

**Fiscal Institutions in a Rentier State -
the case of the United Arab Emirates**

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Diciembre 2015

* This is an abridged version of my study “Policy Goals, Fiscal Institutions and Macroeconomic Management in the United Arab Emirates” prepared for the Economic Research Forum. All errors are my own. The usual disclaimer applies.

Abstract

For most countries, natural resource abundance has not been a blessing but rather a curse. Classical symptoms of the curse are very low growth in labor productivity, government policies unable to counteract economic cycles induced by oil-price volatility, and massive overemployment in the public sector. In some economies, resource rents have also been instrumental in creating a “rentier-state”, that is, a society that lives out of the resource rent and is unable to develop a strong productive domestic sector, where only few are engaged in the generation of this wealth and where the government plays a central role in distributing this wealth to the population. The oil-rich economies of the Gulf of Arabia are the epitome of the rentier state. This paper reviews the case of the United Arab Emirates and provides evidence that the inability of the government to deal with oil-price cycles and global business instability is not the result of inability but a key policy in the political agreement between rulers and the general population (along tribal lines) to share the oil rent.

Keywords: natural resource rents, renter state, fiscal institutions

JEL Classification: P48, E63, N15

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1. Introduction

Paradoxically, the abundance of natural resources –in particular oil and natural gas—has been a blessing for only very few economies. For most countries, significant resource rents have led to short and long-term economic and social problems and the inability to deal with these adverse effects is labeled “the natural-resource curse” (Auby, 1993). In the short run, abundant resource receipts may induce currency volatility and real exchange rate distortions, hampering financial and exporting sectors. In the long run, resource rents may hamper economic growth by encouraging rent-seeking and corruption, insufficient savings and capital formation to compensate for the non-renewable character of the resource exported, insufficient diversification of the economy, and the maintenance of oligarchical governance protected by lack of transparency and the inability of the overall populace to have a say in how resource revenues are spent. Whereas any one of these fiscal issues links to the low growth rate, poor governance and other unfortunate outcomes associated with the alleged curse of oil is likely to be very difficult to treat, what makes doing so even more complicated are the interrelationships among them and in many cases the conspicuous absence of information about oil revenues and expenditures.

The United Arab Emirates (UAE) is a small federative country formed in 1971 in the Gulf of Arabia comprising seven originally independent emirates (Abu Dhabi, Dubai, Sharjah, Ajman, Fujairah, Umm al Quwein and Ras al-Khaimah). As other nations 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. The UAE seems to have escaped the natural resource curse: with per capita GDP around US\$ 40,000 at PPP prices in 2013 it is one of the richest non-OECD countries in the world (World Bank, 2014). The country also ranks comparatively high on business environment, lack of corruption and other institutional features (World Economic Forum, 2014). Soto and Haouas (2015) study how the country used resource rents to achieve economic growth and provide high welfare levels for the local population. Nevertheless, they also notice that symptoms of the resource curse can be found in three areas: very low growth in labor productivity, government policies unable to counteract economic cycles induced by oil-price volatility, and massive overemployment in the public sector. Therefore, they conclude that while the country has not been immune to the oil curse, it has nonetheless managed to make the benefits outweigh the negative outcomes of oil exporting.

This paper focuses on one of the three areas where the resource curse manifests itself: the perceived inability of government policies to deal with oil-price cycles and global business instability. It is well-known that fiscal institutions and fiscal policy are the primary mechanisms that countries have at their disposal for limiting the extent to which natural resources constitute a curse for long-term development (Collier et al., 2010). In the UAE, as in all GCC economies, matters are more complicated because, by virtue of the fixed pegged of the local currency to the US dollar and the open capital account, fiscal policy is the only tool for macroeconomic management. Some resource-rich countries in other parts of the world –such as Norway and Chile—have adopted open budgeting procedures, fiscal rules and special stabilization funds that seem to have led to considerable improvements in managing volatility and achieving national development objectives (see Elbadawi et al., 2014). The UAE, however, has been particularly unsuccessful in adopting these fiscal institutions.

As discussed below, fiscal policy in the UAE is very limited as a countercyclical tool for several reasons. First, the tax system is restricted by the absence of income and value added taxes, relying mostly on exacting fixed fees and utility charges which are disconnected from economic activity. Therefore, taxes do not perform their role as automatic stabilizers of the business cycle. Second, the federal government is particularly weak and unable to implement successful countercyclical policies. Weaknesses arise because the emirates have no financial obligations towards the federal government and the natural resources and wealth are property of each emirate. Consequently, each emirate manages its own budget independently and the federal government has no significant, independent sources of revenue. Third, given the asymmetric distribution of natural resource wealth, the fiscal capacity of individual emirates is heterogeneous and fiscal coordination becomes quite cumbersome. Fourth, the governments of the different emirates have relied on semi-autonomous public-private partnerships –frequently with companies owned by the royal families—as their main tool of economic development, particularly in the areas of real estate, housing, free-zones, and tourism. Government monitoring and control over these GReS is extremely weak and public information on their operations is minimal, as evidenced during the recent collapse of the real estate markets of Dubai and Abu Dhabi.

One can view the absence of an effective fiscal policy in the UAE largely as an institutional failure. Fiscal institutions—which include budgetary procedures, targets, and rules as well as the transparency of the execution process—are very poorly developed, particularly when considering the development level of the country and the availability of fiscal resources.

This paper offers an alternative view on the role of fiscal institutions as instruments in a delicate social agreement between UAE nationals—not citizens—and their rulers to share oil rents in exchange for political support. In this view, the reluctance of the authorities to set up the institutions needed to enact countercyclical fiscal policies, implement more effective tax systems and better manage fiscal budgets is not the result of inherent limitations of the Emirati society but agreed-upon mechanisms to transfer oil wealth among emirates and in time to future generations.

Section 2 of this paper provides a snapshot of the UAE highlighting macroeconomic policies. An in-depth analysis of the UAE and particularly Dubai can be found in Alfaris and Soto (2015). Section 3 summarizes the structure and evolution of the government budget at the federal and emirate level. Unsurprisingly, the overwhelming majority of fiscal receipts are oil proceeds while a significant fraction of expenses are in the form of current expenditures in public wages and salaries and transfers to the Emirati nationals. Both revenues and expenditures follow the oil-price cycle rather closely. In fact, the structure of government revenues and budgets provides very little space for fiscal policy to operate as a stabilization tool and raises the question of why a country that faces significant export instability has chosen to relinquish monetary and exchange policy and has structured its fiscal policy to be of little help for macroeconomic stabilization. Section 4 of the paper focuses on the long-term effects of fiscal policies in the UAE and shows that economic growth has not been the result of higher productivity levels but mostly the accumulation of physical capital and manpower. In fact, the efficiency in the use of productive factors has been stagnant during the last two decades which I relate to the cycles in public investment. In other words, the inability or unwillingness to smooth out the effects of the oil-price cycle on government investment has been detrimental to sustained economic growth. Fiscal policies have not enhanced income and wealth sustainability. Section 6 of the paper provides a political economy interpretation of the particular structure and operation of fiscal policy in the UAE, based on an extension of the classical work on rentier states by Mahdavi (1970) and Beblawi (1987), adapted to the case of an oil rich but population scarce economy such as that of the UAE.

2. The Economy of the UAE

The United Arab Emirates (UAE) is a small federative country formed in 1971 in the Gulf of Arabia comprising seven originally independent emirates (Abu Dhabi, Dubai, Sharjah, Ajman, Fujairah, Umm al Quwein and Ras al-Khaimah). As other nations 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. The UAE seems to have escaped the natural resource curse: with per capita GDP around US\$ 40,000 at PPP prices in 2013 it is one of the richest non-OECD countries in the world (World Bank, 2014). The country also ranks comparatively high on business environment, lack of corruption and other institutional features (World Economic Forum, 2014).

As in most countries in the Gulf of Arabia, the vast oil and gas richness contrasts with the scarcity of population and manpower. Since the mid-1970s the country has been importing low-skilled workers first from neighboring Arab countries (e.g., Egypt, Jordan and Yemen) and later from the Indian sub-continent (mainly Pakistan, India, Bangladesh, Nepal and Sri Lanka). Lack of high skilled manpower has also led to massive immigration of Europeans (mainly British and Eastern Europeans) and, more recently, citizens of Southeast Asia. According to the 2009 UAE Labour Force Survey, 91% of the economically active population is foreigner of which 78.6% participates in the labour market. These participants are mostly male (87%), fairly young (50% are between 25 and 35 years of age) and with low educational attainment (62% have secondary schooling or below). The high participation of expatriate workers is the result of the sponsorship system (*Kafala* in Arabic), an idiosyncratic scheme that has shaped the development of Gulf economies. It requires each migrant to be sponsored by an Emirati national or Emirati-controlled firm that becomes his/her legal representative. The migrant becomes tied to the sponsor for the duration of his/her contract –from one to three years– and cannot change sponsor unless they obtain written consent (no-objection certificate). In principle, workers should leave the UAE immediately upon termination of the contract but renewals are observed.

In addition to the expatriate workforce, the Emirati also participate in the labor market but without the restrictions implied by the sponsorship system. Emirati workers are free to move between available vacancies in accordance with their preferences and, at the same time, they are protected by the rules and regulations emanating from the Emiratization program that shelters them from openly competing with expatriates in the labor market. The participation rate of Emirati in the labor market is low for international standards but has increased from 22% in 1975 to 44% in 2009; the change is mostly due the increase in the participation of females from about 2% in 1975 to 25% in 2009. Nationals are largely employed in the public sector; 79% of active workers are employees of either the local or federal administration. They also tend to occupy high-level positions often uncorrelated to their educational attainment.

In addition to its peculiar labor market, the UAE relinquished monetary policy by implementing a combination of an open capital account and a fixed exchange rate (pegged to the British pound and the US dollar since 1971). The Central Bank cannot control the interest rate and has a minimal role in managing liquidity and, consequently, it plays no role in stabilizing the economy from recurrent cyclical fluctuations. Furthermore, the financial sector is split into two largely isolated segments. On one hand, a modern, globalized and highly competitive industry located off-shore in the Dubai International Financial Center. On the other hand, an oligopolistic domestic market where competition is minimal and efficiency is not a guiding principle.

3. Structure and Evolution of Fiscal Accounts

The fiscal structure of the UAE is very different from the standard case of federal economies where the central government levies general taxes and caters for most of economy-wide public goods while the states or provinces collect local taxes and spend resources largely in local public goods (Tiebout, 1956, Oates, 1999).

First and contrary to most federal countries, the federal government is very small, has limited access to independent financing, and must rely on transfers from Abu Dhabi and Dubai for financing its operations. As a result, it does not perform some classic duties of central governments (e.g., defense, internal security) and it does not provide key public goods to the population on a national scope (e.g., education). In fact, Abu Dhabi manages and finances functions traditionally reserved to federal governments, such as the armed forces and internal security, and each emirate cares, for example, for health services and police. In terms of revenues and expenditures, the federal government is dwarfed by those of Abu Dhabi and Dubai and, consequently, its influence on economic activity is negligible. While the federal and the nationwide (consolidated) fiscal budgets are of interest and I provide some description and analysis first, it would be misleading to ignore the evolution of the fiscal accounts of Abu Dhabi or Dubai. Therefore the analysis also covers these two emirates. For fiscal analysis, the other five emirates are of negligible size and are therefore omitted (in addition, the information is also unavailable).

Second, one of the main features of fiscal accounts in the UAE is its peculiar revenue structure. Contrary to most economies in the world, the UAE is characterized by the absence of income taxes at the personal and corporate level, with the exception of certain duties levied on foreign banks operating in the domestic market (i.e., excluding those in financial free-zones). Furthermore, the UAE does not have value-added taxes and relies mainly on fees charged to private businesses in the form of entry permits and visas, sponsorship fees charged on the expatriate labor force (which accounts for over 80% of the total labor force), trade licenses, which are frequently disconnected from the sales or profits, and specific fees for public transportation and vehicle registration. The only significant ad-valorem tax collected by the authorities is the 5% tariff on imports from countries outside the GCC region (the latter are exempted). In addition, local and federal governments collect some revenue from electricity, water and sewage rates charged mainly to foreigners since the local population is heavily subsidized. Income from these utilities is not a significant fraction of revenues (as discussed below) even though the government reserves itself key potentially profitable enterprises for own management such as the distribution of oil derivatives, telecommunication companies and other utilities, as well as infrastructure (ports and airports), universities, and some large investments in productive activities (such as aluminum smelting). Consequently, only taxes on foreign trade –import taxes and to some extent oil revenues—are related to economic activity and fulfil the automatic stabilizer role traditionally fulfilled by ad-valorem taxes.

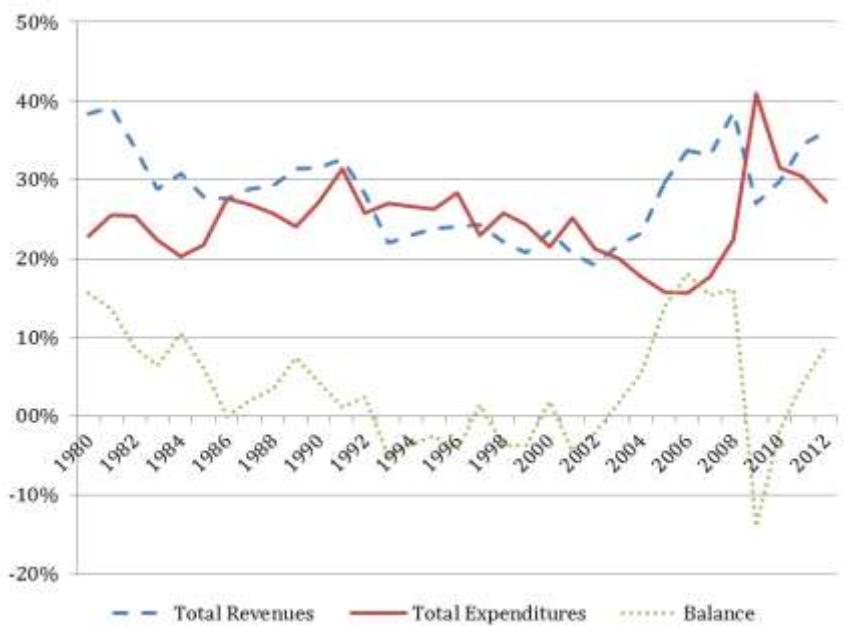
Third, the dependence of the UAE on the oil-price cycle –itself the result of the overwhelming importance of hydrocarbon receipts as source of fiscal revenues—is compounded by the fact that such natural resources are very unevenly distributed among emirates. Abu Dhabi owns the majority of oil deposits and collects around 90% of the oil rent. Dubai, on the other hand, has negligible oil deposits and revenues are not a significant part of the fiscal budget. As expected, Abu Dhabi weighs heavily in policy making, particularly with regards to fiscal policy.

3.1. Fiscal Stance of the UAE Government

Figure 1 presents the evolution of the consolidated fiscal accounts for the period, 1980-2012. Consolidation, in this case, is meant to include each emirate's budget and the federal government. It can be seen that fiscal revenues have hovered around 28% of GDP in the entire period but have suffered from notable fluctuations: prior to the commodity boom of the late 1990s total revenues were as low as 19% of GDP whilst in the built-up of the last global recession they jumped to around 40% of GDP. There are three distinctive phases. The first one would run from 1980 until the early-1990s where expenditures slowly increased to 30% of GDP but remained well below revenues so that a systematic surplus was achieved: by 1992 the cumulated fiscal surplus would be in the neighborhood of 80% of GDP. The second phase is one of systematic yet quantitatively small fiscal imbalances as a result of a slower contraction in expenditures following the progressive decline in total revenue of the 1990s: by 2002 the cumulated fiscal deficit had declined to around 25% of GDP. The third phase, running from 2002 to 2012, is one of total disconnecting between fiscal revenue and expenditures. Fiscal revenue increased substantially in the late-2000s as a result of the commodity-price boom that sent oil prices to unprecedented levels. Expenditures, however, reacted with a significant lag allowing for massive fiscal surpluses: between 2005 and 2008, the fiscal surplus was in excess of 15% of GDP. The recessionary effects of the global crisis, the sharp drop in oil revenues, and the sizable bail-outs of GReEs as a result of the burst of the housing bubble reversed these surpluses altogether and the UAE experienced significant fiscal deficits in 2009 and 2010.

The second and more striking conclusion from Figure 1 is that, while the authorities may have engaged in a conservative zero-fiscal deficit policy, it has been unable to isolate fiscal expenditures from the oil cycle: expenditures follow –with a lag—the trajectory of revenues and the latter, as shown below, depend heavily on oil prices.

Figure 1
Fiscal Accounts of the Consolidated Government
(share of GDP)



Source: own elaboration based on information by IMF (2014).

3.2. Government Revenues

An analysis of the evolution of government revenues by emirate can only be done for Abu Dhabi and Dubai in the period 1980-2012. Prior to 1980, the data are simply not available. While there have been some changes in methodologies, for the most part the data are consistent with IMF standards. Appendix Table 1 presents the detailed figures. Several conclusions emerge:

First, the source of the high volatility of fiscal resources is largely the result of the oil-price cycle. Consolidated government revenues are dominated by Abu Dhabi for which the oil cycle is clearly dominant. These revenues were ruled by the declining oil prices of the 1980s and 1990s and later by the explosive growth in the 2000s with significant instability between 2008 and 2012. One would have expected Dubai to be relatively immune to the oil cycle in the last decades when considering the negligible role played by oil in the economy (less than 3% of GDP in 2013), yet the boom and bust cycle seems to have hit the emirate just the same. Of course, in an integrated economy cycles of economic activity tend to spillover from one region to the next. However, the effects on the budget receipts ought to be minimal since most revenues are based on fixed fees are not directly linked to economic fluctuations.

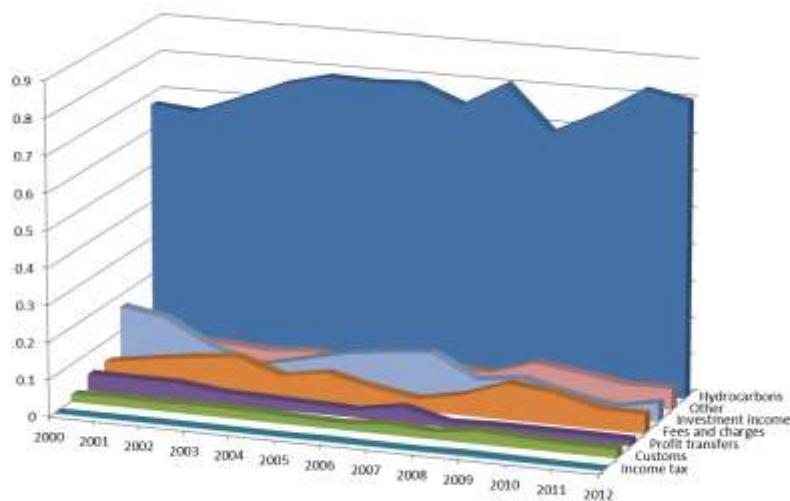
Second, the sources of revenue in Abu Dhabi and Dubai are quite different. In the former, over 95% of revenues come from profits from government enterprises, of which the large majority are in the hydrocarbon sector, and less than 5% come from fees and charges levied on productive sectors. On the contrary, in Dubai less than 70% of resources come from government enterprises, of which the vast majority is not into hydrocarbons, and around 30% of fiscal receipts are more closely related to domestic economic activities. Furthermore, because emirates are the sole owners of oil deposits and can keep the rents from natural resources, there is an equally important imbalance in terms of the appropriation of government revenues. The lion's share of fiscal revenues is collected by Abu Dhabi, which receives around 60% of the total income of the consolidated government. Dubai, which has an economy around one half the size of Abu Dhabi's, collects less than 10% of total revenues.

Third, there has been little diversification of sources in government income in the last two decades, as shown in Figure 2. A detailed decomposition of revenue sources beyond these broad aggregates is difficult as the information is not public and when it is available it tends to be unreliable. Hydrocarbons are the main source of revenue and, in fact, its relative importance has increased over the last twelve years. As anticipated, income taxes and custom duties are negligible.

While revealing, this budget data omits significant sources of fiscal revenue including the profits and dividends of government related entities (GREs), most returns on capital investments abroad and, in particular, the operations of sovereign wealth funds. In the last years, the emirates have financed their fiscal budgets by levying rental fees on land for commercial and housing projects. These operations are by norm excluded from the official budgeting and concealed from public scrutiny (extra-budgetary accounts). The recent collapse of the real-estate markets in both Dubai and Abu Dhabi, which took investors and government authorities equally by surprise, are patent examples of both the magnitude of these operations and the opacity of fiscal accounts.

Detailed information on the structure of capital transactions as well as the internal and external debt for the UAE or its emirates is also conspicuously absent as was painfully evident during the Dubai's recent financial crisis. Abu Dhabi's and Dubai's sovereign wealth finds do not issue any financial statements that would allow us to measure changes in the wealth portfolio of the UAE and the emirates as well as the income derived from these investments.

Figure 2
Revenue Structure of the Consolidated Government
(share of total revenue)



Source: own elaboration based on data from the Ministry of Finance of the UAE.

This fiscal revenue imbalance manifests itself in economic policy and political debates. For example, the reluctance of the authorities in adopting value-added taxes may be linked to the fact that for Abu Dhabi such type of revenue would not bring in additional resources and the cost of implementing a modern internal revenue unit would outweigh any potential benefit. As noted by Ahmad (2008), however, for practical reasons it makes sense to have a centralized tax authority at the federal levels instead of one per emirate. Implementing value added taxes, as discussed below, would also have important distributional effects that also explain the lack of political support for improving fiscal revenues. As discussed in Harrison (2010) the evidence would indicate that the zig-zagging of the authorities vis-à-vis the implementation of value added taxes in the UAE is most likely the result of the opposition of the business community and the lack of consensus among authorities of the different emirates.²

3.3. Government Expenditures

The imbalances of fiscal revenues are mirrored in an also very peculiar structure for fiscal expenditures. Expenditures at the federal level are quite small and a number of public goods that are usually provided by the central government are the independent responsibility of each emirate. Needless to say, there is substantial duplication of functions in key areas such as government finances, health and education, infrastructure and public works. While some of these duplications may not be a waste of resources, others are more difficult to justify on purely economic terms.

² Introducing value added taxes is a long-debated issue in the GCC. In early 1990s, representatives from GCC nations conducted a feasibility study on the proposal to implement corporate taxes and VAT to support local economies but no proposals were advanced. Again, in 2006 the GCC Secretariat commissioned a study to E. Ahmad (2006) but its recommendations and chronogram were not implemented.

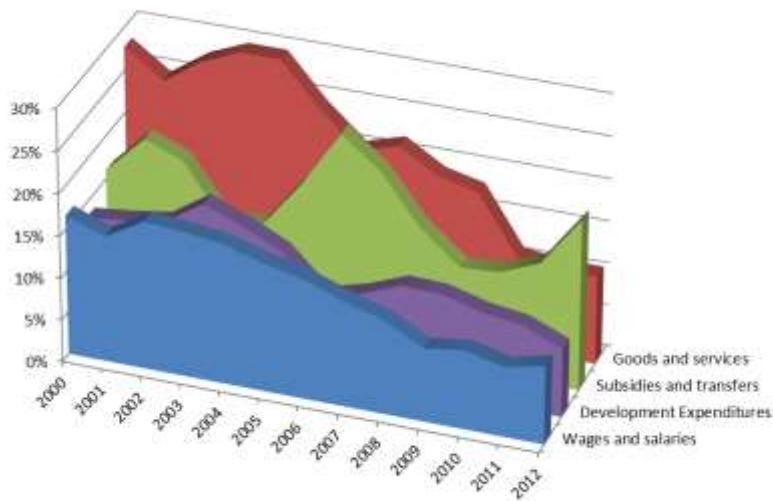
In a federal country such as the UAE, emirate level authorities would be in need of developing their own department of finances to manage local resources and monitor their use by the different local agencies. Likewise, some emirate-level agencies could also be rationalized as providing locally delivered services more efficiently than those a national entity could provide (e.g., utilities), although in this case coordination costs –particularly, among regulators and network interconnections—are not negligible. Nevertheless, some of the duplications are known to be inefficient and economically irrational. For example, some emirates have their own education authorities although they have proved to be incapable of properly running the school system since most decisions on issues such as curriculum or teacher's wages are made by the federal Ministry of Education. Likewise, it would make sense to have a federal center for statistics instead of duplicating data collection and processing at the emirate level as it currently happens in Dubai, Sharjah and Ras al Khaymah.

A second characteristic element is the presence of a myriad of agencies devoted to transferring resources to the local population in the form of subsidies (from marriage dowries to transfers for purchasing plots of land) and allowances for housing, education, food, water, and electricity. Most of these subsidies are managed at the emirate level and tend to bear an important role on local finances. Likewise, each emirate has its own set of agencies for promoting investment and managing and monitoring state-owned enterprises and public-private partnerships.

Turning to the consolidated government, the decomposition of government expenditures by components reveals interesting aspects of fiscal policy as shown in Figure 3. First, there is a declining trend in wages and salaries as share of total expenditures from 15% in the 1980s to around 10% in the 2010s. This trend is to some extent misleading as it does not indicate a retrenching wage bill in the government. Quite the opposite, employment in the public sector has expanded systematically in the last decades as the government has increasingly played the role of the “employer of the last resort”, i.e., it has opened its doors to hiring the increasingly unemployable Emirati labor force. As shown in Figure 4, the expansion of employment in government services is very smooth over time and it is largely independently of the business cycle. Moreover, wages have also increased significantly in the same period, so that the public wage bill was 350% larger in 2012 than it was in 1992. But because total government expenditures have increased even faster fueled by significant oil proceeds, the wage bill reduced in relative terms. Compared to wages, expenditures in goods and services have grown much slowly indicating that, possibly, the provision of public goods to the general population has increased only mildly. On the contrary, direct subsidies to businesses and transfers to the Emirati population (since expatriates are not entitled to most benefits) have increased steadily.

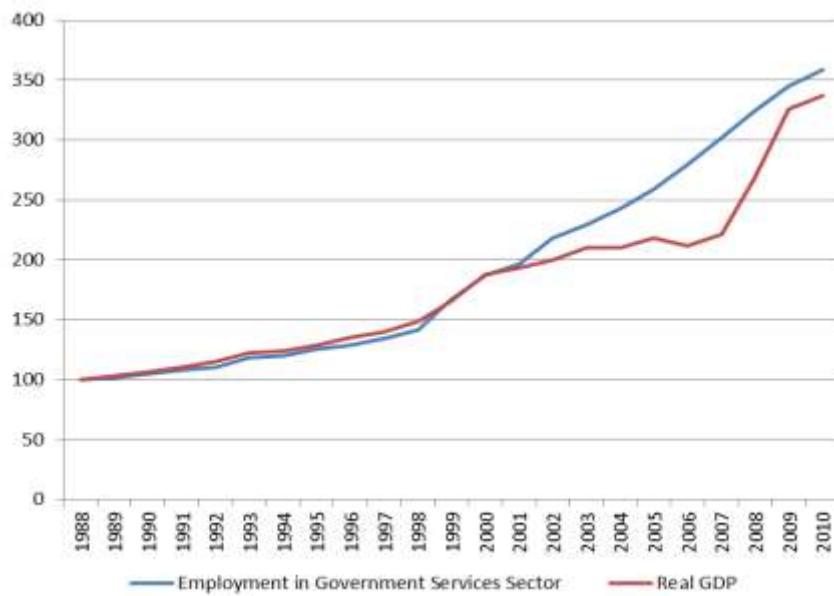
The evidence clearly suggests that most of current fiscal expenditures are devoted to transferring resources to the population, in particular the Emirati nationals which comprise the vast majority of public employees and are usually the main recipients of government subsidies. Of course, some of the subsidies also reach expatriates. This wealth-transferring role of fiscal expenditures becomes quite clear when observing the significant break in the trend of the wage bill (wages and salaries) and the subsidies around the mid-2000s when oil prices skyrocketed. It can be seen that wages and salaries almost doubled in Abu Dhabi (2006) and Dubai (2007), while the federal government had a similar increase in 2005. This surge in the wage bill is largely due to wage increases and not to additional hiring because, as shown in Figure 3, the trend in employment in government services is unchanged. Likewise, subsidies doubled at the federal level, tripled in Abu Dhabi and quadrupled in Dubai.

Figure 3
Expenditure Structure of the Consolidated Government



Source: own elaboration based on data from the Ministry of Finance of the UAE.

Figure 4
Employment in government services sector and real GDP
(normalized 1988=100)



Source: own elaboration based on information by IMF (2014)

The evolution of fiscal accounts as well as its institutional structure raises four questions that need further scrutiny and a compelling answer:

- Why a country that, by virtue of the hard peg of its currency, has chosen to relinquish monetary and exchange policy would structure its fiscal policy to be of little help for macroeconomic stabilization?
- Why have the authorities consistently rejected the idea of levying ad-valorem taxes and continue to rely on fixed fees and charges?
- Why have the authorities chosen to keep the federal government financially dependent by limiting its sources of revenue mainly to cash-transfers from Abu Dhabi and Dubai?
- Why have federal and emirate governments been unable to develop fiscal mechanisms to isolate fiscal expenditures from oil-price fluctuations? Alternatively, although the emirates have access to foreign financing and sovereign wealth funds that could be used to smooth expenditures over time, why have authorities allowed oil price cycles to be filtered into the economy?

4. Fiscal policy, oil-price shocks and economic cycles

In advanced economies, the macroeconomic effectiveness of fiscal policy is evaluated on its ability to smooth the volatility of output during business cycles, thereby reducing the adverse welfare effects of cycles on the population (e.g., unemployment, income fluctuations). When properly working, one should expect fiscal policy to expand during downturns and contract during booms. Indeed, the evidence on industrial countries confirms this pattern. Contrary to expectations, procyclical fiscal policy has been the norm in most developing countries, particularly in Latin America (see Talvi and Vegh, 2005) and Africa (Thornton, 2008).

Countercyclical fiscal policy operates on two fronts. On one hand, the tax system and more generally fiscal revenues ought to serve as automatic stabilizers of the business cycle, reducing aggregate demand pressures whenever private sector activity expands beyond sustainable limits. Ad-valorem taxes on goods and services and bracketed income taxes perform automatically this function, while profits and dividends of GReS can be managed by authorities so as to not further fuel an expansionary period. The opposite should occur during recessions. On the other hand, properly structured fiscal budgets with multiannual structures and limited contingent instruments ought to smooth government expenditures and thereby aggregate demand.

None of these benefits can be enjoyed in the UAE. As mentioned, fiscal revenues rely mainly on oil proceeds that are not isolated from the oil-price cycle and on fixed fees and charges that are highly disconnected from economic activity. On the other hand, until recently government budgets have been simply based on incremental projections of past expenditures and no attempt at having multi-annual plans within a framework of stated national priorities had been successful. Therefore, it is not surprising to find that fiscal expenditures cannot be isolated from oil revenues and, therefore, become very procyclical. In what follows I document the cyclicity of fiscal revenues and expenditures in the UAE and study the main transmission mechanisms.

Two main explanations have been put forward to explain the inefficiency of fiscal policy in smoothing the business cycle. During bad times, limited access to international capital markets stifles the ability of policy makers to conduct countercyclical policies (Gavin and Perotti, 1997; Riascos and Vegh, 2003;). This is unlikely a valid argument for oil-exporting economies where government resources are abundant and authorities do not need to recourse to external sources to finance a downturn. The second explanation rests on a political economy argument: during good times, political pressures or complacency that such times will continue for a long time can lead to fiscal profligacy particularly through public investment projects and transfers to the population (Tornell and Lane, 1999; Alesina et al., 2008). This type of mechanisms is also not suitable for non-democratic, oil-rich economies; below I therefore offer an alternative political economy explanation of fiscal procyclicality based on the mechanics of rentier states.

4.1. Has fiscal policy been procyclical?

Kaminsky et al. (2004) persuasively argue that fiscal policy cyclicity ought to be defined in terms of policy instruments –as opposed to fiscal outcomes—since only the former are under direct control of policy makers. As mentioned, policy instruments are limited mainly to government spending –both government consumption and public investment—since income and value added taxes are conspicuously absent. Other measures, such as fiscal balance or tax revenues, are outcomes and not under direct control of the authorities. Therefore, I define fiscal cyclicity in terms of expenditures such that:

- Fiscal policy is defined as *countercyclical* if and only if government spending decreases (increases) in good (bad) times. This policy is expected to dampen business cycles.
- Fiscal policy is defined as *procyclical* if and only if government spending increases (decreases) in good (bad) times. This policy is expected to amplify business cycles.
- Fiscal policy is defined as *acyclical* if and only if government spending remain constant across time. This policy will neither dampen nor amplify business cycles.

Economic data are relatively scarce in particularly in the 1970s when the country was being born and most government agencies were in infant stages. The data on fiscal accounts can only be found from 1980 to 2013 but national accounts can be extended backwards to 1975. Cyclical components of the log of the annual series of GDP, its components and fiscal variables are obtained using the Hodrick-Prescott (1997) filter which are subsequently contrasted to the cyclical component of the real oil price obtained from BP (2014).³ Results are shown in Figures 5 to 12.

Evidence of the importance of the oil-price cycle in the economy can be clearly seen in Figure 5. It is striking how the cyclical component of real GDP and real-oil prices move together (the correlation is around 66% for the entire period). While this result may seem obvious given the importance of the oil sector in the economy one must not forget that this result does not arise from a “price effect”, because in national accounts GDP is computed using a fixed-prices basket. In fact, the high correlation is even more puzzling since oil production remained very stable in the period 1997-2013 (at 2.6 million barrels per day) and therefore the effects of the oil price cycle do not arise from changes in exported volumes. I conclude that the oil-price cycle arises purely from income effects.

³ The cyclical component is obtained by subtracting from the original series an estimate of its long-run trend. The Hodrick-Prescott filter is a smoothing method computes the long-run trend by minimizing the variance of the series around a stochastic trend subject to a penalty for changes in such trend.

Furthermore, Figure 6 indicates that there is no apparent correlation between oil price cycles and the non-oil-related GDP (if anything correlation is negative). Therefore, spillover effects of oil-price cycles filtering through non-oil sectors are unlikely to be a source of business cycles in the UAE.

This evidence indicates that, in all likelihood, the effects of the oil-price cycle in the economy do not arise from the supply side of the economy. I turn my attention, therefore, to aggregate demand as a source of business cycles. Figure 7 indicates that there is no significant correlation between oil-price changes and the cyclical evolution of private consumption: the simple correlation between these two variables in the period 1980-2013 is -0.06. The cyclical downturn of the 2009-2010 global crisis, nevertheless, do show some correlation. The contemporaneous correlation between oil-price shocks and changes in private investment (gross fixed capital formation excluding public investment) is much larger and negative (-0.33) as shown in Figure 8, which indicates that investment reacts negatively with the business cycle, as expected.

Figure 5
Cyclical components of real GDP
and real oil price

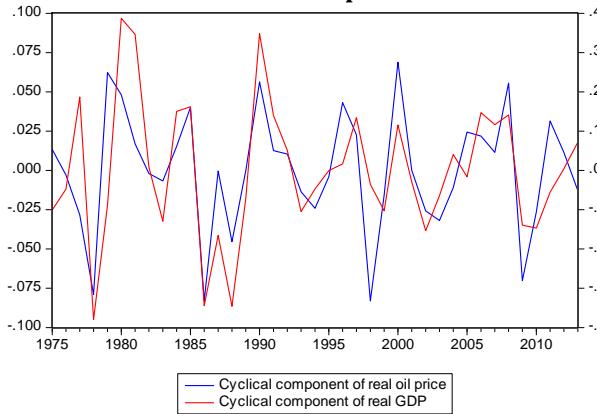
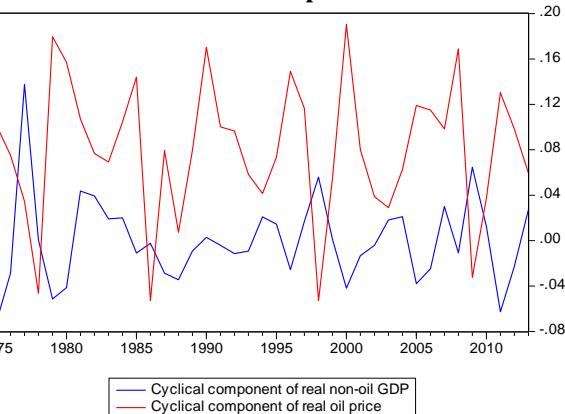


Figure 6
Cyclical components of real non-oil GDP
and real oil price



Source: own elaboration based on information by IMF (2014)

Figure 7
Cyclical components of private consumption
and real oil price

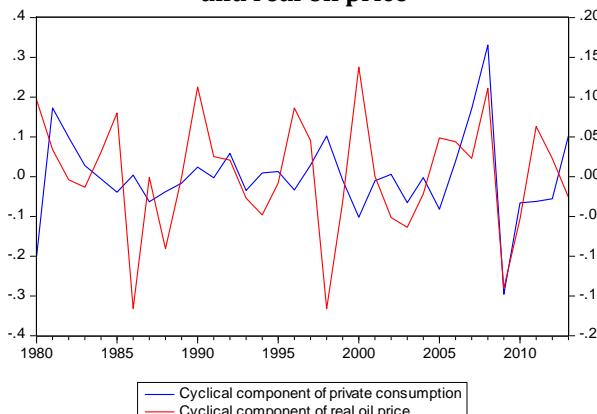
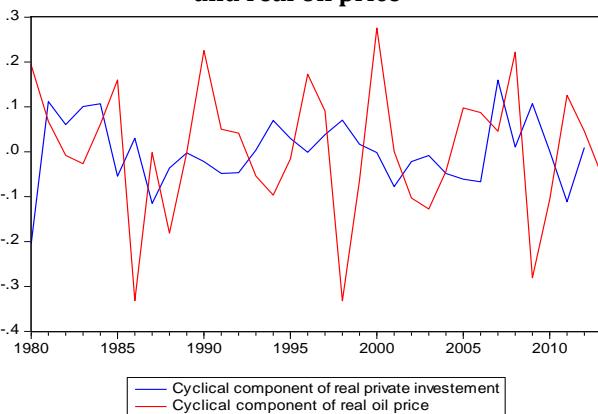


Figure 8
Cyclical components of private investment
and real oil price



Source: own elaboration based on information by IMF (2014)

The empirical analysis clearly indicates that the oil-price cycle does not filter through private sector activity and suggest looking at fiscal variables. As shown in Figure 9, government revenues are highly correlated to the oil price cycle. This is not surprising when considering the sheer dominance of oil revenue in government revenues: between 1980 and 2012, revenues collected from hydrocarbons were on average around 60% of total revenue. The share has fluctuated with the oil-price cycle but has never been below 45%. Although this is not surprising, one would have expected that the massive wealth amassed in the form of domestic and international investments, in particular sovereign wealth funds, would have provided fiscal incomes with some cushioning against the oil-price cycle. The evidence indicates otherwise.

The cyclical component of non-oil revenue is uncorrelated with oil-price shocks, as shown in Figure 10, which is not surprising since these government revenues come mainly in the form of fixed-fees and non-oil related activities (e.g., labor permits). While this provides for some hedging in government revenues, the relatively small size of this type revenue precludes achieving enough isolation of fiscal revenues from the oil-price cycle.

The fact that the oil-price cycle significantly affects government revenues is hardly surprising. Nevertheless, oil-price cycles and government expenditures are also positively correlated, albeit not contemporaneously but with a lag (of one to two years) which is consistent with the budgetary cycle of the government. This correlation indicates that government expenditures are the main source of oil-price induced cycles in the economy and poses the questions of why is the government unable to enact countercyclical policies.

The oil-price cycle filters with force through public investment (development expenditures) as shown in Figure 11. Correlation is quite high except in the build-up of the global crises of 2008-2009. This indicates that capital expenditures are adjusted by the government following the pattern of receipts from the hydrocarbons sector. A second transmission channel of oil prices shocks to the economy that has become significant since the mid-1990s is via public wages. As shown in Figure 12, the public sector wage bill had been largely disconnected from oil-price shocks throughout the period 1980-1995 but became far more responsive to oil-price shocks thereafter. It is noteworthy the response of the government to the global recession of 2008-2009 where real oil prices drop significantly vis-à-vis their long run trajectory but the real wage bill reacted in countercyclical manner.

In summary, the empirical evidence suggests that economic instability in the UAE is linked to oil-price cycle largely as the result of passing oil-revenue fluctuations directly to government expenditures, particularly capital expenditures.⁴ While in most emerging economies capital expenditures are usually the first victims of cycle-induced adjustments in government expenditures, often it is not an optimal policy but rather the only policy available to authorities. Less costly policy responses would be in the form of raising foreign resources to cope with revenue fluctuations (via debt or withdrawing from reserves) or adjusting current expenditures. Given the ample external reserves of the country (around US\$ one trillion) and its ability to raise external financing using oil or property as collateral, economic logic would indicate that there is no need for relying on such sub-optimal policy in the UAE. Therefore, I focus on political economy arguments below as an explanation for this phenomenon.

⁴ Abdih et al. (2010) find a similar result on the strong procyclicality of fiscal policy. Furthermore, they also observe that such procyclicality is more pronounced in good times than in bad times and conclude that political economy factors that result in excessive spending pressures in good times might have played a more important role than financial constraints in explaining the cyclical behavior of fiscal policy.

An alternative view on the working of fiscal policy in the UAE is in terms of fiscal multipliers. As noted by Espinoza and Senhadji (2011) the effectiveness of fiscal policy in smoothing the impact of shocks depends critically on the response of the economy to changes in government expenditures, i.e., on the size of fiscal multipliers. Their estimates for GCC countries in the period 1980-2008 indicate that fiscal multipliers are generally weak for current spending but could be sizable for productive capital spending, despite important leakages through imports and remittances. Therefore, the UAE has structured fiscal policy in a way that current fiscal expenditures are largely isolated from the oil-price cycle.

Figure 9
Cyclical components of government revenues and real oil price

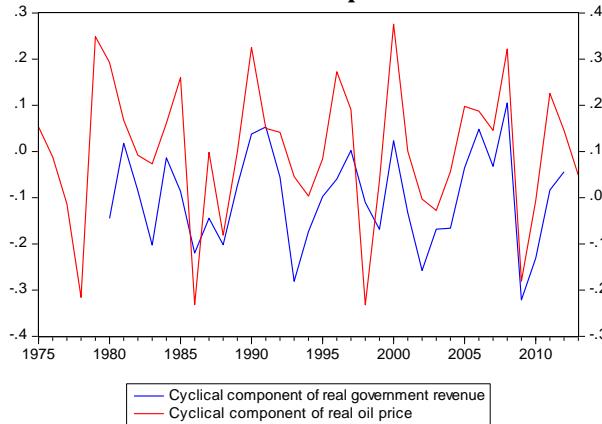
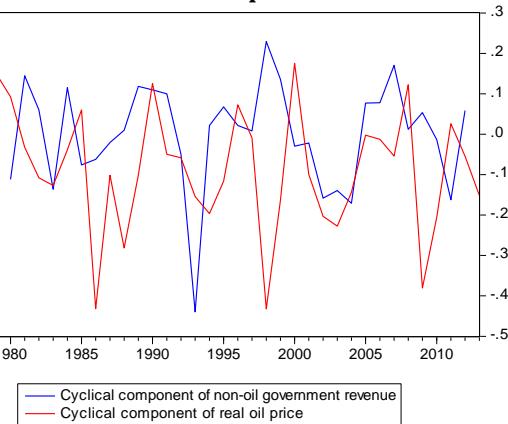


Figure 10
Cyclical components of non-oil revenue and real oil price



Source: own elaboration.

Figure 11
Cyclical components of public investment and real oil price

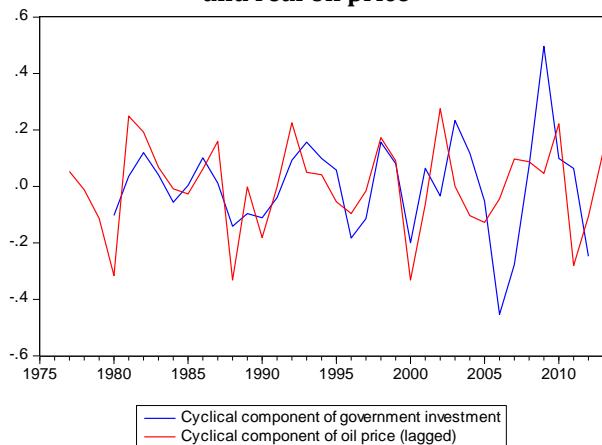
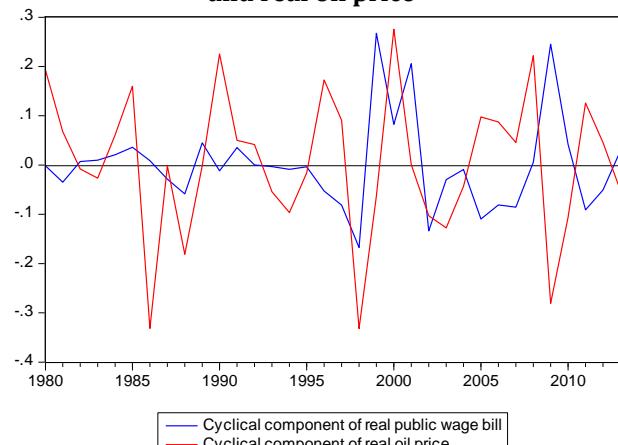


Figure 12
Cyclical components of public wage bill and real oil price



Source: own elaboration.

4.2. Why are UAE sovereign wealth funds not stabilizing?

Sovereign wealth funds (SWFs) have been established for a variety of economic and political-economy objectives, including: (i) macroeconomic stabilization, (ii) precautionary savings or holding of international reserves to face future liquidity constraints (akin to central bank reserves); (iii) intergenerational sharing of current temporary resource wealth with future generations; (iv) funding of implicit or explicit government liabilities (including future pension payments); (v) international portfolio diversification; (vi) saving for future government expenditure on physical and human capital and/or shielding government saving from domestic expenditure appropriation.

Particular SWFs often meet one or more of the aforementioned policy objectives –sometimes explicitly, other times implicitly. As discussed in what follows, UAE sovereign wealth funds seem to focus exclusively on the intergenerational sharing of oil wealth with future generations given that most of the resources are allocated to long-term, highly illiquid investments. While these may be long-term profitable, they are ill-suited for short-term macroeconomic and stabilization policies. It is, nevertheless, true that allocating a fraction of the copious oil proceeds and other government incomes into external wealth funds relieves somewhat the aggregate demand pressure that would otherwise arise from the spending of such resources within the small economy of the UAE. As discussed in section 4, however, stabilization of fiscal incomes and thereby expenditures is not actually achieved.

The UAE has been at the forefront of SWF establishment and development (see Table 1). Since the mid-1960s, the government of Abu Dhabi has been concerned about the use of the oil rents and their impact on the economy of the emirate. In 1967, the government laid the foundations for what would later become ADIA (Abu Dhabi Investment Authority), one of the largest sovereign wealth funds in the world with estimated assets well over US\$ 750 billion (SWFI, 2014). In 1976, the authorities made the decision of separating ADIA from the government of Abu Dhabi and manage it as an independent organization. According to its 2013 Annual Review, “*ADIA carries out its investment program independently and without reference to the Government of the Emirate of Abu Dhabi or other entities that also invest on the Government's behalf. Furthermore, ADIA is not involved with nor has any visibility on matters relating to the spending requirements of the Government of the Emirate of Abu Dhabi, nor are ADIA's assets classified as international reserves.*” Furthermore, ADIA prides on a long tradition of prudent investing, basing its investment decisions solely on long-term financial returns, and avoiding active management of the companies in which it invests.

Although ADIA is largest sovereign fund of Abu Dhabi, its government has other investment vehicles. The Abu Dhabi Investment Council (ADIC), which currently holds around US\$ 90 billion, started operations in April 2007 and is responsible for investing part of the government's surplus financial resources through a globally diversified investment strategy. Like ADIA, ADIC has no potential liabilities to the state. Although the ADIC operates globally, there is a strong focus of investing in Abu Dhabi's economy. Some of its significant investments include substantial stakes in banks and financial institutions. The International Petroleum Investment Company (IPIC), established by the government of Abu Dhabi in 1984, is mandated to invest in energy and energy related industries and has support by equity contributions from the government of Abu Dhabi. Mubadala Development Company was established in October 2002 as a public joint stock company and is a wholly owned investment vehicle of the government of Abu Dhabi. Its mandate is to facilitate the diversification of Abu Dhabi's economy and focuses on managing long-term, capital-intensive investments.

Table 1
Structure of Sovereign Wealth Funds

Fund	Inception	Source of Funds	Estimated Assets under Management (US bn, 2014)	Asset Classes	Geographic Allocation
Abu Dhabi Investment Authority	1976	Oil	750	Developed Equities (35-45%) Emerg. Market Equities (10-20%) Small Cap Equities (1-5%) Government Bonds (10-20%) Credit (5-10%) Alternative Assets (5-10%) Real Estate (5-10%) Private Equity (2-8%) Infrastructure (1-5%) Cash (0-10%)	United States (35-50%) Europe (25-35%) Developed Asia (10-20%) Emerging Markets (15-25%)
Abu Dhabi International Petroleum Investment Company	1984	Oil	68	No information disclosed	No information disclosed
Abu Dhabi Mubadala Development Company	2002	Oil	55	Corporate/Acquisitions (27%) Oil & Gas (14%) Real Estate (13%); Aerospace (12%) ICT (10%) Infrastructure (9%) Renewable Energy (8%) Other Energy & Industry (4%) Service Ventures (2%) Healthcare (1%)	United Arab Emirates (33%) Qatar (41%) Others (26%)
Dubai Istithmar World	2003	Government-Linked Companies	11.5	Equity & Venture Capital (40%) Real Estate (60%)	Europe (20%) Middle East (25%) North America (40%) Asia Pacific (5%) Sub-Saharan Africa (5%) Latin America (5%)
Ras Al Khaimah Investment Authority	2005	Oil	2	No information disclosed	No information disclosed
Investment Corporation of Dubai	2006	Government-Linked Companies	70	Transp. Sector Companies (~40%) Financial Sector Co. (~20%) Industrial Sector Co. (~20%) Real Estate Companies (~15%) Other Companies (~5%)	Dubai (100%)
Federal Emirates Investment Authority	2007	Oil	10	No information disclosed	No information disclosed
Abu Dhabi Investment Council	2007	Oil	90	No information disclosed	No information disclosed

Source: own elaboration based on data from SWFI (2014) and SWF (2013)

As apparent from the description of their portfolios, mandates, and their relationship with the government, these wealth funds have no role to play in stabilizing the economy vis-à-vis oil-price fluctuations or the world business cycle. In the case of the financial funds, their governance impedes direct connection with government financing as is the case with other SWFs in the world. On the other hand, the investment funds have portfolios which are highly illiquid and, consequently, cannot credibly perform a stabilizing role.

Naturally, it would be unreasonable to expect the government of Abu Dhabi to provide macroeconomic stability for the federation. Nevertheless, the only sovereign wealth fund of the

federal government, the Emirates Investment Authority (EIA) is unable to provide for credible stabilization tools. On one hand, it is too small vis-à-vis the stabilization needs of country (around US\$ 10 billion for an economy with GDP of US\$400 billion). On the other hand, it does not have the mandate and portfolio needed for stabilization purposes: it was established in 2007 as an investor in businesses within the Gulf Cooperation Council (GCC), focusing on investing in assets considered to help strengthening and diversifying the UAE economy. The EIA is known to have acquired property in 30 corporations across the GCC. Stakes in corporations are too illiquid to provide for a credible stabilization instrument.

Dubai, on the other hand, does not have the flow of oil rents that Abu Dhabi enjoys and would benefit from a strong financial entity to help stabilizing its fiscal operations. However, its only SWF – the Investment Corporation of Dubai, ICD—is an investment corporation established in May 2006 with the transfer of the government's portfolio of investments from the government's Department of Finance and its role is to supervise the government's investment portfolio while adding value. The ICD is comprised of wholly and partly owned government businesses, operating in the industrial, retail and financial sectors of Dubai. As was painfully evident during the recent collapse of Dubai's real estate sector, this SWF does not perform as a stabilization tool since the authorities had to recourse to Abu Dhabi's coffers (US\$ 20 billion or 20% of Dubai's GDP in 2009) to restructure, refinance and serve its mounting debt. In fact, the government refused to liquidate assets under the control of the ICD on the grounds that a massive sale would devalue the entire portfolio of the corporation and opted for defaulting on its debt even at the cost of a lengthy restructuring process that was unfinished as of 2014.

In summary, the financial arm of fiscal policy in the form of SWFs does not provide for stabilization nor for isolating fiscal revenues and expenditures from the oil-price cycle. All SWF in the UAE are investment corporations with portfolios highly skewed towards illiquid assets and long-term investments that cannot be easily liquidated when resources are needed to face an external shock. Indeed, Emirati SWF are better viewed as the response of the authorities to the issue of transferring wealth to future generations and not as available resources for stabilization purposes. Heuty and Aresti (2010) point out that the discretion and weak accountability in the governance of Gulf resource funds undermines fiscal policy and predictability of fiscal aggregates. The funds have strong vertical accountability but lack transparency, horizontal accountability or other institutional checks and balances.

Naturally, this is not the only way to design SWFs as discussed above and exemplified by the myriad of stabilization funds in the world. And having investment-oriented SWFs does not preclude having a secondary stabilization-targeted SWF. Therefore, one has to conclude that having funds organized basically as investment vehicles is the preferred design chosen by the authorities as a key component of its fiscal policy. Again, this raises the question of why a country so dependent upon a highly volatile commodity does not have a macroeconomic stabilization fund?

5. Fiscal policy, oil-price shocks and long-run growth

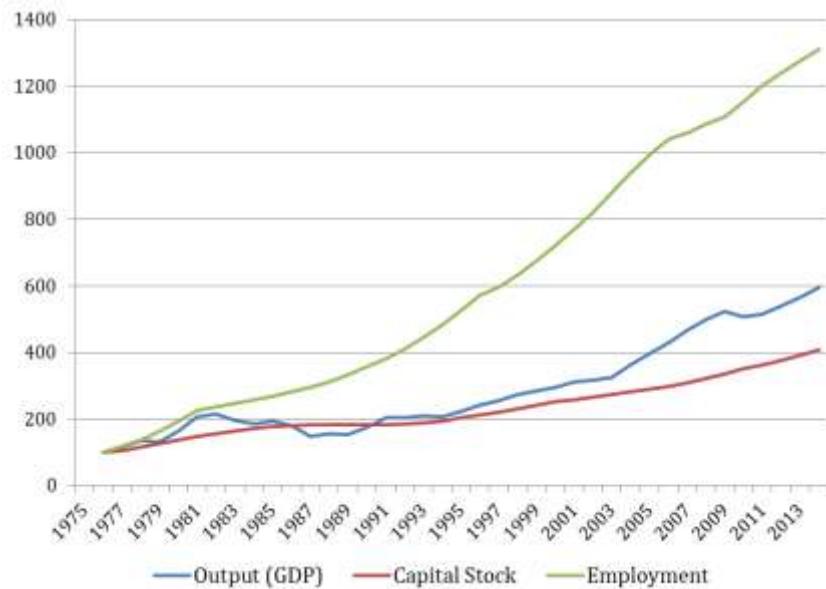
As discussed, the high correlation between the oil-price cycle and fiscal policy shocks in the UAE indicate the government's inability or unwillingness to smooth the effects of business cycles. In this section I turn to the possible effects of such policy on long-run growth. I first decompose economic growth in the UAE in terms of its "sources" and show that, contrary to most countries, sustained economic growth has not been the result of higher productivity levels but mostly the

accumulation of production factors (capital and labor). I then relate the estimated evolution of total factor productivity with level and changes in public and private investment and show that the latter have opposite effects: while, as expected, private investment has a positive correlation with productivity, public investment has a negative effect on productivity levels.

5.1. Sources of economic growth

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 (hereafter, TFP). Figure 13 shows the evolution of GDP, the capital stock and employment which, for an easier exposition, are normalized so that 1975=100.⁵ It can be seen that these factors have evolved in very different fashion: while the capital stock 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 economic cycles. This is a remarkable phenomenon: despite the huge natural-resource capital and the massive investment in physical capital, the economy has become increasingly labor-intensive.

Figure 13
Real GDP, Capital Stock and Employment
(Normalized 1975=100)



Source: own elaboration.

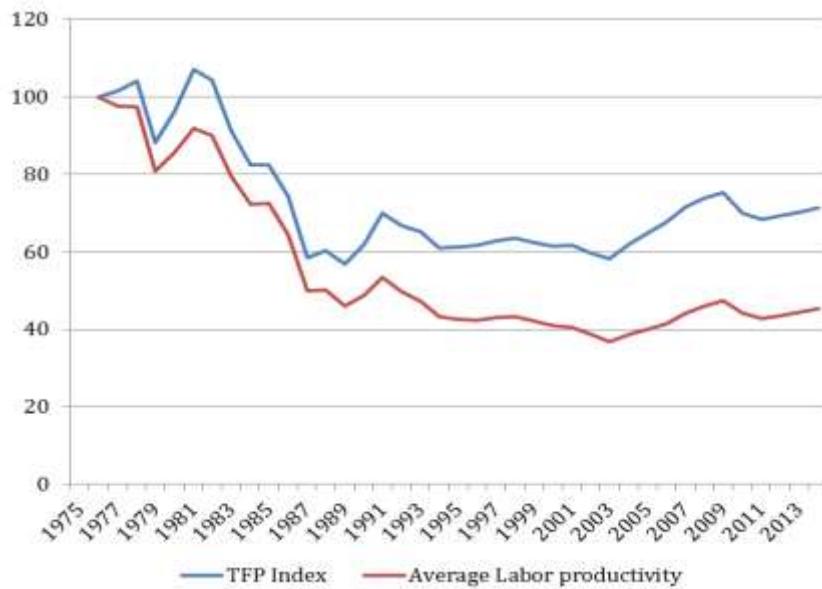
Being unpopulated in its early stages of development, the employment-intensive growth strategy led to a massive immigration of workers, largely from the Indian subcontinent. According to the World Bank database, between 1975 and 2010, the population increased from less than half

⁵ The methodology, assumptions and data sources used in this section are presented in Appendix A.

million to almost five millions.⁶ 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 significantly over time. I 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). Output per worker is a direct measure of the average productive capacity of the labor force of an economy and also an indirect measure of efficiency.

Figure 14 shows the first distinctive feature of the UAE's economic development: it can be seen that average productivity levels have remained stagnant for a long period of time (1987-2013) after a substantial decline in the early 1980s. This is a particularly worrisome feature as it indicates that economic growth has been primarily the result of capital and labor accumulation and not of the efficiency in the use of production factors. Even if excluding 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 signals deep-rooted problems in the development process.

Figure 14
Average Labor Productivity and Total Factor Productivity
(Normalized 1975=100)



Source: own elaboration.

Average labor productivity is a useful indicator but by itself provides little information on the causes of the stagnation in productivity. I decompose economic growth according to its abovementioned sources in order to determine the contribution of each production factor and focus on TFP, i.e., the fraction that can be attributed to the efficiency with which production factors are

⁶ The actual population of the country became a hotly debated issue in 2009 when the Bureau of Statistics estimated that it had reached eight millions, almost 60% above the general belief of 5 million.

used. Our measure of TFP –which follows Prescott (1998)– 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. Figure 14 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 changes in inputs were not the main responsible for the evolution of GDP, but rather the efficiency with which these factors were used.

A second distinctive feature of the development strategy of the UAE is that it has been based on importing and accumulating low-skilled workers. 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 latter has restricted itself to primarily hiring Emirati, to the point that it has become the employer of preference for the local population. Consequently, the massive accumulation of workers has been more pronounced in the private sector than in the public sector.

It is, to a large extent, puzzling that entrepreneurs would 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. Soto and Vazquez-Alvarez (2011) provides an explanation based on the peculiar institutional framework of the labor market in GCC economies known as the sponsorship or *kafala* system. Under the *kafala*, employees are restricted to work only for the employer that sponsors him or her in the country and is forbidden to change occupations while the contract is in force. 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 and, moreover, it biases employment towards low-skilled workers that have less ability to negotiate their salaries.

The labor market arrangement provides one channel to link oil rents and low productivity growth. Abundant resource rents provide ample funding for the numerous investment projects required by a country that is in its formative stages. These projects generate a significant demand for labor in the scarcely populated UAE. 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 labor-saving technical improvements would be disregarded by entrepreneurs 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.

There is, nevertheless, a second channel linking oil-rents and low productivity growth which operates via the effective protection to local producers in key areas (natural and regulation-made monopolies). While competition in several areas of the Emirati economy is healthy, areas such as banking, telecommunications, and energy distribution and foreign commerce activities under the

Agency Law of 1981 are reserved to local companies or Emirati individuals.⁷ Casual evidence of the performance of companies in these areas suggest that effective protection is quite high and the productivity gains consequently low.

5.2. Productivity Growth and Investment

As shown, TFP growth in the UAE has been dismal in the past two decades. This contrasts to the evolution of productivity in the world economy which has been quite vigorous: according to data produced by the Conference Board, total factor productivity at the world level grew at around 0.8% per year in the period 1990-2013 while in the UAE it declined by 0.3% per year.

As simple method to systematizing the relationship between productivity and investment levels is to run a simple OLS regression between these variables. In Table 2 I present the results of regressing the trend of TFP against the trend and cycles of private and public investment. The results must be viewed as partial correlations and no causality is intended. Nevertheless, while the partial correlation of both the trend and cycle of private investment with TFP is positive, the counterparts for public investment are negative (although it is not significant for the cyclical component of public capital formation). As expected, TFP levels exhibit also substantial inertia.

Table 2
Econometric Model for Total Factor Productivity Growth

Trend in Public Investment	Trend in Private Investment	Cycles in Public Investment	Cycles in Private Investment	TFP Inertia	R2
-0.272*	0.275*	-0.056	0.312*	0.646*	0.847
(-1.97)	(2.95)	(-1.40)	(1.74)	(10.77)	

Note: (*) significant at 95% confidence.

Source: own elaboration.

This empirical evidence, coupled with that in the previous section regarding government expenditure cycles, indicates that the inability or unwillingness of the authorities to filter out the revenue cycle arising from oil-price fluctuations have had a negative effect on long-run growth in the UAE economy. As discussed in Section 4, the authorities have shielded current expenditures –mainly in terms of public employment and wages as well as direct subsidies to the population—while allowing the adjustment to oil-price fluctuations to fall mainly on public investment. In turn, such volatility of public investment has hampered TFP and sustained growth.⁸

Volatile public investment may induce significant GDP fluctuations but it may also hamper productivity gains and sustained economic growth. The reason is that public resources are poorly

⁷ The UAE Commercial Agencies Law (Federal Law No.18 of 1981, as amended by Federal Law No. 14 of 1988) regulates the appointment of commercial agents, sales representatives, and distributors in the UAE. This law defines a commercial agency as any arrangement whereby a foreign company is represented by an agent to “distribute, sell, offer, or provide goods or services within the UAE for a commission or profit”. As per Article 5(1) commercial agents are entitled to an exclusive territory encompassing at least one emirate for the specified products.

⁸ Using a different methodology, Espinoza (2012) reaches a similar result. In particular, he finds also that for the UAE relatively poor institutions, oversized governments, and volatile growth would have contributed negatively to TFP growth.

allocated whenever oil prices are allowed to filter through the economy and public investment is made the primary adjustment mechanism: in this case it is the availability of resources, as opposed to the expected social rates of return, the major factor behind public investment decisions. Espinoza (2012) provides evidence that this behavior is common to all GCC economies and suggest a similar rationale to my findings, concluding that governments spend a lot on public investment because they can, and not necessarily because those investments are needed.

While some of the expenditures can have, if properly evaluated, growth enhancing effects (e.g., public infrastructure), a significant fraction of government expenditures in the UAE is in the form of explicit or implicit subsidies to support the development of the private sector as envisioned by the diversification strategy. As discussed in Section 2, direct subsidies and transfers have grown steadily during the 2000s (at a rate of 12% per year) according to government budgets to reach over 20% of the total expenditures of the consolidated government.

The bulk of subsidies, however, is not accounted for in central government financial statistics because many subsidies are only in the form of “opportunity costs” of publicly owned companies that are selling domestically at prices below international prices.⁹ One significant subsidy is that of energy. According to Fattouh and El Katiri (2012) the subsidization rate in energy in the UAE exceeds 65 percent implying a transfer to the private sector of around US\$ 18 billion in 2010, equivalent to 20% of total government expenditures. Other subsidies cannot be easily measured but could be potentially significant (access to land, mortgage financing, and cost overruns in public procurement contracts).

Subsidies are used in most economies as a tool of industrial policy to develop businesses that are deemed strategic or needed to support long run growth, diversify the economy and create jobs. However, there is a need to maintain a balance between the fiscal cost of such subsidies and the benefits arising from these growth enhancing policies. Therefore, two questions arise. First, are subsidized industries providing positive productivity and technology spillovers to the non-oil sector in the economy? Second, how costly and distortionary are these subsidies?

The evidence discussed above on the dismal growth of productivity in the past two decades suggests that massive subsidies may have contributed to economic activity but have been ineffective in promoting sustainable growth. Nor have they been very successful in promoting diversification away from oil-related activities. Soto and Haouas (2015) review the development strategy of the UAE and find that while Dubai has made significant progress in diversifying its economy (Abu Dhabi less so), the economy is still 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. As such, the development of these different industries does not diversify adequately the risks emanating from cycles in the international price of oil. Hertog (2013) reaches a similar conclusion from his analysis of GCC economies and concludes that *“While the Gulf private sector has made huge strides since the first oil boom, most of its activities still amount to more sophisticated rent recycling rather than autonomous diversification”*. Hodson (2013) has a more optimistic view regarding the emergence of an independent private sector in the GCC but warns that the Qatari and Emirati business classes are still eclipsed by state-owned enterprises.

In addition to subsidies, transfers to the population have become progressively more important in the UAE and increasingly linked to the oil-price cycle. Transfers to the population

⁹ There is unfortunately no data to distinguish between subsidies to corporates and subsidies to households.

improve welfare directly and are expected in an oil-rich country. However, because these transfers usually operate by granting preferential treatment in the labor market to UAE nationals, they also have distorting effects on productivity levels and long-run growth. On one hand, employment for the UAE nationals is *de-facto* guaranteed in the public sector with wages and salaries that are unrelated to qualification and effort (albeit with long waiting lists). Therefore, efficiency and accountability are not issues vis-à-vis the provision of public goods. Furthermore, public employment policies lower the employability of Emiratis in the private sector since businesses cannot compete for national workers. This explains the need for mandatory hiring of nationals (i.e., Emiratization) with additional distortions in the form of costly layoffs and/or high severance payments. On the other hand, these transfers lower the incentive to invest in human capital formation for the Emirati both in terms of formal education and on-the-job training. As documented in Elbadawi (2015), firms located in free-zones –which are not subject to labor market distortions—outperform their counterparts in Dubai in terms of productivity (value-added per worker) because they accumulate higher levels of physical capital and invest significantly more in human capital formation. As a result, firms in free-zones are able to compete more successfully in international markets. I think it is safe to extend these results to Abu Dhabi although no hard data is available.

6. Fiscal Policy, the Rentier State and Long Term Development

The previous sections have documented the structure and operation of fiscal policy in the UAE, raising a number of issues and questions that need addressing in an encompassing model. Among the most salient issues are the vulnerability of the UAE economy –in particular, fiscal revenue—to oil-price cycles despite the ample resources it has at hand to counterbalance the adverse effects of such fluctuations, the self-imposed limitations of fiscal policy to undertake countercyclical actions by eliminating automatic stabilizers such as ad-valorem taxes and multi-annual government budgets, the dependence of public investment on oil income, and the existence of numerous and highly distortive subsidies and transfers directed to local businesses. Among the key questions are why would a country simultaneously relinquish monetary policy and organize fiscal policy to be of little help in stabilizing the economy when most needed and why would the government prefer to transfer oil rents to the population by distorting labor markets incentives and hampering businesses profitability. Implicitly, the main question is whether this strategy is sustainable in the long run and would achieve the goals set by the rulers.

The political-economic structure of the UAE seems to broadly conform the paradigm of the rentier state, as defined by Mahdavi (1970) and Beblawi (1987). According to these authors, a rentier state would be characterized, from an economic point of view, as a country which (a) relies on substantial external rent, (b) the economy lacks a strong productive domestic sector, (c) only few are engaged in the generation of this rent (wealth) while the majority being only involved in the distribution or utilization of it, and (d) the government is the principal recipient of the external rent in the economy and, more importantly, plays a central role in distributing this wealth to the population.

According to the rentier state hypothesis, the role of the government as the principal recipient of the external rent is closely related to the fact that only few individuals control the external rent. The "economic power" thus bestowed upon the few would allow them to seize "political power" as well, or else induce the political elite to take over the external rent from them without major political disruption. A predominantly rentier state will accordingly create a rentier mentality, i.e., a situation where there is a break in the work-reward causation. Reward –income or wealth—is

not related to work and risk bearing, rather to chance or situation. For a rentier, reward becomes a windfall gain, an isolated fact, situational or accidental as against the conventional outlook where reward is integrated in a process as the end result of a long, systematic and organized production circuit (Beblawi, 1987).

Most if not all of the above conditions for a rentier state are met in the case of the UAE, but with a significant difference as discussed below. Hdvit (2009) disputes the notion that the UAE – specifically, Dubai— is a pure rentier state and suggests that it better be viewed as a “rentier pact”, whereby the regime is organized around the ruler as an individual, maintaining other members of the elite in a relationship of personal dependence on his grace and good favor. This pact distributes wealth to both locals and expatriates, securing the ruler political acquiescence and considerable popularity. It usually includes distribution of land to loyal supporters and important families; highly subsidized electricity, water, and housing; free welfare services such as education and health care; and well-paid jobs in the public sector. Furthermore, government contracts in every field from cleaning government buildings to constructing airports are awarded strategically to loyal citizens. This neo-patrimonial governance style allows for significant dirigisme, especially when the ruler and a relatively small group of top government officials control the economy and development planning, as it happens in all emirates of the UAE.

Arguably, the difference between the rentier state and the rentier pact is rather thin. For our purposes of providing a rationale to the choice of fiscal policy in the UAE, the rentier-state model provides answers to a significant number of the questions raised above.

First, the particular structure of fiscal expenditures can be easily explained as a mechanism to transfer wealth –in particular, oil proceeds—to the nationals but not to expatriates. This comes in the form of guaranteed public employment, high public wages and a myriad of subsidies given to nationals on more or less ad-hoc criteria. Emiratisation (the mandatory program to employ nationals in the private sector) which guarantees favorable conditions in the labor market for nationals arose as a response to over-employment in the public sector and the long waiting periods Emiratis withstand to obtain a permanent public job.

Second, it also explains why a country that has chosen to relinquish monetary and exchange policy would structure its fiscal expenditures to be highly insensitive to oil-price cycles and its tax system to be of little help for macroeconomic stabilization. On one hand, the fixed peg of the UAE dirham to the US dollar reduces distributional conflicts arising from the inevitably asymmetric effects of fluctuations in the exchange rate on different type of industries (traded vs. non traded goods, imports vs. exports). On the other hand, if political allegiance largely depends on transferring wealth to the nationals, isolating government's current expenditures from the business cycle is an obvious alternative. Local businessmen certainly prefer the current tax structure to one based on income and value added taxes, even if the latter provide better isolation from economic cycles. The opposition of the majority of local businessmen to ad-valorem taxes is easily explained in that current taxes levied on Emirati companies are of a lump-sum type (fixed fees) and, for international standards, quite low. These fees are independent of the business cycle, highly predictable and equal for all producers. On the contrary, income taxes are less predictable and would fall unequally among different businesses and, therefore, would open the discussion as to the fairness of taxes and the political support of the government. Value-added taxes, on the other hand, would be paid by all consumers, nationals and expatriates, thereby impeding the preferential treatment now enjoyed by the Emirati.

Third, to the extent that oil deposits and other natural resources are considered the property of each emirate, it makes sense to have a weak federal government, unable to levy taxes or decide the allocation of government expenditures. To properly operate nationwide fiscal policies, a strong federal government would require strict control of the finances of each emirate and disclosure of the operations of GRES, which are the preferred vehicle of investment of oil proceeds and the potentially significant returns on foreign investment by sovereign wealth funds and public companies. This would most certainly collide with the notion that natural resources are the property of each emirate which lie at the foundations of the federation as indicated above.

Fourth, the rentier-state hypothesis would also explain the relative lack of public accountability and transparency on fiscal matters. The key issue is that from an Emirati viewpoint the transparency and accountability of authorities is mainly due to the local population and not to the general population which largely consists of expatriates. To the extent that the majority of the Emirati labor force works for the government and the Emirati firms work in close connection with the government, transparency and accountability of UAE authorities mainly refers to the allocation of rent transfers which can be appropriately discussed in the Federal Supreme Council comprising the rulers of the seven emirates. Higher levels of transparency would only undermine the power of the Council. This also explains the absence of a nationwide independent audit agency. As noted by Wiertz (2007) the implementation of self-enforced national expenditure rules in limiting upward expenditure pressures due unexpected revenue windfalls can only be successful if the political and institutional costs of non-compliance are sufficiently large. In a confederation, such as the UAE, where members are highly asymmetric in terms of wealth, development, and interests, such high political and institutional costs are unfeasible.

Fifth, the rentier state would organize fiscal policy in a very different manner than is the ideal case in market economies. In the UAE fiscal policy is not geared towards sustainable economic growth but mainly to secure wealth transfers from the royal families and the governments to the national population. In this perspective, the use of foreign funds to stabilize the economy –either by withdrawing resources from the SWFs, liquidating foreign investments or raising debt—would amount to sacrificing current and future Emirati wealth to stabilize the business cycle basically benefitting the large expatriate population. For this reason, it is not surprising that Emirati SWFs are almost exclusively investment vehicles with an explicit mandate to keep away from fiscal policy or invest in the UAE. Only a major crisis such as that in Dubai in the late 1990s would force the authorities to use oil proceeds to support economic activity in the country.

In this political economy view of fiscal policy in the UAE one has to conclude that the perceived inability of the authorities to smooth the adverse effects of oil-price cycles on the economy most likely is a policy choice in the strategy for transferring oil wealth to the nationals. Of course, such policy choice has inevitable costs. Fiscal procyclicality, as I have shown empirically, may be one contributing factor to the dismal growth in productivity levels during the last two decades. But the slow growth in productivity does not imply small welfare gains for the nationals since the connection between effort and reward is very loose in the case of Emirati which are mainly public employees or protected by labor laws.

The main difference between the standard rentier-state model and the case of the UAE is that the adjustment to oil-price cycles does not fall mainly on the local population but on the expatriates. In non-rentier economies, business downturns are costly to the general population in the form of increasing unemployment, lower wages, and capital losses. In rentier states with large populations – such as the KSA—the coffers of the government are not as deep as those in the UAE and, therefore, eventually there is a limit to ability of the government to transfer oil rents to the population and keep

the allegiance to the authorities intact. On the contrary the very small population of the UAE allows the government to completely isolate the nationals from business fluctuations induced by oil-price cycles. Since most nationals are employed in the public sector, the authorities can shield public wages and employment directly. In addition, authorities tend to manage subsidies in countercyclical manner so as to further reinforce political support during downturns. The government adjustment falls, as discussed, mainly on public investment. In principle this would hurt the private sector if both forms of capital are complementary and reduce productivity gains if public works are in the form of infrastructure and business-supporting public goods. However, as we have seen, the *national* private sector operates largely shielded from cycles by oligopolistic structures in key areas well protected from competition. This gives market power to producers to pass on part of the adjustment cost to consumers which are in the majority of cases expatriates. The collapse of Dubai's real estate sector in the late 1990s attests to the speed at which expatriates were laid off and had to leave the country. Whenever the adjustment cost hits the nationals, the government increases subsidies accordingly (as was the case during the global recession of 2009-2010 when the UAE government reduced utility prices and froze rent fees for housing).

The fact that a significant part of any fiscal adjustment is borne by expatriates and not by the Emirati population confers additional strength to the rentier state and the government. The political constituency is not the entire population of the UAE but less than 15% of it. Oil rents are not transferred to the entire population but mainly the nationals. Accountability and transparency in fiscal accounts are not due to society but only to a segment of it, well connected and informed via tribal relations with the ruling families.

A crucial question is whether the UAE development strategy is sustainable in the long term. The insistence of authorities on the need to diversify away of natural resources suggests that the cumulative costs of such strategy are becoming an important limitation to development. Resource-rich economies are confronted to two main issues vis-à-vis the disposal of rents. On one hand, they need to transfer a fraction of such rents to future generations and secure their welfare. On the other hand, they need to transfer the remaining fraction of such rents to the current generation, hopefully in the least distorting manner. In labor scarce economies, such as the UAE, there is the additional issue of how much of such rents are to be transferred to expatriates. These issues are more pressing when resources are non-renewable –i.e., when resource rents are finite—and when, as in the case of oil, resource prices are highly volatile and adjustment costs are unavoidably high.

The solution implemented in the UAE deals with the intergenerational transfer of the oil rent by accumulating and diversifying oil rents in foreign markets, as well as investing a very small amount in domestic ventures aimed at developing perceived key developmental sectors. While this follows the standard prescription for resource rich economies –following the lead of Norway, Chile and other countries—the management strategy and profitability of such investments are not publicly known. On the other hand, the transfer of oil rents to the current generation seems to be less successful as it is subject to significant distortions that, in many cases, lead to resource misallocations that hamper economic growth. Economic theory suggests that if rents are to be passed back to the population, lump-sum transfers are optimal as they leave resource allocation undistorted. This is, obviously, unfeasible in a large economy for practical and political reasons. The second best would then be to subsidize goods and services –in particular, those that support human capital formation such as education, health, and even housing. The current practice of distorting factor markets is the least preferred option, be it in the form of protection to the national labor force, subsidies for acquiring physical capital, land, or energy below cost. These distortions reduce productivity growth and international competitiveness, generating a hidden cost to be paid by future generations.

In summary, if one considers that the ultimate goal of fiscal policy is to achieve durable improvements in the welfare of the population, it would be fair to say that the UAE has been quite successful in raising the standards of living of the current generation of Emiratis (and many expatriates as well) but the mechanisms chosen to deliver such benefits are not really efficient and should be corrected in the near future. As they stand, they pose a long-term risk in that should oil rents reduce the economy will not be sufficiently diversified and efficient to compete successfully in international markets.

7. Conclusions

This paper studies the structure and conduct of fiscal policy in the UAE at the federal level as well as for the two largest emirates of the federation (Abu Dhabi and Dubai). I first review the evolution of fiscal revenues and expenditures for the period 1980-2012, (i.e., covering roughly two thirds of the existence of the UAE as an independent state) and document how oil rents dominate fiscal revenues and have significant impact on government expenditures, particularly on public investment. I then show that oil-price shocks have a significant impact on economic activity in the UAE as they are allowed to pass through to the economy relatively unimpeded affecting mainly fiscal revenue and by extension public investment. Other expenditures –particularly, public wages and employment—are shielded from revenue fluctuations while transfers to businesses and the local population seem to be countercyclical. I use econometric methods to show that these short-term fluctuations in public and private investment have had also negative long-term effect on productivity growth. Coupled with the distortions embedded in the labor market, it provides a reasonable explanation for the dismal productivity gains in the UAE both in and outside the oil sector.

In spite of significant advances in the management of fiscal accounts to be expected from the ongoing 2008 Fiscal Reform, I conclude that for the standards of a modern market economy, fiscal policy in the UAE is structured in a very particular and also inefficient manner. Being a federal country, its federal government is particularly weak, cannot undertake independent policies and depends on transfers from Abu Dhabi and Dubai to operate its rather restricted set of governmental tasks. Being subject to significant fluctuations from oil-price cycles, it has structured fiscal policies and institutions to be of little help in stabilizing the economy and smoothing out the short and long-term adverse effects of business cycles. Being a country endowed with unimaginable riches and access to capital markets and technology, it has structured production of non-oil industries to depend largely on unskilled workers from neighboring countries, crowding-out its own nationals which now work primarily as public servants and consume most of government revenues in the form of wages, allowances and subsidies. Finally, being a young country which is still in the phase of building its infrastructure and developing new industries, it has allow the bulk of fiscal adjustments to be borne by public investment thus hampering long-run growth.

One possible interpretation of the absence of western-style fiscal policies and budgeting procedures would be the lack of understanding by the authorities of the importance of fiscal institutions, the scarcity of skilled workers and human capital to design, implement and properly evaluate fiscal reforms, and the high complexity of coordinating government expenditures and revenues in a federal country populated by many sub-national units and a myriad of state and interstate agencies. None of these elements seem to be particularly relevant in the case of the UAE. Historically, Emirati authorities have been very forward looking and quite aware of the need for political and policy coordination among the emirates. In fact, the foundation of the nation itself is a compromise between emirates favoring an integrated federation and those in favor of the autonomy of individual emirates. The same authorities visualized the fragility of their separate existence after

the discovery of hydrocarbons in the late 1960s and, in anticipation that oil wealth would have to be shared with future generations, set up one of the largest wealth funds in the world. On the other hand, the relative scarcity of human capital among nationals have been more than amply compensated by an inflow of highly qualified expatriates that currently work at high level ranks in the private sector and in most government agencies. Finally, the UAE is a small economy, in its initial stages of development, and with a short and uncomplicated fiscal history that lends itself quite easily to implementing nationwide fiscal policies.

This paper offers an alternative view on the structuring and management of fiscal affairs in the UAE whereby the perceived limitation of current policies is actually the result of a delicate equilibrium among the emirates to share oil wealth in a politically amicable way. The political-economic structure of the country seems to conform the paradigm of the rentier state, albeit with a distinctive difference from the textbook model in that a significant part of stabilization costs are borne by the expatriates and not the national population, which confers extra strength to the political agreement reached by the seven emirates vis-à-vis the allocation of oil rents.

Under the rentier state hypothesis, the defining traits of the Emirati political and economic system are its reliance on substantial external rents from hydrocarbons, the absence of a strong productive domestic sector, and the key role of the government as the principal recipient of the external rent and the main agent in distributing this wealth to the national population. In this context, and considering the high heterogeneity of the emirates in terms of resource endowments and wealth, it makes political sense to have a weak federal government without its own agenda and to bestow high-level political/economic decisions to a Federal Supreme Council where all members have, in principle, equal voting rights.

The riches of oil are passed on to nationals in two different manners, via distortions in labor market and by granting protection to local producers and participation in government enterprises, raising political allegiance to the royal family and the ruler. The transferring of the wealth to nationals is highly isolated from the oil-price cycle, as evidenced by its steady growth with disregards of the economic situation. A large part of it comes in the form of guaranteed public jobs at high public wages to the national labor force and a myriad of subsidies and transfers to the population. The bulk of fiscal adjustment, naturally, falls on public investment which, in turn, magnifies the effects of fiscal procyclicality as a contributing factor to the dismal growth in productivity levels during the last two decades. But the slow growth in productivity does not imply small welfare gains for the nationals since the connection between effort and reward is very loose in the case of Emirati which are mainly public employees or work in the private sector under a very protective labor law. For the local entrepreneur, significant protection and a very favorable labor code ruling the work of expatriates allow for the collection of economic rents in booming times and the passing on to consumers of a fraction of the adverse shocks during downturns. For nationals with low entrepreneurial abilities, rent-seeking activities are tolerated.

This interpretation of the configuration of fiscal policy does not invalidate the arguments of the alternative explanation: possibly it is also determined by some lack of understanding by the authorities of the importance of fiscal institutions, the scarcity of skilled workers and human capital to design, implement and properly evaluate fiscal reforms, and the complexity of coordinating government expenditures and revenues in a federal country. But I find them less convincing as being the main reason for the particular structure of fiscal policy in the UAE.

A crucial question is whether the UAE development strategy is sustainable in the long term. Resource-rich economies are confronted to two main issues vis-à-vis the disposal of rents. On one

hand, they need to transfer a fraction of such rents to future generations and secure their welfare. On the other hand, they need to transfer the remaining fraction of such rents to the current generations, hopefully in the least distorting manner. These issues are more pressing when resources are non-renewable –i.e., when resource rents are finite—and when, as in the case of oil, resource prices are highly volatile and adjustment costs are unavoidably high.

The development strategy of the UAE deals appropriately with the intergenerational transfer of the oil rent by accumulating and diversifying oil rents in foreign markets, as well as investing a very small amount in domestic ventures aimed at developing perceived key developmental sectors. On the other hand, the transfer of oil rents to the current generation seems to be less successful as it is subject to significant distortions that, in many cases, lead to resource misallocations that hamper economic growth. The current practice of distorting factor markets is the least preferred option, be it in the form of protection to the national labor force, subsidies for acquiring physical capital, land, or energy below cost. These distortions reduce productivity growth and international competitiveness, generating a hidden cost to be paid by future generations.

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Appendix A Sources of Growth.

When computing the sources of growth I follow Solow (1956) and use a simple, aggregate Cobb-Douglas production function of the form $GDP_t = A_t KS_t^\alpha (L_t^\beta HK_t^{1-\beta})^{1-\alpha}$, 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. The combination of the latter two elements is popularly known as total factor productivity or TFP. Parameters α and β are constants. I therefore compute TFP as $TFP_t = \frac{GDP_t}{KS_t^\alpha (L_t^\beta HK_t^{1-\beta})^{1-\alpha}}$.

Our definition of TFP, therefore, encompasses not only technological capacity but also the 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, I need to choose a value for α and β and generate series for KS and HK. I 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); I have chosen 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,¹⁰ 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%.¹¹ As for parameter β , I choose a value of 0.25, following Bernanke and Gürkaynak (2001).

To calculate a capital stock series, I cumulate gross fixed capital formation or investment, I_t , using the perpetual inventory method, i.e., $KS_t = (1 - \delta)KS_{t-1} + I_t$ for some chosen depreciation rate δ and an initial condition on capital. Based on information by Bu (2006) I use a depreciation rate of 7%, and, for the initial condition on capital, I 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: I 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. I use the data from Barro and Lee (2011) which is collect in 5-year intervals from 1950 to 2010; linear interpolation was used to obtain a continuous annual series for the period 1975-2010.

¹⁰ The 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).

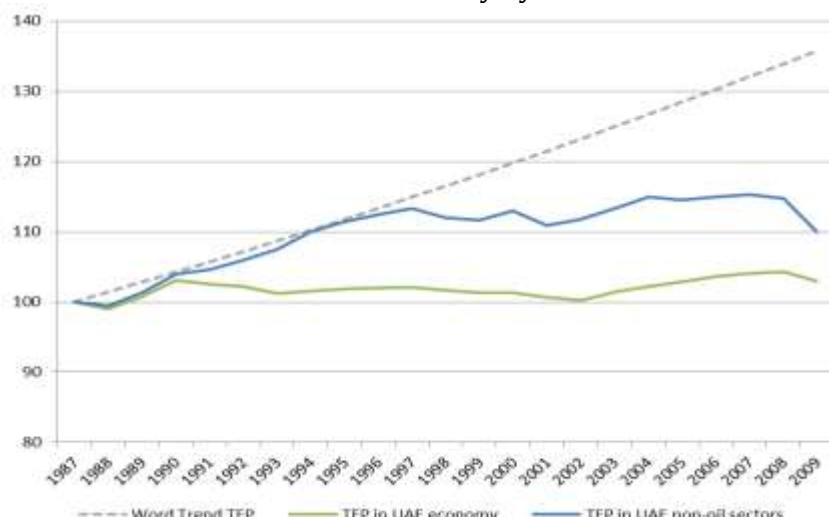
¹¹ Given our technology in equation 1, in equilibrium $rK = \alpha GDP$, where r is the real return to capital. Given our annual data, $r=0.29$. Adding the depreciation of 7% yields an annual real interest rate of 36%.

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, I 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 I now operate with a reduced sample.

The results are displayed in Figure A1 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 no 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.

Figure A1
UAE: Total Factor Productivity by Economic Sector



Source: own elaboration.

Appendix Table 1
Government Revenues^a
(AED billions of each year)^a

Year	Federal Government ^a				Abu Dhabi ^a			Dubai ^a		
	Total Revenue	Profits from Government Enterprises	Fees and charges from Abu Dhabi and Dubai	Transfers from other	Total Revenue	Profits from Oil and Gas companies	Fees and charges from other companies	Transfers from other	Total Revenue	Profits from Government Enterprises
1980	22.0	0.0	0.3	21.7	57.0	55.7	1.3	6.4	6.1	0.3
1981	23.5	0.0	0.6	22.9	64.0	62.3	1.7	8.6	8.3	0.3
1982	15.7	0.0	0.5	15.2	53.4	50.7	2.7	7.8	7.6	0.2
1983	14.3	0.0	0.7	13.6	40.6	38.0	2.6	7.7	7.5	0.2
1984	14.3	0.6	0.8	12.9	41.8	40.1	1.7	7.4	7.0	0.4
1985	21.5	0.3	0.7	20.5	38.9	35.3	3.6	7.1	6.8	0.3
1986	12.8	1.2	0.7	10.9	24.9	24.1	0.8	6.1	5.8	0.3
1987	13.5	2.1	0.7	10.5	28.9	28.0	0.9	5.7	5.5	0.2
1988	15.6	1.1	0.7	13.8	30.1	29.3	0.8	5.7	5.6	0.1
1989	12.7	0.6	0.8	11.3	39.7	38.2	1.5	6.1	6.0	0.1
1990	15.3	1.4	0.9	13.0	49.6	47.8	1.8	6.6	6.4	0.2
1991	14.6	0.7	1.0	12.9	52.2	47.5	4.7	6.9	6.7	0.2
1992	17.7	4.2	1.0	12.5	41.9	39.2	2.7	7.8	7.6	0.2
1993	15.6	1.4	1.6	12.6	36.8	33.4	3.4	7.7	7.4	0.3
1994	16.5	1.7	2.1	12.7	38.2	35.3	2.9	6.7	6.2	0.5
1995	16.9	1.6	2.5	12.8	44.2	40.3	3.9	7.5	6.5	1.0
1996	18.1	2.3	3.2	12.6	49.8	44.2	5.6	8.1	7.0	1.1
1997	19.5	2.6	3.5	13.4	53.3	47.9	5.4	9.3	7.9	1.4
1998	19.6	2.6	3.3	13.7	44.6	39.9	4.7	9.1	7.6	1.5
1999	20.5	2.9	4.0	13.4	46.7	42.5	4.2	8.8	7.2	1.6
2000	20.3	2.8	4.1	13.4	69.6	67.7	1.9	11.0	9.5	1.5
2001	21.0	2.3	5.1	13.6	59.0	57.1	1.9	10.2	8.6	1.6
2002	21.7	2.1	6.4	13.2	46.7	44.9	1.8	9.1	7.7	1.4
2003	21.3	1.8	6.4	13.1	63.8	61.7	2.1	10.1	8.1	2.0
2004	22.0	2.0	7.0	13.0	80.2	76.5	3.7	12.0	9.6	2.4
2005	24.9	2.7	8.7	13.5	132.2	125.3	8.9	16.9	13.6	3.3
2006	30.4	2.9	13.4	14.1	191.8	188.3	3.5	19.8	15.2	4.6
2007	34.5	11.2	8.9	14.4	213.2	207.5	5.7	25.6	18.8	6.8
2008	42.8	3.4	23.2	16.2	305.7	298.0	7.7	32.6	25.0	7.6
2009	42.3	3.3	23.5	15.5	147.1	141.5	5.6	40.5	33.4	7.1
2010	39.8	3.2	24.5	12.1	192.2	184.9	7.3	40.9	33.8	7.1
2011	40.9	6.0	21.5	13.4	281.5	275.7	7.8	42.6	34.3	8.3
2012	41.6	6.2	19.3	16.1	324.2	313.9	10.3	34.4	26.0	8.4

Source: own elaboration based on data from the Ministry of Finance of the UAE.

Appendix Table 1
Government Revenues

(AED billions of each year) Source: own elaboration based on data from the Ministry of Finance of the UAE.

Appendix Table 2
Government Expenditures
(AED billions of each year)

year	Federal Government						Abu Dhabi						Dubai										
	Total expenditure	Total current expenditure	Wages and salaries	Goods and services	Subsidies and transfers	Capital and Expenditures	Total expenditure	Total current expenditure	Wages and salaries	Goods and services	Subsidies and transfers	Development Expenditures	Federal Services	Capital and Other Expenditures	Total expenditure	Total current expenditure	Wages and salaries	Goods and services	Subsidies and transfers	Development Expenditures	Capital and Other Expenditures		
1980	15.7	12.7	2.6	8.7	1.4	1.0	3.0	33.0	4.4	1.0	1.7	1.3	4.6	0.3	28.6	6.4	1.5	0.9	0.5	0.1	2.0	4.9	
1981	20.7	14.9	3.0	10.2	1.8	1.3	5.8	37.2	5.6	1.2	1.5	2.8	5.1	0.1	31.6	8.6	1.7	0.9	0.7	0.1	2.9	6.9	
1982	20.1	15.1	3.4	10.0	1.6	1.7	5.0	28.8	5.7	1.4	2.7	0.9	5.4	0.7	23.1	7.8	2.1	1.1	0.8	0.2	3.2	5.7	
1983	19.0	14.0	3.5	9.4	1.2	1.3	5.0	24.6	5.4	1.6	2.8	0.5	4.2	0.4	19.2	7.7	2.1	1.2	0.9	0.0	2.8	5.6	
1984	15.0	13.2	3.5	8.9	0.8	0.7	1.8	21.2	5.1	1.6	2.7	0.2	3.8	0.6	16.1	7.3	2.6	1.3	1.0	0.3	1.9	4.7	
1985	15.9	15.0	3.9	10.4	0.7	0.4	0.9	23.0	5.2	1.8	2.9	0.2	4.0	0.3	17.8	7.1	2.6	1.3	1.0	0.3	1.7	4.5	
1986	13.3	12.8	4.0	7.8	1.0	0.2	0.5	23.0	7.5	1.8	2.1	0.6	3.6	2.6	15.5	6.1	2.6	1.2	1.1	0.3	2.1	3.5	
1987	13.5	13.0	4.0	8.1	0.9	0.2	0.5	24.7	11.6	1.9	2.0	3.1	3.1	3.3	13.1	5.6	2.8	1.4	1.1	0.3	1.9	2.8	
1988	12.7	12.3	4.3	7.2	1.8	0.1	0.4	24.9	11.5	2.0	2.9	1.9	2.9	3.2	13.4	5.8	2.5	1.2	1.0	0.3	1.4	3.3	
1989	13.6	13.2	4.5	7.7	0.9	0.1	0.4	26.6	12.4	2.2	4.0	0.4	3.3	4.0	14.2	6.1	3.5	2.2	1.0	0.3	1.4	2.6	
1990	14.4	13.8	4.7	8.0	1.1	0.2	0.6	40.9	13.4	2.2	3.6	1.8	3.5	3.6	27.5	6.5	4.0	2.0	1.7	0.3	1.6	2.5	
1991	15.2	14.7	5.5	8.3	0.9	0.3	0.5	53.7	13.8	2.3	3.5	1.9	3.7	3.4	39.9	8.0	4.3	2.0	2.0	0.3	2.4	3.7	
1992	15.6	14.8	5.6	8.1	1.1	0.7	0.8	43.4	18.4	2.4	4.1	5.6	4.9	5.9	25.0	9.1	4.6	2.0	2.3	0.3	3.5	4.5	
1993	15.6	14.9	5.7	8.0	1.3	0.6	0.7	47.6	20.3	2.5	5.4	2.6	7.8	9.7	27.3	8.8	5.2	2.3	2.6	0.3	2.4	3.6	
1994	16.0	14.9	5.7	8.1	1.1	0.7	1.1	51.1	20.8	2.6	5.4	2.7	8.8	10.1	30.3	7.8	5.1	2.4	2.4	0.3	1.5	2.7	
1995	16.2	15.4	5.8	8.2	1.4	0.5	0.8	46.4	20.4	2.2	5.1	3.6	8.1	7.2	26.0	9.5	5.9	3.0	2.5	0.4	2.5	3.6	
1996	17.0	16.4	6.1	8.3	2.0	0.5	0.6	59.7	36.1	2.5	5.3	16.9	7.5	8.6	23.6	8.4	5.9	3.1	2.4	0.4	1.4	2.5	
1997	18.2	17.4	6.5	8.8	2.2	0.5	0.8	48.2	23.0	2.6	5.6	4.5	7.6	7.8	25.2	9.5	6.0	3.1	2.6	0.3	1.8	3.5	
1998	19.8	18.0	6.7	8.9	2.5	1.0	1.8	54.5	26.9	2.7	6.6	4.3	10.0	10.9	27.6	8.8	5.4	2.2	2.1	1.1	2.0	3.4	
1999	20.2	19.1	6.9	8.8	3.4	0.8	1.1	56.8	32.1	3.0	8.9	6.1	8.9	11.9	24.7	9.9	5.5	2.3	2.9	0.3	3.0	4.4	
2000	20.7	19.7	7.3	8.7	3.7	0.5	1.0	63.8	43.1	3.1	9.0	9.6	7.5	19.4	20.7	11.1	7.0	2.6	3.8	0.6	2.4	4.1	
2001	21.0	20.1	7.5	8.8	3.8	0.4	0.9	76.3	48.9	3.2	10.3	15.0	10.4	19.1	27.4	10.6	6.8	2.9	3.1	0.8	1.8	3.8	
2002	21.6	20.7	7.8	9.2	3.7	0.5	0.9	66.3	43.9	3.4	12.1	10.8	9.2	17.0	22.4	9.5	5.8	2.9	2.0	0.9	2.0	3.7	
2003	22.1	21.4	7.8	9.8	3.7	0.6	0.7	69.9	45.3	3.5	15.1	6.6	11.8	19.3	24.6	10.8	5.8	3.0	1.8	1.0	2.9	5.0	
2004	22.5	21.7	8.0	9.9	3.8	0.7	0.8	74.0	50.7	3.2	15.5	7.3	11.9	23.8	23.3	10.5	7.0	3.4	2.4	1.2	1.5	3.5	
2005	23.3	22.1	8.2	10.0	3.9	0.5	1.2	79.8	52.5	3.2	12.7	13.8	9.8	22.8	27.3	12.4	7.6	3.9	2.2	1.5	2.7	4.8	
2006	28.6	25.6	9.0	9.2	7.4	0.5	3.0	92.3	65.2	3.2	13.6	23.1	7.3	25.3	27.1	17.3	13.4	5.1	1.9	6.4	2.1	3.9	
2007	27.8	25.5	9.4	9.4	6.6	0.9	2.3	121.7	81.6	4.2	22.4	23.1	5.0	31.3	40.1	26.5	15.1	5.9	4.0	5.2	8.9	11.4	
2008	39.8	36.6	13.9	11.7	11.0	1.0	3.2	187.4	105.4	5.9	32.0	21.8	13.2	45.6	82.0	38.1	20.9	8.2	5.1	5.1	7.6	14.3	17.2
2009	41.3	38.6	15.3	11.7	11.6	1.1	2.7	263.8	139.0	6.0	48.9	27.6	27.4	55.9	124.8	90.2	22.9	10.4	6.7	5.8	13.5	67.3	
2010	39.6	37.2	13.2	14.5	9.5	1.2	2.4	260.2	159.1	5.4	14.7	25.7	23.8	72.7	101.1	49.1	23.3	10.9	6.6	5.8	8.9	25.8	
2011	43.8	37.9	13.4	11.1	13.4	1.5	5.9	318.4	183.9	5.8	21.6	35.3	29.0	80.1	134.5	42.0	24.1	11.2	7.2	5.7	7.1	17.9	
2012	42.3	39.9	14.5	11.9	13.5	1.2	2.4	295.9	196.9	6.1	15.6	54.0	20.1	79.7	99.0	38.1	26.0	11.7	7.9	6.4	5.7	12.1	

Source: own elaboration based on data from the Ministry of Finance of the UAE