Is energy subsidy reform in an oil-exporting small economy beneficial to trade? Illustrations from Kuwait

Non-Technical Commentary

1. Introduction

Fossil fuel subsidies have been widely accepted by economists as being both distortionary and a generally inefficient and costly means of resource allocation – they lead to wasteful consumption and distort international trade and local markets. Such impacts have motivated international organizations such as the G7, the G20, and the Asia–Pacific Economic Cooperation (APEC) to draw commitments from various member countries to reduce fossil fuel subsidies. The Centre for Trade and Sustainable Development (ICTSD) and the World Trade Organization (WTO) have also targeted effectuating subsidy reform, through the use of trade rules.

Energy pricing reform has also gained ground across major oil exporting economies, as high subsidies were blamed for aggravating the fiscal challenges caused by the collapse of the oil price in mid-2014. Nevertheless, barriers to reform persist and subsidies remain high. According to the International Energy Agency (2018)[1], fossil fuel consumption subsidies increased by 12 per cent in 2017 to reach US$300 million; more than half of this figure is accounted for by 11 of the major oil producing economies.[2] Barriers to reform have included concerns over inflationary pressures (due to the rising cost of energy-dependent goods) that reduce households' welfare and hinder industrial competitiveness of the export-oriented sectors necessary for economic diversification.

While increasing numbers of studies on the impact of energy subsidy reform on welfare and the macroeconomy offer inconclusive evidence,[3] little is known about its impact on the trade and competitiveness of these economies. In general terms, subsidies impact competitiveness and trade via two main mechanisms: first, via the prices of final and intermediate goods; and, second, via the real exchange rate, which affects trade flows (both imports and exports). In the context of highly specialized economies such as those of the Gulf region, proponents of energy subsidy reform have stipulated that in a low oil price environment such reform would lead to the expansion of non-oil sectors and of their exports. Sceptics, however, argue that subsidy reform would result in minimal changes to either economic structure or trade in these economies, due to the dominance of the oil sector there and, consequently, that the prospects for expansion opportunities of non-oil sectors and of their exports are limited.

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[1] International Energy Agency (IEA) (2018). *Outlook for Producer Economies 2018: What do changing energy dynamics means for major oil and gas exporters?* Paris: EIA.

[2] These are: Bahrain, Iran, Iraq, Kuwait, Nigeria, Oman, Qatar, Russia, Saudi Arabia, the UAE, and Venezuela.

[3] See Gahvari and Taheripour (2011), Arze Del Granado 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), and Gelan (2018).

To examine these two views, and given the gaps in the literature, this paper [4] examines the impact of fossil fuel subsidy reform on trade (inflow and outflow) in an oil-exporting, distorted 'almost' small economy, showing illustrations from Kuwait. Specifically, this paper asks two primary questions: (i) do production subsidies offer non-energy Kuwaiti industries an advantage in the international market?; and (ii) what are the linkages between energy subsidy reform and trade in a low oil price environment?

Economy-wide models are best suited to offer such insights, yet only a few such models of Kuwait's economy exist, and with limitations. Thus, to tackle the aforementioned questions, this paper employs a two-region economy-wide, general equilibrium model with oligopolistic behaviour that embodies key features of Kuwait's contemporary economy and extends the model of Shehabi (2017) [5] by differentiating consumer- and industry-specific energy subsidy rates. The model embodies key unique features of the Kuwaiti economy, which are:

- High specialization in petroleum sector activity;
- Dominance of the public sector in the economy;
- High dominance of expatriate labour across the economy, particularly in the private sector;
- Large consumption and industrial subsidies;
- Large flows into and out of the of the sovereign wealth funds; and
- Oligopolistic industrial structure.

This paper makes important contributions to the literature in understanding the linkages between trade and subsidy reform in distorted, highly specialized, small open oil economies. Based on available information, this paper is the only applied general equilibrium study in which trade emerges as a central issue in the context of the Middle East. The Kuwaiti economy is chosen as the illustrative case as it offers various parallels with other oil economies experiencing similar high levels of distortions and similar economic structures. Not only is the Kuwaiti economy highly specialized – with the oil sector constituting more than 62 per cent of GDP and more than 90 per cent of exports, estimated at US$41 billion in 2016 – it also exhibits one of the highest energy price distortions, and had the highest annual subsidy per capita in 2015, estimated at US$1,547.

2. The Kuwaiti context

2.1 Economy, energy pricing, and trade

Like many oil-exporting economies, Kuwait's economic development strategy since the 1960s has positioned crude and refined oil products at the forefront of its exports and government revenue. As a result, the country's GDP is closely linked to its oil production and oil prices and is, therefore, subject to oil price volatility. Kuwait's hydrocarbon production is managed through the state-owned Kuwait Petroleum Company (KPC), and oil production is formally determined by OPEC's production allocations, set at 2.7 million barrels per day (mbpd) effective January 2017. Actual production varies, but hovered around 3.1 mbpd between 2012 and 2017. Kuwait follows a 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 relied on fiscal policies as its main instrument of macroeconomic stabilization, aided by

substantial foreign asset accumulation in its sovereign wealth funds (SWFs), managed by the Kuwait Investment Authority (KIA).

Up to 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 in use mostly depend on local hydrocarbon resources, has been offered at virtually zero cost. By 2014, Kuwait was the world's sixth-highest per capita energy consumer (World Bank, 2017), with domestic consumption having steadily increased over the previous 25 years. In March–April 2016, following various rejected schemes, the National Assembly proposed to raise electricity prices 'only after excluding owner occupied residences of Kuwaiti citizens' from price increases, effectively raising prices on expatriates. Prices for residential use by expatriates increased from US$0.007 progressively 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 which point it had the lowest domestic gasoline prices globally, together with 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. 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 solve fiscal pressures, economic inefficiencies, and energy over-consumption, and that any subsequent inflation would be muted.

Kuwait has very liberal trade policies. It signed the General Agreement on Tariffs and Trade in 1963 and has been a WTO member since 1995. The country's imports have been steadily increasing, while exports have been volatile (as Figure 1 shows), being subject to both world demand fluctuations (for example, due to the global financial crisis in 2008) and volatile oil price movements. The chemicals sector (fertilizers, organic chemical, and rubber products, for example) contributes the lion's share of non-oil exports, followed by machinery and transport equipment (such as vehicle parts and mechanical appliances). The largest imports are in the machinery and transport equipment sector, followed by manufacturing.

Figure 1: Growth of Kuwaiti trade 2006–2017.
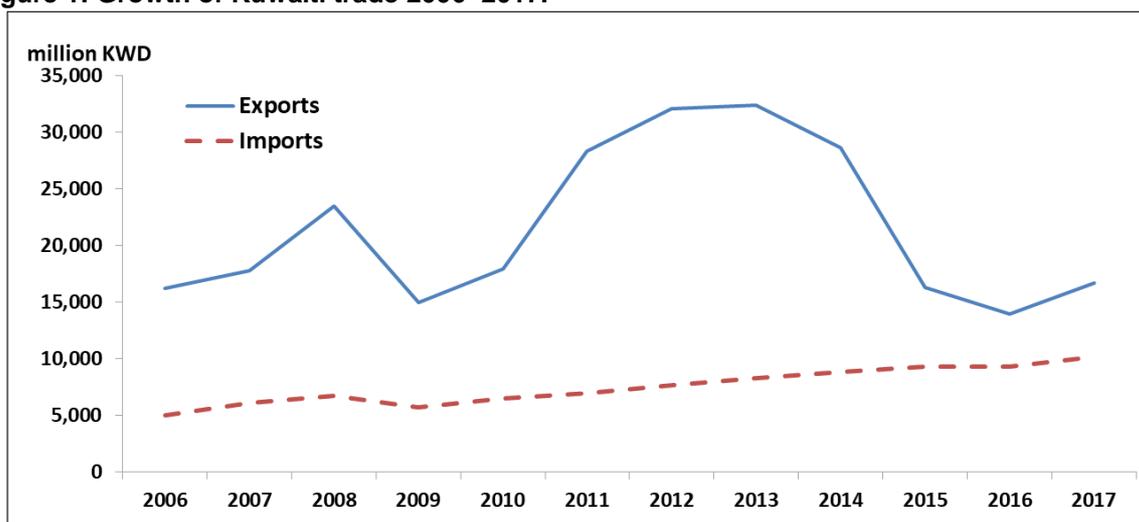
Source: Kuwait CSB Foreign Trade Statistics (2017).

Key structural elements of the Kuwaiti economy are pertinent to an assessment of the impacts of trade and pricing reforms and are depicted in Table 1, using the database for 2013 (the most recently available) constructed to calibrate this paper's economy-wide model.

Table 1: Economic structural elements 2013

Sector/ Percentage	Share of GDP^{FC}*	Share of total exports	Export share of output	Net exports over output
1 Agriculture	0.3	0.0	1.3	–63.3
2 Mining	1.4	0.0	0.0	0.0
3 Crude oil	48.9	42.1	50.5	50.3
4 Gas and petro-services	0.9	1.3	50.5	50.3
5 Oil refining	5.4	38.6	72.6	72.2
6 Chemical	1.1	3.4	37.4	–1.7
7 Light manufacturing	0.8	0.4	4.1	–56.0
8 Heavy manufacturing	0.8	1.9	8.1	–72.0
9 Electricity	0.6	0.0	0.0	0.0
10 Other network services	4.6	4.6	32.3	31.4
11 Construction	2.2	0.0	0.0	0.0
12 Transport	3.4	5.7	38.9	14.1
13 Financial services	7.8	0.7	4.1	–1.3
14 Other services	21.7	1.2	1.8	–15.6

* GDP^{FC} is GDP at factor cost, which is the sum of value added in each industry.
Source: Model database (social accounting matrix) constructed by author for 2013.

After hydrocarbons, 'Other services' are the second-highest value-adding sector, employing mostly expatriate labour. The 'Chemicals', 'Other network services', and 'Transport' sectors generate 14 per cent of exports, each exporting approximately one-third of its output. Kuwait has some existing expandable non-oil exportation capacity, as well as import-competing industries. The data point to a heavy indirect effect through imported intermediate inputs (which form a large part of all intermediates). This structure has two main consequences: first, the economy had a capital surplus, which was funnelled into investments abroad and some foreign aid; and second, most of the consumer and intermediate consumption had to be met through imports.

Critical to trade is the existence of local non-oil import-competing industries in Kuwait, the expansion of which has been a key development target. For example, the National Assembly approved US$103.4 billion to fund 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 2030. Moreover, the fiscal savings achieved by the 2016 subsidy reform were proposed as a means of supporting the diversification of non-oil exports. Nonetheless, non-oil exports have plummeted since the two most recent economic shocks (the oil price collapse in 2014 and energy pricing reform in 2016, see **Error! Reference source not found.**), confirming limited expansion capacity despite depreciation of the real exchange rate. This challenge can be used to support the view that energy subsidies had, indeed, offered an extra advantage to these industries in international markets.

Table 2: Comparative values of key non-hydrocarbon Kuwaiti exports and imports 2013- 2017

Value (million KWD)	2013	2014	2015	2016	2017
Chemicals					
Exports	1,034	920	819	671	722
Imports	994	1,177	1,144	1,136	1,331
Machinery & transport equipment					
Exports	343	413	401	325	404
Imports	3,266	3,399	3,618	3,623	3,997
Base metals					
Exports	121	116	70	69	84
Imports	842	825	817	1,003	1,075
Manufacturing					
Exports	118	130	128	114	104
Imports	1,097	1,163	1,299	1,227	1,284

Source*:* Ministry of Planning, *Annual Statistics Abstract* (2000), *Statistics Abstract in 25 years* (1990).

Non-oil productive capacity is limited and hydrocarbons continue to dominate trade.

2.2 Key economic features

The structure of Kuwait's trade and economic outcomes are due to the key economic features of its economy.

- • **Structural rigidities**: In addition to high specialization in hydrocarbons (a commodity with a highly volatile price) and their dominance over trade, Kuwait's economy is constrained by other structural rigidities. Chief among these rigidities is public sector dominance; in 2014 this 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 contributed to two-thirds of total capital formation. It is also the employer of choice for Kuwaiti workers (it employs the majority of them) and they in turn form the majority of public sector employees. Despite privatization efforts, Kuwait has a small private sector, and the public sector continues to dominate the economy in various industries, including petroleum. These structural rigidities have contributed to fiscal rigidities, described below.

- • **Fiscal rigidities and high subsidies**: Adjusting the fiscal gap between revenue and expenditure is difficult during periods of low oil prices due to the following factors:

— *Negligible tax revenue*: Negligible rates are applied on labour and corporate income. As part of fiscal reforms in 2016, the government approved the introduction of corporate taxes of 10 per cent on profits of Kuwaiti firms and multinationals' permanent establishments. A value-added tax (VAT) of 5 per cent was supposed to be imposed in 2018, in line with a GCC-wide agreement. As another means of diversifying government revenue, in 2017 the parliament proposed imposing a 5 per cent tax on foreign remittances, which equalled 5 per cent of GDP and 18 per cent of government revenue in 2015 (with estimates as high as 35 per cent in 2016); this tax is yet to be implemented.

— *Large current expenditures and wage bill*: The government's current expenditure (half of which funds the public sector wage bill) constitutes 80 per cent of total government expenditure. Such large commitments have reduced the scope and flexibility of other public expenditures, especially given the political opposition to any reduction in public transfers.

— *Welfare transfers*: In 2014, transfers and subsidies to households and firms represented more than half of the government's total spending. These transfers covered a wide range of products and services and included energy subsidies that were pervasive and conspicuously high even when compared to other petrostates. In 2015, Kuwait had the fifth-highest subsidization rate on energy products (when comparing domestic prices with their international shadow prices), estimated at 70 per cent.

• **Expatriate labour***: There are effectively two separate labour markets. Expatriates comprise 83 per cent of Kuwait's labour force. The majority of these are employed in the private sector at lower wages, with flexible labour contracts linked to employers through a strict system of employer-sponsorship of expatriate labour named *kafāla*. Overall, 77 per cent of Kuwaitis are employed by the bloated public sector, including the subsidized government-owned energy industries which employ mostly Kuwaitis. Public sector positions prioritize indigenous employment and offer salaries exceeding those in the private sector for similar levels of education and technical training.

• **KIA***: The KIA is an important institutional and financial feature of the Kuwaiti economy, acting as a financing alternative to oil revenue shortages and as a means of smoothing out short-run governmental expenditures. It manages two funds: the FGF, which is a long-term intergenerational fund established as an alternative source of government revenue to oil; and the GRF, which serves a macro-stabilization objective, offering fiscal rebalancing through inflows to and from the fund. Kuwait acquired a substantial and diversified international asset portfolio, which the SWF Institute estimated at US$524 billion (SWF, n.d.), more than three times the size of Kuwait's record high GDP in 2013 and more than five times the country's export revenue in that year.

• **Oligopoly***: The economy is dominated by oligopolistic firms. Shehabi (2017) examines firm and industry-level market capitalization and revenue data, to reveal that oligopolies are pervasive in Kuwait. This pervasiveness is evidenced by the high concentration of industries' capital and revenue levels within a few companies across all industries. It is not surprising that a combination of the high levels of minimum efficient scale delivered by modern technology, together with the small size of the economy in 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. 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 exhibit distortionary behaviour that is exacerbated by high subsidies, because subsidizing the negatively-impacted industries enables them to be profitable at their existing levels of investments and innovation, thus reducing their economic incentives to innovate and expand. Government-dominated industries are, by definition, monopolies and oligopolies in the economy. 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 discontent and parliamentary obstruction.

3. Modelling trade and subsidy reform in Kuwait

The paper employs a two region (Kuwait and the Rest of the World), economy-wide model in a CGE framework that embodies the abovementioned unique features and structure of the economy. CGE frameworks, generally considered the most suitable for policy assessment, are economy-wide models that capture the major structural features of an economy and represent the interactions between its industries. More generally, they belong to a class of economy-wide models that provide industry disaggregation in a quantitative description of an economy through a set of mathematical equations.

These models include neoclassical substitutability in production and consumption, coupled with an explicit system of market-clearing prices and the complete accounting of income flows. 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. The applied model is multi-sectoral. It is also comparatively static, comparing the economic outcomes of endogenous variables (such as real prices and wages at different equilibrium states) that result from changes in exogenous variables such as oil prices and subsidy rates.

3.1 Model structure

The model incorporates core features of conventional economy-wide modelling. These features include the standard 'Armington' constant elasticity of substitution between imports and locally produced varieties. They also include an open 'almost small' assumption, with saving and investment levels that adjust to circumstances, and open capital and current accounts. This assumption is essential in the case of Kuwait, as it represents 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 it has limited impact on prices in the markets to which it exports. Uniquely, in a departure from conventional CGE modelling, the model represents oligopolistic behavioural structure in its supply side (see Asano and Tyers, 2015).[6]

As modelled, the Kuwaiti economy has one representative household that consumes home 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, while external economic conditions (as represented by bond yields and commodity prices) are readily shocked as part of analytical applications. 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 demands. Households consume either differentiated home products supplied by oligopolistic firms, or imported varieties, also differentiated from local ones. 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. The long-run version has prices and interest rates which all adjust to ensure that product, factor, and financial markets all clear.

3.2 Incorporating Kuwait's economic features

The analyses are conducted to mimic 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 analysed. Closures represent assumptions as to 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 five unique Kuwaiti economic features (detailed in Section 2.2.) and the way these are captured in the model through its structure and closures, are as follows:

- Structural rigidities and public sector dominance: Given that KPC and the electricity sector operate as large and nominally independent corporations, they are represented as separate monopoly firms with their 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.

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[6] Asano, A., & Tyers, R. (2015). Third arrow reforms and Japan's economic performance. (UWA Discussion Paper Series DP 15.17). Perth, WA, Australia: University of Western Australia. Retrieved from http://www.business.uwa.edu.au/__data/assets/pdf_file/0012/2765847/15.17-Asano,-A.-and-Tyers,-R.-Third-Arrow-Reforms-and-Japans-Economic-Performance.pdf.

- 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. The collection of petroleum export revenue is treated as a quasi-tax payment. The fiscal closure allows the government deficit and welfare payments to adjust, the 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, there are four different labour types differentiated by skill and nationality (taking into account the flexible employment contracts of the expatriate workers). Further, wage and mobility rigidities in the labour market are assumed, especially as these pertain 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, with their real expatriate production wage rates (relative to an index of producer prices) being held fixed.

- KIA and financial capital market: The model takes into account external financial flows, primarily flows 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 and they 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 can lead to the potential for unrealized economies of scale which 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 experiments

Three experiments are undertaken, all being analysed in the long run due to the nature of subsidy reform which has long-term rather than transitory effects. These experiments are:

a) A counterfactual decline in energy subsidy rates in a high oil price environment without change in any policy instruments (Scenario 1);

b) The first shock in experiment (a) is combined with a decline in the oil price (this is similar to simulate the energy pricing reform implemented in Kuwait in August 2016) (Scenario 2);

c) Both shocks in experiment (b) combined with a hypothetical microeconomic policy reform that includes competition policy and productivity boosts (Scenario 3).

A summary of the pertinent results follows.

4.1 Scenario 1: energy subsidy reform in a high oil price environment, allowing adjustments in fiscal deficit and welfare payments

To examine whether energy subsidies, including production subsidies, offer non-energy Kuwaiti industries an advantage in the international market, this counterfactual 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 high oil prices, without any changes in other policy instruments. Table column (a) summarizes the results.

Table 3. Impact of energy subsidy reform shocks on selected economic variables in the long run

Variable	Percentage change (departure from baseline)		
	(a) Pricing reform 50%: Household 50%; Firms –5%	**(b)** Oil price decline: –5%; Pricing reform 50%: Household 50%; Firms –5%	**(c)** Oil price decline: –5% Subsidy reform 40%; Competition reform–20%; productivity boost 6.5%
Macroeconomic indicators			
Real GDP	–1.43	–10.10	3.62
Real GNP	–3.63	–13.76	0.79
Real exchange rate	0.39	–2.62	–5.54
Real rate of return on capital, gross of tax	2.88	–8.39	–1.11
Capital stock	–2.80	–3.58	–1.94
Non-petroleum exports/GDP	–1.18	0.53	9.20
Government			
Fiscal deficit/GDP	0.35	–9.66	–6.31
Welfare payments	3.70	1.70	–4.16
Current account/GDP	–1.76	–14.34	–5.97
Investment expenditure/GDP	0.98	1.91	1.33
Welfare and consumption			
Welfare (Real disposable income, CPI deflated)	–7.82	–5.82	7.37
Household energy consumption	–12.15	–11.22	–5.02
Labour			
Unskilled expatriate labour employment	–0.71	1.94	19.99
Skilled expatriate labour employment	–0.80	1.49	16.70
Real Kuwaiti unskilled wage, PC deflated	–4.0	–4.8	19.4
Real Kuwaiti skilled wage, PC deflated	–3.1	–4.2	9.7
Real expatriate unskilled wage, PC deflated	–1.6	–2.2	–1.6
Real expatriate skilled wage, PC deflated	–1.6	–2.2	–1.6
Industry/ oligopoly			
Pre-tax pure profits/GDP	0.17	0.27	–0.02
Average markup	0.59	–0.29	–3.52
Average markup, non-oil tradables	0.72	–0.19	–2.51
Average markup, non-tradable services	0.62	–0.77	–5.92
Fixed costs/GDP	–0.29	–0.10	0.63
Average industry scale	18.15	5.64	37.62

Source: Simulation results.

At the macro level, the real GDP and real GNP drops are driven by a loss in capital stock. The net fiscal effects witness only minor improvements. The increase in government revenue resulting from savings accrued by reducing subsidies improves the government budget. These savings, however, are offset by higher welfare payments to Kuwaiti citizens to compensate for inflation and for the decline in household disposable income caused by the decline in subsidy. Household welfare, measured by real disposable income deflated by the CPI, drops.

The first important insight from the results is that transmission of energy subsidy reform into trade flows occurs through the two main channels, but through opposing effects: (i) raising the cost of local energy and energy-dependent goods; and (ii) appreciating the exchange rate, which decreases the relative cost of imports and reduces the competitiveness of non-oil exports abroad. Nevertheless, these effects are very limited due to idiosyncratic factors, namely: (i) the elasticity of substitution between imports and locally produced goods; (ii) the flexibility of expatriate labour contracts; (iii) the high share of imports in intermediates; and (iv) oligopolistic structures in non-tradable and tradable sectors. The dynamics are as follows.

The drop in the subsidy by itself does not affect Kuwait's net petroleum exports. It does, however, raise the cost of domestic energy and of energy-dependent goods, as well as that of intermediates using local energy as an input. The ensuing decline in overall household income reduces demand by both households and industries (intermediate) for energy and for other products. Further, the rise in domestic energy prices causes the real exchange rate to appreciate, which decreases the competitiveness of non-oil exports.

Accordingly, industries adjust their production (downwards), first through the use of labour. The flexibility of expatriate labour contracts allows affected industries to adjust their employment levels, causing similar declines in the employment levels of skilled and unskilled expatriates (while the employment of Kuwaitis is largely unaffected due to their fixed employment in the public sector, while their real wages are reduced). Without employment sponsorship, expatriate labour must exit. As expatriates' wages are generally lower than those of Kuwaitis, their exit contributes to the above-described production adjustments and to potentially smaller adjustments in consumption. This mechanism is unique to GCC states (with similar labour markets) in which expatriates' exit acts as a cushion that absorbs the economic shock.

The mobility of capital in the long run, coupled with the decreased competitiveness of non-oil exports, leads to declines in output for the non-energy sectors, which has a net contractionary effect on the overall economy. This effect is similar to that of the 'Dutch Disease', which occurs following a boom in natural resource exports that leads to a significant appreciation of nominal (and real) exchange rates (or to inflation in countries with fixed exchange rates regimes), adversely affecting non-resource tradable sectors and expanding non-traded service sectors.

The appreciating real exchange rate also renders imported goods relatively cheaper. Thus, the declining household demand is moderated with more affordable imports. Similarly, the demand for intermediate goods is inelastic and the high real exchange rate (powered by strong petroleum exports) renders imported intermediates relatively cheaper. As such, there are potential expansion opportunities as local industries shift away from local intermediates to more affordable imported intermediates. Nevertheless, low elasticity of substitution between imports and locally produced goods, coupled with the share of imports in intermediate inputs in the non-energy tradable sectors, means that any expansion in those sectors is small. Overall, the demand for imported intermediate inputs changes, but only marginally. The net effect is a decline in non-energy output and exports, and an increase in overall imports.

The long-term sectoral results, depicted in Table 4, reveal three important insights into the linkages between subsidy reform and the trade of non-oil tradable industries.

Table 4. Long-run sectoral effects of subsidy reform

Variable	Percentage change (departure from baseline)				
	Expatriate employment	Gross output	Markup ratios	Scale	Exports/GDP
1 Agriculture	−0.93	0.86	0.11	4.72	0.00
2 Mining	−3.55	−3.72	1.16	−0.68	−0.03
3 Crude oil	−5.77	−3.04	0.25	14.01	1.01
4 Gas and petro-services	−1.61	−0.73	0.01	1.05	0.00
5 Oil refining	−30.89	−9.43	0.50	35.95	−2.01
6 Chemical	−4.64	−4.71	0.45	4.82	−0.13
7 Light manufacturing	−4.46	−4.23	0.18	10.05	−0.03
8 Heavy manufacturing	−16.93	−17.55	1.22	1.42	−0.38
9 Electricity	−3.35	−1.37	0.49	2.42	0.00
10 Other network services	−4.25	−5.26	1.83	−1.83	−0.25
11 Construction	9.84	9.56	0.26	−3.41	0.00
12 Transport	−5.42	−5.53	0.53	2.72	−0.30
13 Financial services	−3.66	−4.19	0.98	53.77	−0.04
14 Other services	−1.05	−0.80	0.05	8.27	−0.01

Source: Simulation results.

First, energy subsidy reform in Kuwait has little in the way of pro-competitive industrial effect and produces few efficiency gains. This result is evidenced by small increases in average markups as a share of GDP, including those for non-oil tradable sectors. It is thus unsurprising that the result is contractionary for the overall economy, achieving losses at both the macro and microeconomic levels. The non-traded 'Construction' sector appears to be the main winner.

Second, non-oil tradable exports do not gain a significant advantage from energy production subsidies. This is evidenced by the negligible decline in their exports following energy subsidy reform (a total of −1.18 per cent, a value that is not a significant proportion of overall Kuwaiti exports). Further, if subsidy reform offered a marked edge to non-energy exports, then it is reasonable to expect, following the drop of subsidies, that their exports (as a share of output) would decrease by proportionately more than their overall output. Yet this occurs only for small exporters of Heavy Manufacturing and Services.

The third insight is that, although the shock reduces economic distortions, there is an increase in oligopoly markups across all industries and the overall economy, which is effectively an increase in distortions. The contractionary nature of the shock itself initially reduces oligopoly markups. There are, potentially, expansion opportunities as traded industries shift their output away from the international market to the domestic market. Yet demand in the non-petroleum exporting and services industries shifts from exports (with the highest elasticity) to intermediate and investment demand (with the lowest and second-lowest elasticities, respectively), causing the overall elasticity of demand to decrease. Oligopoly markups therefore increase in turn, counterbalancing the negative impact of the shocks. This is a very important result because these markups, and the pure profits in the larger industries, remain especially high, implying that a large part of the economy's inefficiency is captured by distortionary oligopoly rents.

These results offer a salient conclusion on linkages between subsidies and trade in oligopolistic economies: energy subsidy reform is contractionary to the overall economy, and local energy subsidies do not offer non-energy exporting sectors a significant advantage in international markets (largely due to the oligopolistic nature of the industries and their ability to secure large markups and pure profits locally). These profits are at risk of being eroded in the international market, so non-oil exporting industries have little incentive to export with or without high energy subsidies at home.

4.2 Scenario 2: energy subsidy reform in a low oil price environment

This section quantifies the impact of energy pricing reform (of the type implemented by the Kuwaiti government) on current economic conditions. Table 3 column (b) summarizes the results.

At the macroeconomic level, assuming a continually low oil price, energy pricing reform exacerbates the contractionary shock of the oil price decline. Falls in both real GNP and real GDP are greater than in the first simulation, largely driven by a decline in the oil price and a loss in investment. While the decline in energy subsidy initially causes the real exchange rate to appreciate (as in scenario (a)), the decline of the oil price then causes it to depreciate by more than the initial appreciation, 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, but by only half the figure in scenario (a). These payments erode the fiscal improvement obtained through reducing the cost of subsidy payments to households and industries, necessitating large withdrawals from the KIA funds to finance committed government expenditures.

Importantly, the pro-trade effects of subsidy reform in this scenario are higher than in the first scenario (under a high oil price), driven by the depreciating real exchange rate, elasticities of demand, and efficiency improvements through declines in oligopoly markup. 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, coupled with the high rise in energy costs, force Kuwaiti non-oil industries to cut costs, especially those of expatriate labour, in the short run, limiting their expansion. Capital flows out of the economy (given the declines in returns locally), which further hurts non-petroleum production and reduces its demand for imported inputs. Consequently, markups of the non-oil non-tradables (such as Construction) also decline to a greater extent. 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, this will have only modest direct effects (on final product markups). The ensuing efficiency improvements partially compensate for the output losses of affected industries.

Non-oil 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. Furthermore, they become more competitive owing to the depreciating exchange rate, enabling them to 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 through hiring additional expatriate workers, who are mobile with flexible employment contracts. All in all, 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 of the majority of intermediate inputs (used by the expanding industries) that are imported.

This analysis shows that the pro-trade effects of subsidy reform are limited, but that they are higher if reform is implemented in a low oil price environment because negative effects are partially offset by efficiency gains and reduction in oligopoly markups. Nevertheless, these effects remain small due to structural constraints in economic, labour, and oligopolistic structures. Increases in non-oil industrial production and exports remain insufficient to counter the contractionary effects caused by the oil price decline and subsidy reform, with only minimal improvement in competitiveness from the initial base level.

The pervasiveness of oligopolies that sustain large markups, together with their collusive pricing in the economy, limits trade expansion and indicates that there is considerable scope for competition reform in Kuwait. This is further confirmed by Kuwait's various Five-Year Development Plans, which have the explicit goal of expanding the private sector and increasing competition within the overall economy.

This scope motivates the final analysis, which explores the possible effects of subsidy reform in combination with other reforms.

4.3 Scenario 3: competition reform and subsidy reform

This scenario aims to investigate the circumstances in which energy reform could also be accompanied by pro-competitive effects. To illustrate possible policy solutions that could be implemented in combination with energy pricing reform in a low petroleum price environment, two hypothetical competition policy reforms are introduced simultaneously: tighter pricing surveillance that reduces collusive behaviour across all non-petroleum industries; and improvements in the productivity of both the private and the services sectors in the long run. Table 3 column (c) summarizes the results.

Competition reform can yield substantial improvements in performance as well as substantial pro-trade effects, as improvements in both imports and non-oil exports can be seen at margins significantly larger than in the previous simulations. Real GDP and real GNP both rise, and output, employment, and aggregate welfare all increase. Competition reform yields noticeable expansion in non-oil output (tradable and non-tradable) as well as in non-oil exports. Non-oil exports as a share of GDP increase by as much as 9.2 per cent.

To demonstrate the large improvement and output gains achieved by competition reform, Error! Reference source not found. compares the sectoral changes of exports in this simulation (Scenario 3) with the results of Scenario 1.

Figure 2: Comparative exports/GDP sectoral results of scenario 1 and scenario 3.
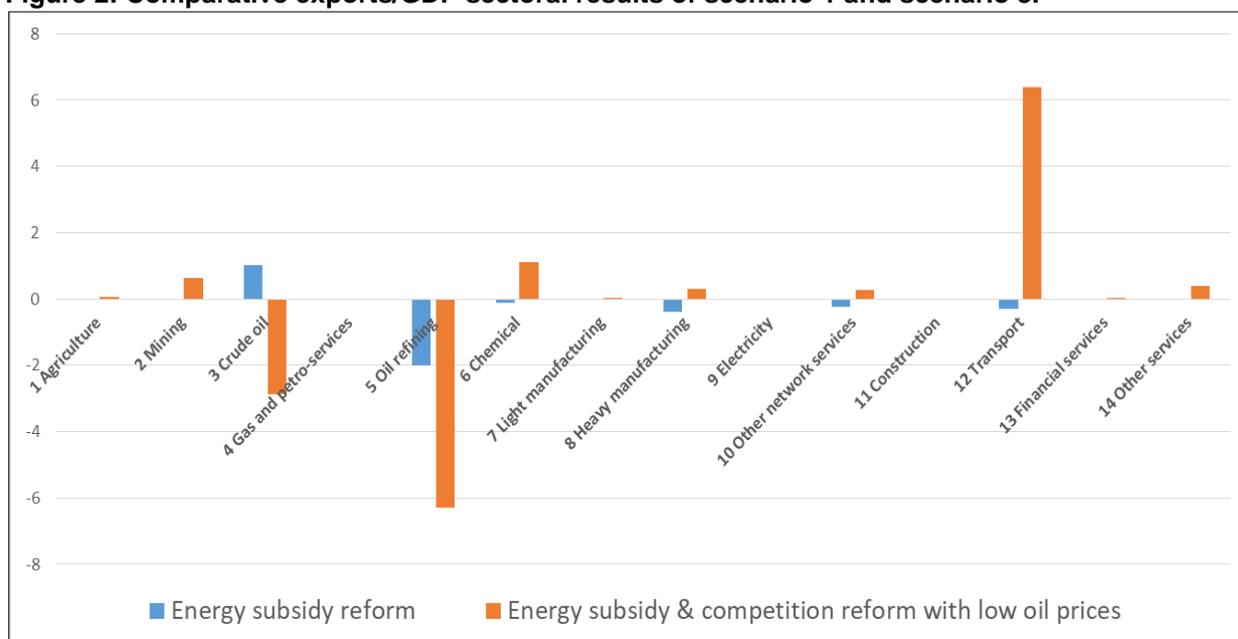
Source: Simulation results.

The depreciation in the real exchange rate, due to the drop in the oil price and to increases in efficiency, allows firms to increase production scale gains and reduce overall costs. Limiting collusion slashes the large pure profits captured by oligopolies, offering gains distributed across the economy as a whole. Further, in the long run, improvements in efficiency encourage capital stock enlargement, shown as a rebalancing of Kuwait's asset portfolios away from foreign toward domestic productive assets. Lastly, the increase in productivity of the private sector and the services sector further augments the aforementioned efficiency gains, reducing markups and increasing production scale. Kuwaiti labour gains in the long run, and capital owners do not endure significant losses. Reductions in oligopolies' pure profits as a share of GDP drive increased competitiveness of the overall economy.

5. Findings and conclusions

This paper examines the linkages between trade and energy subsidy reform in a distorted, small oil-dependent economy, using illustrations from Kuwait. Based on the available information, this analysis is the first to feature trade as a central theme of energy subsidy reform, especially in the context of MENA. In the context of the current literature on the MENA economies, this model offers new insights on whether subsidy reform offers pro-trade impacts and a unique perspective on oligopolistic behaviour, its regulation, and the management of both oil and non-oil oligopoly rents.

Four major findings emerge from the simulation results.

1. The transmission of subsidy reform on trade in a highly specialized and distorted economy is negative and occurs through the two aforementioned main channels (raising costs of final goods and appreciating the real exchange rate) which have opposite effects on industries, but their impact is significantly limited in Kuwait by four existing idiosyncratic economic rigidities. These factors are: rigid public sector employment, oligopolistic distortions, high dependence on imported intermediate inputs in local production, and the limitations of capital movement (as capital is largely locked in public industries or sovereign wealth funds abroad). When subsidy reform is implemented, such economic and structural constraints persist. These factors, coupled with the low elasticity of substitution between imports and locally produced goods, mean that any expansion in those sectors is small.

2. In relation to concerns over the erosion of industrial competitiveness: while energy production subsidies reduce the costs of non-oil sectors, they lead to minimal improvements in their international competitiveness due to their oligopolistic nature and their collusive pricing in the economy. These factors enable the non-oil sectors to sustain large markups in domestic markets and offer little incentive to export. As such, there are few incentives for efficiency-enhancing structural change.

3. Subsidy reforms have higher pro-trade effects if implemented in a low oil price environment (but even then, the effects are relatively small) because their negative effects (detailed in the first finding above) are partially offset by efficiency gains and reduction in oligopoly markups. These gains occur as non-oil industries are directed away from the least elastic (intermediate and investment) demand to the more elastic (export and final) demand.

4. Subsidy reform worsens the competitive gains of the non-oil exporting industries in a low oil price environment but, in combination with microeconomic reform that manages competition, sustained benefits and structural changes can be achieved in the long run, enabling the creation of opportunities for increased efficiency and expansion of the private sector and non-oil exports. The results potentially suggest a lesson in the sequencing of reforms and confirm that in oil-exporting economies characterized by the pervasiveness of oligopolies, microeconomic reform can be a channel through which the pro-trade effects of energy subsidy reform can be achieved.

The results of the last simulation are arguably more optimistic – in that expansion of the non-oil industrial and exports sectors is constrained by institutional, political, economic, and labour constraints and rigidities. In practice, historic petroleum riches have supported policies that have shifted away from assisting the growth of non-oil sectors towards the funding of welfare payments and public sector employment. The government remains the preferred employer and welfare provider and the public sector dominates in most industries, while investment in non-petroleum tradable sectors remains weak. The hydrocarbon industry continues to dominate both the Kuwaiti economy and governmental revenue sources, causing a large deterioration in the country's fiscal position in the long run. Further, in reality, competition reform is hindered by the existing political economy which governs the dynamics of the business community's ability to influence policy implementation, as well as by economic and regulatory rigidities. As such, absent intentional structural change, these potential

benefits cannot be realized. The implications of the results point to the potential role of pricing regulation in such small economies in moderating the impact of oil volatility on trade, employment, and overall economic activity. In conclusion, the results potentially suggest a lesson in the sequencing of reforms, and confirm that in developing petro-economies characterized by pervasiveness of oligopolies, microeconomic reform can be a channel through which the pro-trade effects of energy subsidy reform can be achieved.