) which was updated by the authors from national sources or IMF article IV annex tables

Figure 7: Fiscal balances During Booms and Busts, 1998 and 2008, Percent of GDP



Source: Calculated by authors based on the dataset from Villafuerte and Lopez-Murphy (2010) which was updated by the authors from national sources or IMF article IV annex tables

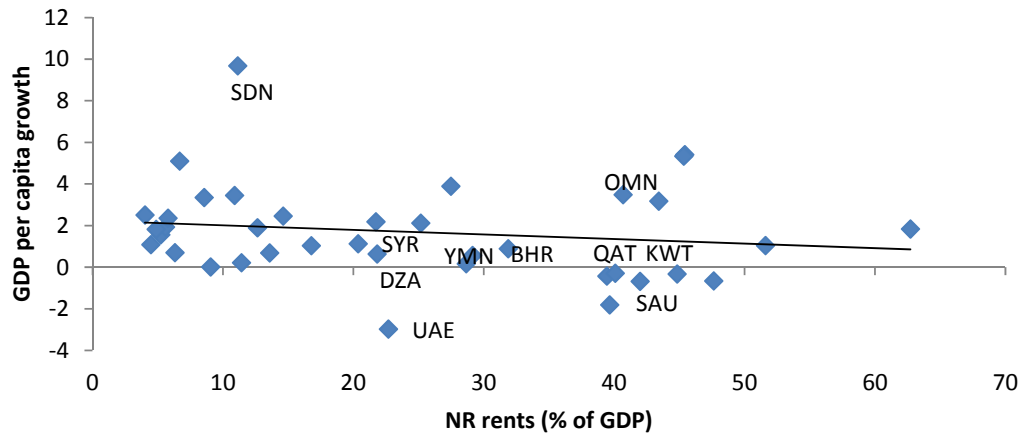
Figure 8: Natural Resources and Freedom House Scores, 2013



Note: The political rights indicator is based on several subcategories derived from the Universal Declaration of Human Rights which are considered to represent the fundamental components of freedom including: (i) the ability to vote freely in legitimate elections; (ii) participate freely in the political process; (iii) have representatives that are accountable to them. This indicator ranges from 1 (the most free) and 7 (the least free). The countries included in this scatter graph (and all subsequent scatters) are those where hydrocarbon rents are 4 percent of the GDP or higher. In addition to the 10 Arab countries in our sample, these countries are: Albania, Angola, Argentina, Azerbaijan, Bolivia, Brunei Darussalam, Cameroon, Columbia, Republic of Congo, Ecuador, Egypt, Gabon, Indonesia, Iran, Kazakhstan, Libya, Malaysia, Mexico, Nigeria, Papua New Guinea, Romania, Russia, Tunisia, Turkmenistan, Venezuela and Vietnam.

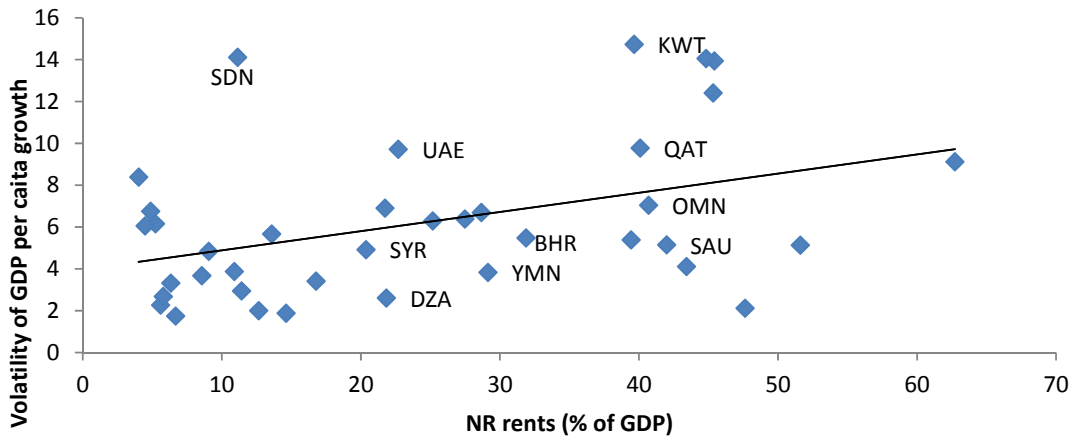
Source: Freedom House

Figure 9: Natural Resource Rents and Long-Run GDP Per Capita Growth, Average 1981-2011



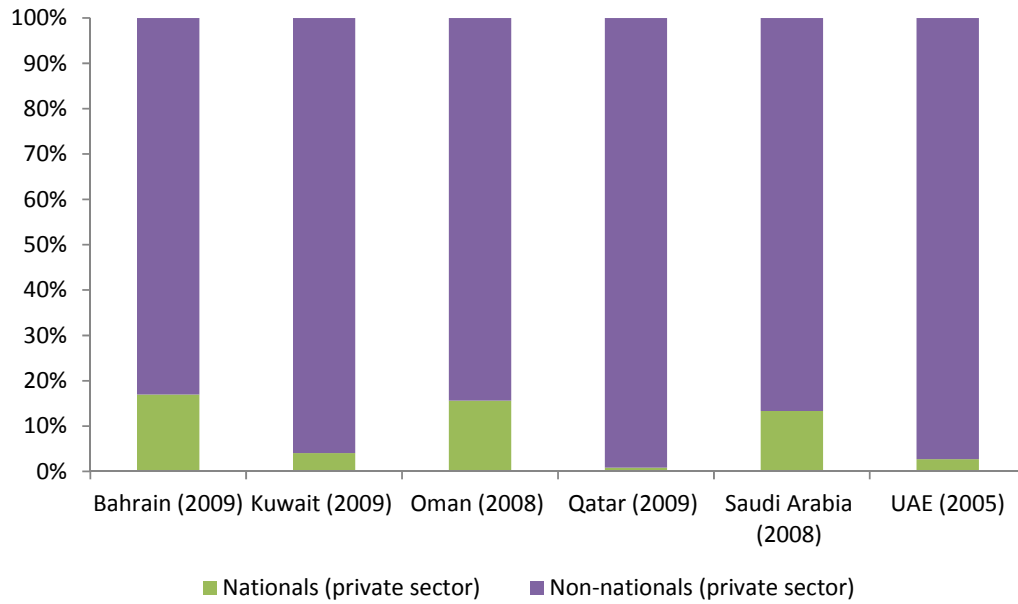
Source: Author's calculations based on WDI data and WEO database, 2014.

Figure 10: Natural Resource Rents and Volatility of GDP Per Capita Growth, 1981-2011



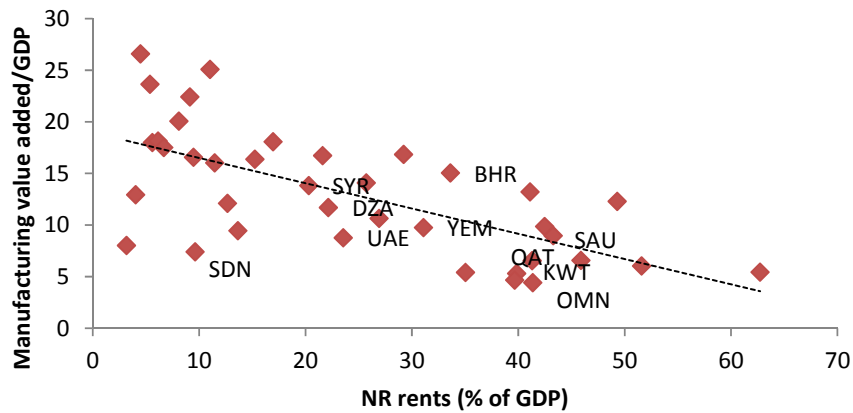
Source: Author's calculations based on WDI data and WEO database, 2014.

Figure 11: Employment of Non-Nationals in the Private Sector, Share in Total Private Sector Employment



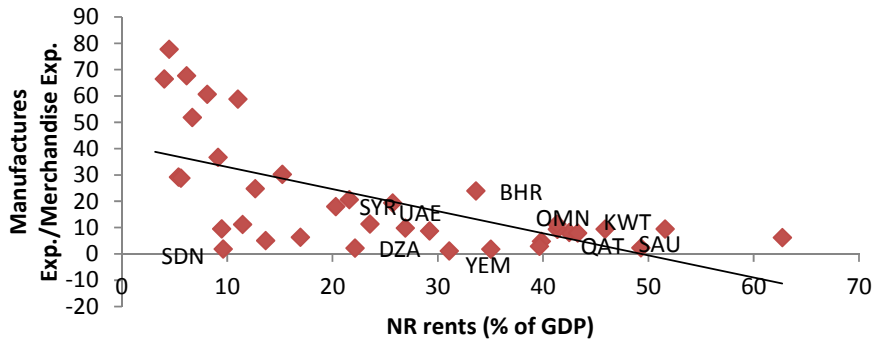
Source: Hodson (2011)

Figure 12: Manufacturing and Rents, 1980-2011



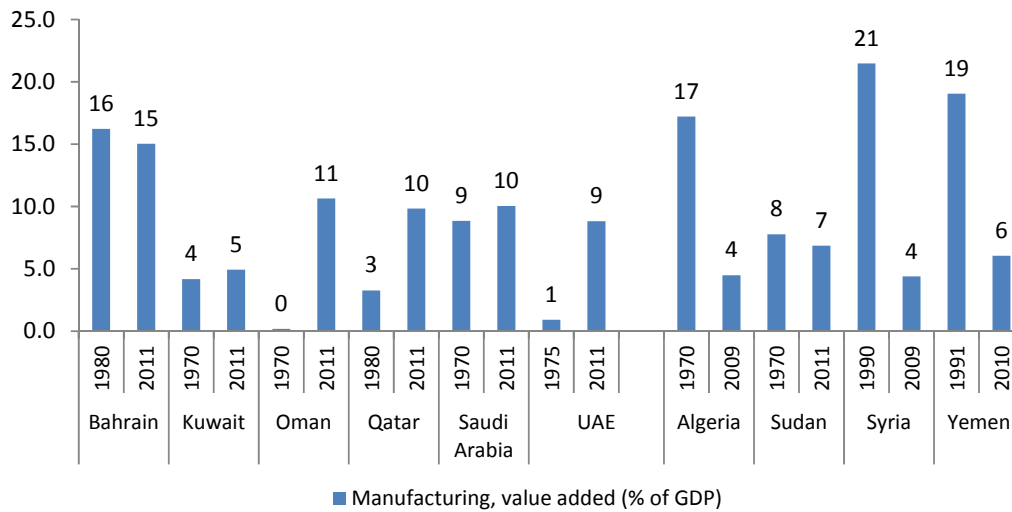
Source: Author's calculations based on WDI data

Figure 13: Manufacturers Exports and Rents, 1980-2011



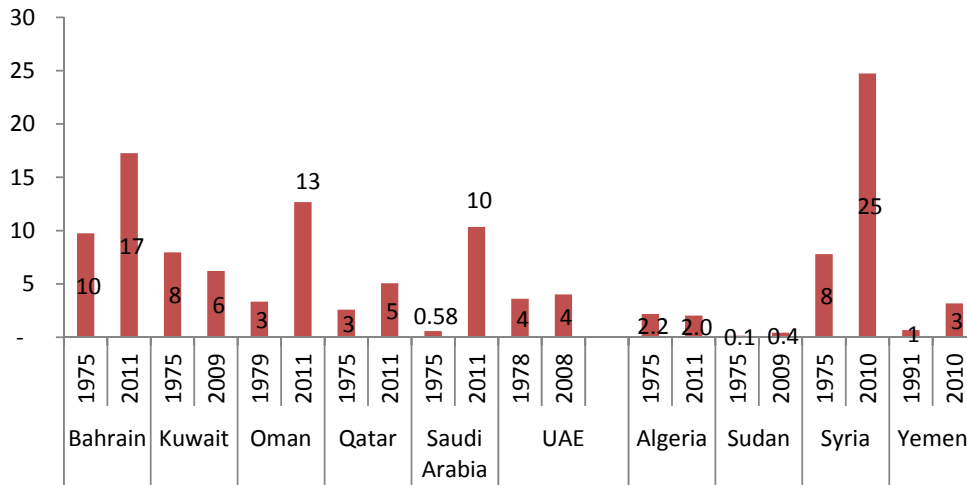
Source: WDI data.

Figure 14: Value-Added Manufacturing (percent of GDP)



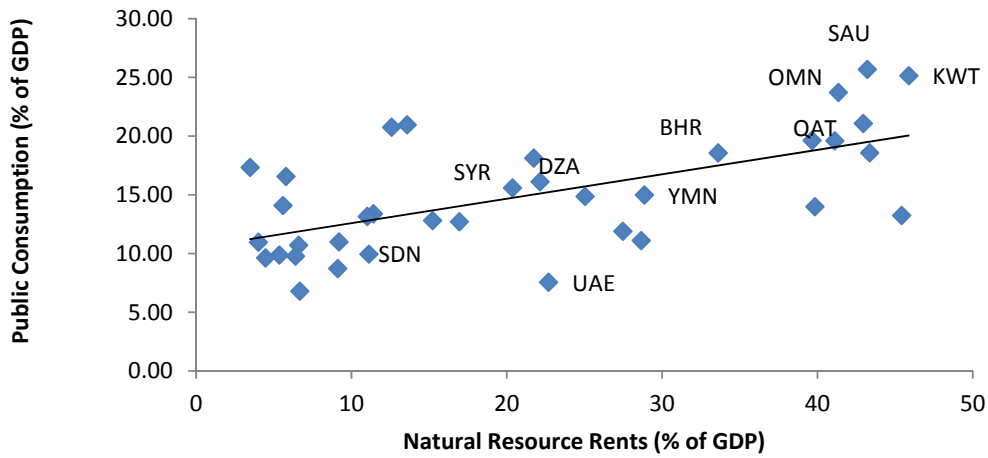
Source: WDI data, 2014 and/or authors' calculations based on data from the Arab Monetary Fund and national statistical agencies.

Figure 15: Manufactures Exports (% of Merchandise Exports), 1975 and 2011



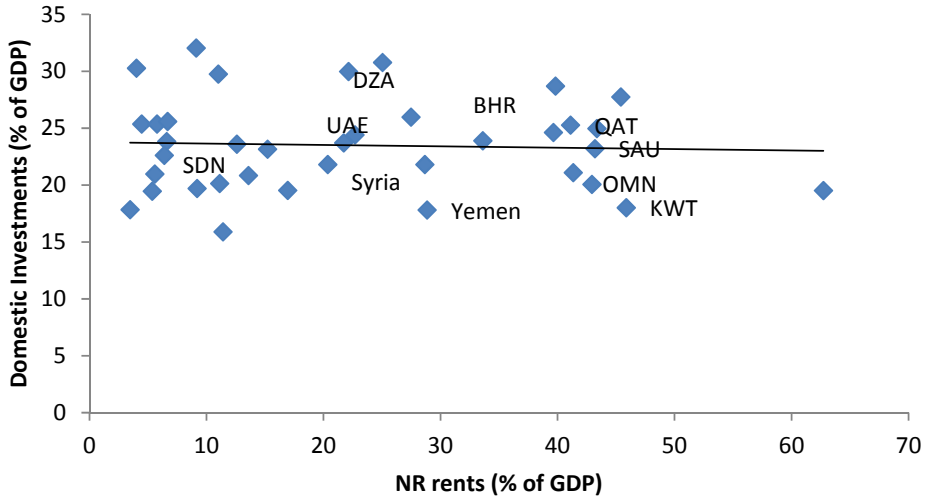
Source: WDI, 2014

Figure 16: Hydrocarbons Rents and Public Consumption, Percent of GDP, 1980-2011



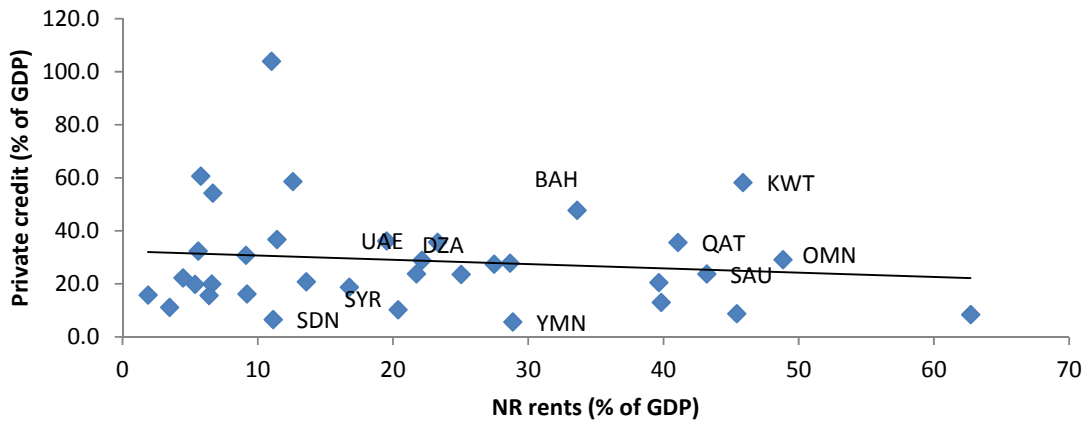
Source: Author's calculations based on WDI data and WEO database, 2014.

Figure 17: Hydrocarbons Rents and Domestic Investments, 1980-2011



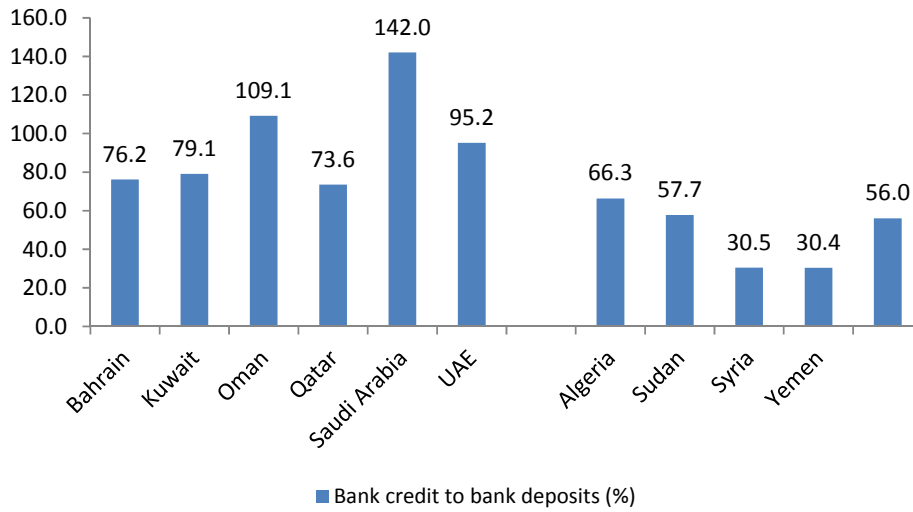
Source: Author's calculations based on WDI data and WEO database, 2014.

Figure 18: Hydrocarbons' Rents and Financial Sector Development, 1980-2011



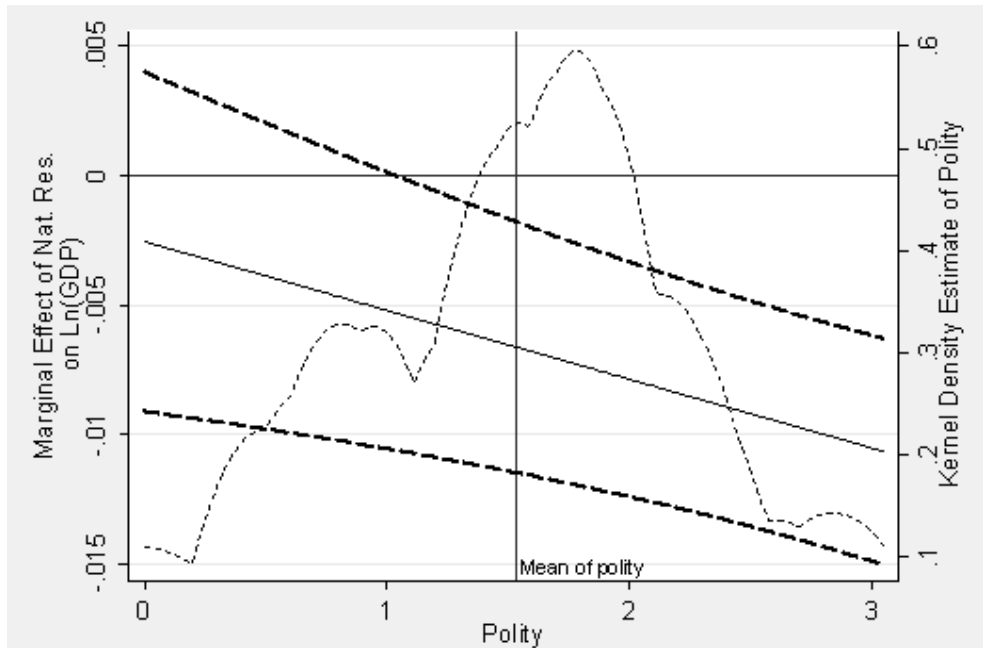
Source: WDI data.

Figure 19: Loan to Deposit Ratios in Resource-Rich Arab Countries, 1980-2011



Source: Global Financial Development Database, 2014.

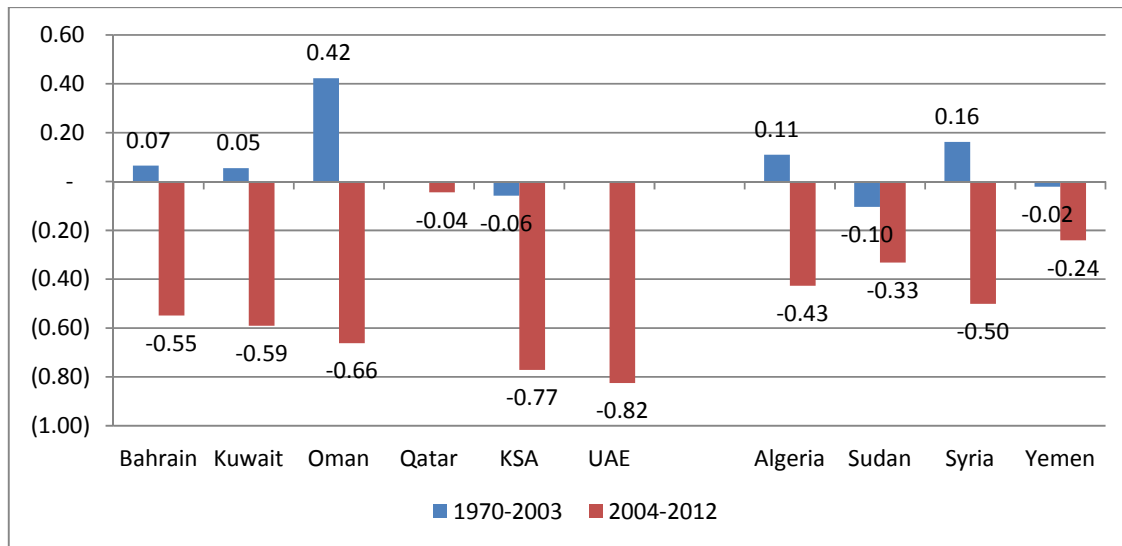
Figure 20: Marginal Effect of Natural Resources Rents with Political Institutions on Growth



Notes: (i) This graph shows the marginal effect of the interacted variable using the ginter package in Stata. It works with any equation with a linear index. In this case, if the index is $Growth = b_1 + b_2 * NaturalRes + b_3 * Polity + b_4 * NaturalRes * Polity$, this command can graph either $b_2 + b_4 * Polity$ or $b_3 + b_4 * NaturalRes$. It is worthy to note that, here, we graph polity with the marginal effect of natural resources on growth ($b_3 + b_4 * NaturalRes$). The graph includes a vertical line at the mean value of the other constitutive term (polity) comprising the interaction. (ii) Thick dashed lines gives 90% confidence interval for the interaction term. (iii) Thin dashed line is a kernel density estimate of the Political Institutions variable.

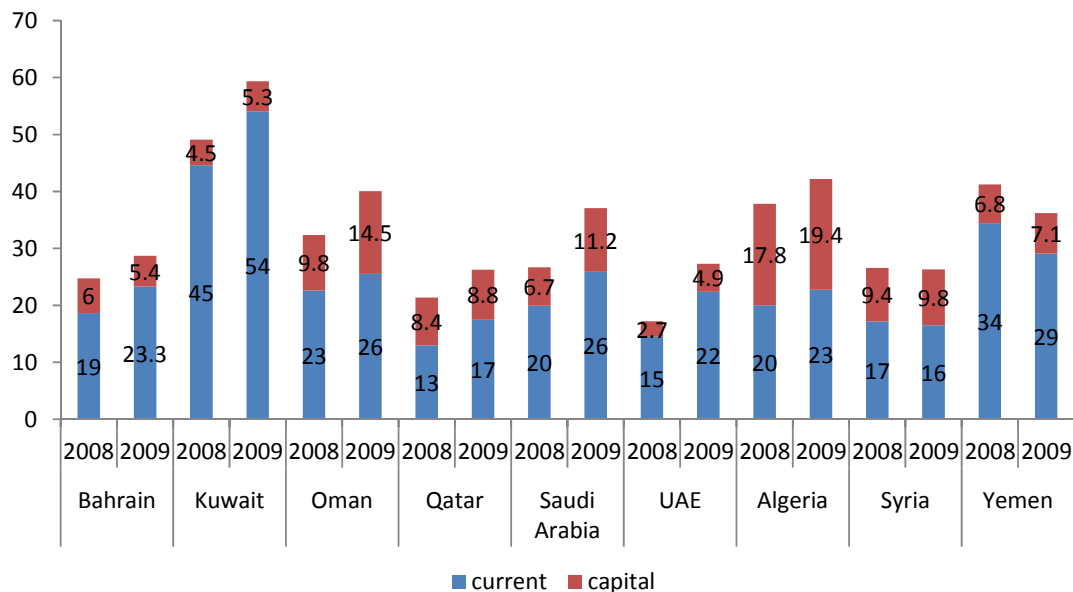
Source: Constructed by the authors.

Figure 21: Country Correlations between the Cyclical Components of Real Government Spending and Real GDP, 1970-2012



Notes: The cyclical components have been estimated using the Hodrick-Prescott Filter. Real government expenditure is deflated by the GDP deflator. A positive (negative) correlation indicates pro-cyclical (countercyclical) fiscal policy. Data for Bahrain is available since 1980 only, Qatar since 1994 and UAE since 2000. Data for Sudan and Syria is available until 2008 and 2007 respectively. Source: Calculated by the authors based on data from the WDI and WEO databases.

Figure 22: Composition of Public Spending in 2008 and 2009, Percent of GDP



Source: Calculated by authors based on the dataset from Villafuerte and Lopez-Murphy (2010)

Table 1: Proven Oil Reserves and Production, 2013

Country	Proven Oil Reserves			Thousand barrels per day	Production	
	Billion barrels	Percent of total reserves	Rank		Percent of total production	Rank
Saudi Arabia	267.9	17.6	2	11,725.7	13.4	1
Kuwait	104.0	6.8	7	2,796.8	3.2	9
United Arab Emirates	97.8	6.4	8	3,213.2	3.7	7
Qatar	25.4	1.7	14	1,579.2	1.8	17
Oman	5.5	0.4	23	923.8	1.1	24
Bahrain	0.1	0.0	63	55.2	0.1	64
Algeria	12.2	0.8	17	1,875.2	2.1	15
Sudan	5.0	0.3	25	115.3	0.1	31
Yemen	3.0	0.2	29	171.1	0.2	40
Syria	2.5	0.2	32	170.5	0.2	33

Note: Figures for Sudan refer to the pre-session of the South. Please see footnote 5.
Source: U.S. Energy Information Administration, Oil & Gas Journal.

Table 2: Proven Natural Gas Reserves and Production, 2013

Country	Proven Natural Gas Reserves			Billion cubic feet	Production	
	Trillion Cubic Feet	Percent of total reserves	Rank		Percent of total production	Rank
Qatar	890.0	13.0	3	5,523.25	4.8	5
Saudi Arabia	287.8	4.2	5	3,585	3.1	8
United Arab Emirates	215.0	3.1	7	1,853.95	1.6	16
Kuwait	63.5	0.9	19	548	0.5	34
Oman	30.0	0.4	26	1034.58	0.9	26
Bahrain	3.3	0.0	53	481.43	0.4	35
Algeria	159.0	2.3	10	3,053	2.6	9
Yemen	16.9	0.2	31	270	0.2	41
Syria	8.5	0.1	43	227.50	0.2	43
Sudan	3.0	0.0	55	0	0.0	93

Note: Figures for Sudan refer to the pre-session of the South. Please see footnote 5.
Source: U.S. Energy Information Administration, Oil & Gas Journal

Table 3: Basic Statistics

	Population (thousands)		Current GDP (in million US\$)	GNI per capita, Atlas method (current US\$)	GDP per capita (constant 2005 US\$)	Natural resource rents as percent of GDP		
	National	Total				1970	2011	
GCC								
	2011	2011	1970	2010	2011	1970	2011	
Bahrain	570.7*	1,228.5	29,044.5	8,310.0**	14,820.0	14,052.1	85.5**	25.1
Kuwait	1,090.0	3,065.9	176,590.1	3,310.0	44,100.0	29,337.7	43.2	51.3
Oman	2,013.0	3,295.0	71,781.5	320.0	19,110.0	13,902.7	47.4	45.3
Qatar	259.9	1,732.7	172,981.6	na	74,340.0	54,791.9	49.3	28.6
Saudi Arabia	19,405.7	28,376.4	576,824.0	760.0	19,360.0	17,050.7	31.6	58.7
UAE	948.0	8,264.1	360,245.1	na	35,330.0	23,795.9	41.5*	24.2
Populous Countries								
Algeria	37,763.0	198,538.8	330.0	4,350.0	3,168.7	8.7	26.3	
Sudan	36,430.9	64,053.4	150.0	1,200.0	832.3	0.0	15.1	
Syria*	21,532.6	59,147.0	360.0	2,610.0	1,700.4	1.6	18.5	
Yemen	23,304.2	31,724.6	na	1,220.0	795.6	na	23.1	

Notes: * End year is 2010. ** Start year is 1980. ** Start year is 1975

(i) For the GCC, population estimates are from national statistical offices. Qatar's national population estimated based on a share of nationals equivalent to 15percent of total population.

(ii) Start years are: Bahrain (1981), Kuwait (1975), Oman (1985), Saudi Arabia (1974). For all populous countries the start year is 1970.

Sources: World Development Indicators, national statistical offices and authors' calculations.

Table 4: Government Revenues and Expenditures in Selected Resource-Rich Arab Countries, Averages 1997-2012, Percent

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	Algeria
	% of GDP						
Hydrocarbon revenues	22.0	43.7	28.5	19.7	31.9	19.6	25.9
Non-hydrocarbon revenues							
o.w.	7.8	16.1	8.2	10.5	5.9	8.1	11.2
Tax revenues	3.1	1.0	2.9	2.1	1.0	0.8	8.6
	% of GDP						
Wages and Salaries	12.7	11.3	8.4	6.7	11.9	6.5	8.4
Subsidies and Social Benefits	5.2	11.0	2.1	2.9	1.5	3.7	4.0
Defense, Security and Public Order	7.0	8.6	11.9	2.3	8.7	4.7	3.5
Education and Health	6.1	7.2	6.5	4.9	9.2	3.0	4.0

Notes: Due to some data unavailability, some variables are included until 2011 only. Also, Data for Oman on tax revenues, wages and education and health start in 1998. Data on tax revenues and subsidies and social benefits for Qatar are available since 2003 only.

Source: Authors' calculations based on several data sources. Algeria Kuwait, Qatar and UAE: IMF statistical appendices of article IV country reports; Data prior to 2004 for Qatar are from the Annual Reports of the Central Bank of Qatar, Oman, Ministry of National Economy's statistical year book and Central Bank of Oman's annual report; Saudi Arabia: Saudi Arabian Monetary Agency's annual report; defense and security data for Algeria and UAE are from WDI.

Table 5: Long-term per capita GDP growth in resource-rich Arab economies, 1981-2011

	GCC	Populous
Average	0.02	1.04
Max	8.91	3.84
Min	-7.02	-5.07
Volatility	3.9	2.01
Average oil prices	34.6	34.61

Notes: (i) Oil booms are years where oil prices here higher than US\$34.6 per barrel which is the average oil price for the whole period 1981-2011. (ii) Oil prices are for crude oil (petroleum), simple average of three spot prices; Dated Brent, West Texas Intermediate, and the Dubai Fateh).

Source: Authors' calculations based on WEO database, 2014.

Table 6: Selected Macroeconomic Indicators during Booms and Busts

	GCC		Populous	
	1998	2008	1998	2008
<i>Oil Price</i>	<i>13.1</i>	<i>97.0</i>	<i>13.1</i>	<i>97.0</i>
GDP growth	4.3	8.5	5.6	3.4
Real hydrocarbon GDP growth	1.3	6.6	3.4	-3.8
Real non-hydrocarbon GDP growth	3.2	11.2	5.4	5.4
Non-hydrocarbon GDP (% of GDP)	74.2	54.0	88.3	70.0
Gross national savings (%GDP)	20.1	48.7	20.2	31.3
Total investment (%GDP)	25.6	29.8	20.2	23
Merchandise Exports (% of GDP)	41.5	63.9	17.3	30.5
Inflation (%)	0.9	9.3	8.2	13.3
Fiscal Balance (% of GDP)	-3.8	17.3	-3.7	0.6
General government gross debt (% of GDP)	38.7	79.3	123.5	37.7
Current account balance (% of GDP)	-8.1	18.9	-4.7	3.2
Total reserves (US\$ billion)	5.6	88	2.5	43.9
External debt stocks (% of GNI)	na	na	119.1	20.3

Source: Authors' calculations based on WEO and WDI databases, 2014.

Table 7: Deviations from Equilibrium Real Exchange Rate, 1975-2005, Percent

Countries	Mean deviation of the RER	Periods with overvaluation (percent)
Bahrain (8)	4.7	50
Kuwait (5)	0.6	80
Oman (8)	-18.1	63
Qatar (5)	10.4	20
Saudi Arabia (5)	-9.0	80
United Arab Emirates (5)	6.4	20
Algeria (8)	-9.0	75
Syria (8)	-17.9	63
Yemen (5)	6.1	40

Note: A negative value in column 1 means an overvalued RER on average during the whole period (up to 8 five year periods 1970-2005).
Source: Diop et al. (2012)

Table 8: Empirical Results of the Growth Equation

	Basic		With private credit	
	OLS Ln(GDP)	FE Ln(GDP)	OLS Ln(GDP)	FE Ln(GDP)
Ln(GDP 80)	0.8365*** (0.1314)		0.7870*** (0.1344)	
Ln(Inv)	0.6254*** (0.0247)	0.6254*** (0.0247)	0.5706*** (0.0302)	0.5706*** (0.0302)
Ln(Land)	-0.2286*** (0.0571)	-0.2286*** (0.0571)	-0.1860*** (0.0602)	-0.1860*** (0.0602)
Pop. Growth	-0.0250** (0.0097)	-0.0250** (0.0097)	-0.0256*** (0.0096)	-0.0256*** (0.0096)
School Enr.	0.0080*** (0.0008)	0.0080*** (0.0008)	0.0088*** (0.0008)	0.0088*** (0.0008)
Net Exp/GDP	0.0135*** (0.0010)	0.0135*** (0.0010)	0.0134*** (0.0011)	0.0134*** (0.0011)
Nat. res./GDP	-0.0096*** (0.0017)	-0.0096*** (0.0017)	-0.0084*** (0.0021)	-0.0084*** (0.0021)
Oil boom	0.0574*** (0.0219)	0.0574*** (0.0219)	0.0475** (0.0219)	0.0475** (0.0219)
Pop. Gro*Nat.res	-0.0008 (0.0008)	-0.0008 (0.0008)	-0.0011 (0.0008)	-0.0011 (0.0008)
Oil exp.				
Priv. Credit			0.0014** (0.0006)	0.0014** (0.0006)
Priv. Credit *Nat.			0.0000 (0.0000)	0.0000 (0.0000)
Constant	-7.7739*** (2.3943)	12.8349*** (1.0785)	-5.9603** (2.5228)	13.3320*** (1.0872)
Observations	263	263	259	259
R-squared	0.9942	0.9583	0.9945	0.9604
Number of code		11		11

Note: (i.) ***, ** and * represent respectively statistical significance at the 1%, 5% and 10% levels. (ii.) Standard errors between brackets. (iii.) OLS stands for Ordinary Least Squares, FE for Fixed effect estimation and RE random effect estimation.

Source: Constructed by the authors.

Table 9: Empirical Results of the Growth Equation

	With Polity		With Freedom House	
	OLS Ln(GDP)	FE Ln(GDP)	OLS Ln(GDP)	FE Ln(GDP)
Ln(GDP 80)	0.6036*** (0.1683)		0.8180*** (0.1342)	
Ln(Inv)	0.4998*** (0.0383)	0.4998*** (0.0383)	0.5694*** (0.0307)	0.5694*** (0.0307)
Ln(Land)	-0.0907 (0.0780)	-0.0907 (0.0780)	-0.2204*** (0.0610)	-0.2204*** (0.0610)
Pop. Growth	-0.0269** (0.0108)	-0.0269** (0.0108)	-0.0238** (0.0096)	-0.0238** (0.0096)
School Enr.	0.0093*** (0.0009)	0.0093*** (0.0009)	0.0086*** (0.0008)	0.0086*** (0.0008)
Net Exp/GDP	0.0109*** (0.0013)	0.0109*** (0.0013)	0.0131*** (0.0011)	0.0131*** (0.0011)
Nat. res./GDP	-0.0025 (0.0040)	-0.0025 (0.0040)	-0.0275** (0.0119)	-0.0275** (0.0119)
Oil boom	0.0820*** (0.0244)	0.0820*** (0.0244)	0.0481** (0.0219)	0.0481** (0.0219)
Pop. Gro*Nat.res	-0.0014 (0.0011)	-0.0014 (0.0011)	-0.0010 (0.0008)	-0.0010 (0.0008)
Oil exp.	0.1684 (0.1775)			
Priv. Credit	0.0015 (0.0009)	0.0015 (0.0009)	0.0016** (0.0007)	0.0016** (0.0007)
Priv. Credit *Nat	0.0000 (0.0001)	0.0000 (0.0001)	0.0000 (0.0000)	0.0000 (0.0000)
Polity	0.0692*** (0.0252)	0.0692*** (0.0252)		
Polity*Nat. res.	-0.0027** (0.0011)	-0.0027** (0.0011)		
Freedom			0.0575 (0.0531)	0.0575 (0.0531)
Freedom*Nat. res.			0.0113* (0.0065)	0.0113* (0.0065)
Constant	-1.3347 (3.2177)	13.6742*** (1.3218)	-6.4449** (2.5291)	13.7379*** (1.0945)
Observations	221	221	253	253
R-squared	0.9912	0.9565	0.9947	0.9590
Number of code		10		11

Note: (i.) ***, ** and * represent respectively statistical significance at the 1%, 5% and 10% levels. (ii.) Standard errors between brackets.
Source: Constructed by the authors.

Appendix 1: List of Countries

Algeria	Malta
Bahrain	Morocco
Djibouti	Oman
Egypt	Qatar
Iran	Saudi Arabia
Iraq	Sudan
Israel	Syria
Jordan	Tunisia
Kuwait	United of Arab Emirates
Lebanon	West Bank and Gaza
Libya	Yemen

Appendix 2: Variables Description

Variable	Definition	Source
<i>Dependent variable</i>		
Ln(GDP)	Real Gross Domestic Product (constant 2005 USD).	WDI
<i>Independent variables</i>		
Ln(GDP 80)	Real Gross Domestic Product (constant 2005 USD) for 1980.	WDI
Ln(Inv)	Gross fixed capital formation (constant 2005 US\$).	WDI
Ln(Land)	Arable land (hectares).	WDI
Pop. Growth	Population growth (annual %).	WDI
School Enr.	School enrollment, secondary (% gross).	WDI
NetExp/GDP	Exports of goods and services (% of GDP) minus imports of goods and services (% of GDP).	WDI
Nat.res./GDP	Total natural resources rents (% of GDP).	WDI
Priv. Credit.	Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable that establish a claim for repayment.	WDI
Oil boom	A dummy variable that takes the value of 1 in oil boom years (from 2004 to 2013) and 0 otherwise.	Constructed by the authors
Oil exp.	A dummy variable that takes the value of 1 for oil exporters and 0 otherwise.	Constructed by the authors
Polity	An index based on an evaluation of that state's elections for competitiveness, openness and level of participation. For each year and country, a "Polity Score" is determined which ranges from -10 to +10, with -10 to -6 corresponding to autocracies, -5 to 5 corresponding to autocracies, and 6 to 10 to democracies.	Polity Project IV
Freedom	An index based on an annual survey of media independence that assesses the degree of print, broadcast, and internet freedom throughout the world.[22] It provides numerical rankings and rates each country's media as "Free," "Partly Free," or "Not Free." Individual country narratives examine the legal environment for the media, political pressures that influence reporting, and economic factors that affect access to information	Freedom House