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Soaring of the Gulf Falcons: Diversification in the GCC Oil Exporters in Seven Propositions

Reda Cherif and Fuad Hasanov

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Abstract

A key priority for the Gulf Cooperation Council (GCC) countries is to create a dynamic non-oil tradable sector to support sustainable growth. Since export diversification takes a long time, it has to start now. We argue that the failure to diversify away from oil stems mainly from market failures rather than government failures. To tackle market failures, the government needs to change the incentive structure for workers and firms. Experiences of oil exporters that managed to diversify suggest that a focus on competing in international markets and an emphasis on technological upgrade and climbing the “quality ladder” are crucial.

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EXECUTIVE SUMMARY

The prevailing economic model in the Gulf Cooperation Council (GCC) countries has achieved large improvements in human development indicators and infrastructure. Its main features are a reliance on oil and gas as the main export; economic activity which is concentrated in the non-tradable sector such as services and construction; and a reliance on low skill imported labor with a majority of nationals employed in the public sector except for Bahrain and Oman.

However, while this model resulted in higher per capita incomes relative to the pre-oil era, per capita incomes relative to the US have declined since the 1970s, due to negative productivity growth. To achieve sustainable growth, the GCC economies need to diversify their non-oil tradable sector towards high value-added sectors with large spillovers and productivity gains.

The diversification experience of the few successful oil exporters suggests that diversification usually takes place amid dwindling oil revenues, and requires several decades of preparatory work to develop a non-oil tradable sector. Successful strategies have relied on a policy mix of promoting vertical diversification in “comparative advantage” sectors such as oil and gas and petrochemicals and endeavors into horizontal diversification beyond these sectors with an emphasis on technological upgrade and competition in international markets.

Although there is still room for improvement, the business environment, legal framework, macro-stability, and infrastructure are not the main constraints to diversification in the GCC. Rather, the main challenge for the government is to tackle simultaneously different types of market imperfections.

A crucial ingredient for success in diversification is to change the incentive structure for workers and firms and change social attitude towards investment in human capital, entrepreneurship and employment in the private sector. Policies are needed to encourage investment and entrepreneurship in the non-oil tradable sector.

I. INTRODUCTION

The countries of the Gulf Cooperation Council (GCC) face a difficult task of refocusing their growth models towards creating more diversified economies with less reliance on hydrocarbons, which are driven by the private sector, and in which nationals have the skills to enter high value-added private sector jobs. Most export and fiscal revenues come from the sale of oil and gas, and these affect the economy through government spending, including public investment. A key challenge is to find ways to diversify the economy and develop non-oil tradable sectors, which in turn should support creating sustainable private sector employment. The large amounts invested until now have not produced tradable sectors that are not geared toward oil and oil-derived products. These sectors have little export diversification and minimal linkages with the rest of the economy. A large population of foreign workers, mostly low skilled, has been utilized in the development of non-tradable sectors rather than non-oil tradables. More importantly, the continuing reliance on the public sector to absorb new labor market entrants for nationals is unsustainable.

Although all GCC countries are heavily reliant on hydrocarbons, their challenge to diversify varies depending on the specificities of each country. For Bahrain and Oman, oil reserves could be depleted sooner than in the other countries, making it more urgent to find other sources of economic growth and export revenues. In Saudi Arabia, while oil reserves are long-lasting, the increased employment of nationals in the private sector is a key challenge. Kuwait, Qatar, and the UAE's nationals work predominantly in the public sector with little incentive to work in the private sector and invest in human capital and skills. Compared to the other countries, Dubai's economy is more diversified, but its non-oil exports are concentrated in minerals, metals, tourism, and transportation services. Despite the different reasons to diversify their economies, all GCC countries need to develop growth models that will allow their current and future citizens to continue to enjoy the fruits of the development that came with oil income in the last decades.

We analyze the major economic challenge facing GCC countries in seven propositions. The GCC's prevailing growth model with an inflow of oil revenues achieved a large improvement in human development indicators such as health, education, sanitation and physical infrastructure, but also resulted in a decline in economic performance relative to other countries. We argue that a sustainable growth model requires a diversified tradable sector that is lacking in the GCC countries. Since export diversification takes a long time, it must start now. In contrast to the previous literature, we argue that the standard policy advice—implementing structural reforms, improving institutions and business environment, creating infrastructure, and reducing regulations—while necessary, will not be sufficient due to fundamental market failures stemming from Dutch disease, broadly defined as the crowding out of the non-oil tradable sector by the income generated from oil exports. To overcome these barriers, other countries, including oil exporters, have gone beyond the comparative advantage sectors and targeted high value-added industries such as manufacturing and innovation sectors with large spillovers to the rest of the economy and

productivity gains. The state has often acted as a venture capitalist and fostered a public-private collaboration to achieve sustainable and equitable growth.

We draw lessons from the diversification experiences of oil exporters, in particular from the few relatively successful ones—Indonesia, Malaysia, and Mexico. Success or failure appears to depend on implementing appropriate policies ahead of the fall in oil revenues. Study of different diversification strategies suggests that a mix of vertical diversification to create linkages in the existing industries and horizontal diversification beyond the comparative advantage with an emphasis on exports and technological upgrade seem to be the most successful.

II. SEVEN PROPOSITIONS

Proposition 1: The prevailing growth model achieved a large improvement in human development indicators, but also resulted in a decline in relative economic performance.

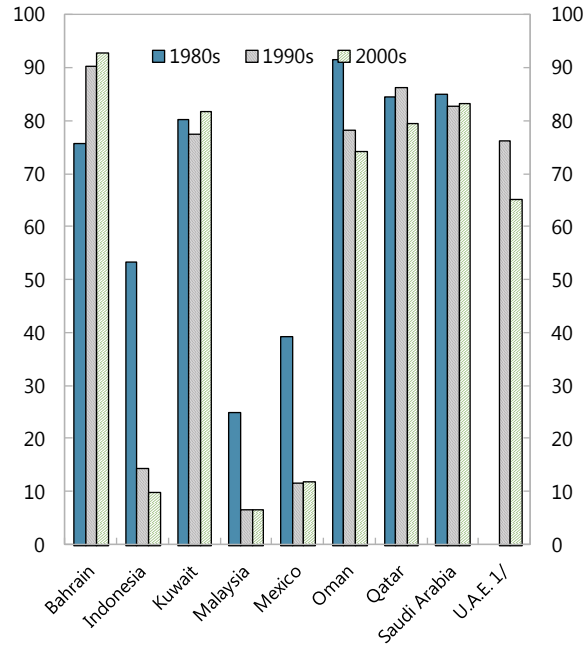
Ever since oil was discovered in the GCC countries, it has been both a boon and a curse. The flow of oil revenues provided an opportunity to develop the economy and improve standards of living. The GCC invested heavily in infrastructure and heavy industries, started developing services such as finance, logistics, trade, and tourism, spent considerably on education and health, and provided affordable food and energy to their populations. However, the decline of oil prices in the 1980s-1990s did not pave the way for export diversification—the concept which we argue is the most relevant in the analysis of diversification and sustainable growth as opposed to the share of non-oil GDP. These economies are still as dependent on oil as in the past.

The prevailing growth model in the GCC consists of extracting oil and producing oil-related products and non-tradables while importing most of the tradable goods it consumes. The main economic characteristics of the GCC countries and other oil exporters are provided in Appendix I, Tables 1 and 2. Oil exports account for more than 60 percent of total exports of goods and services in the GCC in the 2000s, and this share either increased or has not fallen much for the past few decades (Figure 1). In contrast, oil export shares fell drastically in other oil exporters such as Indonesia, Malaysia, and Mexico. In addition, oil revenues were more than 60 percent of total fiscal revenues in the GCC in 2013. Except for Bahrain, the other GCC countries have run fiscal surpluses. However, with higher spending in the last few years, 2013 fiscal breakeven oil prices were relatively high compared to the actual oil price while current account breakeven prices were lower, providing some cushion (Figure 2).

There is variation in output composition in the GCC countries but they all have in common an export composition which is heavily concentrated in oil, chemicals, and metals (Figures 3 and 4). The share of mining/utilities output (in real terms) is above 30 percent in all but one GCC country; it is about 15 percent in Bahrain, which is similar to Norway's (Figure 3). Manufacturing share is smaller than that in comparator oil exporters. Starting at a low base, non-oil exports grew on average at about 13 percent per year in the 2000-2010. However,

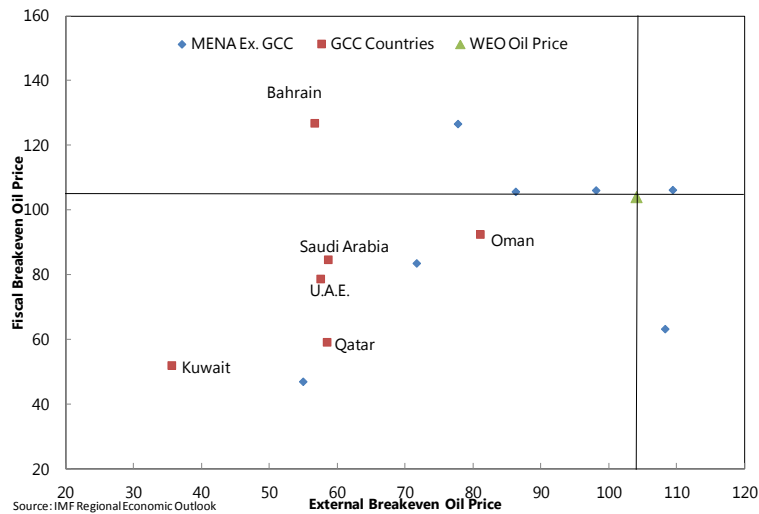
export composition reveals that most of manufacturing production is concentrated in metals (e.g. aluminum) and oil-related products such as chemicals. Compared to the rest of the GCC, UAE has increased its non-oil exports substantially.

Figure 1. Average Oil Exports (Percent of Total Exports)



Source: IMF World Economic Outlook
1/ U.A.E. Goods and Services exports excludes re-exports

Figure 2. MENA Breakeven Oil Prices (\$), 2013



Source: IMF Regional Economic Outlook

Figure 3. Composition of Real GDP by Sector, 2012 (2005 constant \$)

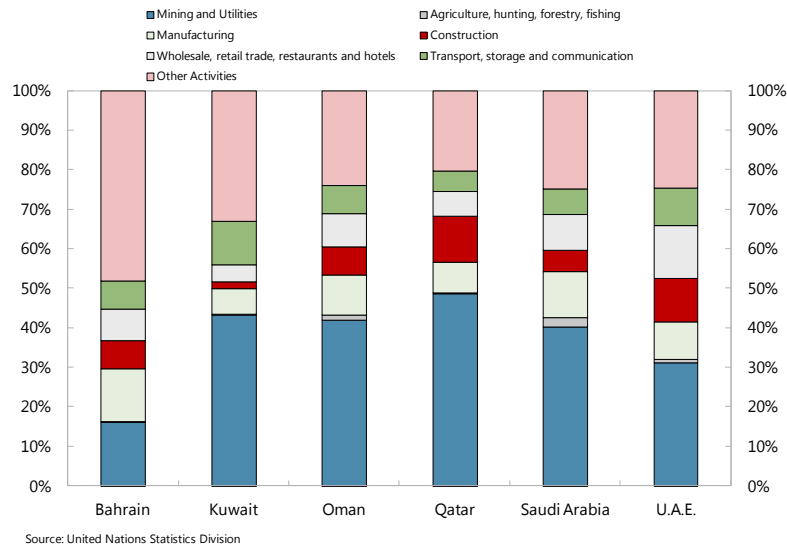
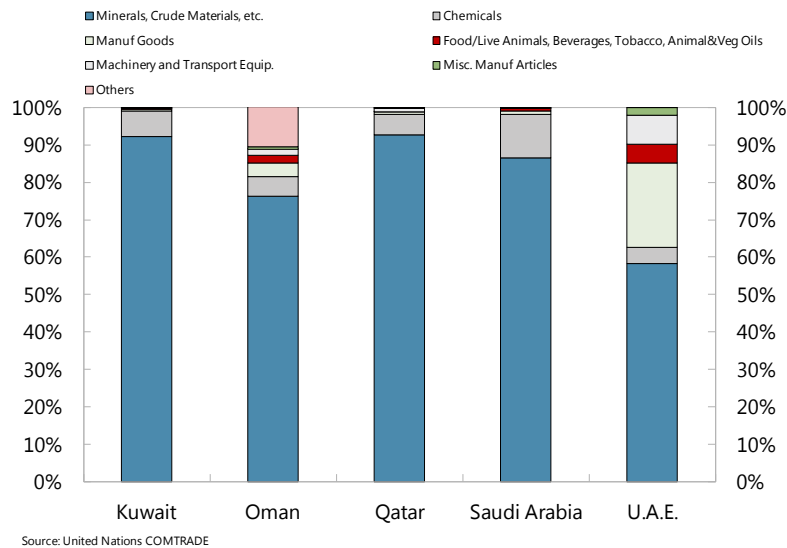
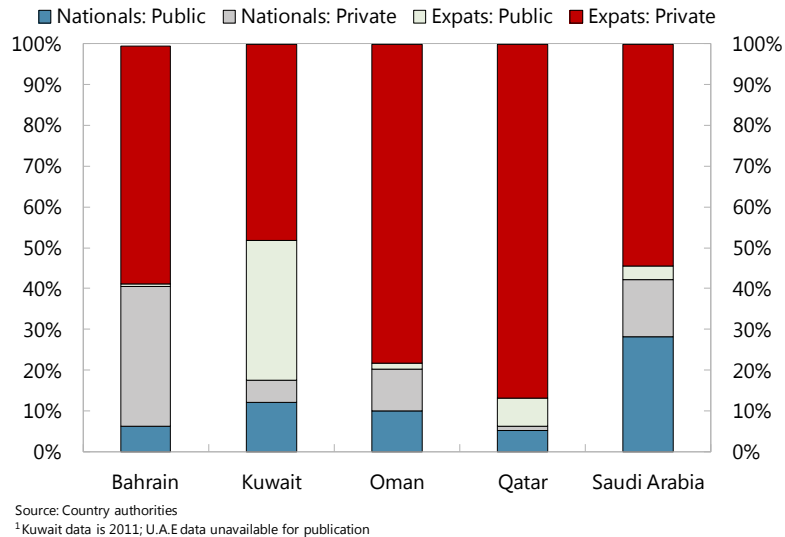


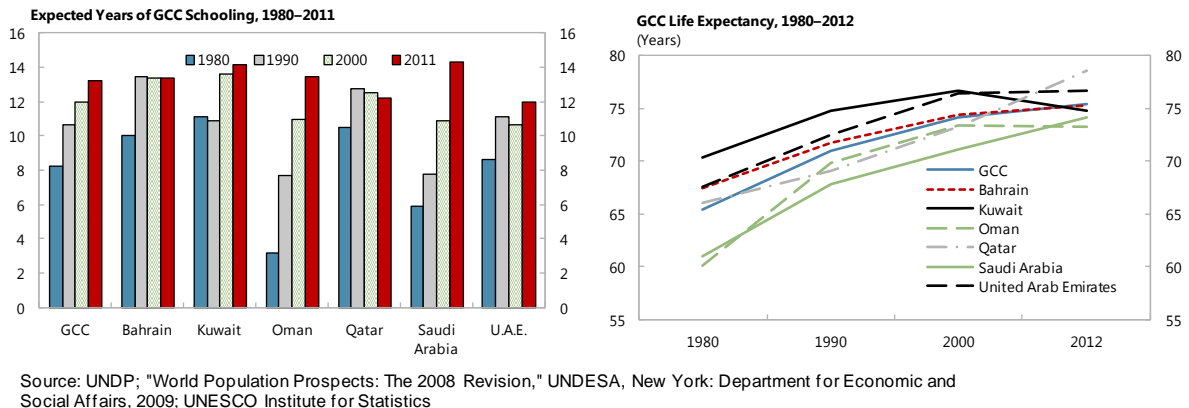
Figure 4. Goods Export Composition, 2010



The state is a dominant force in the economy, receiving oil revenues and in turn redistributing them through different channels. Fiscal policy acts as the main transmission channel of oil price fluctuations to non-oil output (Husain et. al 2008). A large part is spent directly by the government and is provided to citizens through transfers and public sector jobs with the public sector employing the majority of nationals in most GCC countries (Figure 5). A part of revenues are invested in mega projects, especially infrastructure and real estate, while the rest is saved, for instance, in the sovereign wealth funds (SWFs). In addition, most private sector jobs are held by expatriate labor, and most of the expatriate labor is employed in low skilled and low productivity activities (Figure 5).

Figure 5. Labor Market Composition, 2012

The GCC has achieved huge success in improving their living standards. Human development index (HDI) scores improved substantially; infant mortality fell; expected years of schooling increased; and life expectancy rose (Figure 6). Even in comparison to oil exporters of advanced countries such as Norway and Canada, the GCC countries are performing relatively well.

Figure 6. Social Indicators

In parallel, however, the GCC countries slid in international rankings of income. GDP per worker (in PPP \$) fell over time for the GCC countries, except for Oman and Qatar. The standard of living fell as oil prices dropped to their lowest levels in the 1980s-1990s and improved somewhat after oil prices started rising (Figure 7). In relative terms, the overall performance was even more disappointing. The GCC fell substantially in relative income

rankings from about 1.5 to 4 times the US income per worker in 1980 for most countries to the US levels or below in 2010 (Figures 8 and 9).^{2 3} Even Qatar with large gas production and small population decreased from more than 3 times the US level to only about double the US income per worker. From being in the top 10 countries in the world in 1980, Bahrain and Saudi Arabia slid to 43rd and 31st ranks in 2010, respectively.

Figure 7. GDP per Worker (PPP 2005 Constant \$), 1970-2010

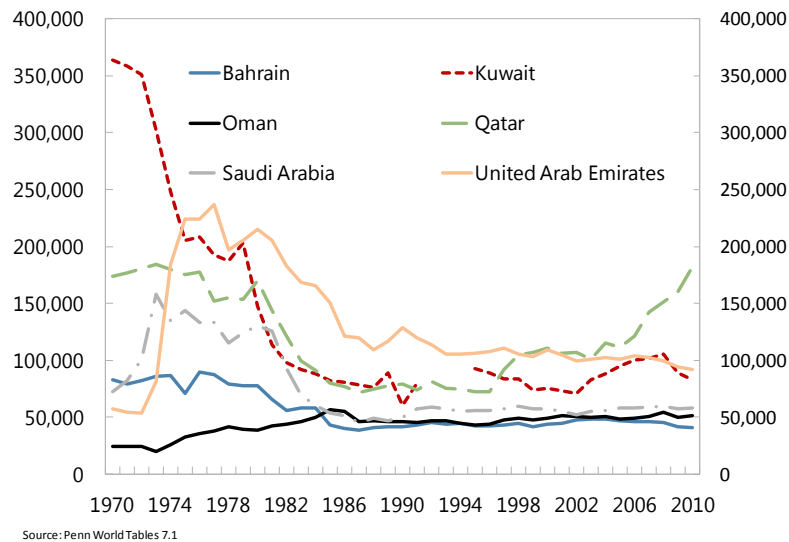
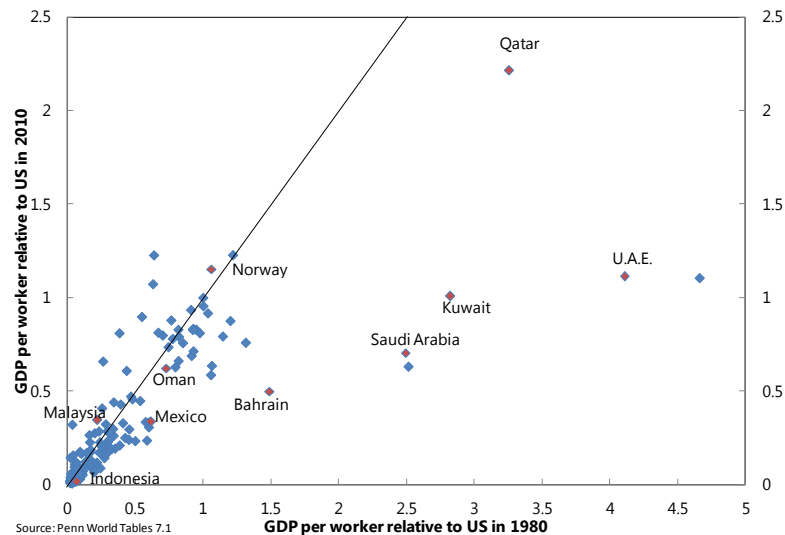


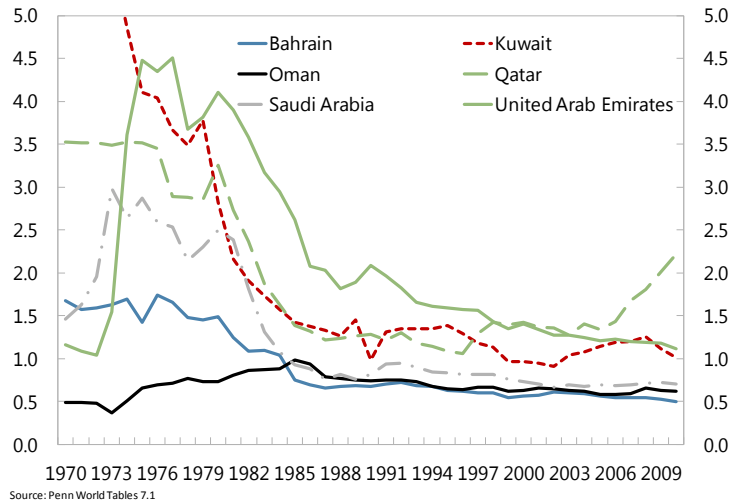
Figure 8. GDP per Worker Relative to the US (PPP 2005 Constant \$), 1980 vs. 2010



² Although 1980 corresponds to the peak of the oil price boom of the 1970s, using it as a base year is valid as oil prices in real terms are about the same level today as in 1980-81. In addition, our results are overall still valid whether we use 1970s or 1980 as a base year (see Figure 9).

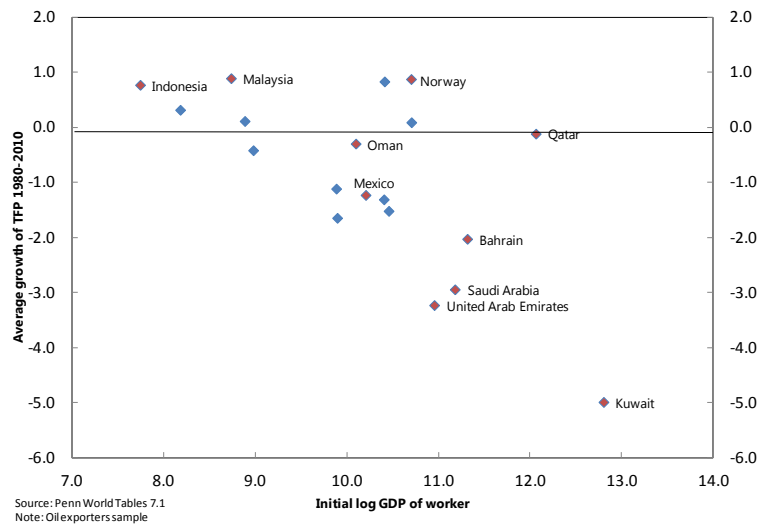
³ The data on PPP GDP and employment come from the Penn World Tables 7.1 and could differ from other sources.

Figure 9. GDP per Worker Relative to the US (PPP 2005 Constant \$), 1970-2010



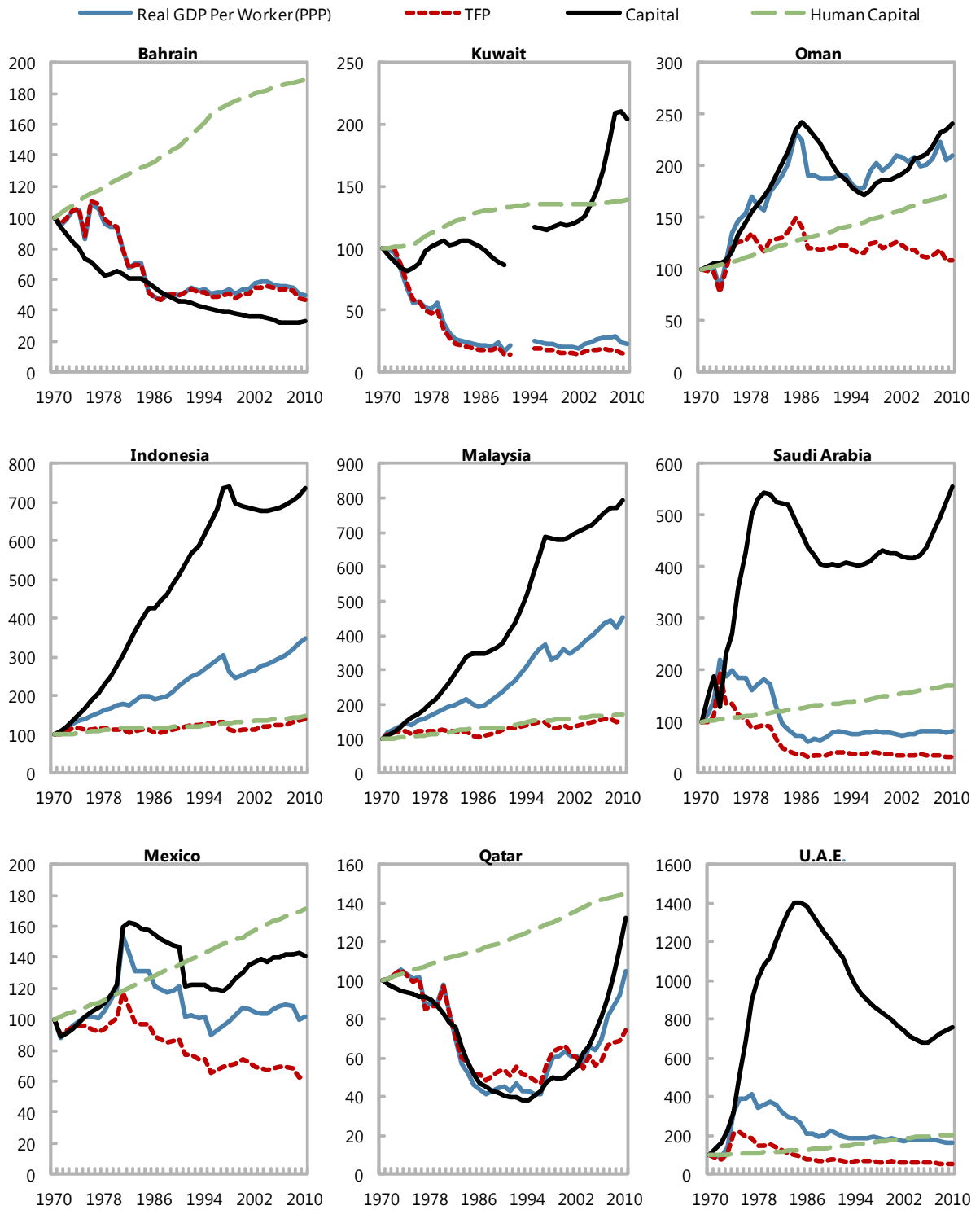
The relative income fall was also accompanied by declining productivity, while real GDP growth was mostly driven by factor accumulation (Figures 10 and 11). High capital accumulation, including human capital, and population growth contributed to the high growth of output in the GCC but was not accompanied by increasing relative performance on a per capita basis (Figure 11). Total factor productivity (TFP) declined in all GCC countries over the past decades (Figure 10).⁴ Mexico has also witnessed a decline in TFP, but Malaysia and Indonesia’s TFP grew, increasing the gap with other oil exporters. Large accumulations of physical capital contributed to growth in Malaysia and Indonesia and supported the TFP growth (see Appendix Figure 1 for other countries).

Figure 10. Total Factor Productivity Growth vs. Initial Real GDP per Worker, 1980-2010



⁴ IMF (2013a) also finds declining TFP over 1990-2012 using national accounts data.

Figure 11. Growth Decomposition, 1970-2010 (1970=100)



Source: Penn World Tables 7.1

Proposition 2: A sustainable growth model requires a diversified tradable sector.

Sustainable growth is driven to a large extent by export diversification and sophistication of countries. Hausmann, Hwang, and Rodrik (2007) and Cherif and Hasanov (2014a) show empirically that export sophistication is one of the major determinants of growth, accounting for initial conditions, institutions, financial development, and other growth factors. Jarreau and Poncent (2012), using regional Chinese data, reach the same conclusion but emphasize that it is the domestic firms' export activities which have the largest effect on subsequent growth while foreign firms mostly contribute to export upgrading. Papageorgiou and Spatafora (2012) also indicate that export diversification in low income countries is one of the major determinants of growth and is associated with the decline in the volatility of GDP per capita in developing countries. Their study finds that quality upgrading, especially in manufacturing, is positively correlated with growth. Since export sophistication is crucial for growth, the manufacturing sector with its high potential for sophistication represents an important sector to focus on. Moreover, Rodrik (2011) shows that labor productivity in manufacturing industries converges across countries, independently of initial conditions.

To create sustainable growth, a country needs to constantly produce new goods and adopt and develop new technologies. Lucas (1993) in his seminal paper, "Making a Miracle," argues that constantly introducing new goods rather than only learning on a fixed set of goods is what is needed to generate productivity gains for a sustained growth miracle. Learning by doing or learning on the job is one of the most important channels of accumulating knowledge and human capital in this process. Producing the same set of goods would rapidly lead to stagnation in productivity. In contrast, introducing new goods and tasks would allow managers and workers to continually learn and move up the "quality ladder" (see the seminal paper on creative destruction by Aghion and Howitt 1992). To do this on a large scale, Lucas argues, the country must be a large exporter.

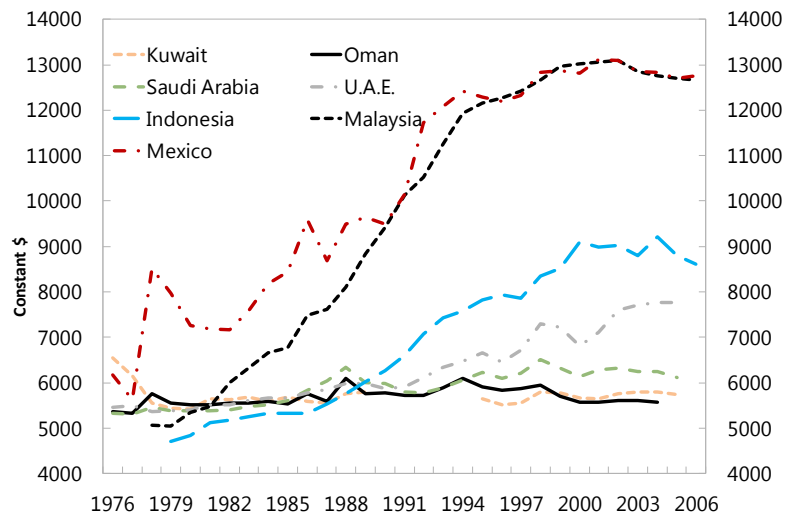
The productivity decline and relative income stagnation in the GCC can be explained by the non-diversified export base and stagnating export sophistication. As the studies mentioned above show, sustainable growth depends importantly on export sophistication and new goods production. Compared to commodity exporters such as Malaysia, Mexico, and Indonesia, the GCC countries' export sophistication is low and did not improve much over the years (Figure 12).⁵ It did not manifest in productivity gains, which were negative over the period (Figure 13).

The comparison of Bahrain and Singapore offers a stark example of the distinction between export diversification and output diversification. The output compositions of the two

⁵ Export sophistication is measured according to Hausmann, Hwang, and Rodrik (2007). The measure, EXPY, is defined as the export-share weighted average of sophistication levels of the country's export basket. The sophistication of each good is measured as the weighted average of real GDP per capita—a proxy for the level of sophistication—of all countries that export that good.

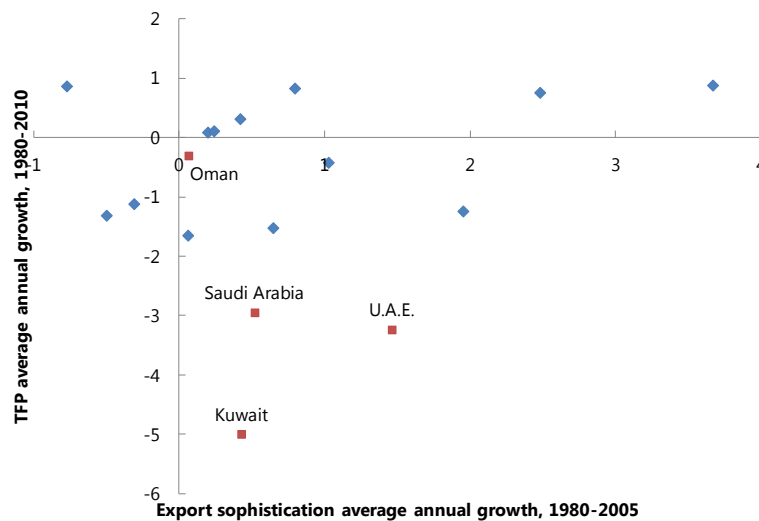
countries are overall comparable (Figure 14). Starting at comparable shares, the mining sector share increased in Bahrain from the 1990s relative to Singapore's. The manufacturing share in Bahrain is similar to that in Singapore, while the share of construction is slightly greater. In contrast, exports in Bahrain are almost exclusively concentrated in oil and metals (more than 95 percent), which is vastly different from the diversified export base of Singapore, which has more than 60 percent of total goods' exports in manufactures (Figure 15). In addition, manufacturing in Bahrain is mostly aluminum and other metals, which is not necessarily the most conducive to the introduction of new goods and tasks and moving up the "quality ladders" that Lucas (1993) advocated. Even when accounting for Bahrain's exports of services (transportation, travel, communication, and insurance), oil still represents more than one-half of total exports of goods and services in 2010.

Figure 12. Goods Exports Sophistication, 1976-2006



Source: World Bank; Hausmann, Hwang, and Rodrik (2007)

Figure 13. TFP Growth vs. Export Sophistication Growth



Source: Penn World Tables 7.1; World Bank; Hausmann, Hwang, and Rodrik (2007)
 Note: Oil exporters sample

Figure 14. Bahrain vs. Singapore: Output Structure, 1990-2011

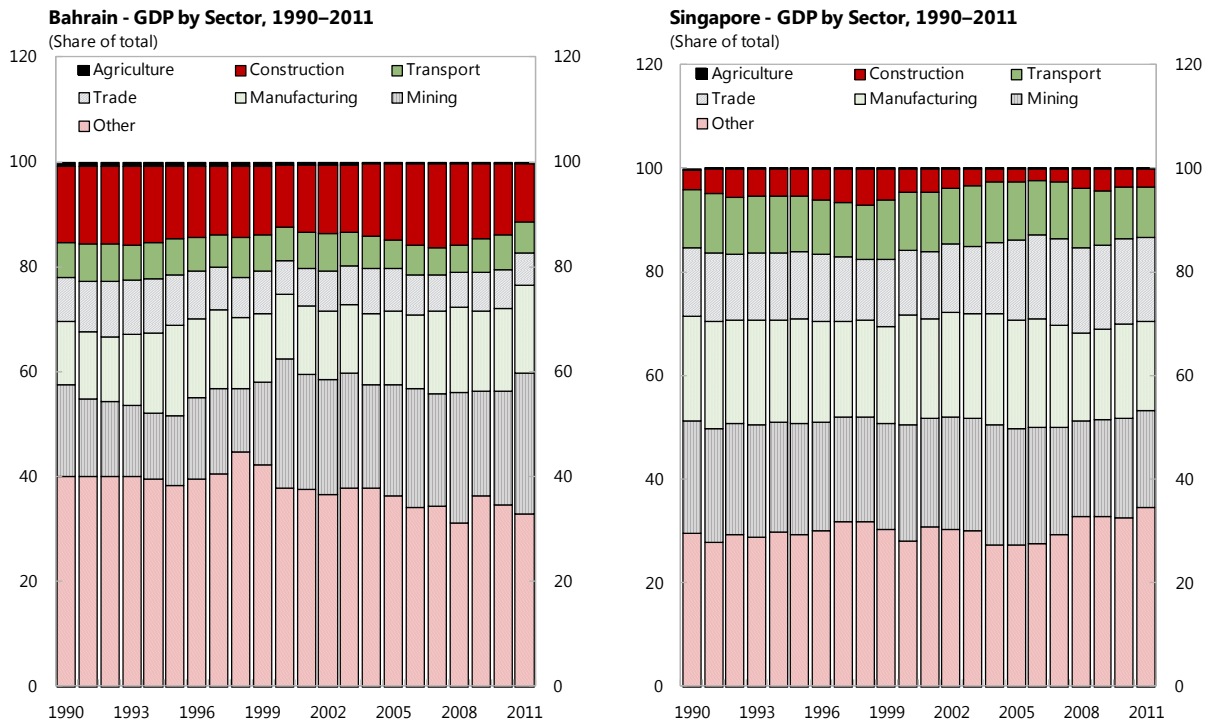
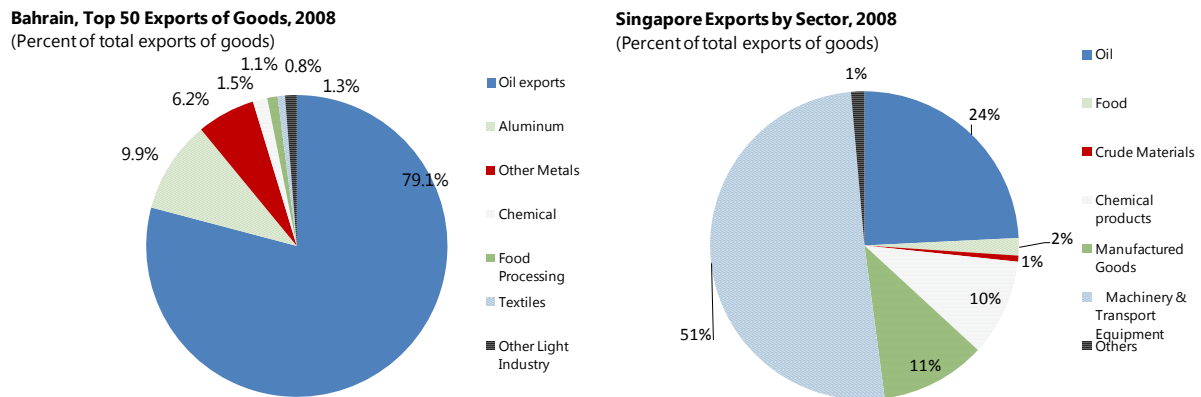


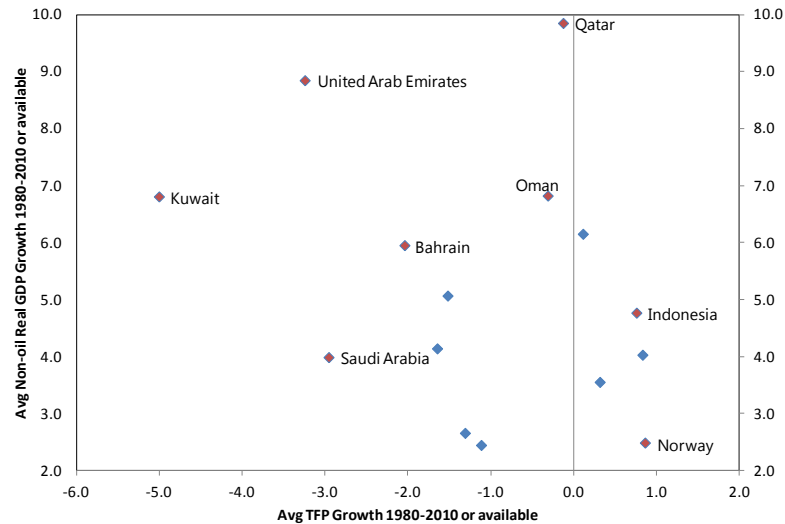
Figure 15. Bahrain vs. Singapore: Export Structure, 2008



In a similar vein, output diversification and non-oil growth are misleading indicators of diversification and sustainable growth. The example of Bahrain shows that a relatively diverse output composition does not necessarily imply export diversification. The export structure is a proxy for tradable production, the main source of productivity gains for sustainable growth as discussed above. In fact, the GCC countries have witnessed a decline in TFP over the past decades despite high non-oil growth over the same period (Figure 16). This increase in non-oil GDP, however, is mostly due to oil revenues channeled to the

economy through fiscal and related private spending (Husain et al. 2008). Non-oil GDP comprises energy intensive and resource related industries like metals and petrochemicals as well as construction, and services such as retail and restaurants, transport and communications, and social services. High non-oil growth in these economies is not an indicator that growth could be sustained in the long run, or if oil prices were to fall for a sustained period of time.

Figure 16. Average TFP Growth vs. Non-oil Real GDP Growth, 1980-2010



Source: Penn World Tables 7.1; IMF World Economic Outlook
 Note: Oil exporters sample. For some countries, non-oil growth data start in the 1990s

The literature on diversification in the GCC suggests that past attempts have yielded little benefits. Hvidt (2013) analyzes the national visions published by the GCC governments and argues that the implementation of these plans is plagued with many obstacles. These include barriers to interregional trade, the duplication of economic activities across the GCC, and political environments in which governments tend to revert to patronage and increased government spending rather than follow through tough reforms. Poor diversification results of the GCC, according to Looney (1994), can be explained by the lack of the overall industrialization strategy, Dutch disease, the reliance on migrant labor, and inadequacies of incentives in production and exports. To fight the oil curse, Elbadawi (2009) suggests stable macroeconomic environment, rules-based fiscal policy, and sound economic and political institutions for the management of oil rents. Beblawi (2011) stresses that natural resource-based industries and import substitution industries such as food processing and construction materials would not be sustainable growth drivers. Nabli et. al. (2008) discusses the need to promote horizontal policies and improve governance.

The heavy industrialization strategies in the GCC in chemicals and energy-intensive sectors like aluminum helped diversify production and exports but had several shortcomings. These industries are capital intensive and bear little linkages to the rest of the economy. Local sourcing of tradables in support of the heavy industries was not developed, and most of the complex technology is still imported. Although some technology was acquired (e.g. SABIC's

2007 acquisition of GE Plastics), there was not much technology transfer to the rest of the economy. The productivity gains and spillovers are limited. The employment opportunities available in these capital intensive industries are small. In addition, the exports of oil derivatives such as petrochemicals are strongly correlated with oil prices, in turn hampering the reduction of high export income volatility. The recent attempts at creating industrial clusters, technology parks, and other manufacturing industries have yet to yield substantial results.

Service sector exports have grown strongly in a number of countries in the region, although the development of services may not be sufficient for sustainable growth. The GCC countries have developed tourism, logistics, transportation and financial services. The services development resulted in output diversification, but most of these services rely mainly on low skill labor (e.g. tourism and transportation) and would not attract nationals. Low skill activities such as restaurants and transportation are less conducive to sustained productivity gains and cannot be the engine of a sustainable growth strategy for high-income countries such as the GCC. In addition, the amount exported is insufficient to cover imports. In the UAE, exports of services barely covered a quarter of imports of services in 2011, and the net service balance has been negative since 1990 despite growth of exports. In Bahrain, the net service balance is positive but only covered about a third of goods imports in 2011.

The focus on such sectors is not sufficient for countries with larger populations to reduce their dependence on volatile oil prices and decrease unemployment. In theory, high value added sectors and the associated high wage jobs exist in both the tradable and non-tradable sectors. However for an economy to generate a sufficient number of jobs in the high value added non-tradables (e.g. software, design, etc.) it needs to create a network of interlinked tradable and non-tradable sectors. It is unlikely that the massive number of entrants projected would be absorbed by the currently existing high value added sectors such as finance, insurance and managerial jobs, which already employ a relatively large number of nationals. As shown in Arezki et al. (2009), specialization in tourism yields limited growth benefits. For instance, an increase in the tourism sector share of exports by 8 percent (one standard deviation in a sample of more than 80 countries over 1980-1990) increases growth by only one-half percentage points a year. The sector would also not help absorb a labor force of nationals with high reservation wages. Even the finance sector paying high wages is not enough to generate sufficient employment. Bahrain's finance sector, about 17 percent of GDP, directly employed less than 10 percent of nationals in 2012, similar to London's share of the finance and insurance sector.

Proposition 3: Both the initial technological gap and the size of oil revenues determine the chances of success or failure at diversification in oil-exporting countries, while policies adopted magnify or mitigate this effect.

Over the past decades, oil exporters diversified their economies with different degrees of success. While some countries such as Algeria, Congo, Gabon, the GCC countries, and Yemen have not developed much tradables, others like Malaysia, Indonesia, and Mexico increased their export sophistication and developed manufacturing industries. We argue that the relative success or failure in diversification stemmed mainly from the manifestation of a crowding out of the tradable sector, which could be described as a type of Dutch disease, while policies pursued magnified or mitigated this effect. Broadly speaking, Dutch disease is the crowding out of the tradable sector as a result of oil revenues compared to the counterfactual of no oil revenues.⁶ In the following we will use “Dutch disease” to describe this crowding-out of the tradable sector although not necessarily linked to real exchange rate movements.

The severity of the crowding-out of the tradable sector depends both on the amount of the oil revenues and the initial technological gap or distance to the technology frontier (Cherif 2013).⁷ Oil exporters can be classified along two dimensions (Figure 17), in which the real value (deflated by the US CPI) of machinery and transport equipment exports per capita in 1970 is used as a proxy for the initial level of technology.⁸ Four groups of oil exporters are distinguished: low (initial) tech and low revenues (e.g. Algeria, Angola, Congo, Ecuador, Indonesia, Malaysia, Mexico, Nigeria, and Venezuela), low tech and high revenues (Bahrain, Gabon, Kuwait, Libya, Oman, Qatar, Saudi Arabia, and United Arab Emirates), high tech and low revenues (Canada), and high tech and high revenues (Norway).⁹

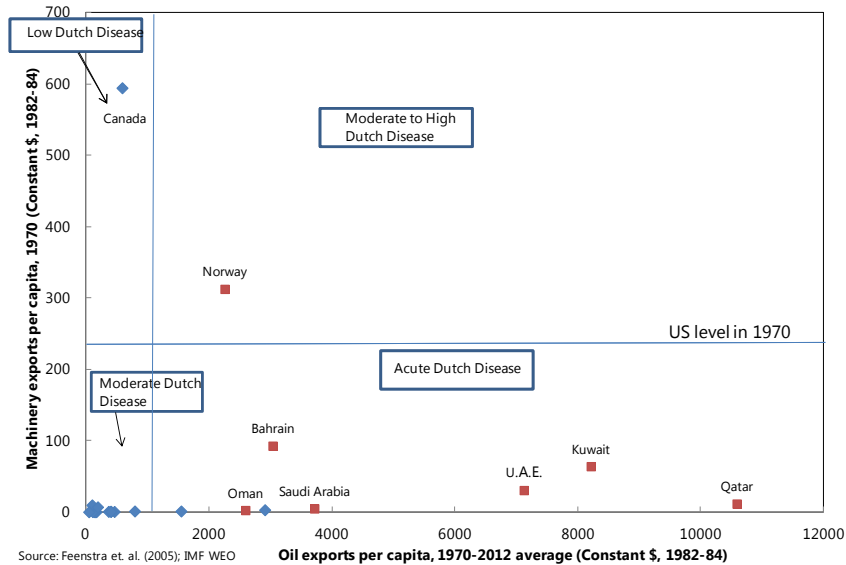
⁶ When income increases as a result of oil revenues, and both tradable and non-tradable goods are normal, the increased demand for non-tradables is met by real exchange rate appreciation and a relocation of labor toward the non-tradable sector (e.g. Krugman 1987). Empirically, the real exchange rate in the GCC is unaffected by oil revenues, implying that traditional transmission of Dutch disease does not apply (Espinosa et. al. 2013). However, as discussed later, the crowding-out of the tradable sector takes place in the GCC by the impact of oil revenues on incentives for exporting in these economies given the distribution mechanisms of oil revenues to the rest of the economy.

⁷ In the model of Cherif (2013), the relative wage depends on the relative productivity in the tradable sector. The bigger is the productivity gap, the bigger is the relative wage, and thus an increase in oil revenues, when translated into domestic income, would have a bigger income effect than that in the case with lower productivity gap. This would result in greater crowding-out of the tradable sector. Empirical evidence supports this result.

⁸ The data come from Feenstra et al. (2005) (code 7 of the U.N. SITC classification). Jarreau and Poncet (2012) use a similar measure (share of high technology manufacture in total exports) as an alternative to EXPY, export sophistication measure from Hausmann et al. (2007). Both measures exclude services; however, it should not affect the results as the services share of exports is small for many countries.

⁹ One could argue that instead of flows or revenues, the stock of oil reserves or oil wealth could matter most through consumers' expectations. However, consumers might not internalize the ownership of reserves and even if they would either (i) credit constraints would prevent them from properly smoothing their consumption; and/or (ii) the precautionary saving motive would be high as a result of the high level of uncertainty in oil price (Cherif and Hasanov 2013). Empirically most studies find evidence of the Dutch disease effect based on flows as opposed to stocks (e.g. Cherif 2013 and Ismail 2010).

Figure 17. Initial Machinery Real Exports per Capita (1970) vs. Oil Revenues (1970-2012)

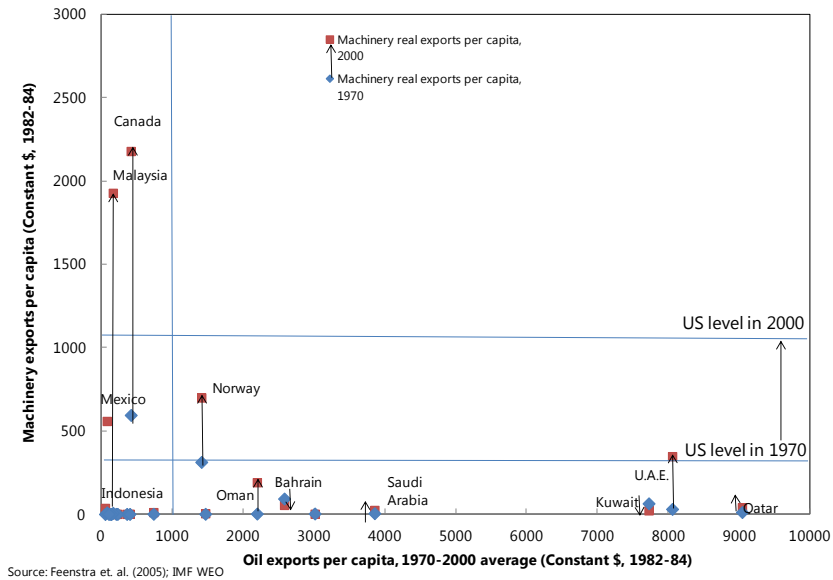


Overall, the performance of oil exporters has followed the typology identified above:

- Canada, a high tech/low oil revenue country, did well in increasing its technological development proxied by real machinery exports per capita.
- In contrast, Norway, which received large oil revenues and is technologically sophisticated, did not increase its exports per capita as much and actually fell from above the US level in 1970 to below it in 2000 (Figure 18).
- Low tech countries with large oil revenues did not do as well. Out of 9 countries, Oman and UAE increased their exports relatively more than others but only to around the 1970 US level.
- Lastly, low tech/low oil revenue countries had achieved different success rates in diversification. Malaysia, Indonesia and Mexico succeeded compared to Algeria, Nigeria, and Venezuela. Although Indonesia's machinery exports did not increase as much as Malaysia and Mexico's, the country's export sophistication improved significantly. Both indicators improved substantially for Mexico. Yet the case of Malaysia stands out as it improved significantly both in export sophistication and machinery exports, reaching the vicinity of Canada.

To sum up, high tech countries were better prepared for coping with Dutch disease and were already diversified before receiving oil revenues. However, as oil revenues increased, the odds of success were overwhelmingly against the low tech countries such as the GCC countries. In the low tech/low revenue quadrant, we contend that policies pursued put these countries on different and diverging development paths.

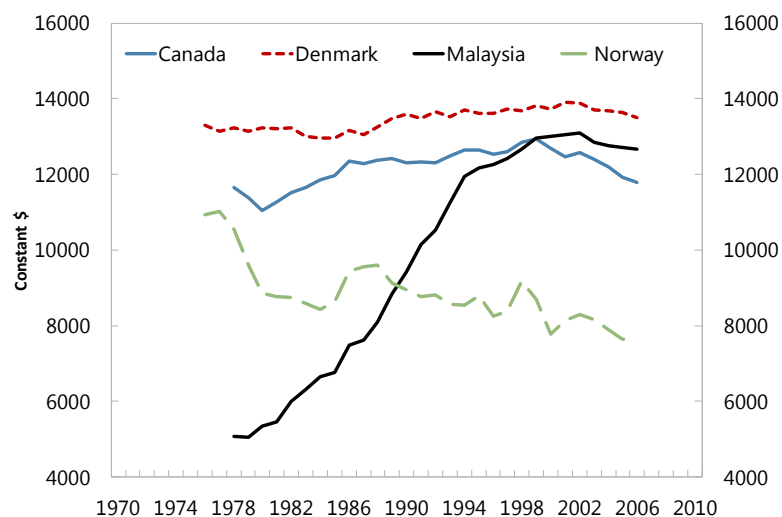
Figure 18. Machinery Real Exports per Capita (1970 vs. 2000) vs. Oil Revenues (1970-2000)



One would think that the high tech countries such as Norway with an already diversified export base could escape Dutch disease. However, Norway, which received much bigger oil revenues than Canada, fell prey to the Dutch disease despite its strict rules to sterilize most of the oil income. In 2012, manufacturing hourly wages were the highest in the world and about double that of the US or Japan, according to the US Bureau of Labor Statistics. Unit labor costs increased by 50 percent in the 2000s, whereas they declined in Germany and Sweden. In addition, Norway's annual average hours per worker declined by 600 hours since 1960 to about 1400 hours in 2012, according to Norway's State Statistics Bureau, and are the third fewest hours worked in the OECD.

The measure of export sophistication of Norway was on a declining trend since the late 1970s despite its relative increase in machinery exports per capita. The rapid decline coincided with the spike in oil prices in the late 1970s, but then export sophistication slightly recovered in the period of very low prices until the mid-1980s (Figure 19). Since then, it has been on a declining trajectory. One could argue that incorporating services in the measurement of export sophistication would mitigate the observed decline. However, the largest service export is maritime transport, the incorporation of which is unlikely to reverse the declining trend in sophistication. In addition, Denmark, a comparator country to Norway, witnessed a slight increase in its measure over the past decades despite starting with a higher export sophistication level. The gap with Norway widened substantially. Interestingly, Malaysia, which stood at about 45 percent of Norway's level in mid-1970s, caught up by late 1980s, and was about 65 percent higher by mid-2000s.

**Figure 19. Goods Exports Sophistication, 1976-2006:
Canada, Denmark, Malaysia, and Norway**



Source: World Bank; Hausmann, Hwang, and Rodrik (2007)

It could be argued that the few success stories among oil exporters are in the group of countries where the size of oil revenues received was not large enough to crowd out their non-oil tradable sectors. In other words, they stood a fighting chance at diversifying their economies. However, as the performances within this group show, policies did matter. The case of Norway suggests that at much earlier stages of development, the potential effect of large revenues is likely to be detrimental to the tradable sector as observed in many MENA oil exporters.

The experience of oil exporters suggests that very few countries—Indonesia, Malaysia, and Mexico—successfully diversified (see Appendix II). These countries prepared the ground before the dwindling of oil revenues occurred (Figure 20). Although Indonesia, Malaysia, and Mexico increased their export sophistication, they are yet to achieve the successes of Korea and Singapore and remain dependent on natural resources to a significant extent.

Malaysia, one of the earliest oil exporters to scale down its import substitution strategy in the 1970s, started relying on export promotion policy (Jomo 1997). Malaysia successfully expanded its export base as well as the sophistication of its manufacturing sector. Today, manufacturing represents more than a third of all exports (and three-quarters if one includes refining and other natural resource-related manufacturing). To achieve this goal, Malaysia used a multi-faceted approach: (i) it selectively encouraged FDI in exports, especially in electronics; (ii) it relied on free trade zones; (iii) offered lower taxes; and (iv) provided a stable business environment and well as an educated workforce with competitive wages. The country has promoted specific strategic industries in order to achieve the maximum technological transfer possible. It relied on both horizontal and vertical development of industries as well as natural resource-related industries (Yusof 2013, and Jomo 1997). Malaysia used active state intervention to spur growth in sectors it deemed important, in effect acting as a “venture capitalist.” In parallel to rapid physical accumulation, human

capital accumulation was very important. The Malaysian state used public agencies to enforce a continuous retraining and skill upgrading of employees.

With the collapse of oil prices in the 1980s, Indonesia adopted a set of policies meant to attract foreign capital in export-oriented manufacturing. The main instruments of this policy were the creation of free trade zones, tax incentives, the easing of tariff restrictions and non-tariff barriers as well as the largest exchange rate devaluation among developing nations in the 1980s (Jomo 1997). The result was substantial growth in labor intensive manufacturing (textile, footwear, electronics, etc.) due to the attractive level of wages. During the liberalization period of the 1980s, the government performed a “strategic retreat” and retained several of its strategic projects, in particular in steel and the aircraft industry. Jomo (1997) notes that the experience of Indonesia also shows that with government commitment, a complex technology industry was successfully started from scratch in what was a poor nation at the time. Indonesia today is part of a selected group of developing economies with clusters of aircraft maintenance and aircraft parts manufacturing. The creation of the national champion, albeit at a large cost, did facilitate the establishment of this cluster.

Similarly to Indonesia, Mexico has started with labor intensive industries and moved to more sophisticated production. The country also relied on free trade zones focused mainly in labor intensive industries and mostly foreign-owned. It did help increase exports but firms did not climb the value added ladder and had low linkages with the rest of the economy. The upgrading of Mexico’s industries is evident in the automobile industry over the last 15 years. In 2012, the employment in the sector in Mexico surpassed that of the U.S. Midwest (40% of North American employment in Mexico vs. 30% in the U.S. Midwest) and is expected to continue its fast growth. Obviously, the NAFTA agreement and the exchange rate depreciation in the 2000s helped propel the country as an attractive place for FDI by automotive companies planning to export to the US. However, the policies adopted by different states in Mexico in pursuit of building manufacturing clusters, and their performance in terms of productivity and quality upgrading are important. In particular, the State of Guanajuato followed what can be described as a purpose-specific investment strategy in parallel with strong incentives to attract firms. In terms of infrastructure, the state built a 2,600-acre interior port, customs facilities, a railroad depot and a link to the local airport (Cave 2013). Nearby, there is also a polytechnic university to supply engineers, and the state gives incentives to firms to send workers for training abroad. The state has attracted foreign firms by providing tax incentives but more interestingly by acting as an active consultant.

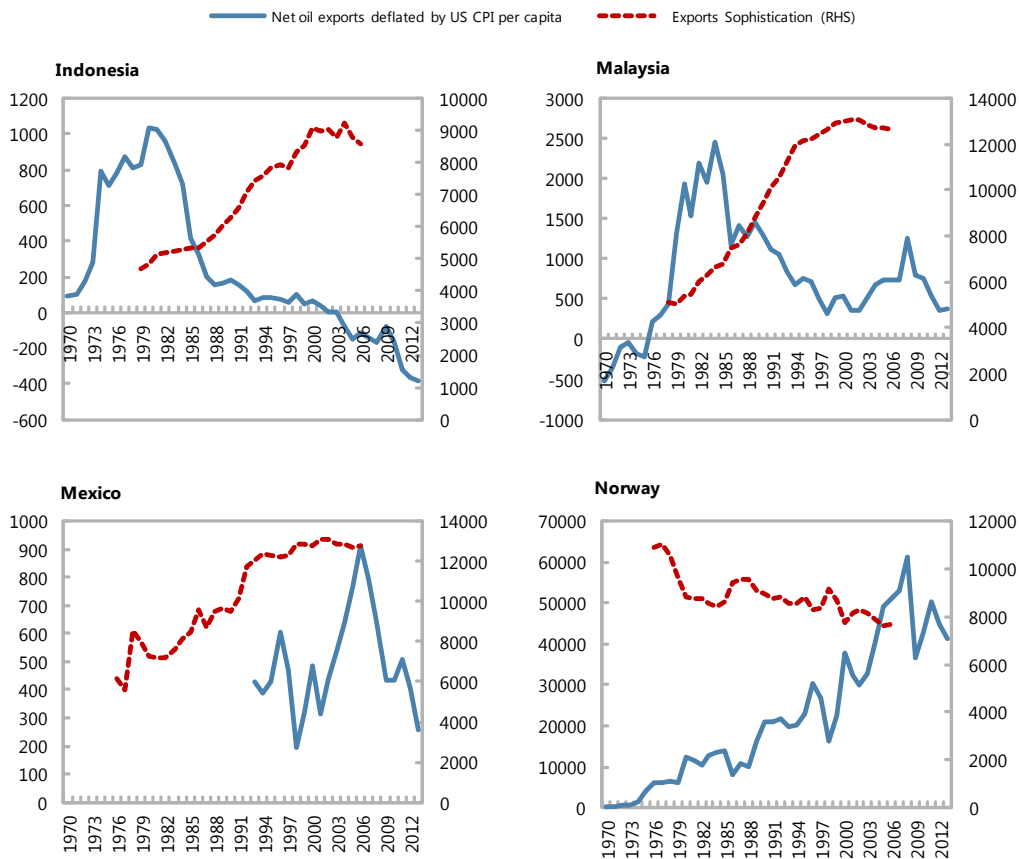
In summary, the main policy lessons from the diversification experiences of relatively successful oil exporters are as follows:

- Import substitution strategies created mostly inefficient firms because they were not encouraged to compete on international markets. Instead, they relied on a captive domestic market and imported inputs and technology. A focus on competing on

international markets and an emphasis on technological upgrade and climbing the value added ladder are crucial.

- The policy mix of Malaysia involving investment in higher value added comparative advantage industries (e.g. natural resource-related manufacturing) and going beyond comparative advantage (e.g. electronics) was the most successful.
- Comparing the experience of Malaysia to other oil exporters shows that it is more important for the state to actively encourage the supply of inputs in target industries (e.g. skilled labor, infrastructure, consulting) than impose price distortions to protect an industry (tariffs and price controls).
- Indonesia and Mexico show that relying mostly on low wages and labor intensive manufacturing would eventually lead to limited productivity gains. Mexico's experience shows that attracting FDI needs to be directed toward the creation of industrial clusters.

Figure 20. Export Sophistication and Oil Revenues through Time



Source: IMF WEO; World Bank; Hausmann, Hwang, and Rodrik (2007)

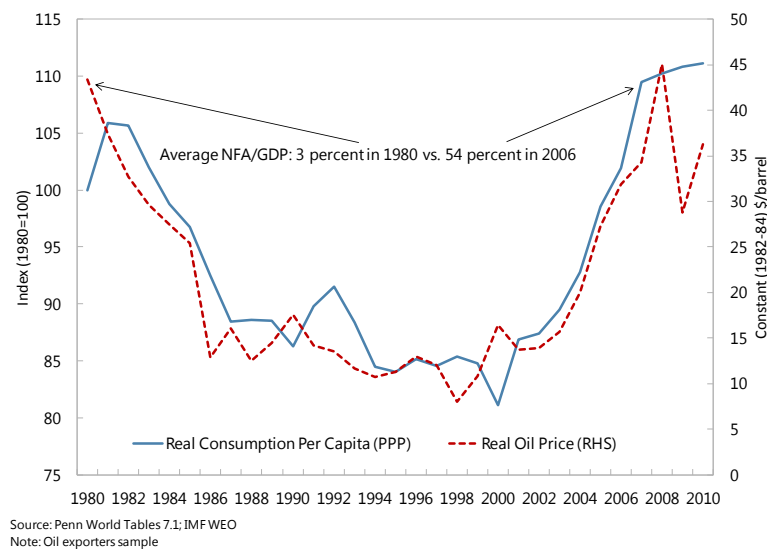
Proposition 4: Exports diversification must start now.

The GCC countries are currently enjoying high standards of living and very long horizons of oil reserves, so one could argue there is no urgency to start diversifying the economy. In contrast, we contend that there is urgency to implement a true diversification strategy.

It would take twenty to thirty years to achieve high export sophistication. The few successful oil exporters prepared their non-oil export base for decades before they could take off when oil revenues dwindled. For example, Malaysia started its export-oriented strategy in the early 1970s and experienced rapid growth in export sophistication in the 1980s-90s. Despite the rapid pace, it took more than 20 years to reach a level of sophistication comparable to some advanced economies.

The experience that oil exporters went through in the 1980s-1990s is a cautionary tale of reduced spending, falling standards of living, and increased debt levels. The oil exporters went through a long recessionary cycle—measured by the consumption per capita developments—that lasted 30 years. Consumption per capita on average fell by about 20 percent from the 1980 peak, only to return to this level by late 2000s as oil prices recovered (Figure 21). Continuing with the implementation of the same model (extracting oil, saving part of it in a sovereign wealth fund, and investing mostly in infrastructure without focusing on tradables) is likely to be suboptimal from a social welfare perspective. This could be true even if the GCC countries tackled subsidy and tax reforms and managed to create more fiscal space. This would not be sufficient to diversify the tradable sector which is crucial for sustainable growth (see proposition 5).

Figure 21. Real Consumption per Capita and Real Oil Price, 1980-2010



Proposition 5: The standard policy advice—implementing structural reforms, improving institutions and business environment, investing in infrastructure, and reducing regulations—is very important, but may not be sufficient to spur tradable production because of market failures.

Macroeconomic stability, minimum state intervention, and an enabling environment conducive to investment in both physical and human capital are the main ingredients of the standard growth policy prescription for sustainable economic growth. It consists of tackling what is described as “government failures” by Stern (2001) and Rodrik (2005). These failures could stem from the associated high inflation, monopolies, investment impediments, uncertainty on property rights and other types of government-driven distortions. Reforms are ongoing in the GCC to address these issues. Yet there has been little progress in export diversification in most countries (see proposition 3). Although there is still room for improvement along those dimensions especially in terms of legal and bankruptcy framework and cumbersome business regulations in some countries, can the lack of progress in increasing non-oil exports and manufacturing output be attributed to government failures alone? We contend that the binding constraint to developing the non-oil tradable sector lies also in market failures and that tackling both government and market failures are necessary for true development to take place in oil-exporting economies.

A growing body of literature points to the need for rethinking industrial policy. It invites economists not to rule out a priori industrial policy as a tool because badly designed industrial policies failed in the past (typically import substitution strategies in the 1970s). Pioneers in the revival of industrial policy include Amsden, Chang, Hausmann, Jomo, Lall, Ocampo, and Rodrik. The gist of their argument is that economies face multiple market failures that impede their industrialization.¹⁰ Economies could be trapped in a suboptimal state, not only as a result of distortions imposed by the government or government failures, but as a result of market failures due to learning externalities or coordination failures.¹¹

The market failure based on learning externality implies that firms do not internalize productivity gains leading to lower allocation of resources into high productivity sectors. As argued by Matsuyama (1992), some activities, typically manufacturing, entail higher productivity gains for an economy compared to other traditional activities such as non-tradable services or agriculture. Firms may not be fully aware of these productivity gains leading to lower output in high productivity sectors and lower relative incomes over time. The learning externality could also involve spillover effects in which productivity in other sectors increase, while firms are unable to extract the pecuniary benefit from the spillover effect (e.g. manufacturing’s spillover effect on agriculture). In this case, the resource

¹⁰ The other main argument is that manufacturing expansion and technological upgrade in export sophistication are the keys to sustained productivity gains and development in general as discussed in proposition 2.

¹¹ See Rodrik (2005).

allocation into the traditional sector would also be higher than what would otherwise be socially optimal (Rodrik 2005).

The coordination failure is based on the idea that a critical size of the modern (e.g. manufacturing) sector is needed for a firm to enter it. It would be profitable for a firm to invest in a modern sector only if there are enough firms investing simultaneously in other modern sectors. The mechanisms proposed to explain the spillovers in the literature differ (e.g. demand spillovers) but could be summed up as related to reaching a critical market size to justify investment in complex technologies (e.g. automotive and aircraft). If a large number of firms invest together in the modern sectors, described as the “big push,” the economy reaches a higher level of productivity and development.

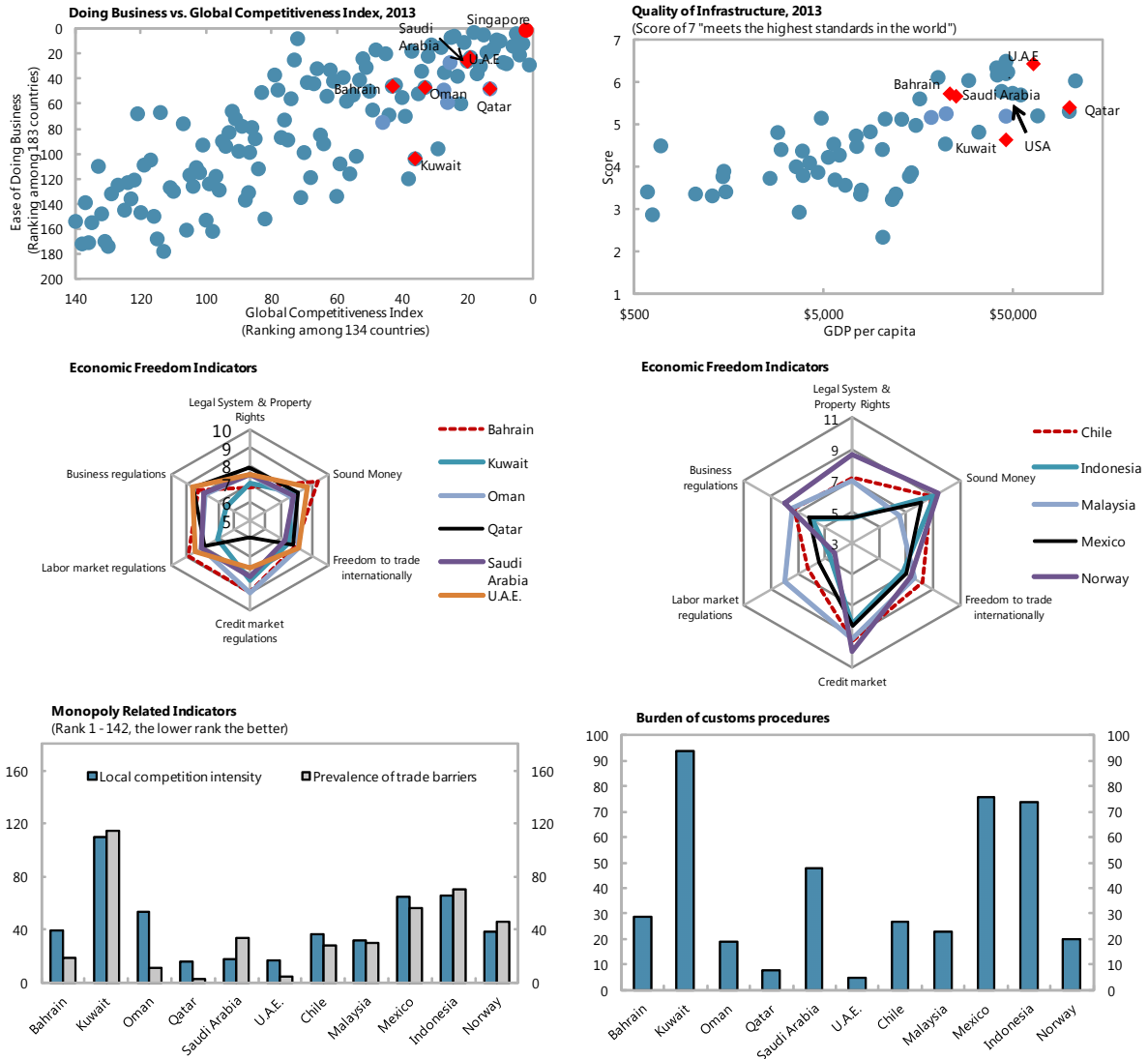
The existence of market failures would require state intervention to reach a socially superior outcome. Of course, the type of intervention would depend on the type of market failure faced. One could reinterpret the failure of imports substitution strategies as a failure in identifying and tackling the correct market failures.

We argue that the GCC countries, and probably other oil exporters, are not plagued as much by “government failures” as by “market failures,” although the two are often closely linked. The following are three arguments indicating that the binding constraint for firms in the GCC impeding diversification is not related to government failures:

- The GCC countries have achieved very high scores in terms of infrastructure quality and other business quality indicators. Their successes are striking in comparison to other oil exporters that have done poorly in doing business indicators, but much better in promoting exports sophistication such as Indonesia and Mexico, as shown in proposition 3 (Figure 22).
- Norway and more recently Canada (Stanford 2012) could not escape Dutch disease although government failures are basically nonexistent there, in particular in comparison with developing nations. If such advanced economies with a strong record of institutions, governance, skills, infrastructure, and other ingredients of an enabling environment are not immune to Dutch disease, it is highly likely that developing oil-exporting countries are not, either. Moreover, trying to reach their level of institutional quality and openness would certainly not be enough to develop the tradable sector. As Henry and Miller (2009) show, Barbados and Jamaica’s real GDP per capita diverged after independence as they pursued different economic policies despite similar institutional environment, geography, and colonial and legal heritage.
- Diversification in successful oil exporters was taking place as oil revenues were slowly declining. The institutional reforms would have taken a relatively long time to materialize as the diversification process was ongoing. The ICRG’s bureaucratic quality indices for Malaysia and Saudi Arabia were similar and did not change

through the 1980s-1990s as Malaysia was developing its tradable sector, while the quality index was lower for Indonesia.

Figure 22. Governance and Institutions Indicators



Source: The World Economic Forum's Global Competitiveness Indicators (2013-14); Fraser Institute

We identify the market failures preventing these economies from developing the tradable sector. As discussed in proposition 3, Dutch disease would lead to a learning failure if firms do not fully internalize the fact that the tradable sector offers higher potential for productivity gains. This is a variant of the failure due to learning externality, according to the taxonomy of Rodrik (2005). As discussed in proposition 3, oil exporters are trapped in a vicious circle where their relative productivity or technological gap in the tradable sector keeps deteriorating. This market failure seems to be the most significant compared to other theories

advanced in the literature. However, one needs to clarify the exact channel relevant for the GCC.¹²

We suggest a novel approach to the channel of transmission of the Dutch disease in the GCC, and the key to understanding it is the attitude of firms, especially conglomerates. For SMEs, the array of potential hurdles to develop exportable goods is wide—access to financing, lack of skills, and poor business services support. In contrast, conglomerates in the region are large and decades-old corporations with access to land, financing, connections with the administration, and the ability to import both skilled and unskilled labor. Moreover, they have access to world class infrastructure and operate within trade agreements opening to them most advanced markets. In other words, they would be shielded from most forms of government failures or even known market failures, in particular coordination failures. So the question remains as to why they do not diversify into tradable goods as the Korean conglomerates did a few decades ago.

In the context of the GCC, we argue that oil revenues skew the risk-return tradeoff between the tradable and non-tradable sectors (Cherif and Hasanov 2014b). Suppose an entrepreneur has to decide whether to enter the tradable or non-tradable sector. The tradable sector is exposed to international competition and requires many years of investment with highly uncertain returns although it has higher potential of productivity gains if successful. In the presence of high enough oil revenues, the “insurance” mechanism would be at work, and the non-tradable sector would be a far more attractive sector to enter than the tradable sector. Access to imported labor would not change this mechanism and would only affect the scale of the output of non-tradable goods and/or profit margins. It could in fact fuel a vicious circle of a further increase in the demand of non-tradable goods, thanks to the inflow of expatriate workers.

In this environment, the government paradoxically could exacerbate the market failure by engaging in big investment projects in infrastructure, which are by nature non-tradable, over multiple years. The commitment to build the infrastructure is laudable and most developing economies consider it a priority to achieve development. However, going forward, if the binding constraint on producing tradable goods is not infrastructure, the resources may be better put to use to develop tradables. In fact, large infrastructure projects may exacerbate the crowding-out of the tradable sector as they would further increase risk-adjusted returns in the non-tradable sector for monopolistically competitive or oligopolistic firms. The mechanism we described would also apply to SMEs. Few SMEs enter tradable sectors even when some

¹² The Dutch disease theory in its standard version would not fit the picture for the GCC. An important assumption in the Dutch disease theory is that labor is not internationally mobile. If that were the case, the increase in the revenues from oil exports would not lead to the real exchange rate appreciation and crowding out of the tradable sector. This assumption is fairly plausible for most oil exporters, especially with large populations such as Venezuela and Nigeria. However, the specificity of the GCC economies is their open labor market with huge inflows of expatriate workers in the past decades, especially from low income countries.

of the standard hurdles facing them are eased. Government funding programs to encourage SMEs are mostly concentrated in services sectors such as transportation, retail and restaurants.

Proposition 6: The government needs to change the prevailing incentive structure in the society.

The fiscal policies followed in the GCC countries contributed to creating a very generous social system but limited incentives to risk taking. As shown in proposition 1, a large share of nationals are employed in the public sector. The average compensation in the public sector is relatively high, for instance about \$4500/month in the UAE (IMF 2013a). Subsidies represent about 10-20 percent of GDP in the GCC countries, reaching about 30 percent of GDP in Bahrain (IMF 2013b). In addition, the legal retirement age is relatively low in the GCC. For instance, Saudi Arabia has a defined benefit system with retirement age of 60 for men and 55 for women, at the low end of the retirement age range (IMF 2012). The effective retirement age is even lower, around 50-55 in Bahrain, Oman, and Qatar. The pension benefits are also high, for instance, with a replacement rate of 80 percent in Bahrain (World Social Security Forum 2013).

The risk-return tradeoff channel described in proposition 5 would also apply to the labor market. An environment in which the risk free strategy for nationals is to join the public sector for a relatively high salary and generous compensation and benefits, is not conducive to following the uncertain path of entrepreneurship or employment in the tradable sector.¹³ Employment in the private sector would entail a higher probability of a job loss as well as longer hours and maybe even lower pay. The structure of the labor market does not encourage investment in human capital, either. If the possibility of getting a risk-free job with lifetime employment, generous pensions and relatively high compensation exists, then the risk-adjusted returns on education need to be very high to justify this investment. In turn, the lack of skills would prevent the private sector from creating enough high productivity/high wage jobs to attract workers. The outcome becomes self-reinforcing as the private sector would not create high productivity jobs due to the lack of skills and the workforce skill set would not improve due to the lack of learning by doing in high productivity jobs. Then the question is, how can the state change the incentive structure to encourage private sector employment?

The public sector should not be the employer of first resort, offering relatively high compensation and benefits compared to most of the private sector. Firm limits need to be placed on public sector jobs and wages, and it needs to be clearly communicated to people entering the workforce that they should not expect a public sector job. This needs to be matched by ensuring that workforce entrants are provided the training and support needed to

¹³ For evidence on the crowding out effect of public sector employment, see Behar and Mok (2013).

work in the private sector. As in Belgium and Germany, vouchers could be used for various training programs on starting a business, accounting and finance, legal issues, IT and computer technologies, and other applied professions, apprenticeship training systems, and vocational education. Safety nets also need to be in place to ensure that those not in employment have a minimum income level (as well as the incentives to search for employment). This approach would reduce the need for the absorption of the labor market entrants into the public sector, reducing the wage bill. With the bloated public sector, the reduction would increase efficiency without disrupting public services. The insurance of minimum income would encourage risk taking and, coupled with training programs, provide the necessary support for entrepreneurs.

To attract nationals into the private sector, salaries need to be more competitive implying high value added jobs and reforms in the public employment policy. Meanwhile, for the private sector to generate high value added jobs, it has to move from its current business model of reliance on unskilled cheap labor in low value added sectors (e.g. retail, restaurants, transportation, etc.) to more advanced sectors. However, this transformation could also require bringing high skilled labor and entrepreneurs from other countries initially while active policies would be needed to create a high skilled and dynamic national labor force going forward.

The goal of improving skills and changing attitude should be tackled at an early stage. Changing incentives as more workers enter the private sector and improve their skills, is not enough. There is growing evidence that the quality of early childhood education determines long lasting outcomes (Heckman 2008). Heckman (2013) shows that a good quality early childhood education has long term positive effects on test scores. More importantly, he shows that the mechanism through which the program works is through its positive effects on non-cognitive skills. Children who benefitted from early childhood education obtained higher test scores later in their lives as a result of a more positive social behavior and improved academic motivation rather than higher IQs. The positive effects of early childhood education were not limited to labor market outcomes and included improved health behavior.

Despite higher spending on education and increasing years of schooling over time, the outcomes of education in the GCC are still low. The GCC countries spend on average more than 4 percent of GDP on education, with Saudi Arabia and the UAE's spending above the average of high and middle income countries of 5-5.5 percent of GDP (IMF 2013a). Spending per capita is even higher than in most developing economies. However, the educational achievements are not in line with the investment in education, and the average number of years of schooling is still significantly below developing nations (Figure 23).

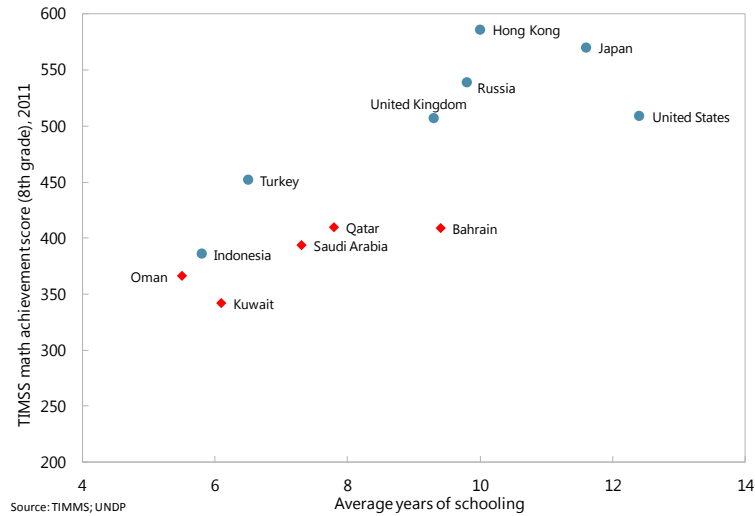
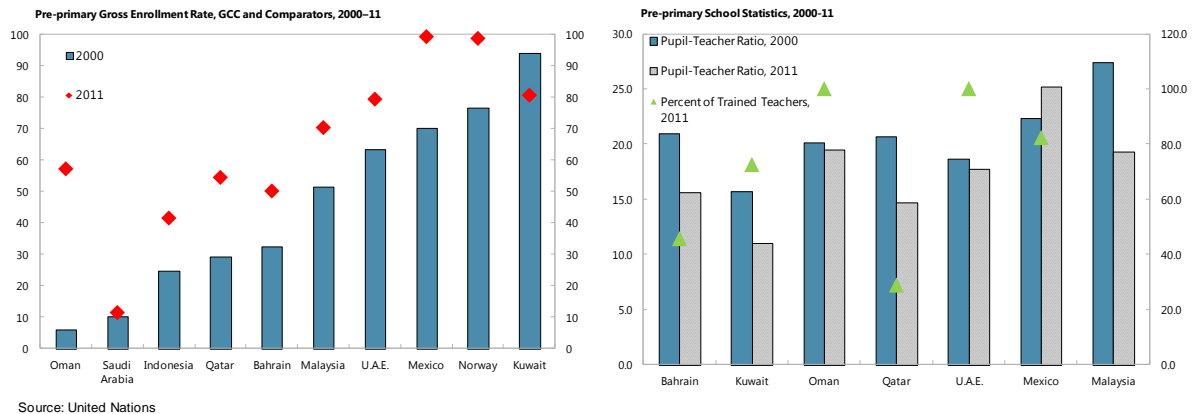
The amount and quality of early childhood education could be another factor in explaining poor results later in life. Several GCC countries have low enrollment rates in early childhood education (Figure 24). The countries with highest enrollment rates in this group also tend to display the highest test scores in the secondary school (Figure 23). In addition, pupils' achievement is highly correlated with teachers' quality. Dolton et al. (2011) suggest that the

quality of teachers depends on how high they are in the income distribution of their country. The wages paid have a direct causal effect on teachers' motivation, in line with the efficiency wage theory, but they could also act as a proxy for the quality, length of training as well as how selective the hiring process is. The teacher quality is a channel to tackle the low test scores and the quality of education in general. Preparing future generations, especially in terms of non-cognitive skills is important and the focus on the quality of education should start at an early stage. As for the current generation, Korea's experience discussed below shows that attitudes can change as well.

Changing societal attitudes toward private sector employment is also important. Korea's "Saemaul Undong" provides an example of a social program that succeeded in changing attitudes of citizens and creating a link between social and economic development (Kwon 2010). It was initially meant as a rural development tool in the early 1970s, but due to its success it was rapidly expanded to incorporate urban communities and the public administration. The main elements of the program were first, to encourage communities to undertake small scale projects to improve their surrounding environment, followed by the investment in income-generating projects and infrastructure. The government help came in the form of funding and providing the organizational framework such as type of projects, leadership, accountability, regional/national coordination, and technical assistance. Although the concrete achievements of the program were impressive, the long term objective was to change social attitudes by encouraging communities to work together, develop self-help and eventually build the will to contribute to the development of the country.¹⁴ For the Saemaul Undong "was in a sense, a movement for spiritual reform of Korean people, and has achieved a lot in this respect. It changed people's attitude from laziness to diligence, from dependence to self-reliance, and from individual selfishness to cooperation with others" (Choe 2005).

The social development literature considers Saemaul Undong as a role model and an important ingredient of the success of Korea (Choe 2005, and Kwon 2010). However, the specificity of each society should be taken into account when applying the Korean program to other societies (Kwon 2010). The experience of Korea shows that through concrete community projects, taking into account their socio-economic context, the governments spur a spirit of self-reliance, innovation and entrepreneurship in their countries. But for this turnaround to take place, governments themselves need to change in the way they approach development.

¹⁴ In the 1970s, for example, 43,000 km of village roads, 61,700 km of agricultural roads, and 79,000 small bridges were built, and 2.7 million households were supplied with electricity (Choe 2005, Table 1).

Figure 23. Education: Years vs. Quality of Schooling**Figure 24. Pre-primary School Statistics, 2000-2011**

Proposition 7: The state could act as a venture capitalist and foster public-private collaboration to design and implement strategies that go beyond the comparative advantage sectors and target high value-added sectors with large potential spillovers and productivity gains.

So far we have argued that for GCC countries to achieve sustainable growth, a dynamic non-oil tradable sector needs to emerge. We also inferred from the experience of oil exporters in general and the GCC in particular that the main impediment to the emergence of the non-oil tradable sector is not a government failure but rather a market failure, requiring a redeployment of state intervention. We also argued that it was urgent to start implementing policies to tackle this challenge. This leaves us with the question of how the state should help the process of diversification in addition to changing the incentive structure in the economy. It is imperative to note that implementing the policies formulated in this proposition without simultaneously tackling the change in the incentive structure of the society as discussed in

proposition 6 would not work. Without the right change in incentives, the policies proposed would be unlikely to produce the much needed tradable sector and could lead to destructive misallocation of resources.¹⁵

The seemingly “common sense” answer would be to focus on sectors where the GCC countries have “comparative advantage.”¹⁶ The comparative advantage theory, however, ignores the fact that to develop new industries, a country needs to accumulate industry-specific capital and knowledge. A central assumption of the modern comparative advantage theory is that the same technology is freely available to every country. The only barrier for the poorest developing economy to produce, say aircrafts, robots, or satellites, is the capital-labor ratio. It ignores the importance of experience in the technology acquisition process, or learning by doing, and the fact that capital accumulation does not necessarily imply developing new industries. For instance, the GCC countries accumulated impressive general purpose infrastructure such as roads, ports, and airports. A large buildup of residential and commercial real estate in the GCC would also amount to capital accumulation. Even in a standard Ricardian comparative advantage framework, Krugman (1987) shows that in the presence of learning externalities (learning-by-doing), there is a justification for infant industry protection policies. Young (1991) further shows that in a growth model with learning by doing, a country starting with lower initial level of knowledge would grow less in free trade equilibrium than in equilibrium without trade. Essentially, producing goods in the sector in which learning by doing has been exhausted without attempting to produce goods with learning externalities, would lead to lower growth outcome.

There are also GCC-specific arguments against a pure comparative advantage strategy. Studies based on “revealed comparative advantage” usually indicate that GCC countries should invest in relatively low value added industries such as agro-industry, basic metal manufacturing, animal skin, and leather products. It could be argued that a relatively poor economy could focus on such sectors and approach industrial upgrade in a gradual way. However, given that the GCC countries are already high income countries, it seems unlikely that focusing on these sectors would prevent them from sliding further down the income ladder as they did in the last decades. These low value added sectors would not attract enough national workers to tackle the pressing employment issue. In the description of Chang and Lin (2009), the question is not whether comparative advantage should be defied or not, but how far from comparative advantage a state should push.

In terms of vertical diversification, the GCC countries have already made significant investment in refining, aluminum smelting, fertilizers and petrochemicals. As the example of Malaysia showed, the important element is to build domestic capabilities and enter into

¹⁵ As argued in Cherif and Hasanov (2013), with low productivity in the tradable sector, optimal investment should be relatively low.

¹⁶ Note that if the same logic were applied to Korea in the 1960s, the conclusion would have been to focus on rice or wigs, which was the main export at the time.

downstream and upstream activities such as medical materials based on rubber, research in biotechnology engineering to improve palm production, and international diversification of Petronas, the state oil company (Jomo 1997). Going forward, the emphasis should be on building linkages with the rest of the economy and technological transfer and upgrade.

This could involve creating networks of suppliers around the existing exporting industries. The oil extraction and refining industries, for example, require a large number of manufacturing inputs (machinery, metals, pipes, platforms) as well as high value added services (software, geological surveys, engineering studies) with high employment potential. These industries would have the advantage of geographic proximity and knowledge of the specific needs and expected demand.

In this respect, Norway's state policies to develop an oil and gas suppliers' cluster in the 1970s represent an interesting case study. First, the government intervened directly in the procurements of oil operators. The Norwegian Petroleum Code imposed that operators communicate their lists of bidders to the government, which in turn had the authority to impose the inclusion of Norwegian firms in the list and even to change who was awarded the bid (Leskinen et al. 2012). Second, the licensing process required foreign operators to come up with plans to develop the competencies of local suppliers (Heum 2008). Third, starting in the late 1970s, the government imposed a minimum of 50 percent of R&D needed to develop a field to take place in Norwegian entities (Leskinen et al. 2012). Although the restrictions were lifted in 1994 when Norway signed trade agreements with the EU, the government continued to support the suppliers through the INTSOK foundation since 1997 to encourage them to internationalize their activity. Eventually the suppliers cluster became highly successful, including on international markets, spanning a large array of high value added industries such as subsea, geology, and seismic, developed the required skills, and employed directly about 114,000 workers in 2009, or more than five times the employment of the operators in the oil and gas sector (Sasson 2011).

To create “system integrators”—large firms to spearhead the sector development—clusters, and “global brands” in the tradable sector as well as to direct SOEs to produce tradables, the state itself in Singapore became what Mazzucato calls “the entrepreneurial state.”¹⁷ Pure coordination failures as discussed in the literature would call for a “system integrator” or industrial beachheads to provide a “big push” (Murphy et al. 1989) for firms to enter this market. The bigger is the technological leap (or the further from the comparative advantage), the bigger is the risk and the time it would take to discover the true outcome (Rodrik 2005 and Chang and Lin 2009). Horizontal diversification has usually focused on tradable manufacturing and high-tech innovation sectors, including high skill services. High-tech sectors, or innovation sectors, have large spillover effects on job creation as shown by

¹⁷ The government-linked companies in Singapore played a significant role in the economy since independence and are run efficiently on a competitive and commercial basis (Ramirez and Tan 2004).

Moretti (2012). The growth of global value/supply chains (GVCs) could further support entry of firms/countries to produce specific goods (e.g. the Asian supply chain). In the current globalized world of trade in tasks and intermediate goods, GVCs are opening up a new avenue for countries to join the high value added goods production chains.

The entry into the tradable sector provides potentially high returns over the long run but at high risk in contrast to the non-tradables that provide high returns in the short run at lower risk. Relevant examples of the risk-return tradeoff are Nokia's mobile unit (part of a logging company at the time) which was incurring losses for about 20 years and Toyota for 30 years before becoming profitable (Chang and Lin 2009). In contrast, Malaysia's tire industry, for example, did not manage to take off (Jomo 1997) showing the importance of competing in international markets and enforcing accountability.

To address the skewness in the risk-return tradeoff in favor of the tradables, governments have used subsidies to support exporters and taxes on firms in the non-tradables. The key element in providing support, however, whether to private firms or SOEs, is to make sure that the top management is responsible for the funds they receive, and if needed, could be fired for non-performance (Chang 2007). Substantial subsidies and tax breaks are given even in advanced economies with the best business environment possible like the US and the EU to large corporations. As reported by the nonprofit organization Good Jobs First, Boeing had 137 subsidies and tax breaks worth about \$13 billion. Alcoa, an aluminum company, received \$5.6 billion; Intel – about \$4 billion, and Dow Chemical – \$1.4 billion over the past decades. According to the WTO, Airbus received about \$18 billion from the European governments in the 1990s-mid 2000s.

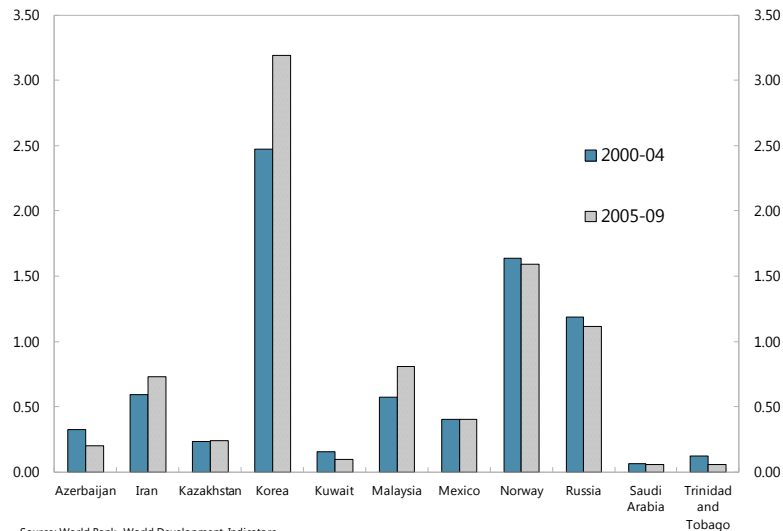
The “insurance” for the tradable sector and access to financing are a second set of policies that countries have used. These are provided through development banks, venture capital (VC) funds, and export promotion agencies. Given the long horizon of potential returns and high risk involved, cheap credit, grants, and access to equity funding would facilitate risk-return tradeoff choices conglomerates and SMEs would have to make. There are programs to support innovation through early stage financing to SMEs in most advanced economies. Lerner (1996) shows empirically that firms that benefitted from the US Small Business Innovation Program (SBIR), which provided more than \$6 billion in funding between 1983 and 1995, grew significantly faster than comparable firms. After the failure to attract multinationals to a newly created Science Park in 1980, Taiwanese VC initiative provided financial incentives and tax credits to encourage the set up of firms (Kuznetsov and Sabel 2011). Seed Fund provided matching capital contributions to private VC funds. Two funds were established and run by US-educated Chinese invited to relocate there. The venture proved successful and large banks and corporates started creating their own VC funds. Even conservative family conglomerates followed suit and started investing in information technology businesses. By the late 1980s, the VC industry growth was well underway.

The creation of special economic zones, industry clusters, incubators with university links and the promotion of entrepreneurship constitute a third set of policies that countries have

used to promote the development of tradables. Special economic zones (SEZs) have helped tackle specific binding constraints that exist in the country such as land rights and legal/bankruptcy frameworks. Similar to Singapore's Jurong Town Corporation (JTC) that specialized in urban planning and made Singapore a location choice for foreign investors, SEZs would provide business services and support, for instance, to acquire land, facilities, lease agreements, and approval of plans in a short period of time (Minli 2008). Incubators with university links, coupled with research and development funds, would support the promotion of technology transfer and commercialization. Kuwait and Saudi Arabia, for example, have very low spending on R&D compared to other oil exporters (Figure 25). Another important factor is the link between universities and industry. A relevant example is the Massachusetts Institute of Technology's (MIT) Technology Licensing Office which facilitates investment in development of discoveries and inventions at the University. For instance, in 2012, about 200 patents were issued and 16 funded companies were established.

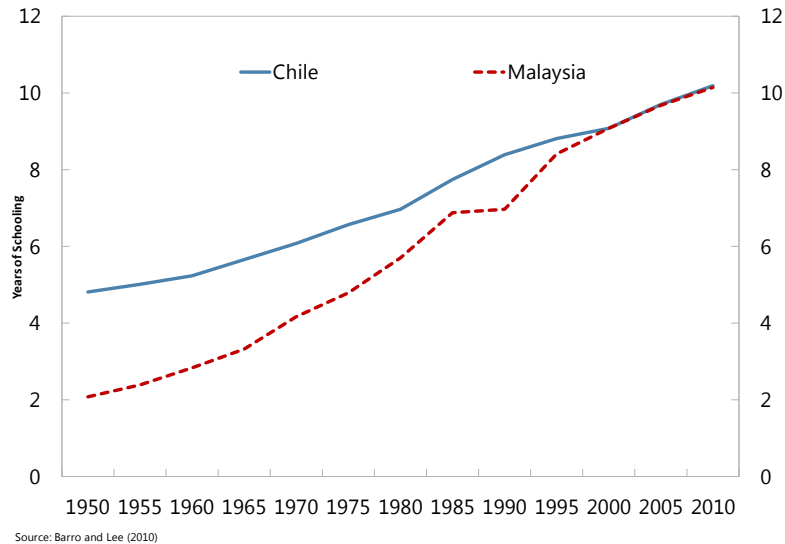
Experience suggests that specific purpose investment is needed to develop a skilled workforce. This is a fourth set of policies. The development of general infrastructure and education is important but not sufficient, and a focus on specific purpose investment is key (Chang 2007). For instance, creating industry clusters necessitates human capital skills relevant to the sector such as engineering and computer science, along with the required infrastructure and industrial facilities. For instance, the polytechnic institute in Guanajuato, Mexico, was created to provide skilled labor geared toward the industrial park outside the campus gates. Internships at auto companies and continued applied education equipped students with skills needed in the industry. As the recent survey of 150 executives of fast-growing companies in the US has shown, skilled workforce and the quality of life were major reasons they located their companies where they did while taxes and business-friendly regulations were not significant factors (Mazerov 2014). These are the two key elements needed to create industry clusters.

Figure 25. Research and Development Expenditures (Percent of GDP, Averages)



One could argue that the lack of human capital skills is a reason not to pursue many high value added and complex activities and wait until they eventually emerge. However, it is learning by doing or learning on the job that builds up the skills needed. The comparison of Malaysia and Chile since the 1970s provides a good example. While Malaysia clearly outperformed Chile in terms of exports growth and sophistication over the past decades, Malaysia had a significantly less educated workforce (Figure 26). It only caught up in the 2000s.

Figure 26. Years of Schooling, Chile vs. Malaysia



Universities can also provide relevant skill sets relatively fast as Ireland showed in the late 1970s. The Irish Development Agency negotiated agreements with electronics firms that increased the demand for electrical engineers substantially. The short-term solution to fill in the gap was to train science graduates through one-year courses, with the expansion of technical programs, courses, and degrees in the longer run. Apprenticeship programs and vocational training need to be formally set up to further increase human capital and skills needed for the targeted industries and clusters. For instance, more than two-thirds of 15-16 year olds enter apprenticeship programs in Switzerland, while more than half of students are apprentices in Germany, while only 25 percent of students go to college (Nash 2012). Retail trade and manufacturing are the largest employers. The government could provide incentives such as directly subsidizing the cost to firms for “hard to place” apprentices as in Germany (Aivazova 2013). The requirement to develop local talent and local suppliers as was done in Norway would further produce the needed skill set.

More generally, the government can foster linkages between SOEs, multinational companies (MNCs), and SMEs to promote the development of tradables and exports. A potential way to achieve this is to create a program similar to the Ireland’s National Linkage Promotion Program (1987-1992). Started by the Industrial Development Authority, the program brought together MNCs and potential suppliers to facilitate local sourcing. The government instructed various agencies to provide support to SMEs to navigate through bureaucracies, to

collaborate, and provide effective service that could be fine-tuned depending upon the needs of customers and suppliers. The MNCs targeted were in electronics industry and were lobbied extensively. They contributed costs for the first two years of the program and provided technical assistance together with state technical agencies. The SMEs were thoroughly assessed for participating in the program and selected together with MNCs. In the 5-year program operation, MNCs increased locally sourced materials from 9 percent to 19 percent of their purchases.

The GCC countries have pursued some of the policies mentioned above—such as the creation of special economic zones, links between universities and businesses, skills development, SME funds, development banks, export promotion agencies, and more recently clusters. However, these policies are yet to deliver the desired results.

III. CONCLUDING REMARKS

In this paper, we have described the main features of the prevailing economic model in the GCC that relies on oil as the main export and a concentration of economic activity in the low skilled non-tradable sector. We observed that over the last decades this economic model yielded important achievements in terms of human development and infrastructure development. However, in terms of relative economic performance the model led to stagnation and GCC countries are being outperformed by other countries.

A growing body of literature shows the main issue with the economic model of the GCC is the lack of a dynamic non-oil tradable sector. We study a set of oil exporters and infer from it that Dutch disease is a powerful force at play, which was only mitigated by an initial high level of technology. The few successes at diversification took place only amid dwindling oil revenues combined with decades of adequate policies to prepare the ground.

We contend that a strategy to diversify the non-oil tradable sector must be implemented now even for the richest GCC countries. We argue that the main hurdles facing diversification efforts in the GCC stem from market failures rather than government failures, with the incentive structure in society needing to be changed. Although there is room for improving further the business environment, infrastructure, skill sets, and institutions, these are unlikely to be enough to spur non-oil exports on their own. To do so, the government needs to change the incentive structure of the economy to encourage individuals to work in the private sector and for firms to look beyond the confines of domestic markets and seek new export opportunities. Improving the quality of education especially in early childhood and implementing a social development program are important elements of changing incentives.

Beyond this, experiences in other countries show that diversification policy has often followed a mix of vertical diversification in existing exports industries and horizontal diversification in suppliers' clusters for those industries and industrial beachheads into high value added and innovation sectors. Crucially, this policy is to be done in tandem with changing the incentives for workers and firms to achieve the desired results. These countries

have used a combination of policies to achieve these results, including the use of venture capital funds, development banks and export promotion agencies, combined with skills development and the emphasis on technological upgrading and competition in international markets. In the GCC, some degree of coordination in terms of diversification strategies would be helpful to ensure that countries do not all develop in the same area and thereby risk crowding each other out.

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Appendix I. Main Economic Characteristics of Oil Exporters

Appendix Table 1. Oil Exporters: Selected Economic Indicators

	Population (mil)		GDP per capita (PPP, USD)		Percent of commodity/oil revenues in total fiscal revenues 1/ latest 2/	Percent of oil exports in total exports of G&S latest 2/
	1970	latest 2/	1970	2010		
Bahrain	0.2	1.2	21654	23101	72.3	69.0
Kuwait	0.7	3.9	102997	41240	81.7	86.2
Oman	0.7	3.2	6118	22390	86.1	65.6
Qatar	0.1	1.9	79555	136248	64.7	74.8
Saudi Arabia	6.4	29.6	16829	20189	81.8	83.1
U.A.E.	0.2	9.0	24062	60175	80.6	30.5
Algeria	13.6	38.1	4066	6263	63.2	93.0
Angola	6.0	20.8	2313	5108	80.2	96.5
Azerbaijan		9.3		9474		83.3
Brunei Darussalam		0.4	51532	44555	91.9	88.3
Canada	21.3	35.2	17726	37104		19.5
Chad	3.6	11.0	879	1331	61.2	79.0
Congo, Republic of	1.2	4.2	1348	2254	74.4	83.7
Ecuador	5.9	14.9	2916	6227	33.2	49.4
Equatorial Guinea		0.8	737	13958	158.4	97.9
Gabon	0.7	1.6	8281	9896	60.4	80.4
Indonesia	120.3	248.0	816	3966	17.7	8.6
Iran	28.7	77.1	8480	9432	37.9	60.7
Iraq		34.8	2779	4537	91.2	97.2
Kazakhstan		17.2		12303	52.3	58.3
Libya	2.0	6.5	26814	19491	96.0	96.8
Malaysia	10.5	30.0	2046	11956		10.3
Mexico	50.9	118.2	6821	11939		12.2
Nigeria	55.2	169.3	1572	1695	80.1	91.6
Norway	3.9	5.1	17980	50488		23.0
Russia		141.4		15068	29.8	47.8
Syria	6.6	21.4	1753	3793	18.5	26.4
Timor-Leste		1.2		1119		
Trinidad and Tobago		1.3	11110	30749	49.3	28.4
Turkmenistan		5.7		15635	49.7	91.4
Venezuela	10.2	30.0	9366	9071	30.4	94.3
Yemen		26.7		2393	46.2	51.4

1/ MENA and Central Asian countries=oil rev from Regional Economic Outlook; others=commodity rev from World Economic Outlook
2/ latest=2013, except Syria=2010

Appendix Table 2. Oil Exporters: Reserves, Horizon, and Production

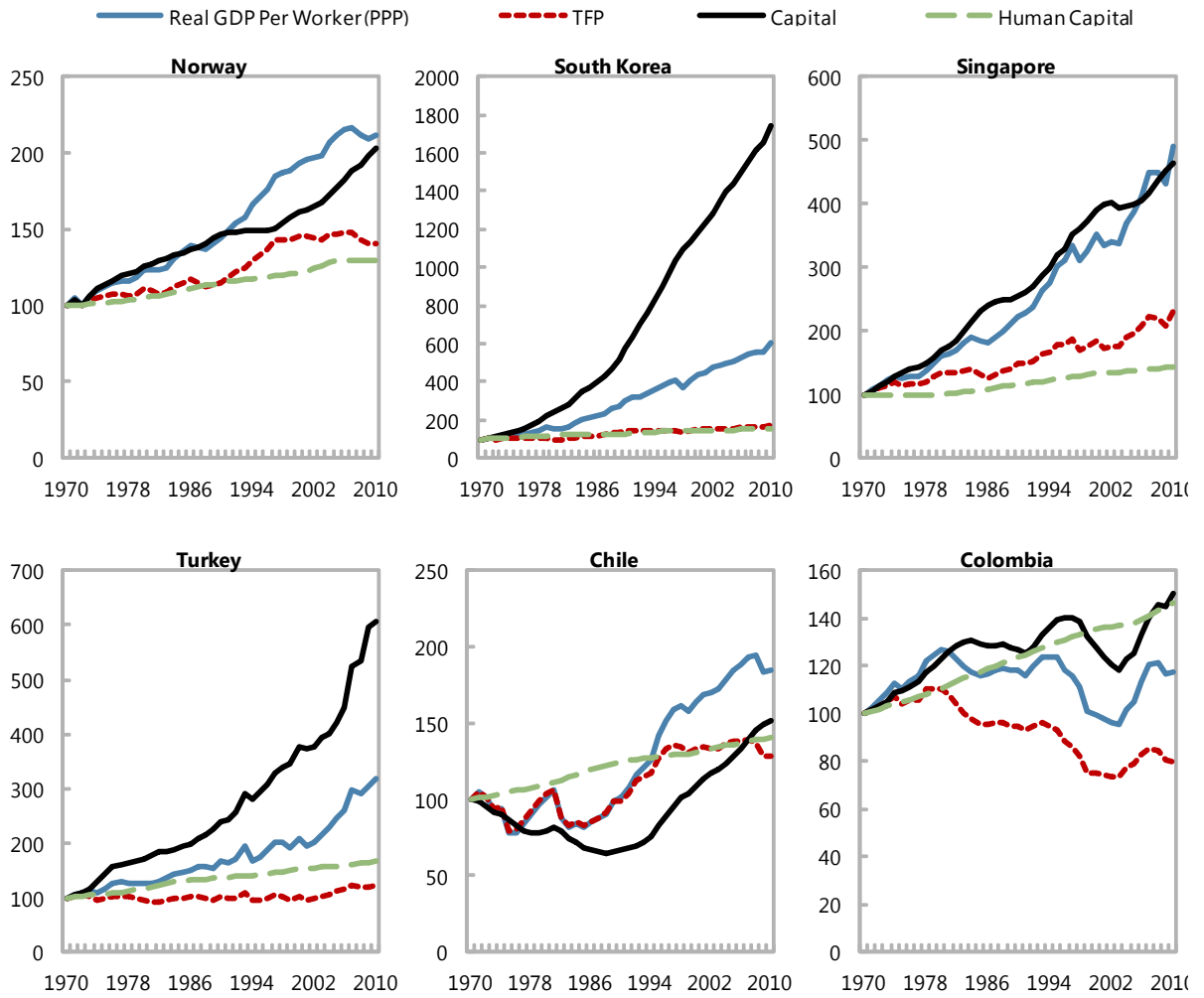
	Year oil was first discovered or produced 1/	Current production (mbpd)	Reserves as of 12/2012 (bil barrels)	Oil horizon at current production rate, years
Bahrain 2/		0.1	0.1	6.2
Kuwait	1938	3.1	101.5	88.9
Oman		0.9	5.5	16.3
Qatar	1935	2.0	23.9	33.3
Saudi Arabia	1938	11.5	265.9	63.2
U.A.E.	1958	3.4	97.8	79.3
Algeria	1956	1.7	12.2	20.1
Angola	1955	1.8	12.7	19.5
Azerbaijan		0.9	7.0	22.0
Brunei		0.2	1.1	19.0
Canada		3.7	173.9	127.3
Chad		0.1	1.5	40.8
Congo, Republic of		0.3	1.6	14.8
Ecuador	1921	0.5	8.2	44.7
Equatorial Guinea		0.3	1.7	16.5
Gabon		0.2	2.0	22.4
Indonesia		0.9	3.7	11.2
Iran	1908	3.7	157.0	116.9
Iraq		3.1	150.0	131.9
Kazakhstan		1.7	30.0	47.6
Libya	1959	1.5	48.0	87.2
Malaysia		0.7	3.7	15.6
Mexico		2.9	11.4	10.7
Nigeria	1956	2.4	37.2	42.2
Norway		1.9	7.5	10.7
Russia		10.6	87.2	22.5
Syria		0.2	2.5	41.8
Timor-Leste 2/		0.1	0.0	0.0
Trinidad and Tobago		0.1	0.8	18.8
Turkmenistan		0.2	0.6	7.4
Venezuela	1914	2.7	297.6	299.1
Yemen		0.2	3.0	45.6

Source: BP Statistical Review, 2013.

1/ Data is from OPEC. Algeria: first commercial discovery year; Angola: year oil first produced; Ecuador: first productive oil well year; Iran: year first oil well drilled; Kuwait: year first commercial oil well drilled; Libya: year first productive oil well struck; Nigeria: year oil first discovered; Qatar: year oil exploration began; Saudi Arabia: year oil first struck; U.A.E.: year first commercial oil discovered; Venezuela: year first commercial oil well drilled.

2/ Current production and reserves data for Bahrain and Timor-Leste from EIA; International Energy Statistics platform.

Appendix Figure 1. Selected Countries: Growth Decomposition, 1970-2010 (1970=100)



Source: Penn World Tables 7.1

Appendix II. Diversification Experience of Oil Exporters

Diversification trials and failure

Low tech/high oil revenues countries, in particular in Algeria, the GCC, and Venezuela tried to diversify and industrialize early on and went through three major phases in their approach to export diversification. However, they mostly failed to truly diversify their exports away from oil.

The first phase of the diversification process, taking place in the 1960s-1970s, could be characterized by an oil boom, import substitution policies, and the “heavy-handed” state. Nationalization policies of late 1950s-early 1960s expanded the state and the use of central planning. Price controls and production subsidies became widespread. Production was concentrated in state-owned enterprises (SOEs). High tariffs and other protection measures (e.g. licenses) insulated SOEs from international competition as the state pursued import substitution policy. SOEs were not expected to export unlike their counterparts in Southeast Asia. The spike in oil prices in the 1970s provided a large flow of oil revenues that could be transformed into an industrial base. In fact, high investment rates followed, in the range of 40 percent of GDP and above, higher than in Korea at the time. The oil revenue transformation into fixed investment spending relied heavily on SOEs as well.

With the strong influence of the state in economic affairs, vertical policies and heavy industrialization were the hallmark of the diversification strategies of this period. Algeria invested in iron and steel, chemicals, and construction materials (Gelb et. al. 1988). Venezuela built SOEs in steel, aluminum, petrochemicals, oil refining, and hydroelectric power (Di John 2009). Energy- and capital-intensive heavy industries in the Gulf States concentrated in petrochemicals, chemical fertilizers, steel, and aluminum. In joint ventures with foreign companies, Qatar spearheaded the creation of petrochemical, fertilizer, and steel industries in the early 1970s (UN 2001). Saudi Basic Industries Corporation (SABIC), established in 1976, pursued import substitution projects such as chemicals, plastics, and building materials, followed by large scale petrochemical projects in late 1970s-early 1980s (Hertog 2011). Dubai (DUBAL) and Bahrain (ALBA) ventured into aluminum smelting and aluminum rolling industries. Cheap energy and feedstock made these SOEs profitable. For instance, SABIC was profitable once its large petrochemical plants became operational by mid-1980s. In contrast, SOEs in Algeria, Venezuela, and Libya mostly ran deficits. Without the pressures of international competition and the need to improve productivity, these deficit-running industries could survive as long as oil prices were high.

During the second phase of the diversification process, as oil prices collapsed in the 1980s-1990s, oil exporters had to adjust their spending and shifted course to pursue liberalization policies. The heavy industries’ reliance on imported intermediate goods and inputs did not survive the collapse of oil prices, especially since the goods produced could not be exported to fill in the income gap created by falling oil prices. By the mid-1980s, most oil exporters

abandoned the import substitution approach in favor of a more flexible economy. Tariffs and price regulations were dismantled or reduced and public enterprises were closed down or privatized to a large extent. This period saw also a drop in the average investment as a share of GDP as the large current account deficits accumulated during the oil slump had to be absorbed. Despite large real exchange depreciation, non-oil exports did not increase much as there was no industrial base to take advantage of improved competitiveness. Hausmann and Rodriguez (2006) show that out of ten oil exporters that experienced export collapses in 1981-2002 (Algeria, Bahrain, Ecuador, Indonesia, Mexico, Nigeria, Oman, Saudi Arabia, Trinidad and Tobago, and Venezuela), only Indonesia and Mexico managed to develop non-oil exports and grow their economies. Both of these economies had a sufficient non-oil tradables base to increase their non-oil exports.

Henry (2009) argues that it was the reversal of industrialization policies during the bust years that resulted in the failure of the industrialization projects in Algeria. After the death of Algeria's president, Boumediene, in 1978, industrializing technocrats lost their protection and industrialization projects from tires and trucks and automobiles to cement and gas liquefaction plants were stopped. The argument went that the previous policies resulted in a series of disconnected projects that did not produce intra-industry linkages and exchanges of goods and services. However, policies of deregulation, restructuring, and selling of SOEs have not improved the outlook. The deregulation of state monopolies produced a handful of well-connected importers that further discouraged local producers. The manifestation of Dutch disease was the result of policies rather than oil rents per se (Henry 2009).

In contrast, political fragmentation contributed to the failure of heavy industrialization policy in Venezuela. Di John (2009) argues that the populist, clientelist, and factionalized political system of the post-1960s did not bode well for the heavy industrialization projects that required a centralized power capable of mobilizing resources and effectively monitoring these projects. In the 1960s, manufacturing output was growing due to chemicals, metals such as steel and aluminum, and metal-transforming industries. The government recognized that import-substitution industries needed to export to continue to grow. In 1973, the Fondo de Exportaciones (FINEXPO, the state export credit fund) provided numerous export credits to help firms enter foreign markets. Most of the support went to manufacturing firms, especially chemical, aluminum, and steel sectors, but was erratic. Non-oil exports were dominated by these sectors and to a lesser extent, by transport equipment. Despite the non-oil export growth, heavy industries ran into problems. SOEs borrowed heavily in dollars, and external debt skyrocketed. The country went through capital flight, devaluation, and large debt repayment in early 1980s. The number of SOEs increased to about 400 in 1985, and the state employment increased significantly. At the same time, public investment was plummeting as personnel expenditures and interest payments on external debt in SOEs went up substantially. The subsidies proliferated, and the number of large manufacturing firms under protection more than doubled in 1970s-80s, receiving most of state credits. With liberalization of the late 1980s, many firms could not survive. Heavy industry firms witnessed the lowest exit as political costs of closing them down were high, but existing

firms were running much below capacity. Policies were misguided, but in large part they were driven by the fragmented political system, which was unable to exclude firms and business interests from the state support or discipline them as well as coordinate investments and subsidies across the economy (Di John 2009).

By early 2000s, the third phase of the diversification, as oil prices started rising, oil exporters pursued another investment strategy. Increasing oil revenues led oil exporters to increase spending on investment in infrastructure to compensate for underinvestment during the bust years. After liberalization policies implemented earlier, international markets were open to them and countries pursued further improvements in business environment to attract foreign capital. Oil exporters invested in general purpose investment, in particular infrastructure and real estate, and focused further on comparative advantage sectors to promote export diversification: oil-related and energy intensive industries such as aluminum and petrochemicals. Algeria, the GCC, and Venezuela's non-oil exports were still mostly chemicals and metals. In addition, the GCC countries focused on developing services, especially in tourism, logistics, and finance.

Diversification successes

Malaysia, Indonesia and Mexico have succeeded in diversifying their exports but more needs to be done.

Malaysia

Malaysia successfully expanded its exports base as well as the sophistication of its manufacturing. The country has promoted specific strategic industries in order to achieve the maximum technological transfer possible. It relied on both horizontal and vertical development of industries as well as natural resource-related industries (Yusof 2011, and Jomo 1997). Above all, Malaysia used active state intervention to spur growth in sectors it deemed important.

Malaysia has enjoyed a diverse and rich endowment in natural resources such as palm oil and oil, considered the comparative advantage sectors. The country pursued vertical policies toward higher value added activities related to natural resources industries. Active state intervention produced mixed results. The petroleum industry started around the spike in oil prices in the 1970s as oil was discovered at that time. Petronas, the state oil company, became a very efficient and globalized firm operating in more than 30 countries, involved in exploration, exploitation, refining and numerous oil related complex activities. It is ranked among the most profitable firms in the world. Countering oil depletion and exploiting offshore oil fields must have contributed to its active technological upgrade. Palm oil refining could also be considered a success as Malaysia has retained a dominant position in the sector and succeeded in diversifying away from relying exclusively on raw palm oil exports. The investment in refining capabilities followed the imposition of exports duties on raw palm oil.

However, a similar approach in moving up the value added chain in the rubber industry to produce tires and logging industry to build furniture did not yield the same results. One common thread in all the resource-related manufacturing in Malaysia in comparison to most other oil exporters is the emphasis on technology transfers and upgrading and the drive to compete internationally.

In the 1960s, Malaysia followed an import substitution strategy in particular in heavy industries: steel, cement, and automotive (Proton car). To protect new industries, the state intervention with tariff barriers and subsidies started with public enterprises although most of them were privatized at least partially at a later stage. This strategy was similar to Korea's a decade earlier, but with much less emphasis on exports and much less performance assessment (Jomo 1997). So far, these companies have not been as successful as their Korean counterparts on international markets and relied mostly on domestic markets. Yet it should be pointed out that successes in these industries in other countries took several decades of losses before taking off (e.g. Toyota and Nokia).¹⁸

Malaysia was one of the earliest oil exporters to scale down its import substitution strategy in the 1970s and started relying on export promotion policy (Jomo 1997). As a result, Malaysia's manufacturing grew tremendously over the last three decades as it was forced to compete internationally and grow beyond its small domestic market. Today, manufacturing represents more than a third of all exports (and three-quarters if one includes refining and other natural resource-related manufacturing). It is one of the major exporters of electric and electronic manufacturing goods in the world. To achieve this goal, Malaysia used a multi-faceted approach: (i) it selectively encouraged FDI in exports, especially in electronics; (ii) it relied on free trade zones; (iii) offered lower taxes; and (iv) provided a stable business environment and well as an educated workforce with competitive wages. However, Jomo (1997) notes the low level of linkages of these industries with the rest of the economy and the absence of export "champions" in high value added goods as in the other successful East Asian economies, explaining partially why Malaysia did not join the rank of Korea.

A standard explanation of the success of Asian economies, including Malaysia is the high rate of saving and investment, which led to a rapid accumulation of physical capital. Jomo (2001) shows that for most of these economies, saving was mainly comprised of corporate saving while household saving was low. The only countries in this group where the households' saving rates were high were Singapore and Malaysia. In the case of Malaysia, high household saving rate was due to a mandatory publicly managed retirement fund for employees in the private sector. All employees were required to contribute 10 percent of their income to which the employer added 12 percent of the employee's salary (on average since 1980). Most of the savings were invested in government securities by law. This forced saving

¹⁸ Chang (2007).

scheme amounted to financial repression and helped the government to finance its investment plans.

In parallel to rapid physical accumulation, one cannot ignore human capital accumulation as another important factor in the Malaysian miracle. The Malaysian state used public agencies to enforce a continuous retraining and skills upgrading of employees. The Human Resources Development Fund was set up in 1993 and has been financed by a levy on employers (about one percent of each employee's salary).¹⁹ Its main target is the manufacturing sector although many service sectors are included. The firms in the program are eligible to use their contribution for re-training and skills upgrading within the Fund's guidelines. At the peak of their scholarship program in 1995, 20 percent of all students were studying abroad costing the government an estimated \$800 million annually or 12 percent of the current account deficit in 1995.²⁰ Finally, several agencies were tasked with helping firms and especially SMEs in technological upgrading, insuring quality control to reach international standards and markets. These agencies contributed to helping firms export on international markets by providing consulting services at different levels.

Indonesia

Like other oil exporters, Indonesia experimented with an import substitution strategy in the 1970s during the spike in oil prices. It created SOEs involved in heavy industries such as cement and steel to support investment in infrastructure and fertilizers and agricultural machinery to support agriculture. The growth of manufacturing during the 1970s reached about 15 percent per year (Poot et. al. 1990). However, the SOEs that operated in isolation from international markets and with little performance control were characterized by inefficiencies and relied on public support (Hill 1988).

With the collapse of oil prices in the 1980s, and contrary to most other oil exporters and in particular OPEC members, Indonesia managed a spectacular turnaround. It adopted a set of new policies meant to attract foreign capital in export-oriented manufacturing. The main instruments of this policy were the creation of free trade zones, tax incentives, the easing of tariff restrictions and non-tariff barriers as well as the largest exchange rate devaluation among developing nations in the 1980s (Jomo 1997). The result was a substantial growth in labor intensive manufacturing (textile, footwear, electronics, etc.) due to the attractive level of wages. Gelb et. al. (1988) argued that Indonesia was the only OPEC member that used a significant share of its oil revenues to develop its productive capacity especially in agriculture. However, the low wages may have played a more prominent role along with the Japanese yen appreciation in the mid-1980s and the subsequent offshoring by Japanese firms in Southeast Asia.

¹⁹ <http://www.hrdf.com.my/wps/portal/PSMB/MainEN/Corporate-Profile/About-HRDF>

²⁰ <http://www.theguardian.com/higher-education-network/blog/2012/jul/02/higher-education-in-malaysia>

More importantly, oil revenues were already declining rapidly in the 1990s to the extent that Indonesia became a net importer of oil by 2003 (IEA 2014). In other words, the intensity of Dutch disease was fading in this period. Between 1985 and 1997, the growth of the manufacturing sector was about 10 percent per year (Dhanani 2000). However, growth in the manufacturing sector has stalled since the 1997-98 Asian crisis to the extent that observers started fearing early deindustrialization (Aswicahyono and Manning 2011). Indonesia remained a good performer in terms of overall growth during the 2000s, but manufacturing was not the engine of growth as in the 1990s (Aswicahyono and Narjok 2011).

During the liberalization period of the 1980s, the government performed a “strategic retreat,” but retained several of its strategic projects, in particular in steel and the aircraft industry. The national steel company is considered to be lagging behind other ASEAN producers (OECD 2013). The attempt to set up an aircraft industry was negatively viewed and taken as an example of why Indonesia failed to catch up (McKendrick 1992). While agreeing with the inefficiencies and other political economy problems, Jomo (1997) notes that the experience of Indonesia also shows that with government commitment, a complex technology industry was successfully started from scratch in what was a poor nation at the time. Indonesia today is part of a select group of developing economies with clusters of aircraft maintenance and aircraft parts manufacturing. The creation of the national champion, albeit at a large cost, did facilitate the establishment of this cluster.

Mexico

Indonesia and Mexico share several similarities. Both have large populations and followed broadly the same export-led strategy. Both relied heavily on free trade zones focused mainly in labor intensive industries and mostly foreign-owned. This policy coupled with attractive wages and business environment built the export successes of both countries. However, the firms operating in these zones did not climb the value added ladder much and the level of linkages between them and the rest of the economy remained low (Jomo 1997, and Verhoogen 2012).

Mexico’s experience in the automobile industry in the last 15 years is notable. Most of the industry is located in the center of the country, far from the borders, the traditional land of the “mequalidores”. Today the employment in the sector in Mexico surpasses that of the U.S. Midwest (40% of North American employment in Mexico vs. 30% in the U.S. Midwest in 2012) and is expected to continue its fast growth. Obviously, the NAFTA agreement and the exchange rate depreciation in the 2000s helped propel the country as an attractive place for FDI by automotive companies planning to export to the US. However, the policies adopted by different states in Mexico in pursuit of building manufacturing clusters, and their performance in terms of productivity and quality upgrading are of interest. In particular, the State of Guanajuato followed what can be described as a purpose specific investment strategy in parallel with strong incentives to attract firms. In terms of infrastructure, the State built a

2,600-acre interior port, customs facilities, a railroad depot and a link to the local airport (Cave 2013). Nearby, there is also a polytechnic university to supply engineers, and the state gives incentives to firms to send workers for training abroad. The State has attracted foreign firms by providing tax incentives but more interestingly by acting “as an overall consultant in terms of support”.²¹

More recently, Mexico saw the rapid growth of aerospace clusters reaching a total export of \$12.2 billion in 2012.²² The aerospace industry requires an even higher level of technical skills and is subjected to very high levels of international standards in terms of quality control. So the establishment of more 300 firms in the aerospace industry is a sign of an improvement in productivity. However, Romero (2010) observes that the R&D activity in the sector is quasi-nonexistent. In his study based on surveys of aerospace firms in several clusters, he shows that the major factors in the location decision of these firms are industrial infrastructure, skilled labor force and low operational costs. He concludes that as long as the government does not follow a more active policy in terms of encouraging R&D and innovation, in particular the creation of domestic “system integrators,” i.e. a firm constructing and commercializing whole aircrafts instead of components, the productivity gains and innovation in the sector would remain limited.

²¹ Norbert Buechelmaier, executive vice president of manufacturing of Getrag.

<http://www.siteselection.com/features/2009/jan/Mexico/>

²² Araujo (2012).