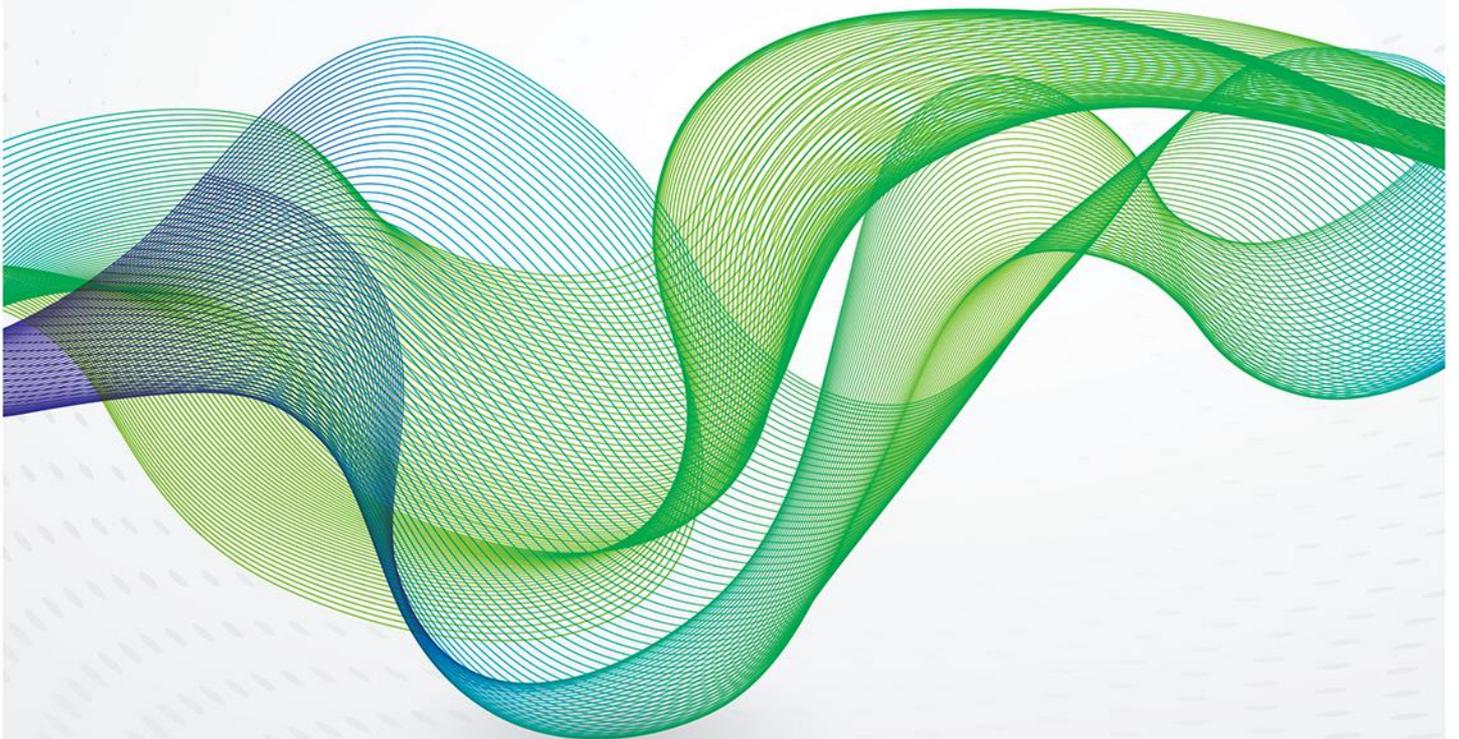




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Diversification in Gulf hydrocarbon economies and interactions with energy subsidy reform: lessons from Kuwait





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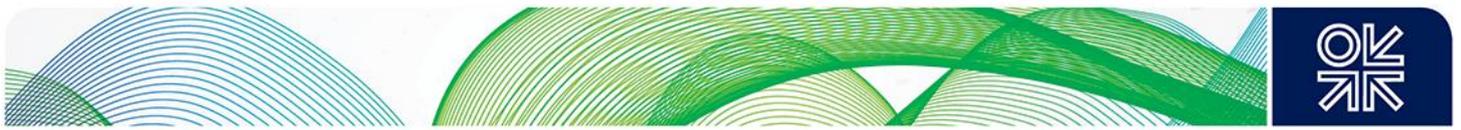
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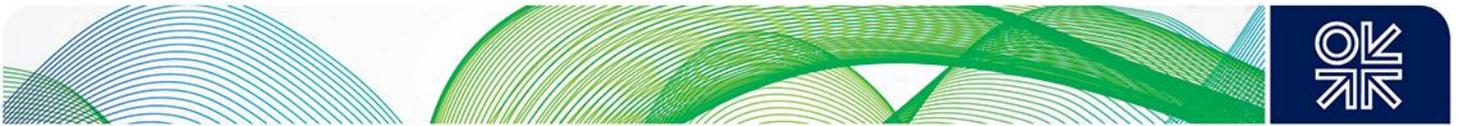
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Abstract

After the recent oil price declines in mid-2014, Middle East and North Africa (MENA) oil exporters including Kuwait reduced energy subsidies and passed economic diversification-enhancing policies in an attempt to improve fiscal balance and economic sustainability. This paper argues that these economies already have a diversified base but this base has not contributed to export or fiscal diversification due to structural constraints and economic distortions. Using illustrations from Kuwait, this argument is tested with simulations using an economy-wide general equilibrium model that embodies key features of the Kuwaiti economy—including subsidies, sovereign wealth funds, industrial oligopolistic structure with collusive pricing, and a labour market that depends heavily on a segregated expatriate labour force. Model simulations confirm that after an oil price decline, subsidy reform alone adds little impetus to diversification, but that relaxing some economic constraints, through mobility of Kuwaiti labour (which simulate Kuwaitization policies) and competition reform, would achieve large efficiency gains throughout the economy and could expand non-energy tradable sectors. This result supports the argument put forth in the paper that weak economic diversification in MENA oil exporters is not primarily due to Dutch disease, as is frequently argued in the relevant economics literature, but to economic and structural constraints and economic distortions. The results have two key policy implications. In small MENA economies, pricing regulation has the potential role of moderating the economic impacts of oil price volatility. And in developing oil economies with pervasive oligopolies like those in the Gulf region, microeconomic reform can achieve efficiency and enhance the diversification effects resulting from energy and fiscal subsidy reforms. Finally, implementing reforms that reduce distortions is a politically complex process, therefore, to achieve meaningful diversification and fiscal sustainability, these reforms ought to be implemented as part of a wider set of broader economic, social, energy, environmental, cultural, and institutional reforms.

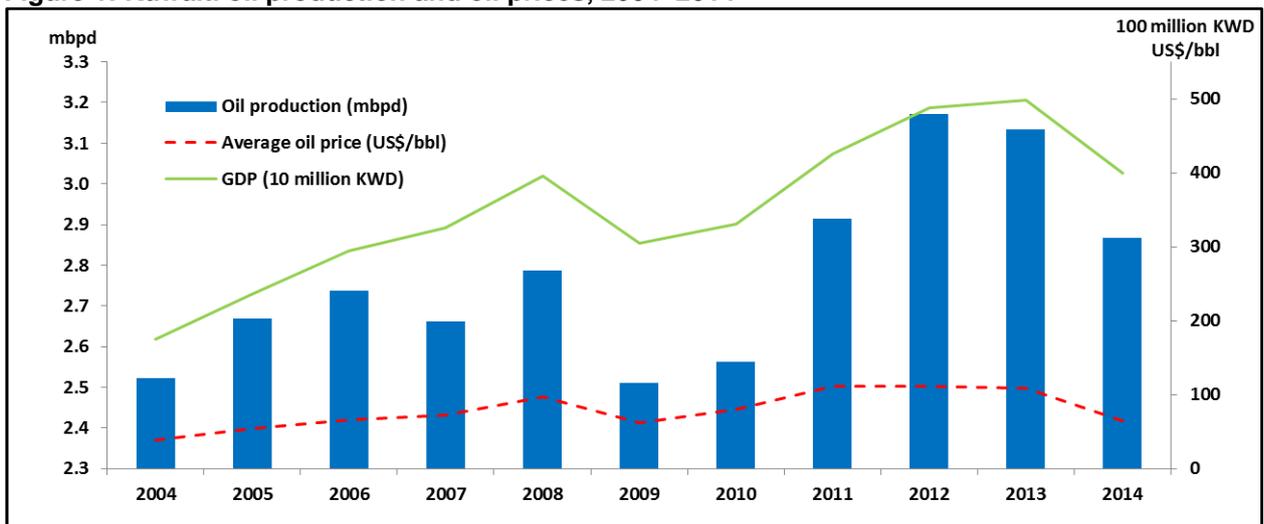
Keywords: Diversification; oil; energy; subsidies; competition reform; labour policy; general equilibrium; Gulf; Kuwait.



1. Introduction

The collapse of the oil price in mid-2014 has had adverse effects on the economies of oil exporters in the Middle East and North Africa (MENA) region due to their overdependence on oil rents. To varying degrees, these economies' gross domestic product (GDP) tended to rise and fall following oil production and oil prices, as shown for Kuwait in Figure 1. Net foreign reserves are also positively correlated with the oil price, as shown for Saudi Arabia in Figure 2.

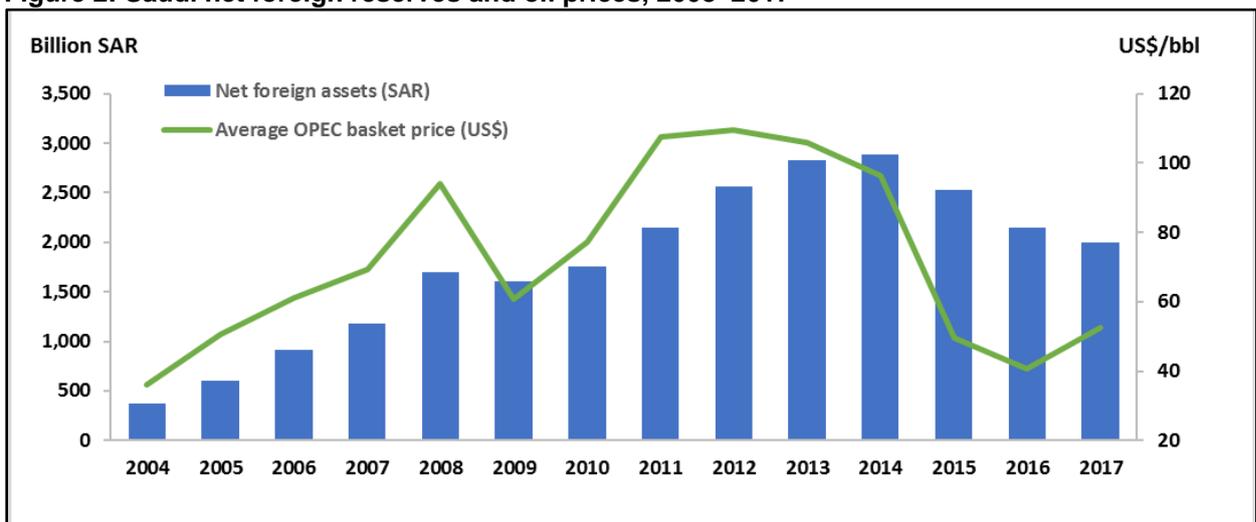
Figure 1: Kuwaiti oil production and oil prices, 2004–2014*



* mbpd = million barrels per day; KWD = Kuwaiti dinar.

Data sources: Kuwait Central Statistical Bureau (2017a); British Petroleum Company (2018); EIA.

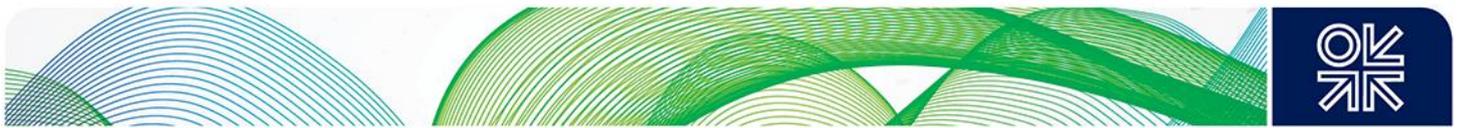
Figure 2: Saudi net foreign reserves and oil prices, 2008–2017*



* SAR= Saudi Arabian riyal.

Data sources: OPEC (2018); Saudi Arabian Monetary Authority (2018).

Due to this overdependence, the decline in the oil price between mid-2014 and 2016 made economic and fiscal reform an urgent priority for MENA governments. Two reform goals, reducing energy subsidies and accelerating diversification away from the petroleum sector, have been positioned as key and complementary solutions to improve government revenues and restore fiscal balance. This paper



is concerned with the linkages between these reforms, specifically the impact of energy subsidy reform on economic diversification.

For MENA oil exporters, both subsidy reform and diversification are important. Although diversification has been a key target in these states' economic development plans, their dependence on oil revenues remains high. Overdependence on an exhaustible resource is economically unsustainable, and diversification into non-petroleum sectors offers potential alternative revenue sources. Increasing the share of export revenue and government revenue contributed by non-energy sectors will reduce the economy's exposure to volatile commodity prices and aggregate economic effects to sector-specific shocks. Even though the state dominates the economy (and is likely to continue to do so), diversification entails reinvigorating the private sector and therefore requires broader reforms.

Subsidy reform has also featured as a key target in MENA economic development plans. Fuel subsidies have been shown to be distortionary (Plante, 2014). Unlike diversification, subsidy reform has advanced. Despite historic economic advantages, like strong fiscal positions and rich sovereign wealth funds (SWFs), in some MENA oil-exporting economies, and widespread opposition to energy price reform, the unanticipated sharp decline in oil revenue increased the urgency of reducing energy subsidies. Domestic gasoline and diesel prices were raised often to match the international price of oil at that time, and in many instances electricity prices were also raised, as shown in Table 1. For example, in the Gulf Cooperation Council (GCC) states, the most highly subsidized within MENA, the average gasoline price was raised by 80 per cent from US \$0.30/litre in 2015 to \$0.54/litre in 2018.

Table 1: Energy prices in MENA oil-exporting economies, 2015–2018 (\$/litre)

Country	Gasoline		Diesel	
	2015	2018	2015	2018
Algeria	–	0.35	–	0.19
Bahrain	0.27	0.53	0.27	0.42
Iran	–	0.29	–	0.07
Kuwait	0.24	0.34	0.39	0.38
Oman	0.31	0.58	0.38	0.65
Qatar	0.27	0.51	0.27	0.55
Saudi Arabia	0.14	0.54	0.06	0.13
United Arab Emirates	0.59	0.67	0.56	0.78

Sources: IMF (2015) for 2015 values; GlobalPetrolPrices.com (2018) for 2018 values.

In the literature on oil exporting economies, a number of recent studies investigate the impact of energy subsidy reform on welfare and the macroeconomy (Gahvari and Taheripour, 2011; Arze Del Grando et al., 2012; BuShehri and Wohlgenant, 2012; Lin and Li, 2012; Fattouh and Mahadeva, 2014; Dennis, 2016; Rentschler, 2016; Li, Shi, and Su, 2017; Shehabi, 2017; Gelan, 2018), but they offer inconclusive evidence. There have also been few qualitative studies on diversification in MENA or on the impact of energy subsidy reform on these economies' non-oil sectors.

Within the larger economics literature, diversification is mostly explained in the context of the 'Dutch disease' literature (Corden and Neary, 1982; Corden, 1984; Venables and van der Ploeg, 2010), often expressed as a manifestation of the resource curse. The term 'Dutch disease' was coined by the *Economist* in 1977 following the discovery of large petroleum reserves in the North Sea. It refers to instances when a boom in natural resource exports leads to a significant appreciation of nominal and real exchange rates (or inflation in countries with fixed exchange-rate regimes), which adversely affects the non-resource tradable sectors and expands the non-traded service sectors (Corden and Neary, 1982; Corden, 1984, 2012; Venables and van der Pleog, 2010; Tyers and Walker, 2016). The Dutch



disease is best known through the seminal work of Corden (1984), although Wilson (1931) first formulated the roots of the theory, and others—including Salter (1959), Swan (1960), and Snape (1977)—contributed to its development. In the context of Kuwait, Alsabah (1985), Al-Sabah (1988), and Looney (1991) suggest that there is strong evidence for Dutch disease effects in Kuwait following oil export price hikes.

In the context of oil-exporting economies, exchange rate theories are also important, as exchange rates tend to reflect the general competitiveness of a country's products. Economic studies of real exchange rates—defined as rates of exchange between a representative bundle of goods and services at a given local economy and corresponding bundles in foreign countries—show they are volatile and persistent. The Balassa-Samuelson effect (Balassa, 1964; Samuelson, 1964), states that productivity gains and higher investments in tradable (exports-producing) sectors cause deviation from purchasing power parity, in light of labour arbitrage between tradable and nontradable sectors, and that technology is unchanging and common across all countries. This effect, as such, suggests that countries with higher per capita income will have higher real exchange rates. Despite some explanatory power, these theories fail to capture actual trends experienced by oil-exporting economies, especially in the MENA region. Further, it is important to examine adjustment costs associated with the Dutch disease relating to investments and sectoral capital (and labour) reallocation between the traded and non-traded sectors (Morshed and Turnovsky, 2004).

No studies have examined the effects of energy subsidy reform on economic diversification in MENA oil exporters in a low oil price environment. Such analysis requires capturing interactions between industries and second-best effects, which can only be measured by economy-wide models.

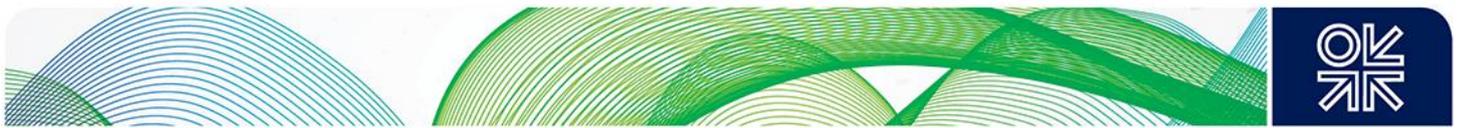
To help fill this gap, this paper examines diversification in Kuwait and its challenges, then quantifies the impact of subsidy reform on diversification along with other proposed economic reforms, using an economy-wide model in a computable general equilibrium (CGE) framework that embodies key features of the Kuwaiti economy and oligopoly behaviour.

Only a few such CGE models of Kuwait's economy exist (Alsabah, 1985; Khorshid, 1990, 1991; Gelan, 2018), and these do not reflect recent economic trends and market conditions. Shehabi (2017) constructs an economy-wide model in a CGE framework that explicitly incorporates oligopoly behaviour and embodies key economic features of the Kuwaiti economy. However, its representation of subsidies uses a homogeneous subsidy rate across industries, which limits its ability to offer insights on the economic impacts on specific sectors. This model is extended further (Shehabi, 2019) by differentiating consumer and industry-specific subsidy rates, incorporating both production and consumption subsidies in a general equilibrium model of the Kuwaiti economy. This paper uses the latter model for its analysis using different closures (which represent assumptions about the targets of policy and the clearance of labor and capital markets). The model is discussed in more detail in Section 3.

This paper argues that Kuwait's economic base is already diversified, both by its non-oil sectors and by its SWF, and this base should in theory expand through the reverse-Dutch-disease effect;¹ yet it fails to contribute to diversification of export revenues or government (fiscal) revenues. It further argues that this failure is due to structural constraints: the lack of taxation, concentration of capital in the (capital-intensive) energy industries and the SWF, pervasiveness of oligopolistic structures, and lock-in of Kuwaiti labour in the public sector.

To support this argument, the results of model simulations are presented to show that the diversification effects of energy subsidy reform are limited in a low oil price environment, due to Kuwait's economic rigidities and distortions, but that that implementing energy subsidy reform in combination with reforms that encourage competition and open the private sector to Kuwaiti labour would achieve large efficiency gains that extend to the rest of the economy and can expand both the tradable and non-tradable sectors.

¹ The reverse Dutch disease occurs when a drop in the resource price causes a country's currency to depreciate, which in turn boosts non-resource exports.



These results emphasize the potential of oligopolistic pricing regulation in small MENA economies to moderate the impact of oil price volatility on trade, employment, and overall economic activity. The results also suggest a potential lesson for the sequencing economic reforms, and confirm that in developing petro-economies characterized by the pervasiveness of oligopolies, microeconomic reform can be a channel through which energy subsidy reform can drive the expansion of the non-energy tradable sector that is necessary for meaningful diversification of the economy.

This paper offers important insights into the linkages between diversification and subsidy reform in distorted, highly specialized, small, open oil economies. To the author's knowledge, it is the first study in which diversification emerges as a central issue in the context of subsidy reform in MENA exporters. The Kuwaiti economy was chosen as the illustrative case due to data availability and also because it offers parallels with other oil economies with similarly high levels of distortion and similar economic structures. Not only is the Kuwaiti economy highly specialized—with the oil sector contributing more than 90 per cent of exports, estimated at US\$41 billion in 2016—it also has a sizable diversified base of non-oil sectors and one of the highest energy price distortions, including the highest annual subsidy per capita in 2015, estimated at \$1,547 (IEA, 2018).

2. The state of diversification in Kuwait

Like many oil-exporting economies, Kuwait's economic development strategy since the 1960s has positioned crude and refined oil products as its most important sources of exports and government revenue. As a result, the country's GDP is closely linked to its oil production and oil prices and therefore subject to oil price volatility. Kuwait's oil industry is managed through the state-owned Kuwait Petroleum Company. Oil production varies, in principle depending on OPEC's production allocations, set at 2.7 million barrels per day (mbpd) as of January 2017, but hovered around 3.1 mbpd between 2012 and 2017. Kuwait followed a seemingly export-led growth policy in a welfare state with an enviable redistribution system and high government intervention. Its primary macroeconomic objective has been maintaining low inflation (1.5 per cent), which has been partly achieved through a monetary policy tied to its stable currency, currently pegged to a basket of reserve currencies. It relies on fiscal policy as its main instrument of macroeconomic stabilization, aided by substantial foreign asset accumulation in its SWFs, managed by the Kuwait Investment Authority (KIA). Critical to diversification is the existence of local non-oil import-competing industries, the expansion of which has been a key development target. For example, the National Assembly approved US\$103.4 billion in funding for more than 800 projects, with the aim of moving the country towards becoming a banking, trade, and services hub for the GCC and the MENA area by 2035.

Until mid-2016, Kuwaiti electricity prices were less than one-twentieth of generation costs and had not changed since 1990. Water, for which the desalination techniques use mostly local hydrocarbon resources, has been offered at virtually no cost. By 2014, Kuwait was the world's sixth highest per capita energy consumer (World Bank, 2017), with domestic consumption steadily increasing over the last 25 years. In March–April 2016, after rejecting various schemes, the National Assembly proposed to raise electricity prices 'only after excluding owner occupied residences of Kuwaiti citizens' from price increases, effectively raising prices for expatriates. Electricity prices for residential use by expatriates gradually increased from US\$0.007 to US\$0.05/kilowatt hour, and for commercial use from US\$0.007 to US\$0.082/kilowatt hour. Kuwait was the last GCC state to reform local gasoline prices in August 2016 (at that time, it had the lowest domestic gasoline prices globally and a US\$15.3 billion deficit for 2016). Effective September 2016, the government raised local prices by 41–83 per cent (differentiated by octane levels) to the international spot market price at that time. Despite widespread opposition culminating in the parliament's failed attempt to reverse the price change in court, the government insisted that its pricing reform would reduce fiscal pressures, economic inefficiencies, and energy over-consumption, and that any subsequent inflation would be minimal.

Although the oil sector dominates GDP and government revenue, and there is widespread belief that the Kuwaiti economy has failed to diversify, the data reveal that the economy has a sizable diversified base. Yet this base fails to contribute to capital growth or export or fiscal diversification. In substantiating this argument, this paper assesses the state of diversification with reference to the structure of the Kuwaiti economy and its distortions. To measure diversification, national accounts delineate sectors as non-mining (which include refining activities, utilities, and services) and mining (which include crude sales and upstream activities). This accounting approach is misleading, as energy-related activities are included in both categories. Instead, this paper aggregates the data differently by dividing economic sectors into energy sectors (which include crude oil, mining, refining, and utilities [electricity and water desalination]) and non-energy sectors (which include all remaining activities).

Data on Kuwait's economic structure reveal dynamics pertinent to assessing impacts of trade and pricing reforms. Key structural elements of the Kuwaiti economy are depicted in Table 2 using the database (social accounting matrix) constructed for the economy-wide model used in this study (based on Shehabi, 2019). It uses data from 2013, the most recent year of high oil prices for which data are available. Using data from periods of low oil prices yields results that exaggerate the size of the non-energy sectors and, consequently, the level of diversification.²

Table 2: Kuwait's economic structural elements, 2013

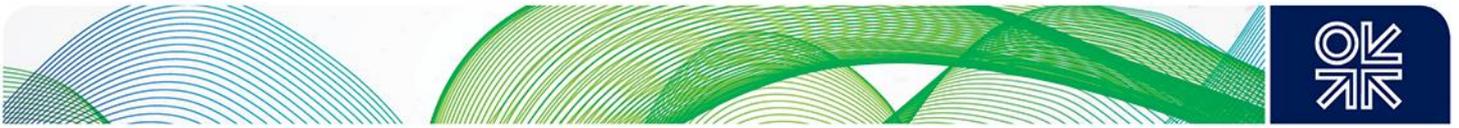
Sector	Share of GDP ^{FC} *	% of total exports	Exports % of output	Net exports over output
<i><u>Energy sectors</u></i>				
Mining	1.4	0.0	0.0	0.0
Crude oil	48.9	42.1	50.5	50.3
Gas and petro-services	0.9	1.3	50.5	50.3
Oil refining	5.4	38.6	72.6	72.2
Electricity	0.6	0.0	0.0	0.0
Other network services	4.6	4.6	32.3	31.4
<i><u>Non-energy sectors</u></i>				
Agriculture	0.3	0.0	1.3	-63.3
Chemicals	1.1	3.4	37.4	-1.7
Light manufacturing	0.8	0.4	4.1	-56.0
Heavy manufacturing	0.8	1.9	8.1	-72.0
Construction	2.2	0.0	0.0	0.0
Transport	3.4	5.7	38.9	14.1
Financial services	7.8	0.7	4.1	-1.3
Other services	21.7	1.2	1.8	-15.6

* GDP^{FC}, GDP at factor cost, is the sum of value added in each industry.

Source: Model database (social accounting matrix) constructed by the author for 2013.

Critical to assessing diversification, energy sectors (namely mining, crude oil, gas and petro-services, oil refining, and electricity) and other network services (which include the energy-intensive water sector)

² The share of the energy sectors in an economy is positively correlated with the oil price. Between 2013 (when the oil price was high) and 2015 (when it had collapsed), there were almost no significant structural changes in Kuwait's economy (or that of any GCC country), but the share of non-energy sectors increased by 18 per cent, due to the decline in the value of energy exports coupled with a reverse-Dutch-disease effect on non-energy exports.



contribute 61.8 per cent of the GDP at factor cost (value added). The remaining non-energy industries contribute 38.2 per cent of the economy's value added (this share is the sum of the shares presented in the second column for non-energy sectors), led by other services, which is the second-highest value-adding sector.

Yet non-energy output is mostly non-traded with limited contribution to exports or export revenues. Only 13 per cent of the total exports are from non-energy sectors. This includes re-exports, which are not produced by the local non-energy sectors. Exports of non-energy sectors are affected by real exchange rate dynamics and the adjustment valves of an economy which cushion the effects of economic shocks. These adjustment valves include access to foreign-held capital in SWFs and the exit of expatriate labour (Shehabi, 2017). These figures imply that the various reforms and development plans have not met their targets of significantly increasing the non-energy export base. Further, the relevance of non-energy sectors in Kuwait shrinks even further in their contribution to the state budget. Only 9 per cent of the total government budget comes from sources other than oil exports, and these include non-energy sectors' taxes (minimal) and returns on investments.

So a key question is: why has this diversified non-energy, non-water base failed to contribute to export and fiscal diversification? Structural and economic constraints and distortions have contributed to this outcome and limited the non-energy sectors' ability to reduce economic overdependence on hydrocarbons. Specifically, the historic inability to transfer the existing non-oil base to productive capacity or diversified earnings is due to the following constraints (represented graphically in Figure 3):

- **Targeting non-tradables.** Non-energy output is mostly non-tradable, with only 9 per cent of it exported, a meagre 13 per cent of total exports. Only 55 per cent of the energy sectors' output is exported, but contributes 87 per cent of total exports, which generate approximately 91 per cent of the government's revenue. Thus, the 38.2 per cent diversified base contributes little to earning diversification.
- **Fiscal structure.** The non-energy sectors contribute a negligible share of government revenue, because they pay almost no taxes and receive subsidies. Thus, they do not contribute to fiscal diversification.
- **Captive capital.** Most of the economy's capital is locked in capital-intensive public-owned energy industries. Labour contributes only 8 per cent of the energy sectors' value added. Non-energy sectors, by contrast, are more labour intensive, with labour contributing 55 per cent of their value added, as shown in the labour intensity line of Figure 3 and detailed in Table 3. A large portion of the capital in the economy is thus locked in the energy and network services sectors and is not mobile to other non-energy sectors, due to the nature of these sectors as well as government's ownership of them. A second constraint on capital is that most government capital surplus is funnelled to investments abroad via the SWFs (some also goes to foreign aid). These two factors limit capital mobility investment in non-energy sectors, which need investment if they are to expand.

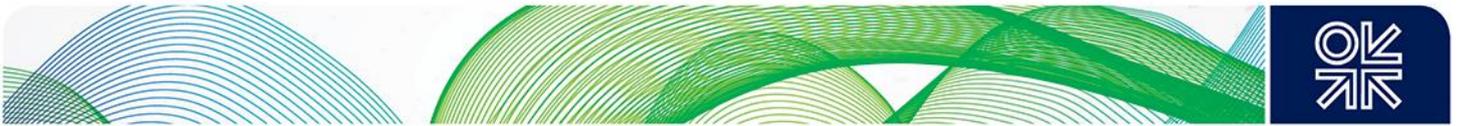
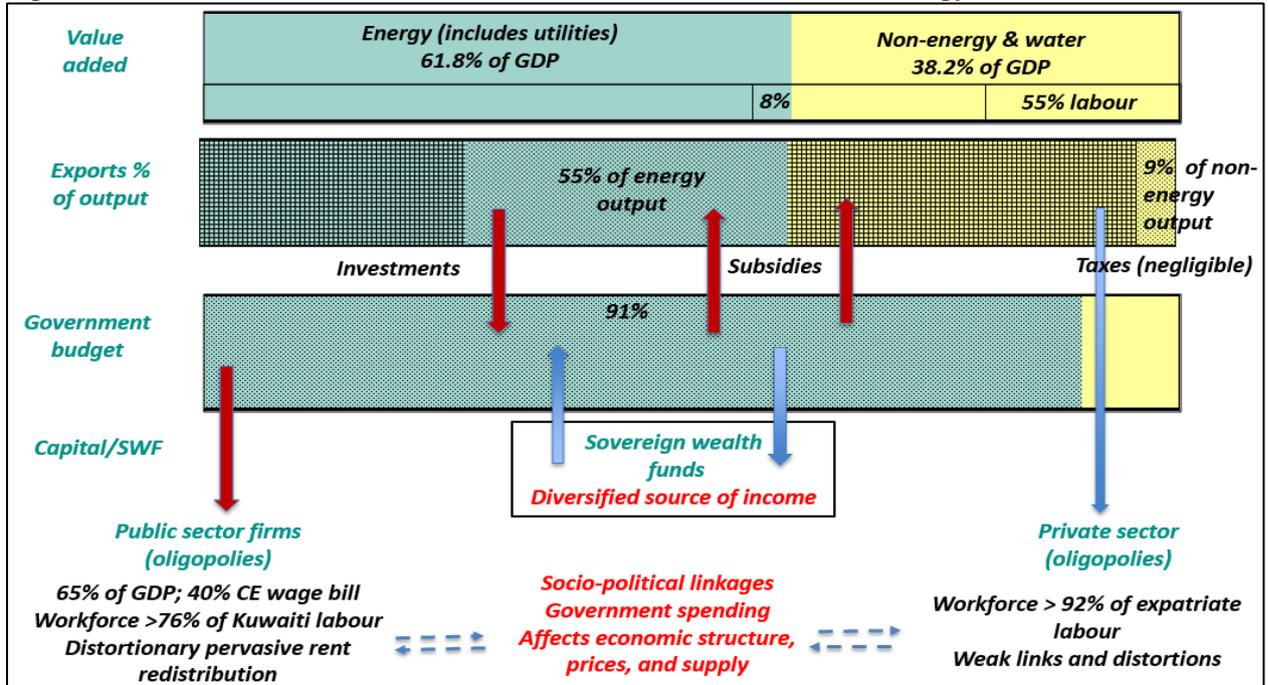


Figure 3: Economic and structural constraints on the role of the non-energy sectors in Kuwait



Notes: * The blue-green blocks represent the energy sectors, and the yellow blocks the non-energy sectors.
 * In the second row, for energy sectors in blue-green, the dark shaded blocks on the left represent portion of sectoral output used for domestic consumption, and the light shaded blocks on the right represent exported share of output. The same applies for the yellow blocks representing the non-energy sectors.
 * In the third row, the light shaded blue-green block correspond to the exported energy output in the second row.
 * The red and blue arrows represent direction of flow of funds of investments, subsidies, and taxes.
 Source: Author's representation.

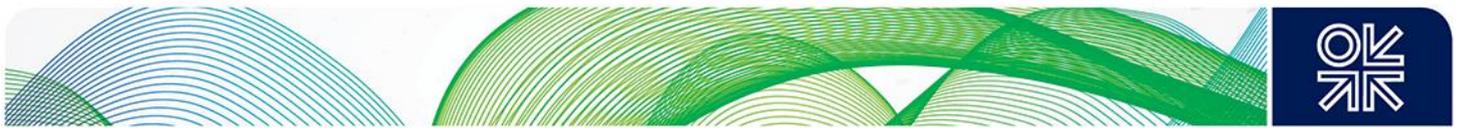
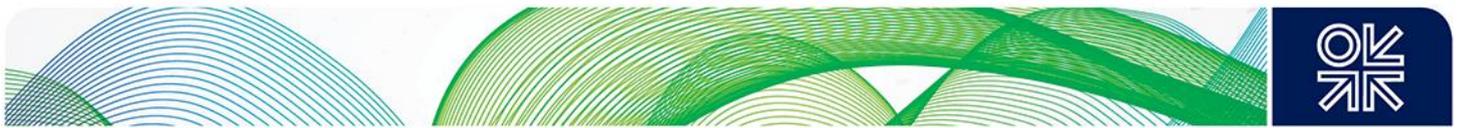


Table 3: Factor intensity in value added by industry, 2013

Industry	Per cent of factor in value added by industry						
	Physical capital	Kuwaiti unskilled labour	Kuwaiti skilled labour	Expatriate unskilled labour	Expatriate skilled labour	Arable land	Natural resources
<i>Energy sectors</i>							
Mining	9.3	12.8	29.8	2.8	1.9	1.1	42.3
Crude oil	13.1	4.2	9.9	0.4	0.3	0.1	72.0
Gas and petro-services	25.7	15.1	18.4	1.1	0.7	0.1	39.0
Oil refining	86.6	5.4	6.6	0.8	0.5	0.0	0.0
Electricity	86.1	7.6	4.9	0.8	0.5	0.0	0.0
Other network services	65.4	6.9	4.2	4.4	3.0	16.1	0.0
<i>Non-energy sectors</i>							
Agriculture	35.1	0.5	0.4	5.7	2.4	41.4	14.5
Chemicals	76.8	4.1	4.1	9.5	5.6	0.0	0.0
Light manufacturing	55.4	10.0	10.0	18.4	6.1	0.0	0.0
Heavy manufacturing	52.6	10.7	10.7	19.6	6.5	0.0	0.0
Construction	32.2	9.5	4.1	38.0	16.3	0.0	0.0
Transport	52.9	10.6	3.5	28.0	4.9	0.0	0.0
Financial services	31.2	8.3	19.3	14.5	26.8	0.0	0.0
Other services	17.0	1.7	14.9	41.8	24.6	0.0	0.0

Source: Model database (social accounting matrix) constructed by the author for 2013.

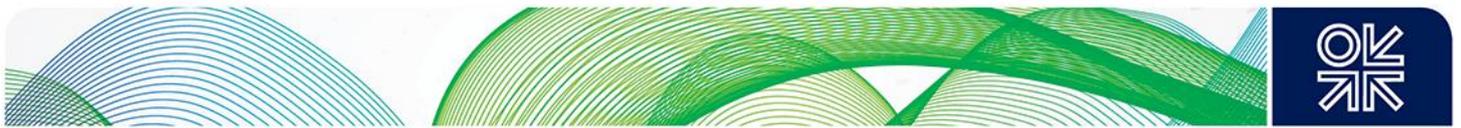
- Public sector dominance.** In addition to high dependence on hydrocarbons, Kuwait's economy is constrained by other structural rigidities. Chief among them is public sector dominance; in 2014, the public sector generated over 65 per cent of GDP, compared with a private sector share that has ranged between 21 per cent (1989) and 41 per cent (2010). The public sector has contributed to two-thirds of total capital formation. It is also the employer of choice for Kuwaiti workers, employing the majority of them. Kuwaiti workers also form the majority of public sector employees. Despite privatization efforts, Kuwait has only a small private sector, and the public sector continues to dominate the economy in various industries, including petroleum. The dominance of the public sector and its investments crowds out the private sector and minimizes innovation.
- Fiscal rigidities.** These limit the scope and flexibility of public expenditures. First is the large size of current expenditure, which constitutes 80 per cent of government expenditure, and half of which funds the public sector wage bill. Second are the large transfers and subsidies to households and firms which, in 2014, represented more than half of the government's total spending, including high energy subsidies. Kuwait's subsidization rate (using a price gap approach) is estimated by the EIA at 70 per cent in 2015 (the fifth highest globally and contributing to Kuwait being the world's sixth highest per capita energy consumer). Despite reforming electricity prices for expatriates and gasoline prices, these rigidities persist, and any attempt to reduce them faces intense political opposition. These transfers have serious



negative implications for diversification because they are distortionary, enabling the public sector to affect supply and prices and public expenditure to alter sectoral structures.

- **A fragmented labour market.** Kuwait effectively has two separate labour markets. The non-energy sectors include some public firms and all private firms; the latter hire predominantly expatriate labour. Expatriates comprise 83 per cent of Kuwait's labour force; most of them are employed in the private sector at lower wages and on flexible labour contracts in a strict employer-sponsorship system known as *kafāla*. Access to expatriate labour offers large efficiency gains and a way to adjust to oil price shocks (Shehabi, 2017), so there is little incentive to employ local labour. Kuwaiti labour is largely concentrated in the public sector and enjoys guaranteed jobs with inflexible contracts. The bloated public sector, which employs 77 per cent of Kuwaitis, prioritizes indigenous employment and offers salaries exceeding those in the private sector for similar levels of education and technical training. This creates little incentive for locals to move to the private sector, even in the presence of wage equalization mechanisms under nationalization (here known as Kuwaitization) policies (Shehabi, 2018). Therefore, the non-energy sectors contribute little to local employment growth.
- **Influence of the SWFs.** The non-energy sectors do not contribute to SWF investments, and the success of the SWFs (managed by the KIA) in offering a fiscal cushion diverts resources away from sectoral and industrial growth. The KIA is an important institutional and financial feature of the Kuwaiti economy, acting as a financing alternative during oil revenue shortages and a means to smooth out short-run governmental expenditures. It manages two funds: the Future Generations Fund, which is a long-term intergenerational fund established as an alternative source of government revenue to oil; and the General Reserve Fund, which serves a macro-stabilization objective, offering fiscal rebalancing through flows to and from the fund. Kuwait has acquired a substantial and diversified international asset portfolio, which the Sovereign Wealth Fund Institute (n.d.) estimated at \$524 billion, more than three times Kuwait's record-high GDP in 2013 and more than five times the export revenue of that year. Investment in the KIA has been a deliberate policy choice to establish a diversified revenue source that is an alternative to sectoral diversification.
- **Oligopoly.** Firm- and industry-level market capitalization and revenue data reveal that the Kuwaiti economy is dominated by oligopolistic firms (Shehabi, 2017). This is evidenced by the high concentration of capital and revenue in a few companies across all industries. It is not surprising that the high levels of minimum efficient scale delivered by modern technology and the smallness of Kuwait (and similar GCC economies) should lead to the emergence of oligopolies or monopolized industries, particularly in protected services. While it is natural for all economies to have oligopolies, short-run oligopoly rent is destroyed in the long run by competition-induced innovation, and limit creative destruction. This is problematic to the extent that oligopolies distort markets and prices and their sustained rents engender strategic behaviours that detract from growth-enhancing innovation. Importantly to Kuwait and other small economies with similarly high specialization, oligopolies' distortionary behaviour is exacerbated by high subsidies, because subsidizing the negatively impacted industries enables them to be profitable at their existing levels of investment and innovation, thus reducing their economic incentives to innovate and expand. Government-dominated industries are, by definition, monopolies and oligopolies. The government has adopted plans to increase industrial competitiveness and expand the private sector. Yet reform attempts have had limited success, largely due to strong public opposition and parliamentary obstruction.

This paper argues that these economic and structural constraints and distortions—and not the Dutch disease, as has been frequently argued in the literature on resource-rich states—are the reasons for the weak role of Kuwait's non-energy sector. This argument is tested in the following section using an economy-wide model of the Kuwaiti economy.



3. Modelling the Kuwaiti economy

3.1 Theoretical underpinnings

The simulations reported in this paper employ the Shehabi (2019) model, an economy-wide model in CGE framework that embodies the features and structure of Kuwait's economy using different closures. This model builds on work done by Shehabi (2017) and Asano and Tyers (2015) to explicitly represent oligopoly behaviour and its regulation.

The model is multi-sectoral with two regions (Kuwait and the rest of the world). It is comparative static, comparing economic outcomes of endogenous variables such as real prices and wages at different equilibrium states resulting from changes in exogenous variables such as oil prices and subsidy rates. The model embodies the following economic features: high specialization in the energy sector and open trade, structural rigidities, fiscal rigidities, the mobility of expatriate labour, external financial flows to the KIA, and oligopoly behaviour and its regulation. It has 3,820 components representing 247 equation blocks, with 3,606 endogenous variables, implemented using the GEMPACK (General Equilibrium Modelling PACKage) software.

The model incorporates core features of conventional economy-wide modelling. Like in Balistreri and Markusen (2009), these features include the standard Armington constant elasticity of substitution (CES) between imports and locally produced varieties. They also include an open 'almost small' assumption following Harris (1984) and Dixon et al. (1982) with saving and investment that adjust and open capital and current accounts. In the case of Kuwait, this assumption is essential as it is a small economy that is highly dependent on trade (including imports in markets where it is a price taker) and on international financial flows and has limited impact on prices in the market to which it exports.

Uniquely, in a departure from conventional CGE modelling, the model represents Kuwait's oligopolistic behavioural structure in its supply side, based on Asano and Tyers (2015), and other extensions to the model as detailed in Shehabi (2019). In assessing efficiency and economic policy, the omission of oligopoly from existing models of small economies like Kuwait is particularly important, since the assumption that policies directed to the advantage of one industry will not create rents that affect others is indefensible. It is well understood that competition induces innovation, so that short-run oligopoly rent is destroyed in the long run by innovation (Schumpeter 1911, 1942).³ This idea has become central to modern research on economic growth (Segerstrom et al., 1990; Aghion and Howitt, 1992; Aghion et al., 2013). Oligopolies distort markets and prices, and their sustained rents engender strategic behaviours that detract from growth-enhancing innovation (Grossman and Helpman, 2014). Devarajan and Rodrik (1991), in one of the first attempts to incorporate oligopoly behaviour in a CGE framework, suggest that pro-competitive forces operating on oligopolistic firms can influence the magnitude of efficiency gains resulting from trade liberalization in Cameroon. Incorporation of oligopoly behaviour by Tyers (2015) suggests that the full exploitation of oligopoly market power in Australia would cause a reduction of real GDP by as much as a third in the long run. Of course, in advanced economies, this effect is moderated by pricing surveillance and price-cap regulation. Yet in resource-exporting countries, oligopolies play an additional role: their increased rents during booms and (usually subsidized) losses during busts further impair economic performance. Oligopoly modelling is complex; the model described below is discussed in more detail in Shehabi (2019).

³ This is the idea of 'creative destruction' coined by Schumpeter (1942, 82–83) to describe an ongoing process in which innovation is induced by competitive forces and destroys rents conferred in the short term by former innovation, maintaining efficiency.

3.2 Economy-wide model

Model structure

As modelled, the Kuwait economy has one representative household that consumes locally produced and imported goods, supplies indigenous and expatriate labour and skill, and owns physical capital. The government is fully represented in the model. Financial flows and real exchange rate changes are endogenous, and external economic conditions as represented by bond yields and commodity prices are readily shocked as part of analytical applications.

Demand side

On the demand side, firms in 14 industries rent capital and hire workers, supplying products and services to meet five demand sources: final, intermediate, investment, government, and foreign. Households consume either differentiated home products supplied by oligopolistic firms, or imported varieties, also differentiated from local ones.

Supply side

The production technology is Cobb-Douglas in variable factors and intermediate inputs, the latter being composites (CES nests) of domestic and imported products and services. The model captures key Kuwaiti oligopolistic (and monopolistic) industries and targeted regulatory surveillance, a key economic feature, as follows.

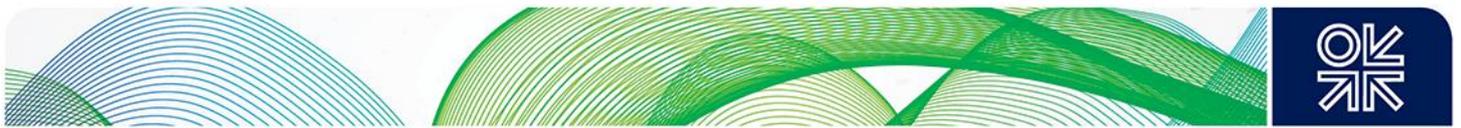
The model represents oligopoly with behavioural structure from Shehabi (2017) based on Asano and Tyers (2015), which is based on earlier work done by Tyers (2005, 2015), Gunasekera and Tyers (1990), Harris (1984), and Horridge (1987), and is similar to that of Devarajan and Rodrik (1991). It assumes that firms in all economic sectors, private and state-owned, are oligopolistic in their product pricing behaviour, operate in differentiated product markets, and adopt profit-maximizing rules, with each carrying fixed capital and labour costs that lead to the potential for unrealized economies of scale and to the occurrence of pure (economic) profits (or losses) at market levels. This representation emphasizes oligopoly rents in the spirit of Blanchard and Giavazzi (2003), who, in a closed-economy general equilibrium setting, find that increased competition is beneficial to an economy because it leads firms to lower their markups, in turn lowering prices and increasing output and exports economy-wide.

Oligopolistic firms operate in differentiated product markets. As such, each firm exploits its monopoly over the supply of its own product variety by selecting the price, and therefore the markup, that maximizes its profit. Within a given industry or economic sector, each firm faces an elasticity of demand that depends on the individual elasticities of the various demand sources as well as on the number of other firms and the degree of pricing collusion between them. Symmetry within each economic sector implies a common optimal unregulated markup for each firm. Oligopolistic firms set their price p_i relative to average variable cost v_i so as to maximize profit by applying the Lerner markup formula:

$$m_i = \frac{p_i}{v_i} = \frac{1}{1 + \frac{1}{\varepsilon_i}} \quad \forall i \quad (1)$$

All firms in all industries have oligopoly power in product and input markets (they do not have oligopsony power in the markets for purchased inputs or primary factors). Larger firms are subject to pricing surveillance regulation. The model calculates pure or economic profits or losses of firms as revenue net of fixed and variable costs.

Firms collude on prices at varying degrees. Calibrated conjectural variation parameters (μ_i) capture the degree of price-setting collusion that occurs between firms in a given industry. Oligopolistic firms operate in differentiated product markets.



Incorporating imperfect competition requires additional data to calibrate the model and renders the calibration process more complex. To incorporate in the model the realistic feature that larger firms are subject to regulation and pricing surveillance, data (obtained from the Kuwaiti Central Statistical Bureau and from the Kuwaiti Stock Exchange) were analysed on industry structure, conduct, and performance to determine cost and pricing behaviour, represented in the model through parameterization. Importantly, collusion and other values can be set to represent a degree of regulatory surveillance or price cap enforcement by the Kuwaiti Competition Protection Authority.

Welfare

The aggregate household's expenditure function is used to derive the consumer price index (CPI), which is a Cobb-Douglas-CES index of after-tax consumer prices of goods and services of both home products and imports. Collective utility is also defined as a Cobb-Douglas combination of consumption volumes by generic products, so the expenditure function is Cobb-Douglas in prices and the CPI-deflated GNP is a consistent measure of overall economic welfare. For purposes of the simulations, the welfare measure used is household CPI-deflated disposable income.

Factors of production

The model has seven primary factors of production: physical capital, Kuwaiti unskilled labour, Kuwaiti skilled labour, expatriate unskilled labour, expatriate skilled labour, arable land, and natural resources.

Long-run behaviour

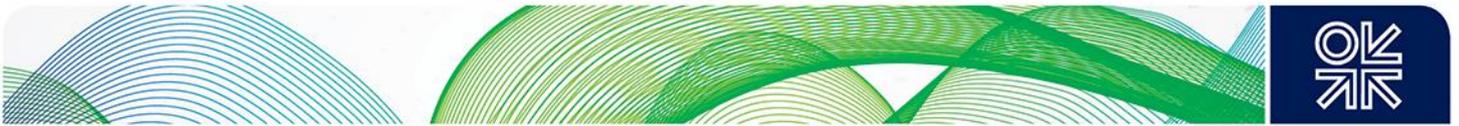
In the long-run version of the model, all prices and interest rates adjust to ensure that product, factor, and financial markets all clear.

3.3 Incorporated features of Kuwait's economy

The analysis mimics the behaviour of the economy in the long run because of the mobility-of-capital assumption (which typically runs for the time required for capital to move). Economy-wide models can allow for various sets of market closures, which dictate the length of run to be analysed. Closures represent assumptions about which variables are free to change in response to shocks and which variables can adjust, reflecting monetary or fiscal policy targets and the clearance of labour and capital assumptions. As such, they directly impact the simulation results.

The following Kuwaiti economic features (detailed in Section 2) are captured in the model through its structure and closures as follows:

- Structural rigidities and public sector dominance. Kuwait Petroleum Company and the electricity sector, which operate as large and nominally independent corporations, are represented as separate monopoly firms, each with its own factor demand and output. In the economic sectors that are public (including oil), the government is treated as the residual owner of additional rent payments (profits) after payments to fixed and variable capital and labour. The majority of Kuwaiti labour is employed in the public sector.
- Fiscal rigidities, subsidies, and taxes. Fiscal rigidities are included in the model through a full representation of government accounts and macroeconomic elements, including endogenous saving and investment, open capital and current accounts, and a complete system of taxes (direct and indirect) and expanded consumption subsidies. Petroleum export revenue is treated as a quasi-tax payment. The fiscal closure allows the government deficit and welfare payments to adjust, and government saving varies, driving the current account deficit. Government spending on goods and services is held constant.
- The labour market. To reflect the Kuwaiti labour market's segmentation, four labour types are differentiated by skill and nationality, taking into account the flexible employment contracts of



the expatriate workers. Wage and mobility rigidities in the labour market are assumed, especially pertaining to public sector employment and low-skill wages. The labour closure fixes the employment of Kuwaiti labour, while both skilled and unskilled expatriates are sectorally mobile; the real expatriate production wage rates (relative to an index of producer prices) are held fixed.

- KIA and the financial capital market. The model takes into account external financial flows, primarily to and from the KIA. These mimic, to the extent possible, the KIA's role as a source of government funds following petroleum price shocks. Payments to the KIA, and withdrawals from it, remain endogenous in the model.
- Oligopoly (market structure). The supply side represents oligopolistic industrial structures across firms in all economic sectors, private and state-owned. These are oligopolistic in their product pricing behaviour, collude with other firms within a given industry on prices, operate in differentiated product markets, and adopt profit-maximizing rules, with each carrying fixed capital and labour costs that lead to the potential for unrealized economies of scale and lead to the occurrence of pure (economic) profits (or losses) at market levels. The model also incorporates the realistic feature that larger firms are subject to regulation and pricing surveillance. The oligopoly closure allows free entry and exit of firms at a given profitability level.

4. Policy simulations

Two policy options were simulated, both in a low oil price environment: energy subsidy reform alone, and energy subsidy reform accompanied by reforms that promote competition and mobility of Kuwaiti nationals in the economy from the public to the private sector. The two simulations are discussed below, and their results are summarized in Table 4.

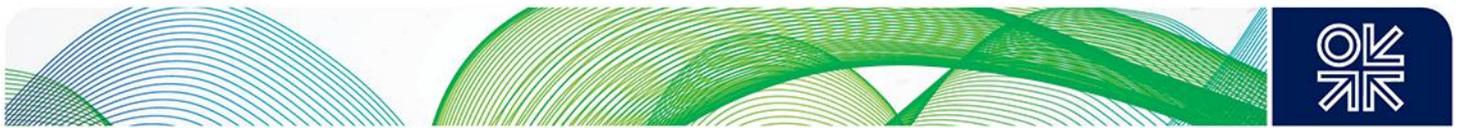
Table 4: Simulated long-run impact of energy subsidy (pricing) reform on selected economic variables following a decline in the oil price

Variable	Percentage change (departure from baseline)	
	Scenario A: energy subsidy reform alone	Scenario B: energy subsidy combined with other reforms
	Oil price decline: -5%	Oil price decline: -5%
	PRICING REFORM, HOUSEHOLDS: 50%	Pricing reform: 40%
	PRICING REFORM, FIRMS: 5%	Competition reform: 20%
		Productivity boost: 6.5%
		Labour reform to promote mobility of unskilled Kuwaiti labour
<i>Macroeconomic indicators</i>		
Real GDP	-10.10	8.38
Real GNP	-13.76	4.55
Real exchange rate	-2.62	-5.89
Real rate of return on capital, gross of tax	-8.39	-4.76
Capital stock	-3.58	7.01
Non-energy exports/GDP	0.53	11.23
<i>Government</i>		
Fiscal deficit/GDP	-9.66	-4.63
Welfare payments	1.70	-4.62
Current account/GDP	-14.34	-2.84
<i>Welfare and consumption</i>		
Welfare (real disposable income, CPI deflated)	-5.82	7.83
Household energy consumption	-11.22	-3.19
<i>Labour</i>		
Employment of unskilled expatriate labour	1.94	22.48
Employment of skilled expatriate labour	1.49	18.96
Employment of unskilled Kuwaiti labour	/	25.52
<i>Industry/oligopoly</i>		
Pre-tax pure profits/GDP	0.27	-0.10
Average markup, economy-wide	-0.29	-2.90
Average markup, non-energy tradables	-0.19	-2.81
Average markup, non-tradable services	-0.77	-4.19

Source: Model simulations.

4.1 Energy subsidy reform alone

To examine the effect of reforming energy subsidies in a low oil price environment on diversification, this simulation examines the impact of reducing oil subsidies by 50 per cent to match the international



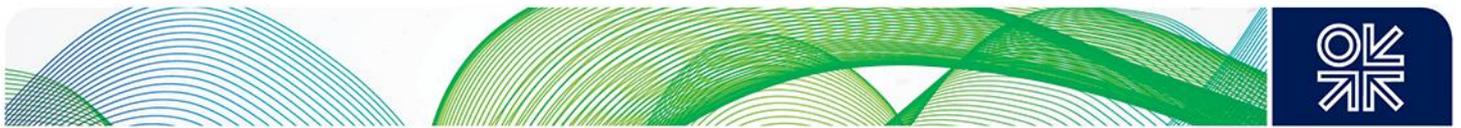
shadow price of oil in Kuwait during episodes of low oil prices without any changes in other policy instruments. The shock was administered through a 50 per cent decrease in households' consumption subsidy rate on crude oil and refined oil products and a 5 per cent decrease in the corporate subsidy (and tax) rate (showing effectively as an increase of 5 per cent in the net corporate tax rate) of non-petroleum industries, calculated based on a pro-rata basis. The adopted capital market and market structure closure, summarized in Section 3.3 above, dictate the length of run. Government expenditures on goods and services are assumed to remain constant.

At the macroeconomic level, assuming a continually low oil price, energy pricing reform exacerbates the contractionary shock of the oil price decline. Both real gross national product (GNP) and real GDP drop, largely driven by a decline in the oil price and a loss of investment. The negative effects of oil price declines are partially offset by efficiency gains and reduction in oligopoly markups caused by the decline of energy subsidies. The decline in energy subsidies also causes the real exchange rate to appreciate, while the decline of the oil price causes it to depreciate, with the net effect being a depreciation due to the dominance of oil exports in the Kuwaiti economy. Consequently, the relative cost of intermediate goods increases. The aggregate welfare measure drops, as real disposable income falls (while savings remain constant), and households adjust their consumption of energy and other products. In compensation, the government increases welfare payments to Kuwaiti citizens. These payments erode the fiscal improvement obtained by reducing energy subsidy (to households and industries) in the long term, necessitating large withdrawals from the KIA funds to finance committed government expenditures.

There is some expansion in non-energy tradable sectors (and their exports) driven by the depreciating exchange rate as well as elasticities of demand and efficiency improvements through oligopoly markup declines. The dynamics are as follows. The depreciating real exchange rate makes prices of imports increase from the base level, reducing demand for imported final goods and intermediates. The rise in input costs and the high rise in energy costs force Kuwaiti non-oil industries to cut costs, especially for expatriate labour, in the short run, limiting their expansion. Capital flows out of the economy, given declines in returns locally, which further hurts non-petroleum production and reduces these industries' demand for imported inputs. Consequently, markups of non-oil non-tradables (such as construction) also decline by larger levels. Markup declines entail increasingly competitive pricing that generates an overall positive effect on economic activity and real GDP and have substantial indirect effects that accumulate economy-wide. Conversely, they have only modest direct effects (on final product markups). The ensuing efficiency improvements partially compensate for the output losses of the affected industries.

Non-energy exporting industries (such as chemicals), whose input costs also rise, are directed away from the least elastic intermediate and investment demand to the more elastic export and final demand. Consequently, their markups decline, expanding their scale efficiency, which further enlarges their expansion. They also become more competitive owing to the depreciating exchange rate, and increase their output and exports. To that end, they import more intermediates and benefit from the movement of expatriate labour and capital away from the negatively impacted non-traded sectors. Additional labour demand is met by hiring additional expatriate workers, who are mobile with flexible employment contracts. The overall employment level of expatriates increases marginally from that in the initial equilibrium, a result that has critical implications for the labour market and its dependence on international labour mobility. Consequently, both non-oil exports and imports increase because the majority of intermediate inputs (used by the expanding industries) are imported. Yet increases in non-oil industrial production and exports remain insufficient to counter the contractionary effects of the oil price decline and subsidy reform, with only minimal improvement in competitiveness from the initial base level.

The analysis shows that, in a low oil price environment, reverse Dutch disease dynamics and the effects of subsidy reform on the expansion of non-energy tradables are limited due to structural constraints (such as limited Kuwaiti labour mobility, oligopolies, and high subsidies). The analysis also confirms



that the economy is unsustainable in a low oil price environment without changes to its economic, labour, and oligopolistic structures. What the economy thus needs is not more diversification but better diversification that can help diversify earnings and reduce exposure to oil price and demand shocks. Better diversification requires relaxing some of the aforementioned constraints and distortions and increasing economic incentives to change economic outcomes.

Based on these results, the final analysis recognizes the substantial scope for fiscal adjustments, labour reform, and reform to promote competition in Kuwait and explores the possible effects of subsidy reforms combined with other reforms. These reforms reduce some of the economic and structural constraints detailed in Section 2, offering another test of the hypothesis put forth in this paper that the state of diversification in Kuwait is due to these constraints.

4.2 Energy subsidy reform accompanied by labour and competition reforms

The second simulation (Scenario B) focuses on reforms that are potentially politically viable because they are already called for in existing policies: labour reforms, and reforms to promote competition.

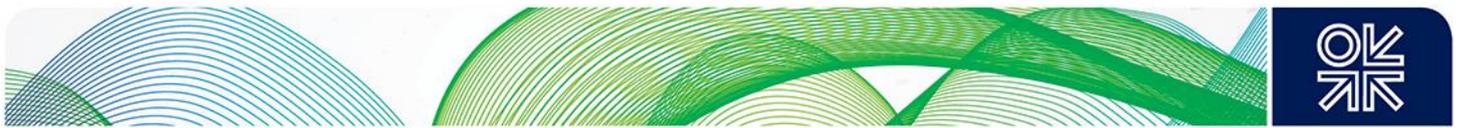
Given the pervasiveness of oligopolies that sustain large markups and collusive pricing, there is considerable scope in Kuwait for reforms to promote competition. The need for such reforms is recognized in Kuwait's five-year development plans and in the policies of Kuwait's Competition Protection Authority.

There is also considerable scope for labour reform in Kuwait, given the concentration of Kuwaiti labour in the public sector with practically permanent employment contracts. This goal is acknowledged in existing Kuwaitization policies, which aim to increase employment opportunities for Kuwaiti nationals and reduce reliance on expatriate labour.

Shehabi (2017) demonstrates that competition-related reform combined with subsidy reform in a low oil price environment can achieve significant gains that translate to the overall economy. Building on this result, and given the scope of available reforms, three hypothetical competition-related policy reforms were introduced simultaneously, in addition to the shocks introduced in Scenario A:

- **Tighter pricing surveillance** that reduces collusive behaviour across all non-petroleum industries, simulated through a 20 per cent reduction in the tendency for businesses to collude on prices (represented by the conjectural variations parameters).
- **Improvements in private- and service-sector productivity** of 6.5 per cent in the long run. This includes all industries except for hydrocarbons, mining, electricity, and agriculture.
- **Mobility of unskilled Kuwaiti labour to the private sector** from the public sector, with competitive wages.

Despite some contraction in the oil industry due to the lower oil price (from base scenario), competition and labour reform can yield substantial improvements in performance, which are further augmented by the mobility of Kuwaiti labour. In industries where large initial markups exist—like construction, which also uses energy as an input—more competitive pricing generates significant drops in markup. These drops have effects on overall economic activity that largely exceed the neoclassical gains in allocative efficiency from removing price distortions due to taxes, subsidies, and regulation. Unsurprisingly, the result is expansionary for the overall economy in the short run, achieving very large gains at the macro- and microeconomic levels. Fiscal improvements are substantial, similar to those achieved during periods of high oil prices, enabling the resumption of large investments in KIA and asset accumulation abroad. The overall expansion in the economy coupled with the substantial increase in disposable income reduces the need for large welfare payments, enabling the government to make additional budgetary savings and reducing citizens' reliance on the government. In particular, limiting collusion slashes the large pure profits captured by oligopolies, offering gains distributed across the economy as a whole. The ensuing increased competition generates efficiency gains that are augmented by further



gains stemming from the increase in productivity of the private sector and services. The gains further reduce markups and increase production scale.

The real exchange rate depreciates substantially, by approximately double the depreciation in the previous simulations in both the short and the long runs. As in the previous scenarios, this depreciation is driven by the drop in petroleum exports, while the decline in investments is driven by the lower rate of return on capital. Moreover, in this scenario the increase in efficiency allows firms to increase production scale and reduce overall costs, further depreciating the exchange rate. This depreciation makes imported intermediates and final goods more expensive, but increases the competitiveness of all non-oil exports, enabling their expansion. With capital fixed in the short run, the expanding industries demand more labour to meet their increased output, which can be met by additional expatriate labour. The increase in disposable income and the welfare measure encourage higher consumption of locally produced goods, which is met with additional local output in all industries in the short run. The increased disposable income and industry expansion also lead to increased demand for imported goods, further depreciating the exchange rate. Unlike all previous scenarios, local rates of return on capital increase, driven by changes in market capital returns rather than pure profits, making this scenario beneficial for both workers and capital owners.

The results show overall general improvements in the long run. There is a huge expansion in gross output by all industries, except in the highly subsidized electricity sector, which continues to contract. Table 5 summarizes long-term sectoral results. To demonstrate the large improvement and output gains achieved by competition and labour reform,

Figure 4 compares the sectoral changes in exports under this scenario with those under scenario A.

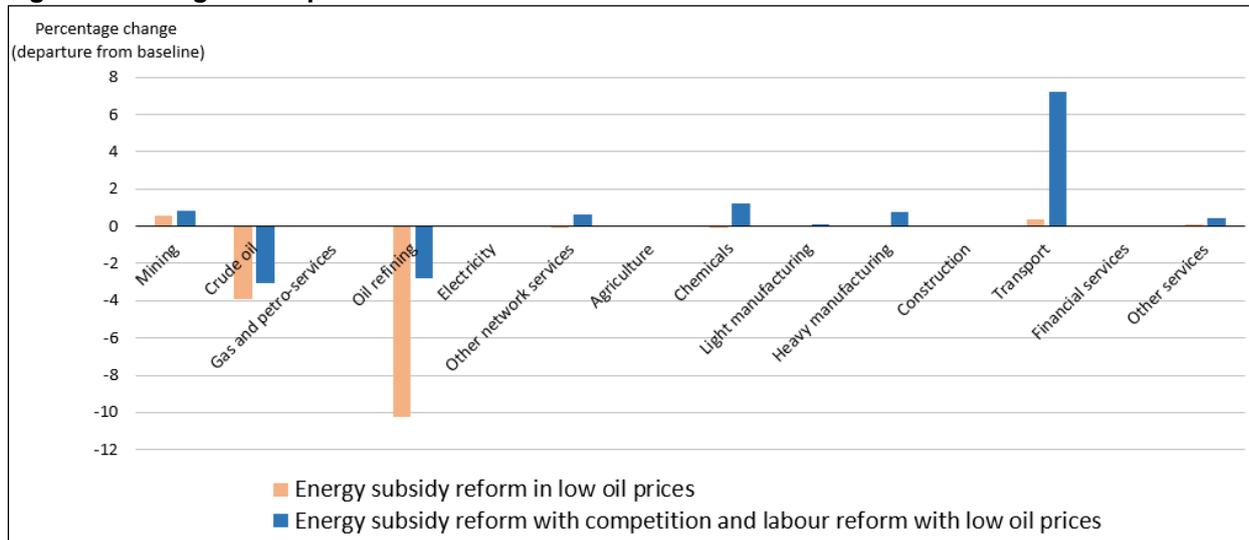
Table 5: Simulated long-run sectoral effects of subsidy, labour, and competition reforms following oil price declines

Variable	Percentage change (departure from baseline)				
	Expatriate employment	Gross output	Markup ratios	Scale	Exports/GDP
<i>Energy sectors</i>					
Mining	21.10	33.80	-6.11	16.59	0.82
Crude oil	-9.97	-6.93	0.95	36.88	-3.08
Gas and petro-services	24.87	18.28	-0.13	-7.27	0.00
Oil refining	-24.45	-2.70	0.17	44.98	-2.81
Electricity	-12.79	19.51	-7.32	50.45	0.00
Other network services	18.13	22.13	-5.12	12.44	0.64
<i>Non-energy sectors</i>					
Agriculture	30.54	22.10	-8.30	4.11	0.01
Chemicals	45.12	49.26	-2.12	0.72	1.21
Light manufacturing	25.52	18.64	-0.21	-22.77	0.10
Heavy manufacturing	49.18	43.49	-1.00	-4.98	0.77
Construction	9.55	13.15	-0.14	10.67	0.00
Transport	104.58	120.43	-4.47	11.27	7.21
Financial services	27.98	21.73	-1.35	-43.63	0.06
Other services	14.19	18.09	-0.64	13.07	0.40

Source: Simulation results.



Figure 4: Changes in exports/GDP under scenarios A and B



Source: Model simulations.

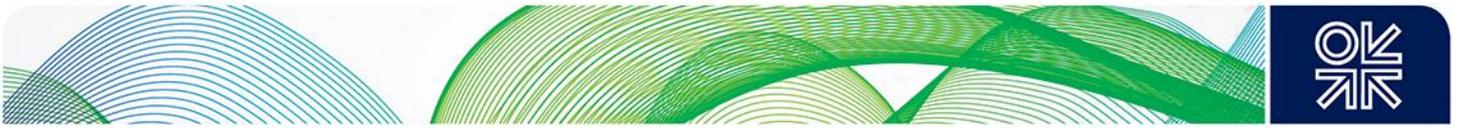
5. Policy implications and conclusions

In the literature on resource-based economies, diversification is often explained in the context of the Dutch disease, yet there is little evidence on the linkages between diversification and subsidy reform in MENA countries. The simulations described in this paper address this gap and are the first to feature diversification as a central theme of energy subsidy reform, especially in the MENA context.

Kuwait has a diversified economic base, but this diversity has contributed little to export or fiscal sustainability and diversification, due to structural factors and economic constraints. These factors include the locking of capital in the SWF and public energy sectors; the dominance of oligopolies in non-tradable services sectors; access to SWF savings; the availability of expatriate labour with flexible employment contracts; minimal taxation; rigid employment of Kuwaiti labour in the public sector; and the dominance of the public sector.

Results of the simulations described here show that energy subsidy reform would minimally improve the non-energy export base due to real exchange rate dynamics and the adjustment valves (namely expatriate labour exit and the SWFs' funds which offer a cushion to the economy following economic shocks, like low oil prices). Reforming energy subsidies in a low oil price environment has a limited effect on and diversification to the extent that energy subsidy reform is contractionary for the overall economy. Yet this contraction slightly reduces some oligopoly markups, which translates to limited overall improvement in the economy. This, coupled with the depreciating real exchange rate, drives expansion in the non-energy exporting sectors, but to a fairly limited extent. Reverse-Dutch-disease dynamics are thus very limited due to the idiosyncratic features and constraints of the Kuwaiti economy. The large share of oligopolies in the domestic market, low elasticity of substitution between imports and locally produced goods, and the share of imports in the intermediate inputs of non-energy tradables mean that expansion in non-oil sectors is small.

The hypothetical simulation of potentially politically viable policy options that relax some of these constraints shows that competition and productivity shocks achieve diversification effects, which are further extended with the movement of Kuwaiti labour from the public to the private sector. Relaxing these economic constraints is a requirement for achieving better diversification that will support Kuwait's long-term economic sustainability. These results support the argument put forth in this paper that the



state of diversification in Kuwait, and similar oil-exporting economies in the Gulf region, is not a result of the Dutch disease but largely due to economic and structural constraints and distortions. These results, thus, debunks the dominant view in the literature about the Dutch disease.

These results have important implications for energy and economic policy. Admittedly, achieving both fiscal reform and diversification is an ambitious goal, which is hindered by these countries' economic structures and high economic distortions. Yet the results described here show that with appropriate incentives, the reverse-Dutch-disease effect could be considerably greater, without becoming a panacea. For instance, an increase in overall productivity levels translates to increased diversification and non-energy exports, as does the increased mobility of capital and labour. Productive growth of non-energy sectors (and therefore diversification) can also be achieved through efficiency-enhancing structural changes.

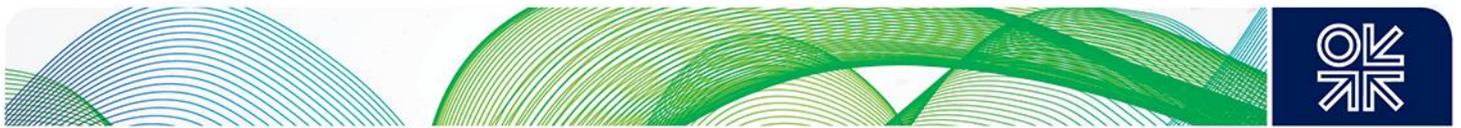
Another key implication of the results is that, in developing petro-economies with pervasive oligopolies like those of the GCC, microeconomic reform (such as competition reform) can be a way to achieve efficiency and drive the diversification effects (namely the growth of non-oil sectors' output and exports) resulting from energy and fiscal subsidy reforms.

Finally, while achieving better economic diversification that reduces overdependence on hydrocarbons requires relaxing some of the constraints described above, this is a politically complex process. Historically, political equilibrium has been achieved partially by establishing policies (such as high subsidies) that create these constraints and distortions and by avoiding painful economic reforms. To achieve meaningful diversification and fiscal sustainability, these reforms ought to be implemented as part of a wider set of broader economic, social, energy, environmental, cultural, and institutional reforms.

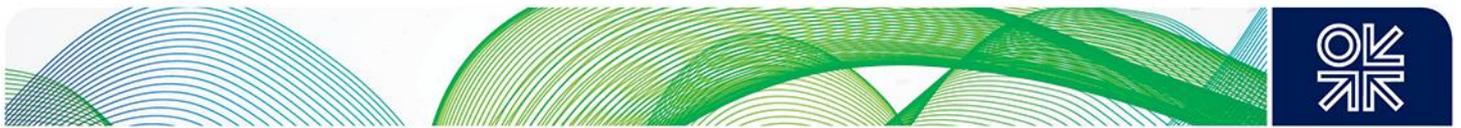


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