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HAS THE UAE ESCAPED THE OIL CURSE?

Raimundo Soto and Ilham Haouas

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Abstract

The UAE is blessed with vast deposits of oil and gas. Contrary to other oil-rich economies, the UAE seems to have escaped from the so-called "oil curse". We study how the UAE used resource rents to achieve economic development and provide higher welfare for the local population. We identify, nevertheless, symptoms of the resource curse in three areas: very low growth in labor productivity, government policies that are unable to counteract economic cycles induced by oil-price volatility, and massive over employment and declining productivity in the public sector. Therefore, we conclude that while the UAE has not been immune to the oil curse, but it has managed to make the benefits outweigh the negative outcomes of oil exporting. We finally study the case of Dubai as an example of how to overcome the dependency on oil exports and diversify the economy by using a combination of market deregulation, support for foreign trade, and efficient provision of infrastructure and institutions for private sector participation.

JEL Classifications: Q32, O41, F14

Keywords: Natural Resources, Oil Curse, Economic Growth, Export Diversifications

ملخص

لقد أنعم الله على دولة الإمارات العربية المتحدة بودائع هائلة من النفط والغاز. وعلى عكس الاقتصادات الأخرى الغنية بالنفط، فقد يبدو أن دولة الإمارات العربية المتحدة قد فرت من ما يسمى "لعنة النفط". ندرس كيفية استخدام الإمارات العربية المتحدة للموارد لتحقيق التنمية الاقتصادية وتوفير رفاهية أعلى للسكان المحليين. نحدد، مع ذلك، أعراض لعنة الموارد في ثلاثة مجالات وهي: النمو المنخفض للغاية في إنتاجية العمل، السياسات الحكومية الغير قادرة على مواجهة الدورات الاقتصادية الناجمة عن تقلب أسعار النفط، والعمالة الزائدة واسعة النطاق وانخفاض الإنتاجية في القطاع العام. ولذلك، فإننا نستنتج أنه في حين أن الإمارات العربية المتحدة لم تكن في مأمن من لعنة النفط، لكنها تمكنت من جعل فوائد تفوق النتائج السلبية لتصدير النفط. وأخيرا علينا أن ندرس حالة دبي كمثال لكيفية التغلب على الاعتماد على صادرات النفط وتنويع الاقتصاد عن طريق استخدام مزيج من تحرير الأسواق، ودعم التجارة الخارجية، وتوفير البنية التحتية وكفاءة المؤسسات لمشاركة القطاع الخاص.

1. Introduction

The UAE is a small federative country formed in 1971 in the Gulf of Arabia comprising seven originally independent emirates (Abu Dhabi, Dubai, Sharjah, Ajman, Fujaira, Umm al Quwein and Ras al-Khaimah). As other countries in the region, the country is blessed with vast deposits of oil and gas. As of 2011, proven reserves of oil amounted to 7% of the world deposits, making the UAE one of the richest economies in the world: at the current extraction rate, known oil reserves would last for another 94 years (BP 2011).

Oil was found in the UAE¹ in the early 1960s but it was not until the oil-price hikes of 1973 and 1978 that the hydrocarbon sector became the main export and a dominant sector in the economy. In the subsequent thirty years, oil has been the backbone of the economy, the main source of exports and foreign currency, and the driving force of the government revenues that have been used both to finance infrastructure and other public goods and to transfer wealth to the local population. The prosperity of the UAE and its transformation from a backwards region to a booming economy has been made possible by revenue from oil exports. However, and contrary to other oil-rich economies in particular the populous oil-rich Arab economies, the UAE seems to have escaped from the so-called “oil curse”, i.e., the often-encountered paradoxical case of countries that have been blessed by abundant natural resources but mismanage such wealth, remain underdeveloped, and cannot lift their population out of poverty (Sachs and Warner 1995). This is the topic of our paper.

Undoubtedly, income levels for the local population have improved significantly after the 1970s. However, and as discussed below, several of the resource-curse symptoms are currently present in the UAE indicating that the country has not been immune to the disease, but it has somehow managed to make the benefits outweigh the negative outcomes of oil exporting. Contrary to most resource-rich economies, and evidencing substantial foresight on the part of the founding fathers of the UAE, the government has made a conscious and systematic effort to invest a significant amount of resources in accumulating two forms of capital that are crucial for sustained economic growth: physical capital—in particular, public infrastructure—and the institutional fabric. The UAE provides an example of a country where abundant natural capital has not crowded-out “social capital”, by which is meant the infrastructure and institutions of a society in a broad sense: its culture, cohesion, law, system of justice, rules and customs and so on, including trust (Woolcock 2001). The authorities have been also quite aggressive against corruption. Insofar as natural resource abundance involves public allocation of access to scarce common-property resources to private parties without payment, thereby essentially leaving the resource rent up for grabs, it is only to be expected that resource-rich countries may be more susceptible to corruption than others.

The success of the UAE in using resource rents for economic development and higher welfare, nevertheless, does not rule out the fact that some of the symptoms of the resource curse are present. The most significant indication of such problems is in the stagnation of productivity levels throughout most of the last 25 years. Production in both oil and non-oil sectors of economic activity have grown largely fueled by massive investment and an even higher use of manpower, but the efficiency in the use of such factors have remained stagnant and, in some areas, steadily declined as the country got richer. On the contrary, emerging countries in East Asia and Latin America have accumulated comparatively fewer resources but learned to use them more efficiently. This has allowed their industries to be competitive in international markets. UAE industries, on the other hand, have yet to become competitive in international markets (with exception of niche business such as gold processing or logistics

¹The first oil concession in Abu Dhabi was granted in 1939 to Trucial Coast Oil Development Company, which was awarded exploration rights to the whole of Abu Dhabi’s land area and part of its offshore for a 75-year period. The company discovered its first commercial oilfield at Bab in 1960, and that was followed by finds at Bu Hasa in 1962, Asab in 1965 and Sahil in 1972.

that perform at world standards): it remains to be seen whether they can survive and prosper with its current labor-intensive production technologies.

We use simple growth models to decompose economic growth according to its sources: physical capital accumulation, use of manpower, development of the productive skills of such human power, and efficiency at which these resources are employed. Our aim is to answer the following set of questions: How has oil extraction shaped the development of the UAE economy? Is there any evidence of an oil curse and if so, is it significant? What has been the role of macroeconomic policies in inhibiting or fostering the oil curse? And does the UAE offer an answer to the oil curse that could be replicated in other countries affected by the malaise?

In dealing with these questions we have tried to provide as much as possible quantitative answers to the above questions. We were limited by the pervasive lack of statistical data for the UAE, perhaps the clearest sign of an “oil curse”: whenever countries do not face stringent budget constraints, it appears to authorities that policies can be decided in the absence of information and that there is no need for hard data.

Section 2 of this paper provides a brief summary of the emergence, causes and effects of the oil curse. Following recent literature (Gylfason 2011; Elbadawi and Gelb 2010) we identify four channels of transmission through which abundant resource rents can distort the workings of an economy to the point where the income benefit of such rents is outweighed by the costs of the distortions they create. Our aim is to provide a general framework for the analysis and evaluate their importance for the UAE, a country where oil rents have been substantial for the past 40 years.

Section 3 provides a long-run perspective of the UAE economy with emphasis on three macroeconomic aspects. First, we study long-run economic growth for the period 1975-2010 and compare the performance of the UAE vis-à-vis the rest of the world, in particular Arab countries and high-income economies. Second, we document the importance of oil rents in achieving the current high-income levels of the UAE as well as the role of oil in foreign trade and government revenues. Third, we study the sources of economic growth, i.e., we investigate to what extent the economic growth observed between 1975 and 2010 is the result of massive investment (the accumulation of physical capital), the use of an ever-increasing number of workers (reflected in the continuous inflow of expatriates), or in the productive efficiency of such resources (total factor productivity growth).

Section 4 studies macroeconomic policies and their relation with oil rents. Because the exchange rate in the UAE is pegged to the US dollar and the capital account is quite open, the authorities cannot pursue an independent monetary policy. Fiscal policy, therefore, remains as the main policy tool for steering the economy in the short run and influence investment decisions to sustain growth in the long run. We study how oil rents and oil-price volatility has influenced the conduct of monetary policy and its ability to provide for the correct resource allocation, to stabilize business cycles, and to incentivize productivity gains in both the public and private sector.

In Section 5 we exploit the heterogeneity of growth experiences among the different emirates to discuss alternative development strategies that could counterbalance the oil curse. We study the case of Dubai, an emirate that was forced to change its development strategy in the mid-1980s after realizing that the oil bonanza was rapidly disappearing and derive insights on what is needed to ameliorate or avoid altogether the negative aspects of oil rents. Section 6 concludes.

2. The Oil Curse Hypothesis

The oil-curse, or more amply defined the *resource-curse* hypothesis, comprises several different theories that have been offered as explanations for the shocking evidence that, frequently, countries endowed with abundant natural resources suffer from long-standing economic malaises that inhibit their economic and social development (Sachs and Warner 1995). As with physical diseases, the resource curse can be the result of different causes and manifest itself in a variety of symptoms. In what follows we briefly review the different mechanisms operating under the resource curse and the most common symptoms, evaluating their relevance in the case of the UAE.

In general terms, natural resources by themselves are not a problem; most countries are endowed with them although in varying quantities and qualities. It is the size of the rents that can be derived from them –and the few hands in which they are frequently concentrated— what largely determines the unveiling or avoidance of a resource curse. Rents can be defined as the difference between the price received for the sale of one unit of the natural-resource based commodity a country exports and the long-run costs of placing such unit in international markets. In most cases, such rents exist but are small vis-à-vis the size of the economy. In a few cases –notably in oil and gas— the magnitude of such rents can be sizable, itself the result of the geographical concentration of the deposits and the presence of significant scale economies. That is precisely the case of Arab countries and, in particular, the UAE.

Table 1 provides a snapshot of resources rents in the world in the last forty years, the only period for which reliable statistics are available. For each country and year, the World Bank computes resource rents as the difference between natural resource prices and extraction costs (the latter underestimates costs as it omits exploration, development and other potentially significant costs) multiplied by the volume of resources extracted and divided by total GDP.² It can be seen that at the world level, resource rents amount to around 3.5% of GDP in the whole period and fluctuates only moderately. We take the world average as a reference point and conclude that resource rents are significant –and resource curses most likely to appear— in Latin America and the Caribbean, Sub-Saharan Africa, and Middle East and North Africa. Note that on average resource rents in Europe, North America, and Asia tend to be very small. Of course, within these geographical areas individual countries can enjoy significant rents (e.g., Norway in Europe or Indonesia in Asia).

The table also describes the size of resource rents according to degree of development using as proxy per-capita income levels.³ Three elements are apparent. First, in general high resource rents are not linked to high-income levels: in fact, among all income groups, developed economies have the lowest participation of resource rents in aggregate income. Indeed, it is among the middle-income economies where resource rents are most significant. Second, for individual countries resource rents can provide significantly high income levels but not necessarily high development levels: note that while resource rents are very low in high-income OECD economies (less than 2% on average on the period 1970-2010), these tend to be very high in high-income countries that do not belong to the group of developed economies (28%). The latter includes the UAE and some other oil-and-gas exporting countries such as Saudi Arabia, Qatar, and Trinidad and Tobago. Third, being blessed by significant natural resources requires –but countries often fails to achieve— good management of such resources: note that on average the highly-indebted, poor countries of

² See World Bank (2011).

³ The World Bank based on annual GNI per capita defines income levels. In 2010 countries were classified as low (less than US\$1,000), lower middle income, (US\$1,006 to US\$3,975), upper middle income (US\$3,976 to \$12,275) and high income (more than US\$12,276).

the world have significant resource rents, equal to those in middle-income economies, yet their economies are so distressed that international organizations have made these countries the focus of special debt assistance under the HIPC initiative. It is in these countries that the resource-curse manifests more clearly, but in middle and high income, non-OECD countries the symptoms of the disease can also be easily identified.

Finally, Table 1 indicates that among those countries that have been able to achieve high per-capita income levels on the basis of the abundance of natural resources, the UAE has been especially fortunate. Resource rents in the UAE are among the highest in the world, in line with the other oil-exporting countries of the Arab region such as Saudi Arabia, Qatar, or Kuwait, and have undoubtedly allowed very high-income levels (if not for the entire population, at least for the local population⁴). In this sense, oil has been a blessing for the UAE. However, and as discussed below, several of the resource-curse symptoms are actually present in the UAE indicating that the country has not been immune to the disease, but it has somehow managed to make the benefits outweigh the negative outcomes of oil exporting.

Gylfason (2011) provides a stylized version of the different theories that have been provided as explanations for the apparent curse that resource rents place on economic development. There are, at least, four main channels of transmission from natural resource abundance or intensity to slow economic growth. These explanations tend to center around the notion that natural capital crowd out other types of capital (physical, human, social or institutional) and thereby inhibit economic growth. Elbadawi and Gelb (2010) provide an excellent taxonomy of the symptoms of the curse. Although they center on oil, and consequently their research is highly valuable for this paper, most of their insights would apply to other non-renewable natural resources such as copper, gold, diamonds, or bauxite.

First, abundance of natural resources, and therefore the ample supply of foreign currency associated with their export to world markets, could induce the so-called Dutch disease (Corden and Neary 1982). Under this theory the significant inflow of currency—particularly if it occurs in a short period of time—could induce a swift appreciation of the local currency thereby reducing the profitability of other economic sectors and shrinking the productive basis of the economy. Naturally, part of the currency appreciation reflects an equilibrium adjustment subsequent to the fact that the economy is now richer than it was before. Nevertheless, it is frequently the case that the currency overvaluation of resource rich countries far exceeds any long-term equilibrium appreciation. Countries that have had fixed currencies—e.g., such as the UAE where the Dirham is pegged to the US dollar—are less affected by nominal appreciation of their currencies, yet the real appreciation can also be substantial via increases in wages and the cost of capital and land. Beyond the currency appreciation, the Dutch-disease operates also in a subtler manner: natural resource abundance is, more often than not, accompanied by increased economic volatility. The prices of raw materials tend to fluctuate widely in world markets (*vis-à-vis* the price of manufactured goods). The resulting fluctuations in export earnings trigger exchange rate volatility and create uncertainty that can be harmful to exports and other trade, including foreign investment. The Dutch disease tends to bias the composition of exports away from those kinds of manufacturing and service exports that may be particularly good for growth over time.

Second, significant natural resource rents in conjunction with institutional weaknesses (including ill-defined property rights, imperfect or missing markets, and lax legal structures) may lead to rent-seeking on the part of producers, thus diverting resources away from more

⁴ The distinction between the locals and the expatriates (non-national immigrants) is important in the UAE. The expatriate group is multiple times that of the locals. The latter group enjoys a variety of preferential treatment in the form of higher salaries, access to restricted residential land, and subsidies on utilities and other consumer goods.

socially profitable economic activity (Gelb 1988). In extreme cases, civil wars break out for the control of such rents, which not only divert away factors of production from socially productive uses but also destroy institutions and the rule of law. In less extreme cases, the struggle for resource rents may lead to hoarding of economic and political power in the hands of elites that, once in power, would use the rents to placate their political supporters and thus secure their hold on power, with slow growth as a result as shown in Elbadawi and Soto (2011). Extensive rent seeking creates corruption, distorts the allocation of resources and reduces both economic efficiency and social equity (Krueger 1974). Finally, abundant resource rents may imbue people with a false sense of security and lead governments to lose sight of the need for good and growth-friendly economic management, including free trade, bureaucratic efficiency, and institutional quality (Sachs and Warner 1999). Incentives to create wealth through good policies and institutions may wane because of the relatively effortless ability to extract wealth from the soil or the sea.

A third channel of the curse arises when resource rents reduce private and public incentives to accumulate human capital due to a high level of non-wage income or when wages are disconnected from the effort of workers. Resource-rich nations may be tempted to underestimate the long-run value of education. Empirical evidence shows that, across countries, school enrolment at all levels is inversely related to resource rents (Gylfason, Herbertsson, and Zoega 1999). There is also evidence that, across countries, public expenditures on education relative to national income, expected years of schooling, and school enrolment are all inversely related to natural resource abundance (Gylfason 2001). The abundant natural capital appears to crowd out human capital, which forms the basis of sustained economic growth.

The fourth and final channel operates through saving, investment, and the accumulation of physical capital. High resource rents usually fuel consumption booms and tend to depress national saving. In turn, this leads to lower than optimal accumulation of capital, in particular in non-oil sectors (Arezki et al. 2011). Bhattacharyya and Collier (2012) also note the negative effects of oil resources on the stock of public capital. Furthermore, financial funds are frequently provided directly from the government of resource-rich countries on non-competitive basis leading often to low-return investments and to retard the development of financial institutions, which ought to identify and fund the most productive projects on a social basis. Unproductive investments may seem unproblematic to governments when they are flush with oil cash.

As discussed in the following sections of this paper, since 1971 the UAE has made significant efforts to escape the oil curse by following policies deliberately aimed at accumulating capital stocks beyond those needed to exploit its rich endowment of natural resources. On one hand, the federal government has maintained a fixed peg to the US dollar, which, along with small and easily controllable fiscal deficits, has reduced the risks of currency overvaluation and its deleterious impact on private investment. In addition, an important fraction of the huge oil earnings received by Abu Dhabi have been invested abroad in a sovereign wealth fund (with over one half trillion US dollars in 2010, according to the Sovereign Wealth Fund Institute), bringing security to foreign and domestic investors vis-à-vis the sustainability of the currency. To a large extent, the Dutch-disease related negative effects of oil exporting have been avoided in the UAE. As shown in section IV, currency misalignment, if anything, has not been significant.

On the other hand, the federal government as well as the government of each emirate has made significant efforts to develop social capital and support private sector initiatives. As a result, the UAE is among the top countries in the world in terms of road infrastructure, ports, airports and telecommunications (see World Economic Forum 2011). Likewise, institution

building since 1971 has progressed notably in areas, which usually foster private investment and sustainable economic growth. In particular, the country ranks high in control of corruption, rule of law and absence of crime and, contrary to most countries in the region, is not afflicted by open political conflicts or terrorism.

Finally, rent seeking, while existent, does not seem to be rampant or capable of interfering massively with the market allocation of resources. While it is true that the mismanagement of government-owned businesses has been blamed for the recent crisis in the real estate markets of Dubai and Abu Dhabi, it is also true that these government holdings had been instrumental in developing sectors that, in the 1980s and 1990s, were disregarded by the private sector as being too risky or too costly to finance (e.g., tourism, commercial aviation).

In consequence, if the resource curse would manifest itself in the UAE it ought to be through other channels of transmission, i.e., either through low physical and human capital accumulation or in an inefficient use of such resources. This is the analysis we undertake formally in section III.

3. Oil Exports, Economic Growth, and Productivity in the UAE

As mentioned, oil was discovered in the early 1960s in the Abu Dhabi region. The discovery prompted the seven emirates of the UAE to form a federation to capitalize on the oil windfall. Since 1971, the country has completely transformed and modernized. Figure 1 shows the extraordinary expansion of the UAE economy in the past 35 years.⁵ Between 1975 and 2010, output expanded by a factor of five in real terms (at PPP prices). The average annual growth rate in the entire period is 5.4%, among the highest in the world. It can be seen, nevertheless, that the pace of economic growth has not been smooth, with periods of very fast growth (as in the early 2000s) and major crisis occurring in the early 1980s and late 2000s. Real GDP grew relatively faster in the period 1975-1990 at over 5.7% per year, while in the subsequent 20 years it grew at around 5.2%.⁶

Few countries in the world have been able to sustain such vigorous growth pace for an extended period of time. Table 2 compares UAE's performance to the world and selected countries such as Hong-Kong and Singapore. It can be seen that in the period 1975-2010 the UAE has grown much faster than the world economy (almost twice as fast) or the average economy at any development stage (from low to high-income levels). This is indeed the positive outcome of oil wealth and adequate government policies. Note also that the UAE has outgrown other high-income, non-OECD economies although not by a very significant margin. Most of these economies are, as the UAE, oil or gas exporters with abundant resources and small populations (although countries such as Cyprus, Croatia and Malta are also in this group).

The growth record of the UAE, nevertheless, is not very impressive when compared to the East-Asian tigers, the benchmark for high, sustained growth of the 20th century. It can be seen that Hong Kong, Singapore, and South Korea have grown much faster than the UAE and for a sustained period of time, reaching development levels that are among the highest in the world and far ahead of the UAE. China and, more recently, India have also managed to grow at impressive rates but remain still behind the UAE in development terms due to their very low starting points.

Undeniably, in the case of the UAE oil has been the major source of economic activity, exports and government finance since the early 1970s. Even if one recognizes the significant

⁵Appendix Table 1 contains all data used in computing economic growth and its sources.

⁶As in most MENA economies, official statistics in the UAE are very poor and data is scarce, incomplete and frequently inconsistent. We have most carefully assembled the data we use in this paper, but it remains limited so that our conclusions should be taken with healthy skepticism.

contribution to total output of Dubai –a non-oil producing emirate which accounts for around 30% of total GDP and is the financial and trade center of the Gulf region—, economic activity and government projects remain largely influenced by oil production and exports. Production of hydrocarbons (oil and gas) commanded a very high share of GDP in the mid-1970s, reaching around 60% of the total activity. This is hardly surprising: the UAE was a young country where most industries had yet to be developed and oil production was far ahead of other sectors. In the 1980s and 1990s other industries developed quite rapidly – particularly in services— and therefore the importance of hydrocarbons declined noticeably as shown in Figure 2. In the period 1990-2010, the share of value added derived from oil extraction in total GDP hovered around 35% with minor variations. The share of oil extraction in GDP belittles the influence of oil in the economy, as there is a myriad of activities that are linked to and depend on oil production and export, (e.g., services such as engineering, transport, logistics, etc.).

The share of oil in total exports, on the other hand, has remained overwhelming high: in the period 1990-2010, oil has represented around 70% of total exports (excluding re-exports), a figure that has decreased only slightly in the last 20 years. Fluctuations are largely the result of the cyclicity in oil prices, as physical exports have remained relatively stable, at least in the last decade. Dominance of oil in exports in resource-rich, Middle East countries is expected. However, what is worrisome is that in the last twenty years no other exports have developed and become significant in the UAE. That is, despite all government efforts, diversification of exports has not been achieved.

Finally, the energy sector is not only the main contributor to economic activity but it is also, and not surprisingly, the main source of fiscal revenue: between 1992 and 2010, oil revenues have represented over 73% of total government revenues (UAE National Bureau of Statistics 2011). As discussed below, these revenues constitute on one hand a significant amount of resources for the government to invest in capital accumulation and finance public goods and, on the other, a source of major fluctuations to government budgets and economic activity.

3.1 Sources of growth

In order to understand what lies behind the fast growth of the UAE, we decompose GDP growth according to its “sources”. The sources of economic growth in the UAE, as in any other economy, are a combination of physical capital accumulation, expansion in employment and its capacities, and increase in the way in which these factors are employed, i.e., changes in total factor productivity (Barro and Lee 1994). Figure 3 shows the evolution of GDP, the capital stock⁷ and employment which, for an easier exposition, we have normalized so that 1975=100. It can be seen that these factors have evolved in very different fashion: while the capital stocks has moved in tandem with GDP during most of the period with only two exceptions –the early 1980s and the 2000s— employment has grown significantly more than output or capital and with disregard of the economic cycles. This is a remarkable phenomenon: despite the huge natural-resource capital and the massive investment in physical capital, the UAE economy has become increasingly labor-intensive.

The increasing reliance on employment has also led to a massive immigration of workers, largely from the Indian subcontinent. According to the World Bank database, between 1975 and 2010, the population of the UAE increased from half a million to almost five million.⁸ Most of the immigrants are of very low educational levels and are generally employed in low-skilled positions in which the highly paid nationals are not interested (e.g., construction workers). It comes as no surprise, then, to observe that output per worker has declined

⁷Computation of the capital stock of the economy is described below.

⁸The population of the UAE is a hotly debated issue after the UAE Bureau of Statistics indicated in 2009 that population had reached eight million.

significantly over time. We use this variable, as opposed to GDP per-capita, because it is relatively insensitive to important changes in demographic factors that characterize the development of any economy (e.g., changes in fertility rates) and also because it is immune to transient phenomena in the labor market (e.g., unemployment waves). Output per worker is, directly, a measure of the average productive capacity of the working force in an economy and indirectly a measure of the efficiency levels of such economy.

Figure 4 shows a distinctive characteristic of UAE's development: it can be seen that average productivity levels have remained stagnant for a long period of time (1987-2010) after a substantial decline in the early 1980s. This is a particularly worrisome feature as it indicates that economic growth in the UAE has been primarily the result of capital and labor accumulation and not of efficiency in the use of production factors. Even if one is willing to discard the early data on the grounds that GDP and employment measures in the 1970s and 1980s were not very precise, the stagnation of the 1990s and 2000s is a signal of deep-rooted problems in the development strategy of the UAE.

The evolution of average labor productivity in the UAE is in stark contrast to that of developed economies or the East Asian tigers. As shown in Figure 4, average labor productivity has grown slowly but systematically in developed economies, while it has grown much faster yet with also more instability in Hong Kong and Singapore. As of 2010, average labor productivity levels in the UAE are one half of those in the developed economies and Singapore and one third of those in Hong Kong. Evidently, the UAE lags significantly behind in development vis-à-vis other high-income economies.

Understanding the reasons for the stagnation in average labor productivity becomes an essential task to understand the working of UAE's economy; determining to what extent it derives from the impact of oil rents becomes important for policy reasons. Average labor productivity is a useful indicator but by itself provides little information on the underlying causes of changes in productivity. A simple yet very useful exercise in this regard consists of decomposing economic growth according to its abovementioned sources in order to determine by how much each factor has contributed. Estimating the contribution of different factors to economic growth –in particular economic and social policies– is not straightforward (see Easterly 2001; Rodrik 2005). As a first approach, we use growth accounting to answer the following questions: What portion of the performance of the economy can be accounted for by differences in inputs of factors like capital and labor? What portion can be accounted for by differences in the efficiency with which these factors are used?

When computing the sources of growth we follow Solow (1956) and use a simple, aggregate Cobb-Douglas production function of the form:

$$GDP_t = A_t \mu_t KS_t^\alpha \left(L_t^\beta HK_t^{1-\beta} \right)^{1-\alpha} \quad (1)$$

where KS_t is the stock of capital, L_t is the use of the labor force, and HK_t is the stock of knowledge or human capital. Variable A_t is an indicator of the efficiency in the use of factors and μ_t is an indicator of the occupation rate of resources. The combination of the latter two elements is popularly known as total factor productivity or TFP. Parameters α and β are constants.

We compute TFP as:

$$TFP_t = A_t \mu_t = \frac{GDP_t}{KS_t^\alpha \left(L_t^\beta HK_t^{1-\beta} \right)^{1-\alpha}} \quad (2)$$

Our definition of TFP, therefore, encompasses not only technological capacity but also efficiency in the use of labor, human capital, and physical capital. In this view, several elements could affect factor productivity beyond the technical ability to mix inputs and generate goods and services. For example, poor government regulation leading to lower use of capital and, thus, lower production is interpreted as declining TFP. On the other hand, an improvement in the education and training of the labor force is interpreted as increasing TFP. This interpretation of TFP links naturally with the analysis of long run economic growth.

To calculate TFP, given series for GDP and employment, we need to choose a value for α and β and generate series for KS and HK. We chose a value of the capital share for growth accounting of $\alpha=0.45$ for two reasons. First, there is a growing consensus among researchers that a share in the 0.3-0.45 range is adequate (see Gollin 2002 for an empirical analysis); we have used for a chosen value the top of the range to acknowledge the fact that oil is a capital-intensive industry that dominates GDP. Second, a high capital share implies an implausibly high long-run rate of return on capital. With $\alpha=0.75$, as suggested by national accounts,⁹ and an average capital/GDP ratio of 2.6 for the period 1975-2010, the annual return on capital (real interest rate) should be around 36%.¹⁰ As for parameter β , we choose a value of 0.25, following Bernanke and Gürkaynak (2001).

To calculate a capital stock series, we cumulate gross fixed capital formation or investment, I_t , using the perpetual inventory method, i.e.:

$$KS_t = (1 - \delta)KS_{t-1} + I_t \quad (3)$$

for some chosen depreciation rate δ and an initial condition on capital. Based on information by Bu (2006) we use a depreciation rate of 7%, and, for the initial condition on capital, we assume the capital-output ratio to be 2.5 in 1975. These assumptions are inconsequential for our long-run analysis.

Measuring human capital is not direct: we use the educational attainment of the labor force. In methodological terms, our measure corresponds to estimating human capital with reference to a stream of past investments, instead of future earnings or individual characteristics (see Stroombergen et al. 2002). The benefit of our methodology is that, contrary to other methods, data is more readily available. Its main limitation is that measuring school attainment does not consider the quality of those education years. We use the data from Barro and Lee (2011), which was collected in 5-year intervals from 1950 to 2010; linear interpolation was used to obtain a continuous annual series for the period 1975-2010.

Figure 5 plots the trajectories of TFP and GDP per-working age person. What is striking about this figure is how closely the TFP data match those for GDP per working-age person, both in the level and the cyclical component. The correlation between the two variables is 0.96. This suggests that it was not the changes in inputs that were mainly responsible for the evolution of GDP in UAE, but rather the efficiency with which these factors were used. As mentioned, this measure of TFP –which stems from Prescott’s (1998) pioneering research– is richer than what standard economic theory assumed: in addition to the impact of technological advances, productivity depends on the framework in which economic agents make decisions to work, invest, and consume. Consequently, TFP can be affected by the quality of macro and microeconomic policies and transient phenomena, such as commodity booms or unemployment cycles.

⁹The UAE, national accounts provide an estimate of the “compensation to employees” which on average for the period 2001-2009 amounts to around 25% of GDP (UAE Bureau of Statistics 2009).

¹⁰Given our technology in equation 1, in equilibrium $rK = \alpha GDP$, where r is the real return to capital. Given our annual data, $r=0.29$. Adding the depreciation of 7% yields an annual real interest rate of 36%.

To some extent, the measurement of GDP and consequently that of TFP are sensitive to transient phenomena. In the case of the UAE oil-price shocks can be very significant. As noted by Kehoe and Ruhl (2008), terms of trade shocks do not directly taint the computation of TFP using the sources of growth method because national accounts do not register price changes (they are based on Laspeyres quantity indices). However, indirectly they can filter through demand booms (imports and consumption via income effects). In order to control for oil shocks, we re-calculate TFP excluding the value added of the oil sector from GDP, the oil-workers from employment, and re-estimate capital stocks outside the oil industry. The availability of data limits slightly the period of analysis to 1987-2010, therefore one should be careful when drawing long-run conclusions as we now operate with a reduced sample.

The results are displayed in Figure 6 where a somewhat different picture emerges: it can be seen that effectively once the oil sector is removed, the evidence suggests that total factor productivity increased during the period 1987-1995 although at a relatively slow pace. In fact, TFP growth in the UAE was similar to that of the high-income countries of the world (i.e., 1.4% per year), which allowed the country to keep track –but not catch-up— with more developed economies. Around 1995, however, somehow the momentum in TFP growth began to wane and productivity stagnated. It should be recalled that until the recent 2008/2009 downturn, the world economy achieved sustained growth throughout the 1990s and early 2000s; these are the years of the so-called self-moderation. Therefore, it seems unlikely that external shocks could have induced a decline in productivity growth. Without excluding external shocks altogether, this would suggest that internal policy changes could be among the causes for this phenomenon.

The different path of total factor productivity in the non-oil sectors vis-à-vis the entire economy also indicate that productivity in the oil industry has not grown in the period 1987-2010. This could be the result of mismanagement of oil companies and/or increased costs of extraction and processing. Lack of public data on oil management precludes us from a precise answer, but the latter hypothesis is unlikely given the fact that oil extraction costs in the UAE are among the lowest in the world thanks to geological conditions.

In conclusion, the sources of growth analysis indicates that the observed GDP growth of 5.4% per year in the period 1975-2010 has largely been the result of fast accumulation of physical capital (at around 4% per year in the same period), a lower growth in the human capital stock (at an annual rate of 3.5% on average) and an even higher accumulation of workers (8.9% per year on average). This is a second characteristic of the development strategy of the UAE: development has been based on importing and accumulating low-skilled workers. Had the UAE imported high-skilled workers, the human capital stock would have increased at a much higher rate.

Naturally, the massive inflow of workers is the result of the hiring policies of the private sector and, to a much lesser degree, the government. The government has restricted itself to primarily hiring Emirati, to the point that it has become the employer by preference of the local population. In fact, employment in the government has also grown at a high pace but much less than the private sector: between 1989 and 2010 government employment increased at over 6% per year. We return to this issue in section IV.

Consequently, the massive accumulation of workers has been more pronounced in the private sector than in the public sector. This is, to a large extent, puzzling: why would entrepreneurs prefer to employ labor-intensive production techniques when they have unrestricted access to the highly sophisticated capital goods and top-notch technologies that the world economy offers? As discussed in Soto and Vazquez-Alvarez (2012) the peculiar institutional framework of the labor market under the sponsorship or *kafala* system provides a compelling explanation. Under the *kafala*, employers have significant market power derived from the fact

that the employee is restricted to work only for the employer that sponsors him or her in the UAE (according to the Law the worker is forbidden to change occupations while the contract is in force and has to leave the country upon expiration, although contract renewals occur). The absence of horizontal mobility allows employers to extract economic rents, even if the worker is better paid than in his/her country of origin. When choosing production technologies, therefore, employers would tend to focus on labor-intensive techniques that, in addition to the normal profit obtained from selling goods, would allow them to extract the highest rents from the worker.

Naturally, this skews production towards labor-intensive technologies. Moreover, it biases employment towards low-skilled workers that have less ability to negotiate their salaries. High skilled workers are relatively scarcer and better educated than low-skilled workers and, consequently, they are better equipped to counterbalance the market power of employers. As documented in Vazquez-Alvarez (2011), wage differentials in the UAE between locals and migrants for identical job-characteristics reduce markedly as employees have more education and disappear altogether at the postgraduate level.

This explanation, however, requires a connection to oil rents and low productivity growth. Abundant resource rents provide funding for the numerous investment projects required by a country, such as the UAE, that is in its formative stages. These projects generate a significant demand for labor –particularly in the scarcely populated UAE— and workers become very valuable. In a non-*kafala* environment with high mobility, workers would command high wages. In the *kafala* system, wages are kept constant for the duration of the contract. In the short run, the lack of mobility provided by the *kafala* prevents rising labor costs and keeps profits high for investors.

In the long run, however, the *kafala* destroys the incentives to increase efficiency and the ability of firms to be profitable on the basis of their efficiency to compete, for two reasons. First, resources do not freely adjust to their most efficient use and therefore there may be an inefficient allocation of workers. Second, note that entrepreneurs would disregard labor saving technical improvements as they lower rent-extraction. Labor saving technological changes will be implemented only when the cost reduction increases market profit significantly more than the sacrifice in rent extraction derived from lower employment.

In keeping the *kafala* as a centerpiece of economic policy in the UAE, the authorities might have considered that increases in labor costs would reduce the profitability of firms and, therefore, the incentives to invest in new, more efficient technologies. An alternative view is that historically whenever labor became scarce and wages soared, entrepreneurs would implement new technologies to replace workers by more efficient technologies based on machines. In the latter case, productivity grows only if new technologies are laborsaving, while in the former productivity growth will only occur only if new technologies are labor augmenting or labor-complementary.

The issue, therefore, is to determine what kind of technology changes might happen in the UAE if labor markets are deregulated and wages increase. According to the data described above, it would seem that technology changes had been laborsaving in the past, since employment has expanded massively and labor productivity stagnated. But of course, that would depend on the technologies employed in the different economic sectors. Sectors operating with constant returns of scale, however, typically face labor-augmenting technologies so that increases in wages would discourage technological change (see Acemoglu2009). By keeping wages low, the UAE would have induced technology adoption and productivity gains. However, that was not the case and one should conclude that, on average, technology is laborsaving. If that is the case, the *kafala* has inhibited technological

change because in keeping wages low it has not given entrepreneurs incentives to acquire more advanced technologies.

This theory explaining the low productivity growth in the UAE centers on labor market distortions; oil rents are instrumental in generating labor demand but any other demand pull would satisfy the same conditions (e.g., copper, foreign aid). In the next section we review the main macroeconomic policies in order to assess the other transmission channels of the oil curse.

4. Macroeconomic Policies and Oil Rents

There is now consensus that macroeconomic policies can have significant impact on long run growth, income per-capita, and household welfare. Monetary, exchange rate and fiscal policies largely determine the risk and profitability of human and physical capital accumulation and, at the same time, provide the government with resources to provide public goods that would support and compliment private sector activities. The UAE is no exception, of course, but the peg of the exchange rate and the open capital account limits its choice of policies.

As indicated above, the exchange rate of the UAE has been pegged to other currencies almost since the foundations of the country. On January 28, 1978, the dirham was officially pegged to the IMF's Special Drawing Rights and, almost twenty years later in November 1997, the dirham was officially pegged to the U.S. dollar at the rate of 3.6725 dirhams per US dollar. At the same time, the capital account is quite open, the financial sector integrated to world capital markets and financial funds flow unimpeded. These policies effectively eliminate the capacity of the government to have an independent monetary policy. However, the Central Bank retains some discretionary power vis-à-vis domestic liquidity using the discount (Repo) window and it has played the role of the lender of the last resort for the banking sector during the recent economic crisis. The commitment towards a fixed-exchange rate seems to be very strong: in May 2009 the UAE announced their withdrawal from the monetary union project proposed by the Gulf Cooperation Council (GCC) and reaffirmed the peg to the US dollar on the grounds that it provides stability to the financial sector.¹¹

Notwithstanding the importance of the monetary authorities, fiscal policy remains as the main tool of the government for steering the economy in the short run and try influencing saving/investment decisions to sustain growth in the long run. In what follows, we review fiscal policies of the UAE and link the fiscal stance and the choice of policies to the presence of significant oil-rents. We first review issues on the revenue side of the fiscal accounts and then focus on the expenditure side.

4.1 Oil price shocks and fiscal pro-cyclicality

The UAE has the most complex fiscal system of the GCC states due to its federal structure, a very cumbersome tax system (lack of income and profit taxes but a myriad of arbitrary and distorting fees on public services), and the overwhelming share of oil receipts in total revenue. Each emirate maintains full autonomy over hydrocarbon resources and fiscal policies and can exercise power in all matters that are not assigned to the jurisdiction of the federal government. The natural resources wealth in each emirate are the public property of that emirate which manages its own budget on an independent basis and has no obligation to contribute to the budget of any other emirate.

¹¹ According to the International Monetary Fund (2011), the authorities believed that further efforts are needed to establish a framework that could lead to a currency union. These should focus on the harmonization of the payment and settlement systems, the regulatory and supervisory frameworks, and the statistical systems, as well as on the removal of nontrade barriers.

As a result of this structure, fiscal policy is difficult to operate, in particular as a countercyclical instrument (Cevik 2011). Fiscal coordination among the seven emirates becomes cumbersome and the federal government lacks an independent revenue base that would allow for autonomous actions, remaining financially dependent on the transfers from Abu Dhabi and Dubai (to the tune of 90% of total revenues). These emirates make contributions to the federal budget in agreed amounts but usually independently of the need for countercyclical policies.

Fiscal federalism is not uncommon and the coordination problem is pervasive in such economies. In several countries –e.g., Argentina, Brazil— states free ride on the government with deleterious effect on fiscal policy and, ultimately, on economic growth. States find it optimal to run fiscal deficits and, when these become untenable, ask the federal government for a bailout. Once a state is in dire straits, the federal government finds it better to bail it out than to allow the contagion of the other states. However, if states anticipate such federal policies, all states have incentives to overspend and wait for the bailout: the massive bailout usually places a heavy toll on economic growth in the form of protracted inflation and macroeconomic instability (Fiorillo and Sacchi 2011). In resource-rich economies, such opportunistic behavior is exacerbated by sizable resource rents.

This, nevertheless, has not been the case in the UAE. As shown in Figure 7, in the period 1980-2010 the consolidated fiscal stance of the government recorded a surplus of around 4.5% of GDP on average, of course largely based on oil receipts. The ample fiscal surplus – coupled with a low inflation rate and the fixed exchange rate— has led to a sustainable macroeconomic stance for the UAE economy. This is a significant success for the government and a crucial mechanism to avoid the oil-curse. Note that the cautious government stance inhibits the Dutch-disease channel of the resource curse, as it does not contribute to overvalue the currency.

Figure 7, nevertheless, indicates one weakness of the fiscal policy in the UAE. It can be clearly seen that fiscal policy has not been smooth and could have not possibly help in stabilizing the economy. In fact, when plotted against the growth rate of GDP in the non-oil economy –the target for stabilization— it becomes apparent that both variables exhibit similar volatility levels and, except for the mid 1990s, a coincidental cycle. This is not surprising: there are no institutional mechanisms implemented in the UAE through which the federal government can enact countercyclical policies. Therefore, the fiscal policy largely follows the economic cycle, if it does not induce more acute cycles. This is relatively common weakness of oil exporting countries: the non-oil primary government balances worsened substantially in oil exporting countries during the 2003-2008 oil-price boom and improved in 2009 –hence exhibiting strong policy pro-cyclicality (Villafuerte and López-Murphy 2010).

Naturally, the cyclicity in the fiscal stance is mostly the result of the cyclical behavior of oil prices that filter through the government stance via oil-related revenues. In Figure 8 we have plotted oil and non-oil government revenues for the period 1980 to 2010 as well as the oil price in international markets (World Bank 2011). It can be easily seen the hardly surprising, high correlation between the oil price and the oil-related government revenues; oil price fluctuations translate immediately into revenue fluctuations. However, non-oil related government revenues do not exhibit such correlation with oil-prices and seem to follow their own, independent path. Note also that until the late 1990s the sizes of the oil and non-oil revenues were approximately equivalent but after that oil revenues became dominant, most likely the result of the oil-price boom that preceded the recent economic downturn.

The need for countercyclical measures became apparent during the last five years. Facing the severe economic contraction that resulted from the global financial crisis, the authorities

indeed engineered countercyclical policies: the non-hydrocarbon primary balance, excluding investment income, deteriorated from a deficit of 16.5 % of non-hydrocarbon GDP in 2005 to a deficit of 26.7 % by 2008 and then to a record level of 44.8% in 2009 (Cevik,2011). But these extreme countercyclical measures only reveal the lack of automatic stabilizers of the Emirati economy: in most countries, ad-valorem taxes allow for higher tax-collection during demand booms –thus inhibiting overheating of the economy— and lower tax collection during downturns –thus stimulating the demand. In the UAE, most taxes are arbitrary, fixed fees that respond much less to the economic cycle. In fact, the need for financing government agencies led to an *increase* in taxes during the most recent economic crisis.

The analysis suggests that the government of the UAE has failed in developing the necessary institutional mechanisms to ameliorate the negative effects of the volatility in oil-prices on government revenues. Recently, a number of countries have started to develop and apply fiscal rules in search for additional macroeconomic stability and policy credibility, which, ultimately, raise growth and improve intra/inter-generational equity.¹² Fiscal rules are set to attain one or more of three objectives: sustainability of public debt, control of government size, and contribution to cyclical stability. Fiscal rules comprise usually a fiscal responsibility law (restricting the amount of resource rents that can be spent by the government), modern financial management, a planning horizon that exceeds one year, a fiscal rule for the budget, rules for government asset and liability management, requirements on accountability and public information on the government’s financial management, effective external control and auditing, and establishment of a fiscal council and/or fiscal committees (Schmidt-Hebbel 2012). The IMF has also advised the UAE on the convenience of implementing initiatives to enhance fiscal transparency and adopt a legally-anchored fiscal rule, which place constraints on discretionary policies through procedural and numerical limits on fiscal aggregates such as the structural budget balance, spending or indebtedness (Cevik 2011).

4.2 Oil prices, currency overvaluation and fiscal expenditures

The expenditure side of fiscal policy can be as important as the revenue side when considering the oil curse. As mentioned, excessive government spending –in particular, in current expenditures—can easily lead to an overvalued currency with adverse effects on the profitability of non-oil sectors. The mechanics of overvaluation are relatively simple: oil proceeds allow the government to increase the demands for goods and services. Frequently, more than generous wage increases are also granted to public servants, as was the case in Abu Dhabi before the recent economic crisis. Higher demand for domestically produced goods and services induces price increases, at least in the short-to-medium run when local producers cannot adjust production to serve the surge in demand. On the contrary, prices for imported and exported goods remain stationary as dictated by international markets. Therefore, the relative price between internationally traded and non-traded goods –i.e., the real exchange rate— appreciates.

In all countries real exchange rates fluctuate in time. As long as such fluctuations remain small and centered around the equilibrium level, they have no negative effects on aggregate economic growth. However, when fluctuations are excessive and when the level of the real exchange rate deviates significantly from the equilibrium, the adverse effects on investment, saving and economic growth become significant (see Elbadawi et al.2012 for a measurement of the growth effects of misalignment). The costs arise because as the real exchange rate appreciates the incentives to invest in exportable goods and services wane (the relative price is decreasing for traded sectors). Investment in non-traded goods may increase, but it is limited by the size of the domestic demand. This would put a ceiling to economic growth.

¹² The number of countries with fiscal rules at national level has grown steadily over the past two decades, from a universe of 10 countries in 1990 to 51 in 2009 (Elbadawi and Soto 2011).

Moreover, usually the costs of bringing the currency back to equilibrium are very high in the form of a sharp devaluation once the currency levels become untenable. This increases uncertainty thus reducing investment while adjustment costs further reduce growth.

Figure 9 presents the evolution of the real effective exchange rate in the UAE in the period 1980-2010. It can be seen that there have been fluctuations around the long run average level depicted in the blue dotted-line but such fluctuations have been rather small in size and, in fact, not very different than those in other high-income countries such as the US or the Euro zone. In conclusion, if there have been negative effects of oil rents in the UAE they have not operated primarily via the appreciation of the currency or Dutch-disease symptoms. Note, however, that this does not invalidate the notion that the fiscal stance has been pro-cyclical: government expenditures in the UAE increase when oil prices rise and contracts when oil markets are bearish and, therefore, fiscal policy does not provide cushioning against the business cycle. The conclusion is that fiscal policy has not been a source of sustained currency misalignment and the government has avoided the perils of overvaluation. This is a significant accomplishment that should not be overlooked.

Beyond the effect of the oil-price volatility on government revenues and expenditures, the oil curse operates in a subtler manner through the misuse of the resource rents. In general, such misuse affects both current expenditures (typically wages) as well as capital expenditures (e.g., socially unprofitable projects or “white elephants”). Resource misallocation is, naturally, the result of institutional weaknesses. As noted by Robinson et al. (2006) and Robinson and Torvik (2005), public over employment and white elephants arise from the desire of politicians to redistribute wealth to supporters in political systems where some individuals have uncontested power. In such case, only these powerful politicians can credibly commit to public over employment and/or socially inefficient projects aimed at redistributing wealth their constituency. The political system is institutionally weak to inhibit such behavior.

When considering current expenditures the misuse of resources in the UAE shows directly in that (a) government wages and salaries are substantially above those of the private sector for equivalent job descriptions and (b) public employment has become the almost exclusive employment option for the local population and, consequently, public employment has increased substantially.

In Table 3 we have collected the results of the 2008 Survey on Employment, Wages, and Hours of Work. It can be seen that there is a wide disparity in terms of earnings (salaries and benefits) in the different sectors, as well as in hours worked. This is not surprising as labor productivity in the different sectors is heterogeneous. However, note that in those sectors which are almost exclusively in public hands (Public Administration and Defense; Mining and Quarrying; and Electricity, Gas and Water Supply) earnings that are substantially higher and hours worked substantially lower than in the rest of the economy. Workers in these three sectors work on average ten hours less per month than their counterparts in other sectors of the economy and earn twice as much as the other workers on average, with the only exception of the financial sector. According to the Survey, earnings per hour in the Federal Government are five times higher than those in the private sector. It is only logical that the Emirati tend to see the public sector –where they enjoy preference over expatriates— as the only viable sector in which to work and, consequently, are willing to remain unemployed while waiting for a position. Furthermore, survey data collected by Vazquez-Alvarez (2011) found that over 85% of the Emirati work for the public sector.

The government has used, particularly since the mid-1990s, public employment to transfer part of the resource rents to Emirati nationals. Generous subsidies for education, health, utilities and subsidies play a complimentary role. In some sense, this is the equilibrium

outcome of the political bargaining process that underlies the stability of the UAE federation. While useful from a political viewpoint, intervening through the labor market does not come at a low price. In Figure 10 we plot the (normalized) trajectory of value added in government services, employment and average labor productivity in the period 1988-2005 for which there is consistent data. It can be seen that there has been a substantial increment in public employment since the mid-1990s, far exceeding the natural growth of the Emirati population. As a consequence, average labor productivity in the public administration declined systematically during the late-1990s and 2000s, until the recent financial crisis put a break to indiscriminate hiring by public agencies.¹³

The evidence of oil-curse symptoms on the capital expenditures of the government is less clear-cut and it is impossible to make an objective assessment, as most of the information is not publicly available. As mentioned in the introduction, however, the government has spent significant resources to provide social capital for the economy, both in terms of public infrastructure and pro-business institutions. As of 2010, the UAE ranked among the top countries in the world according to the World Economic Forum (2011) in rule of law due to its low levels of crime, absence of corruption, and reliable police services. Likewise, it ranked high on political stability, even though it lacks democracy. Nevertheless, although the UAE government has provided significant institutional build-up for the private sector, the institutional fabric of the public sector remains substantially weak. As noted by the IFM, the UAE economy is “dominated by a web of commercial corporations, financial institutions, and investment arms owned directly by the Government of Dubai, the Government of Abu Dhabi, or the ruling families under the umbrella of major holding companies” (IMF 2011, 4). As became painfully evident during the recent global crisis, these government related entities – henceforth, GREs—had been operating in a largely unsupervised and non-accountable form and taken excessive risks.

These GREs had been instrumental in the initial years of the UAE in opening and developing new businesses and diversify away from oil extraction and traditional fishing and pearling activities. Nevertheless, while the GREs have been a major source of growth and development for the UAE economy, it is also true that in the 2000s they became progressively mismanaged, benefitting from government transfers and from extensive borrowing, and fueling the real estate bubble that collapsed in 2008. The global financial and economic crisis unveiled the fiscal and financial risks posed by GREs and the significant weakness in the institutional framework for their management and monitoring. In some sense, oil rents and easy access to foreign funds allowed the UAE government –particularly Dubai and Abu Dhabi— to lose sight of the need for good economic management of GREs, a standard outcome of the oil curse. What remains to be seen is the magnitude of the losses and the steps the government will take to implement governance and accountability to public firms.

4.3 Oil prices, foreign shocks and the absence of monetary policy

As mentioned, the UAE lacks monetary policy as a result of its open capital account and the fixed exchange rate. Because of the exchange rate peg, the UAE follows passively the monetary policy of the U.S. This arrangement had worked quite well in the past, keeping inflation low, anchoring expectations and providing stability to the financial sector. For years, the UAE benefited from the low levels of inflation of the American economy as it kept the exchange rate pegged to the US dollar. In the 2000s, however, inflation in the UAE increased

¹³ An additional, unintended, outcome of this policy is that of incrementing unemployment among Emirati and, consequently, reducing private sector employment. By making public employment extremely attractive for the Emirati, it validates the option value of waiting for position in the public sector. Algan et al. (2002) estimate that the creation of one public job in the OECD countries destroyed about 1.5 private jobs in the period 1960-2000 and eventually increased the number of unemployed workers by 0.3.

from 2.8% in 2001 to 12.3% in 2008, driven largely by increasing commodity prices and the weakness of the US dollar vis-à-vis other world currencies (such as the Euro and the Pound Sterling). While the pass-through was significant in most economies¹⁴, in the UAE inflationary pressures were compounded by domestic factors, such as the rapidly rising housing prices and rentals, which accounted for a significant fraction of the price increase. It is true, however, that a floating exchange rate would have taken some steam off the markets and helped stabilize the economy.

Likewise, recently the U.S. monetary policy has operated in a manner that exacerbated the economic cycle in the UAE. In the late 2000s, the economic cycle in the U.S. and the UAE started to diverge: massive capital inflows to the UAE –linked to the real estate bubble and historically high oil prices— called for countercyclical policies to limit expenditures, overheating and debt accumulation. On the contrary, the US embarked on significant monetary expansions to stimulate its ailing economy. Eventually, the easy money policy in the U.S. made it impossible to control expenditure in the UAE, further aggravating the cost of the bailout that followed the global economic crisis.

The recent inflationary phenomenon in UAE raised questions about the convenience of pegging of UAE dirham with the US dollar. From a purely technical perspective, pegging to a composite currency basket would be preferred if it better matches the trade profile of the country and better protect it against imported inflation than has been recently the case. Abandoning the peg towards a flexible exchange system, on the other hand, constitutes a major institutional change. In principle, it would allow the central bank to manage interest rates and affect the value of the currency, with higher rates curbing domestic demand and a more expensive currency applying a brake to external demand. In a context of rising inflation and increased interest rates, floating the currency would seem the better option, but the reality is much more complicated. Floating the currency would demand significant investment on the capacities of the banking sector and the government to manage risk, in particular exchange-rate risk, emerging precisely from the very source of the resource curse problem: the volatility of oil prices. Such investment would involve a quantum leap in the human capital employed by the government in banking supervision and monitoring.

It is therefore important to recognize that the concept of an "optimal policy mix" for the UAE is contingent on the objective of the policy-making authorities. Recently, the governments of Abu Dhabi and Dubai have separately issued their vision for future development but have coincided on the need to create high value-added industries driven by human capital and technology. By definition, these industries have to compete in global markets and, given the current lack of know-how in the UAE, their creation would require significant foreign direct investment as well as domestic financial resources. Attracting foreign investors –in particular, when asked to transfer or develop cutting-edge technologies— demand stable environments with low risk levels to develop long-maturity projects. A sound macroeconomic policy is, naturally, a must but the choice of policies is not obvious. We can use the experience of other countries as guidance. Singapore and Hong-Kong have been quite successful in developing a highly sophisticated industrial sector with very similar macroeconomic policies to the UAE (fixed exchange rate and open capital accounts). This indicates that the key to these countries success lies elsewhere, most likely in their very flexible labor markets and the high quality of their education systems, two elements missing in the UAE. On the other hand, recently industrialized countries such as Korea have preferred to retain monetary independence by allowing the currency to freely float in the exchange market, and have controlled fluctuations by enacting highly disciplined fiscal policies. Granted, Korea's foreign trade sector is unlikely to induce significant volatility in the currency because its highly diversified export

¹⁴See Rigobon(2010).

base can escape from the wild fluctuations in commodity prices, a feature that is not achieved in oil-dominated UAE. Any option of policy mix in the UAE, however, would require a significant improvement on currently available instruments.

In conclusion, the review of the macroeconomic policies –mainly, fiscal policy— indicates that oil rents might have had both positive and negative effects. On one hand, the ample rents enjoyed by the UAE have allowed the government to maintain a healthy fiscal stance and finance the significant investment in public infrastructure and the build-up of pro-business institutions. This, in turns, helped avoiding the Dutch disease effects of oil rents. On the other hand, oil-curse effects manifest in both the revenue and expenditure side of fiscal policy.

On the revenue side, the absence of ad-valorem taxes and the reliance on arbitrary fees for public goods has eliminated a crucial automatic stabilizer of business cycles and induced numerous microeconomic distortions that hamper efficiency and penalize productivity gains. This has been possible only because oil proceeds take the lion's share of government financing. Moreover, the lack of institutional mechanisms to protect fiscal accounts from oil-price volatility renders fiscal policy pro-cyclical, instead of an instrument for macroeconomic stabilization.

On the expenditure side, standard channels of the oil curse show clearly in public sector over employment and excessively high public wages with regards to those paid by the private sector for equal jobs. The small size of the Emirati vis-à-vis the expatriate population has made this symptom of the oil curse less visible and perhaps less costly than in countries – such as Saudi Arabia— where government employment crowds out the private sector. As a result of using public employment as a the employer of last resort, average labor productivity in the public administration declined systematically until the recent financial crisis put a break to indiscriminate hiring by public agencies.

5. Does Dubai Suggest a Path to Escape the Oil Curse?

Despite the cultural and historical similarities shared by the seven emirates that constitute the UAE, their economic heterogeneity is striking. In terms of population, economic size and level of development, the emirates are very diverse. It can be seen in Table 4 that Abu Dhabi is by far the largest economy in the union, with around 60% of the total GDP of the UAE in 2009, and is several orders of magnitude larger than the smaller northern emirates (Sharjah, Ajman, Umm al-Quwain, Ras al-Khaimah and Fujairah). Only Dubai comes close to Abu Dhabi in population and also in income per capita. As a result of oil rents, Abu Dhabi has one of the highest income per-capita in the world. Note, moreover, that income per capita in most of the northern emirates would barely qualify them as high-income economies. In addition to income heterogeneity, natural resource endowments are also quite heterogeneous: indeed oil and gas extraction is only significant in Abu Dhabi while it is non-existent in most northern emirates and, particularly, in Dubai. In spite of the lack of natural resources, Dubai manages to command the highest level of development in the UAE and an income per capita equal to most OECD countries. Until the mid-1980s Dubai relied heavily on oil extraction and exports, even though it had a long history as a trade hub for the Gulf region. After 1985 oil production dwindled and Dubai initiated a remarkable reshaping of its economy away from oil. In what follows, we study the case of Dubai to identify valuable lessons on how to escape the oil curse.

When confronted with the disappearance of its main natural resource in the mid-1980s, the authorities turned to Dubai's traditional source of income –foreign trade—to support economic development. Historically, Dubai has been a place for businesses due to its early understanding that an open economy offers sustained productive opportunities: even before the foundations of the UAE, Dubai had opened up to foreign trade allowing free trading, providing ample facilities and infrastructure and support for foreign immigration. In addition

to supporting foreign trade, the government realized the need for diversification: foreign trade offered ample possibilities but also generated significant risks for the local economy. Therefore, the authorities embarked on a series of policies aimed at fostering the development of strategic industries, including tourism, the financial sector, and retail and wholesale trade. The opening of several free-trade zones in the 1990s provided an additional boost to the economy and, away from the straightjacket of the *kafala*, allowed competitive re-exporting activities to flourish.

In Table 5 we present the average annual growth rate of sectorial GDP by emirate in the period 1997-2009. Several elements point at the successful diversification achieved by Dubai. First, note that Dubai has outgrown in terms of GDP all other emirates by a significant margin: total GDP in Dubai has grown at 10% per year. Only Abu Dhabi and Ajman comes close to Dubai, the former largely fueled by oil and gas production, the latter by land market de-regulation and construction booms. All the other emirates have grown at much lower rates, with Umm al Quwain all but stagnating. Second, excluding oil and gas production, all economic sectors in Dubai outperform their counterparts in other emirates with very few exceptions: in Abu Dhabi, Transport, Storage and Communication has performed better than Dubai and Ajman and Ras al Khaimah Manufacturing has also performed better than Dubai but starting from a very low base. Third, retail and wholesale trade in Dubai has grown substantially faster than any other sector in Dubai or in any other emirate. As of 2010, retail and wholesale trade accounted for 30% of GDP in Dubai.

The diversification of Dubai has been relatively balanced in the sense that some of the sectors that have flourished after the oil collapse cater mainly to domestic demand (e.g., construction, real estate and business services and manufacturing) while others are largely focused on overseas markets (the financial sector, transport and storage, and the wholesale and retail trade that is largely connected to tourism and duty free activities). This allowed the emirate to hedge against demand fluctuations. Note that the other emirates have not been as successful as Dubai in diversifying independent of whether they are oil exporters or not. Abu Dhabi, the main oil exporter, has been unable to diversify away from oil and gas production. Sharjah lags behind in spite of more than tripling energy production.

Expanding production factors and/or improving the efficiency of use of such resources, as discussed, can achieve economic growth. It is, therefore, necessary to study whether Dubai's remarkable growth and diversification had been the result of massive factor accumulation or if there have been significant productivity gains. We use the same methodology of section III to compute the sources of growth of the non-oil sector of Abu Dhabi and Dubai, the only two emirates with available statistics for a period of twenty years or more.¹⁵ In Figure 11 we present the evolution of total factor productivity in both emirates.

It can be easily seen that total factor productivity in the non-oil sectors of Abu Dhabi stagnated in the period 1988-2010 while that of Dubai has grown at around the same rate of TFP in the world economy. World TFP growth is not a very challenging reference point as it largely reflects the evolution of mature, developed economies; TFP growth in countries that have recently industrialized –such as Korea, Singapore and Taiwan— are significantly higher. The cumulative average growth rate for Dubai is two percent, while that for Abu Dhabi is 0.1%. Moreover, the phases of productivity growth differ markedly in both emirates. In Abu Dhabi, the period 1988-1998 was characterized by a significant decline in productivity, at a cumulative level of 15%. In Dubai this was a period of significant expansion in productivity in the economy that came to an abrupt halt around the times of the 1998 East Asian financial crisis. Likewise, in Dubai the period 2000-2010 was one of

¹⁵ Due to lack of data, the computation of the sources of growth assumes that human capital levels are the same in Dubai and Abu Dhabi. Moreover, lack of data for Abu Dhabi forces us to work with the period 1988-2010.

significant productivity gains –to some extent fueled by the overheating of the economy— that was cut short by the unveiling of the global financial crisis. In Abu Dhabi, total factor productivity increased but only very moderately and it merely reverted to the levels of the late 1990s.

In conclusion, in Dubai the pro-business friendly policies implemented by the local government since the mid-1980s –coupled by market de-regulation and increased integration to world markets— have allowed the non-oil sectors of the economy to reap modest but systematic productivity gains. Openness, however, has also been a source of significant economic fluctuations that the authorities have been unable to dampen. To the extent that the UAE oil curse manifests itself in low productivity growth and lack of diversification away from oil, Dubai provides an answer to the oil curse.

Nevertheless, the answer to the curse is only partial. Even in the pro-business environment of Dubai and supported by significant access to financial resources¹⁶, firms are not achieving the spectacular growth rates of East Asian economies nor is labor productivity increasing paripassu with their competitors in world markets. A dynamic, competitive private sector seems to be a necessary yet not sufficient condition to escape the oil curse. Therefore, other conditions are still missing.

A country that has escaped the curse altogether is Norway. According to Larson (2003) the following policies are responsible for such success: (1) shield and support certain domestic industries thought to be crucial to a long-term comparative advantage, (2) invest heavily in education and know-how, (3) follow counter-cyclical policies, (4) reform labor market to increase the labor force's share of the population, (5) implement wage control and income coordination to establish some sense of social contract, (6) enact an expenditure-limitation policy of fiscal prudence directed to shield the economy from spending effects (including a sovereign wealth fund). Chile, another natural resource exporter that has avoided the curse, has refrained from intervening in the labor market but followed a similar strategy of building up strong policy institutions and complemented the sovereign wealth fund with the additional fiscal discipline provided by fiscal rules –as discussed above—and the conduct of monetary policy under strict inflation-target rules. Chile, thus, provides an alternative policy mix to face the inflow of massive yet volatile resource rents.

Dubai and the UAE have implemented some of these policies (shield and support certain domestic industries thought to be crucial to a long-term comparative advantage, implement wage controls under the *Kafala*, and develop a sovereign wealth fund) but have failed altogether in important ones, as already discussed: invest heavily in education and know-how, follow counter-cyclical policies, and enact an expenditure-limitation policy of fiscal prudence directed to shield the economy from spending effects.

6. Conclusions

This paper studies the existence of an oil curse in the UAE. Oil and gas exports have shaped the economic activity and development strategy of the country since its foundation in 1971. Oil has also brought substantial wealth to the Emirati population and welfare levels have improved markedly. To the casual observer, it would appear as if the UAE has escaped the oil curse. Careful review of empirical evidence, however, indicates that several of the classical resource-curse symptoms are present in the different sectors of the UAE economy. This suggests that the country has not been immune to the disease, but it has somehow managed to make the benefits outweigh the negative outcomes of oil exporting. If so, the UAE experience could provide a valuable guideline for other resource-rich countries.

¹⁶ Access to finance was relatively simple before the recent global downturn even for small businesses. In the post-global crisis environment, however, it appears to be a major constraint (Trabelsi and Fadhel 2011).

We use simple growth models to study the sources of economic growth in the UAE and provide a quantitative answer the following questions: How has oil extraction shaped the development of the UAE economy? Is there any evidence of an oil curse and if so, is it significant? What has been the role of macroeconomic policies in inhibiting or fostering the oil curse? And does the UAE provide an answer to the oil curse that could be replicated in other countries affected by the disease?

The oil curse appears when the earnings from natural-resource capital crowd-out other forms of capital that are also necessary for economic growth, including physical capital –both public and private—, human capital, institutional capital, and social capital. Contrary to most oil-rich economies, the UAE government has invested heavily in physical capital –in particular, public infrastructure— and the institutional fabric that deals with the workings of the private sector (rule of law, corruption control, etc.). Furthermore, to a large extent the government has enacted sound macroeconomic policies, which have been instrumental in supporting private sector investment and economic development. The classical outcomes of massive oil rents in the form of currency mismanagement, rampant rent-seeking behavior, and generalized corruption have been totally avoided.

Although some of the standard transmission channels of the oil curse have been blocked by policies, the UAE government has not been completely successful in controlling the negative effects of oil rents. Ample oil rents and an inadequate labor regulation have given incentives to the private sector to engage in an unsustainable development strategy: production in both the oil and non-oil sectors of economic activity have grown largely fueled by massive investment and an even higher use of low-skilled manpower (mostly from the Indian subcontinent), but the efficiency in the use of such factors have remained stagnant and, in some areas, steadily declined as the country got richer. Average labor productivity remained stagnant in the late-1980s: as of 2010, labor productivity in the UAE is one half of those in the developed economies and one third of those in Hong Kong.

The evolution of labor productivity in the UAE is in stark contrast to the slow but systematic growth of productivity in developed economies or the very fast yet volatile expansion of productivity in the East Asian tigers. Understanding the reasons for this productivity stagnation –in particular, determining to what extent it derives from the impact of oil rents— is therefore important. We show that it was not the changes in inputs that were mainly responsible for the evolution of productivity in the UAE, but rather the efficiency with which these factors were used.

When excluding the oil sector from the calculations of total factor productivity, we found evidence that it actually increased during the period 1987-1995 although at a relatively slow pace (similar to that of the high-income countries of the world), which allowed the country to keep pace –but not catch-up— with more developed economies. Around 1995, however, somehow the momentum in TFP growth began to wane and productivity stagnated. It should be recalled that until the recent 2008/2009 downturn, the world economy achieved sustained growth throughout the 1990s and early 2000s; these are the years of the so-called self-moderation. Therefore, it seems unlikely that external shocks could have induced a decline in productivity growth. Without excluding external shocks altogether, this would suggest that internal policy changes could be among the causes for this phenomenon.

One such policy deals with the workings of the public sector. In our view, it is likely to have had a significant adverse effect on productivity and economic growth. The evidence indicates that the massive accumulation of typically non-skilled workers has been more pronounced in the private sector than in the public sector. This raises the question of why would entrepreneurs prefer to employ labor-intensive production techniques when they have unrestricted access to the highly sophisticated capital goods and top-notch technologies that

the world economy offers. The peculiar institutional framework of the labor market –known as *kafala*—provides a compelling explanation.

Under the *kafala*, employers have significant market power derived from the fact that the employee is forbidden to change occupations while the contract is in force and is required to leave the country upon expiration. The absence of horizontal mobility allows employers to extract economic rents: when choosing production technologies, therefore, employers would tend to focus on labor intensive techniques that, in addition to the normal profit obtained from selling goods, would allow them to extract the highest rents from the worker. Naturally, this skews production towards labor-intensive technologies. It also biases employment towards low-skilled workers that have less ability to negotiate salaries; highly skilled workers are better educated and scarcer and, thus, better equipped to counterbalance the market power of employers. This aspect of the *kafala* would explain why labor productivity in the UAE is lower than in countries with similar GDP per capita.

Moreover, the *kafala* also has long-term effects on productivity growth. Abundant oil rents provide funding for investment projects –particularly in the formative stages of an economy—and raise the demand for labor. In a non-*kafala* environment with high mobility, workers would command high wages. In the *kafala* system, wages are kept constant for the duration of the contract. In the short run, the *kafala* prevents rising labor costs and keeps profits high for investors. In the longrun, however, the *kafala* destroys the incentives to increase efficiency and the ability of firms to be profitable on the basis of their efficiency, for two reasons. First, resources do not freely adjust to their most efficient use and therefore there may be an inefficient allocation of workers. Second, entrepreneurs would disregard laborsaving technical improvements, which are at the core of economic development, as they lower rent-extraction.

This theory explains the low productivity growth in the UAE centers on labor market distortions, but other policies could reinforce or ameliorate the effects of adverse effects of poor labor policies. Macroeconomic policies in the UAE are limited to fiscal policy since the country has pegged its currency to the dollar and the capital account is quite open. We found no evidence of Dutch disease symptoms –a standard oil-curse outcome— nor that excessive government expenditure could be crowding out private sector initiatives. Nevertheless, the fiscal policy presents three classical symptoms of the oil curse.

First, fueled by oil taxes and dividends, fiscal policy has been highly pro-cyclical: there are no institutional mechanisms that would allow the authorities to enact counter-cyclical policies. The volatility of oil prices filters through the UAE economy largely unimpeded.

Second, oil resources have distorted to a large extent the current expenditures of the public sector. The classical oil-curse symptom of public labor over employment is compounded in the UAE by public wages that are twice as high as those in the private sector for equal-skills occupations. In some sense, this is the equilibrium outcome of the political bargaining process that underlies the stability of the UAE federation. However, while useful from a political viewpoint, labor market interventions do not come at a low price since the substantial increment in public employment since the mid-1990s has induced declining average labor productivity in the public administration.

Third, in addition to the massive investment in infrastructure, the UAE government has provided significant institutional build-up for the private sector. However, it has failed to develop a similar institutional fabric of the public sector. As indicated by the IFM (2011), the UAE economy is dominated by a web of semi-autonomous government related entities, including commercial corporations, financial institutions, and investment arms owned directly by the government of each emirate. It became painfully evident in the aftermath of

the recent global crisis that government related entities had taken excessive risks and operated in a largely unsupervised and non-accountable form. Although these oil-financed, poorly designed policies may seem innocuous transfers to the Emirati constituency, their combined and cumulative effect can produce substantial harm to productivity growth.

Beyond the weaknesses of the fiscal policy, it should be acknowledged that the government has maintained a sound macroeconomic stance. The UAE lacks monetary policy as a result of its open capital account and the fixed exchange rate. This arrangement worked quite well in the past, keeping inflation low, anchoring expectations and providing stability to the financial sector. Recently, however, it has exacerbated the economic cycle in the UAE as a result of the weakness of the US dollar in international markets, raising the issue of whether an alternative system would provide better cushioning against foreign shocks. Abandoning the peg towards a flexible exchange system, on the other hand, constitutes a major institutional change. It would demand significant investment on the capacities of the banking sector and the government to manage risk, in particular exchange-rate risk, emerging precisely from the very source of the resource curse problem: the volatility of oil prices. Such investment would also involve a quantum leap in the human capital employed by the government in banking supervision and monitoring.

Finally, we turn to the case of Dubai as an alternative development strategy for resource rich economies. Oil and gas extraction is nowadays insignificant in Dubai. In spite of the lack of natural resources, Dubai manages to command the highest level of development in the UAE and an income per capita equal to most OECD countries. Until the mid-1980s, however, Dubai relied heavily in oil extraction; after oil production dwindled Dubai initiated a remarkable reshaping of its economy away from oil. The authorities turned initially to foreign trade to be the engine of economic development but soon realized the need for diversification: foreign trade offered ample possibilities but also generated significant risks for the local economy. Therefore, they embarked on a series of policies aimed at fostering the development of strategic industries, including tourism, the financial sector, and retail and wholesale trade. The opening of several free-trade zones in the 1990s provided additional boost to the economy and, away from the straightjacket of the *kafala*, allowed competitive re-exporting activities to flourish.

In the subsequent two decades significant diversification has been achieved in Dubai. As a result, Dubai has outgrown all other emirates by a significant margin in almost every economic sector. Diversification has brought a better-balanced development path as some of the flourishing sectors cater mainly to domestic demand (e.g., construction, real estate and business services and manufacturing) while others focus on overseas markets (the financial sector, transport and storage, and the wholesale and retail trade that is largely connected to tourism and duty free activities).

In addition to helping diversify its economy, Dubai's pro-business policies implemented by the local government since the mid-1980s –coupled by market de-regulation and increased integration to world markets— have allowed the non-oil sectors of the economy to reap modest but systematic productivity gains. On the contrary, and in spite of the massive oil resources, total factor productivity in Abu Dhabi stagnated in the period 1988-2010.

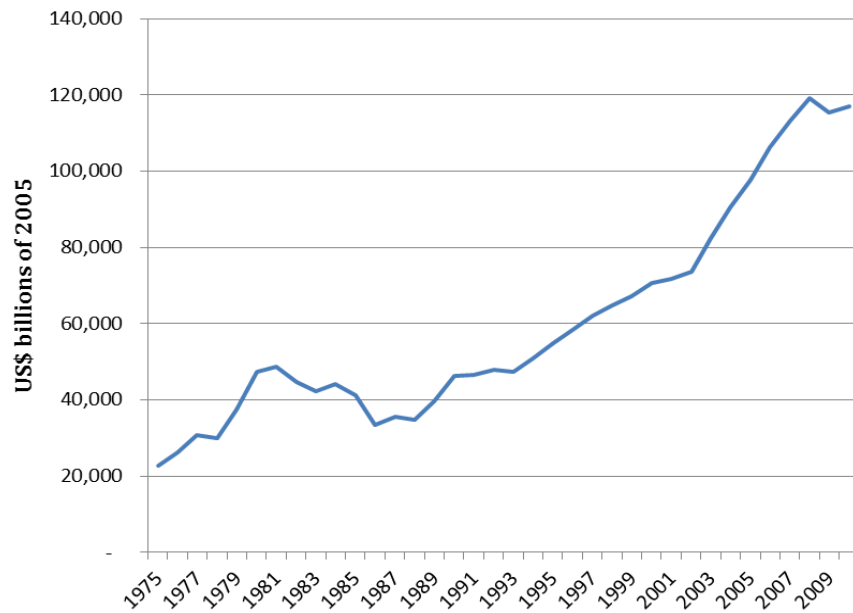
To the extent that the oil curse in the UAE induces low productivity growth and lack of economic diversification, Dubai provides an answer to the oil curse. Nevertheless, the answer is only partial. Even in pro-business Dubai, firms do not achieve the spectacular growth of their counterparts in East Asia and other emerging economies or the efficiency of European firms. Allowing for a dynamic, competitive private sector seems to be a necessary yet not sufficient condition to escape the oil curse. Therefore, other elements restrict development. This paper signals at labor market regulations as a main source of distortions.

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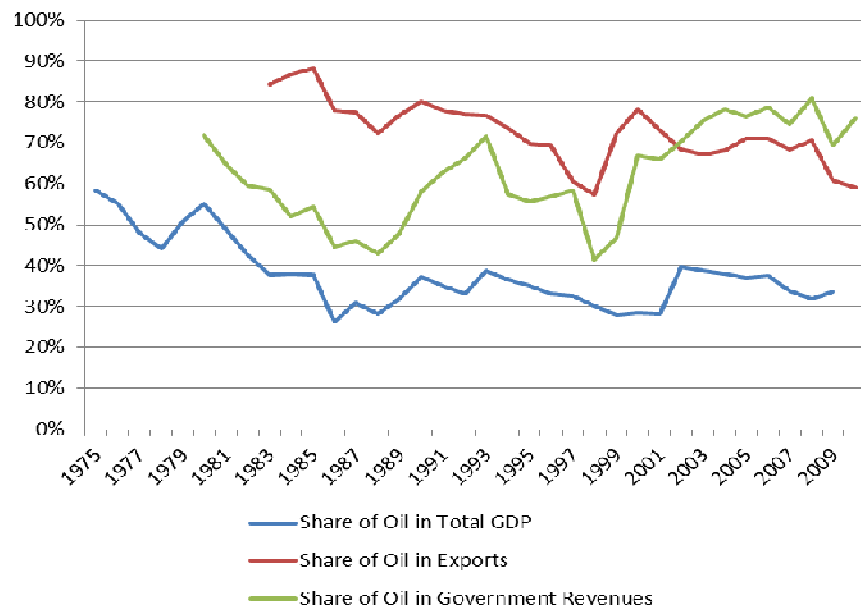
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Figure 1: UAE: Real GDP (at PPP prices)



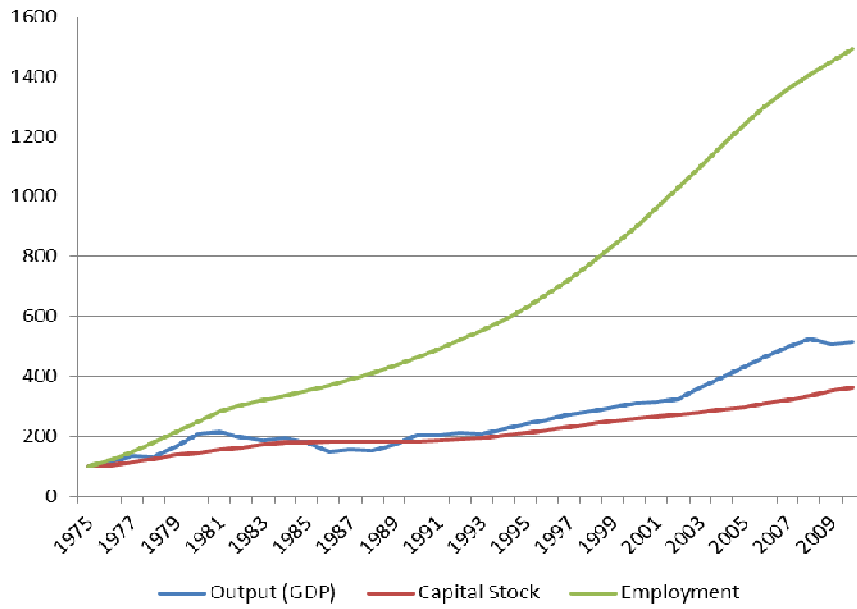
Source: World Development Indicators 2011.

Figure 2: UAE: Share of Oil in GDP, Exports and Government Revenues



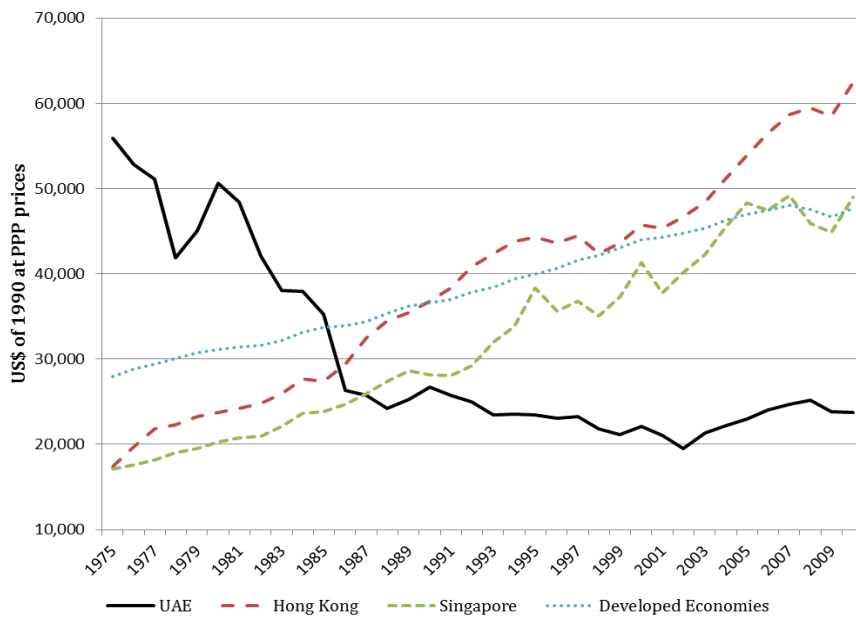
Source: own elaboration based on data from the UAE Bureau of Statistics

Figure 3: UAE: Real GDP, Capital Stock and Employment (1975=100)



Source: own elaboration.

Figure 4: Average Labor Productivity (Real GDP per worker)



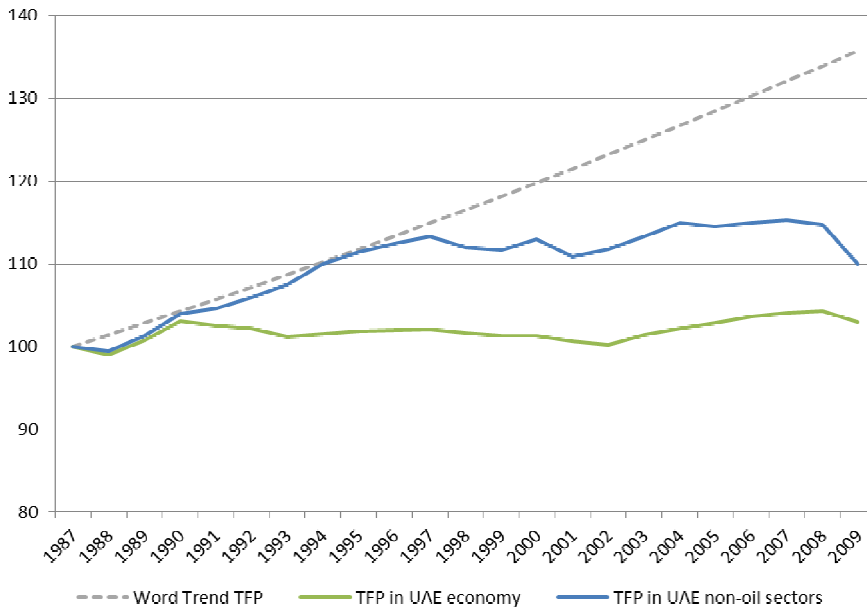
Source: World Development Indicators 2011.

Figure 5: UAE: GDP per worker and Total Factor Productivity (Normalized so that 1975=100)



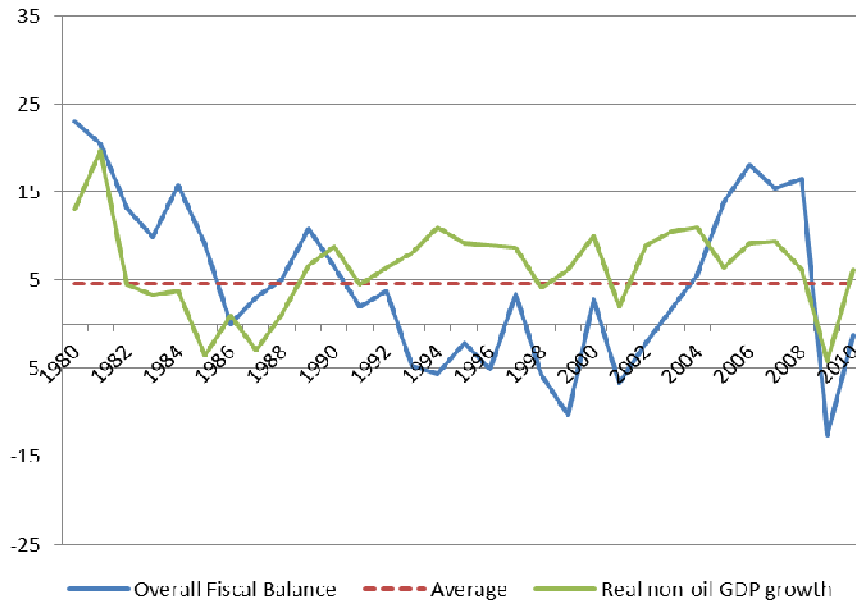
Source: own elaboration.

Figure 6: UAE: Total Factor Productivity by Economic Sector



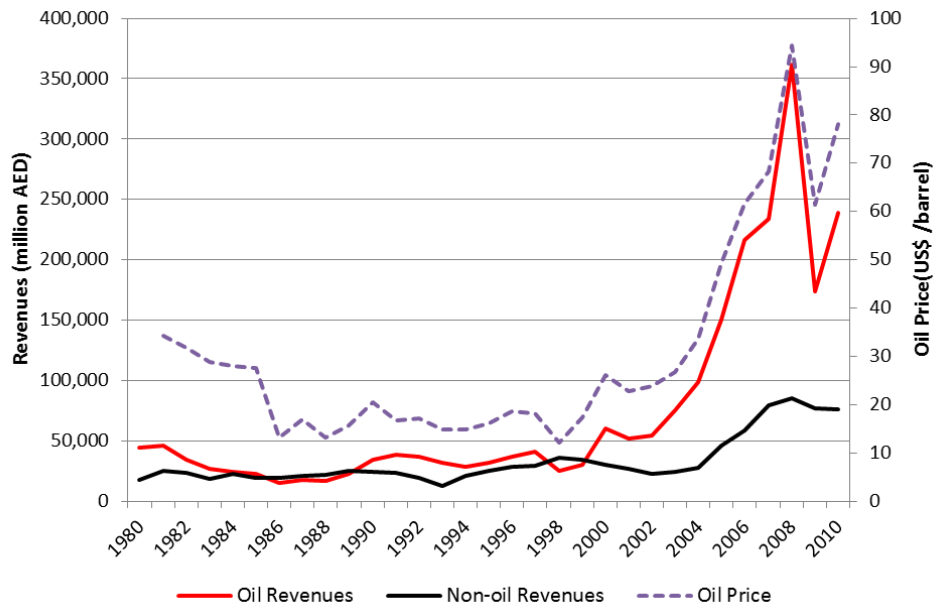
Source: own elaboration.

Figure 7: UAE: Overall fiscal balance (% of GDP) and Non-Oil Real GDP Growth (%)



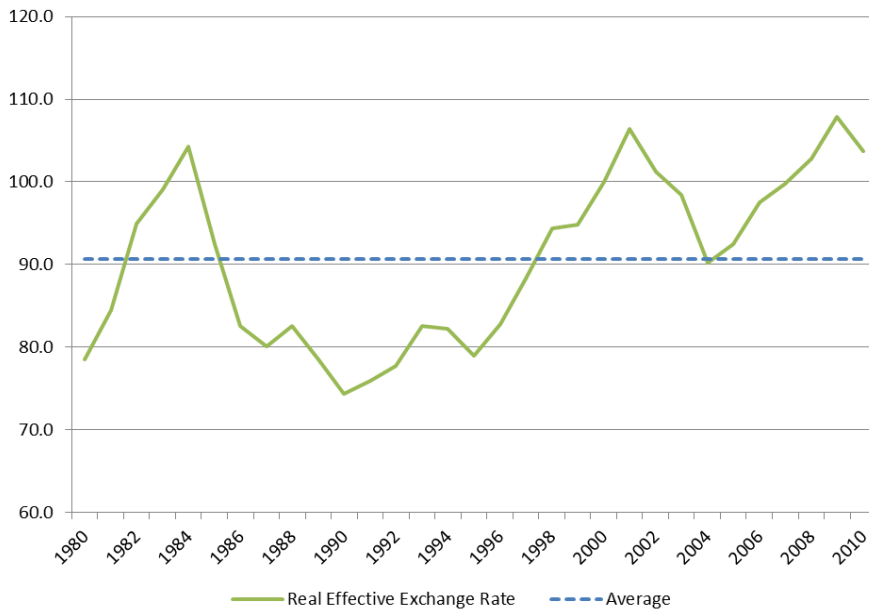
Source: International Monetary Fund (2011)

Figure 8: UAE: Consolidated Government Revenue and Oil Price



Source: International Monetary Fund (2011)

Figure 9: UAE: Real Effective Exchange Rate (Normalized 2000=100)



Source: International Monetary Fund (2011)

Figure 10: UAE: Value Added, Employment and Average Labor Productivity in the Public Sector (Normalized 1988=100)

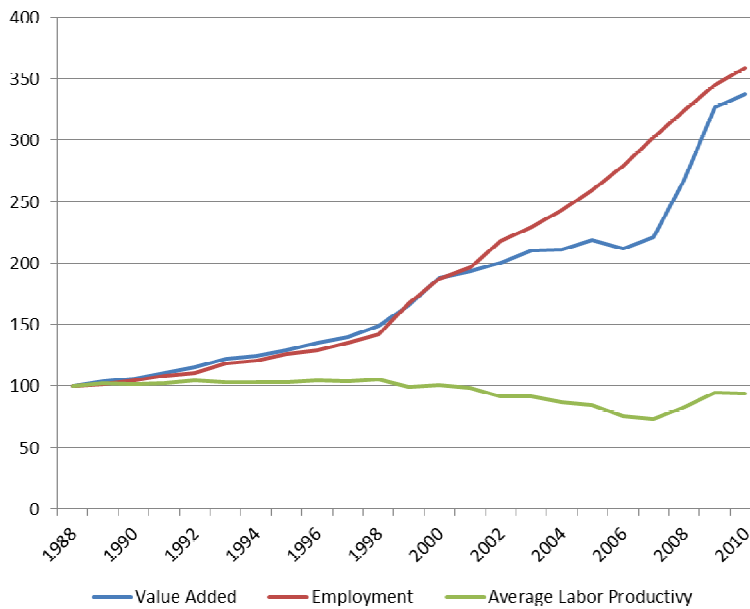


Figure 11: Total Factor Productivity in the Non-oil Sectors of Abu Dhabi and Dubai (Normalized 1988=100)

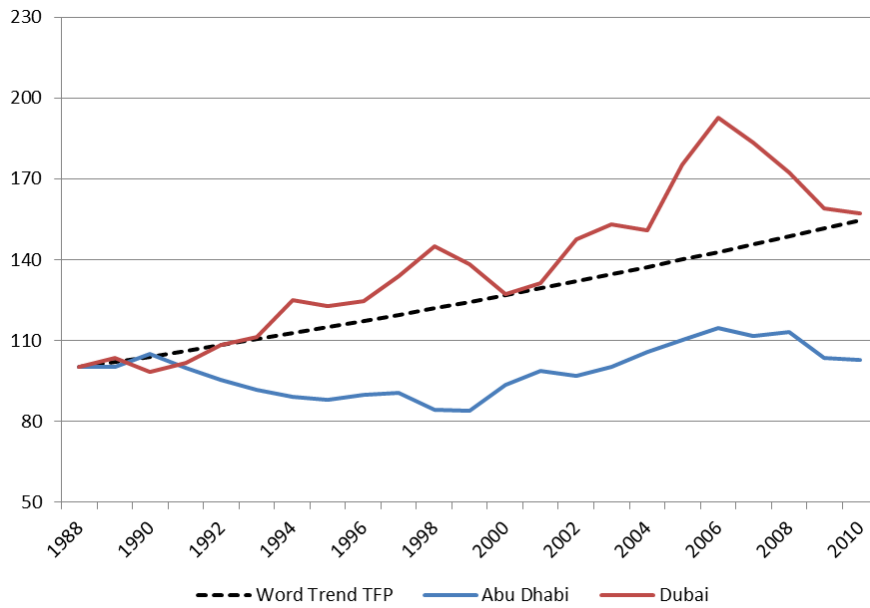


Table 1: Average Natural Resource Rents (As share of GDP, percent)

	1970s	1980s	1990s	2000s
World	3.8	4.3	2.0	3.9
By Geographical area				
East Asia and Pacific	2.9	3.4	1.2	2.5
Europe and Central Asia	0.8	1.5	1.5	2.8
Latin America and Caribbean	5.8	8.8	4.2	8.0
Middle East and North Africa	33.7	26.7	20.2	32.6
North America	3.4	3.2	1.1	1.7
Sub-Saharan Africa	9.7	11.7	8.6	15.1
<i>Arab World</i>	35.6	31.8	22.9	36.1
By Income Levels				
High income	2.7	2.9	1.1	1.9
High income: OECD	1.9	2.0	0.7	1.2
High income: non OECD	37.8	31.6	16.2	26.7
United Arab Emirates	65.3	40.6	31.4	31.5
Middle income	9.1	10.9	6.8	10.7
Upper middle income	8.4	10.7	6.6	10.5
Lower middle income	10.8	11.5	7.2	11.5
Low income	4.5	4.1	4.7	5.5
Heavily indebted poor countries (HIPC)	6.5	6.3	6.2	10.0

Source: own elaboration based on data from World Bank *World Economic Indicators 2011*.

Table 2: Real GDP Annual Growth Rate (%)

	1975-2010	1975-1990	1991-2010
World	3.0	3.3	2.7
High income	2.6	3.2	2.1
High income: OECD	2.6	3.2	2.1
High income: non OECD	5.0	5.4	4.7
Middle income	4.4	3.8	4.9
Upper middle income	4.3	3.6	4.9
Lower middle income	4.7	4.5	4.9
Low income	3.4	2.6	4.1
United Arab Emirates	5.4	5.7	5.1
Hong Kong	5.8	7.9	4.0
South Korea	6.4	8.0	5.2
Singapore	7.2	7.5	6.9
China	9.6	8.5	10.5
India	5.9	5.1	6.6

Source: World Development Indicators 2011.

Table 3: UAE: Annual Earnings and Hours of Work in Different Sectors in 2008

Economic Activity Group	Actual Hours	Monthly Earnings
	of Work per Month	AED
Agriculture, Hunting, Forestry and Fishing	211.2	2,386
Mining and Quarrying	208.9	11,226
Manufacturing	221.0	3,328
Electricity, Gas and Water Supply	206.2	10,490
Construction	225.1	2,249
Wholesale and Retail Trade	212.3	4,424
Hotels and Restaurants	218.9	4,190
Transport, Storage and Communications	179.7	4,645
Financial Intermediation	191.3	10,961
Real Estate, Renting and Business Activities	204.8	5,917
Public Administration and Defense	170.6	10,333
Education	179.0	6,435
Health and Social Work	200.3	6,556
Community, Social and Personal Services	233.1	3,741

Source: Employment, Wages, and Hours of Work Survey (October 2008).

Table 4: UAE: Economic Indicators by Emirate, 2009

Emirate	GDP (US\$ million)	Population (thousands)	Per-capita GDP (US\$)	Share of Oil in GDP
Abu Dhabi	162,406	1,628	99,758	46.0%
Dubai	80,097	1,722	46,514	1.8%
Sharjah	16,595	1,017	16,318	10.8%
Ajman	3,781	250	15,123	0.0%
Umm al-Quwain	630	56	11,252	0.0%
Ras al-Khaimah	4,285	241	17,782	4.4%
Fujairah	2,541	152	16,714	0.0%
<i>Total/average</i>	<i>270,335*</i>	<i>5,066*</i>	<i>53,363**</i>	<i>28.9%**</i>

Note: in the last row, * refers to total values while ** refers to country averages.

Source: National Bureau of Statistics and IMF.

Table 5: Average Annual GDP Growth Rate by Economic Sectors in Each Emirate, 1997-2009

	Abu Dhabi, %	Dubai, %	Sharjah, %	Ajman, %	Umm AlQuwain, %	Ras Al Khaimah, %	Fujairah, %
Total	8.8	10.0	5.4	7.9	1.0	4.3	5.6
Crude Oil and Natural Gas	8.8	-8.6	14.0	-	-	-6.0	-
Manufacturing	6.5	10.7	8.4	11.6	0.4	13.8	14.5
Construction	12.8	12.7	5.1	10.4	-6.5	-3.7	8.9
Wholesale & Retail Trade	8.6	15.2	5.4	6.1	-2.2	3.5	3.2
Transport, Storage and Communication	14.6	12.3	4.9	3.5	6.0	2.7	3.3
Real Estate and Business Services	9.1	12.5	5.8	5.6	7.4	6.4	3.5
Financial Corporations	11.2	12.9	3.6	9.5	-12.0	11.4	8.7
Other sectors	2.9	1.2	1.3	4.0	1.7	1.3	4.4

Source: National Bureau of Statistics and IMF.