

Sheltering the Economies of Oil- Exporting Countries From Energy Shocks

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The King Abdullah Petroleum Studies and Research Center (KAPSARC) is a non-profit global institution dedicated to independent research into energy economics, policy, technology and the environment, across all types of energy. KAPSARC's mandate is to advance the understanding of energy challenges and opportunities facing the world today and tomorrow, through unbiased, independent, and high-caliber research for the benefit of society. KAPSARC is located in Riyadh, Saudi Arabia.

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Key Points

Price shocks are a feature of international oil markets, with the oil price collapse in the second half of 2014 being the most recent example. These episodes are a source of macroeconomic disruption that harm economic activity in the short and medium term, particularly for oil-exporting countries.

The recent emergence of non-conventional oil – such as light, tight oil – represents a critical change in oil markets. Investments in non-conventional oil react very aggressively to changes in oil prices, impacting the structure of oil markets, and could reduce volatility in the future.

Three approaches to stabilizing the economies of exporting countries can provide different ways of achieving specific objectives:

Sovereign wealth funds, which invest current oil and gas revenues in long-term assets so as to increase future economic welfare, are the most widely used strategy. In particular, **stabilization funds** essentially boost savings from oil revenues in good times, when prices are high, so these can be released through increased expenditures to stimulate the economy during bad times, such as during a price shock. The type of fund and investment strategy to be used depends on the policy objectives and time horizons.

Economic diversification addresses the reality that oil-exporting countries tend to have their producing sector concentrated in oil and oil-related activities. Diversification is a way to reduce the resulting gross domestic product (GDP) volatility. In the case of the Gulf Cooperation Council (GCC) countries, it appears that higher growth with lower volatility could be achieved by increasing the share of the manufacturing sector in the countries' GDP, while reducing the shares of services and oil and gas.

Diversifying the energy mix of the GCC would not, by itself, reduce oil-fueled volatility in the economy. It would reduce domestic consumption of oil and gas and permit increased exports. Stabilization, though, will only be brought about by diverting these funds to broader economic diversification or increasing the size of stabilization funds. Otherwise, higher exports would also increase the countries' exposure to oil price shocks.

Summary for Policymakers

The impact of sharp oil price fluctuations on economies has been an issue of concern for policymakers since the 1970s. In the last 40 years, governments of oil-exporting and -importing countries have been implementing policies to shelter their economies from adverse oil price shocks, with the policy approach being different in each case. The emergence of light, tight oil has prompted a critical change in the structure of oil markets. Investment in non-conventional oil reacts aggressively to changes in oil prices; in effect, it reduces the likelihood of long-term cyclical shocks, unless markets are somehow prevented from finding the right price, to the extent that large imbalances may build up. In the case of natural gas, a move away from pricing based on oil prices may also change the volatility of this source of energy.

In this evolving context, the workshop examined three main strategies to minimize oil price shocks for exporting countries. Throughout this brief we refer to oil, while recognizing that major gas exporters are exposed to similar choices.

Sovereign wealth funds are based on the concept of saving in the good times – i.e. when oil revenues are high – and disinvesting in the bad times, that is, spending in response to downward shocks. Depending on the policy objective and time horizon, three approaches dominate:

- Intergenerational funds are savings earmarked for future generations, since they have a very long-term horizon.
- Parking funds focus on key economic sectors, with the aim of influencing the mid-term horizon.
- Stabilization funds, which have a short-term horizon, are used to minimize budget volatility.

In all cases, successful funds have clear and transparent rules. These optimize the drawdowns and minimize the costs to the economy that result from downward shocks in oil and gas prices.

Economic diversification is a second strategy, more focused on mitigation of oil shock impacts. The producing sector of oil-exporting countries tends to be concentrated in oil and oil-related activities, making their economic activity volatile. An innovative approach to planning the optimal structure of a more diversified economy could be borrowed from the financial sector. This considers the economy as a portfolio of assets, with each asset categorized according to its economic efficiency, or profitability, and exposure to oil price shocks, or risk. Using this approach, GCC countries could increase their manufacturing sector's share of GDP – i.e. diversify sources of profitability – and decrease the weighting of services and the oil and gas sectors, so as to reduce overall economic risk without sacrificing economic growth.

Diversifying the energy mix may be a first step in a strategy for sheltering economies from energy shocks, essentially boosting the shares of low-carbon resources to displace oil and gas. This approach not only reduces domestic consumption of fossil fuels, but also provides long-term price certainty for generated electricity. In the case of oil-exporting countries, renewable energy can displace oil in power generation, potentially allowing for an increase in exports and boosting the share of oil revenues in GDP. However, as a second step to increasing economic stability, governments would need to manage the larger oil contribution to state revenue by diverting these funds into broader economic diversification or into stabilization funds.

Background to the Workshop

KAPSARC's workshop *Sheltering the Economies of Oil-Exporting Countries from Energy Shocks*, (Riyadh, May 2017), brought together policy experts from governments, international agencies, central banks, research organizations, industry and academia. Participants discussed different financial and economic strategies to minimize the impact on economies of sharp oil price fluctuations, specifically for oil-exporting countries. This workshop built on a previous workshop, *The Economics of Energy Vulnerability*, which took place in May 2015 (also in Riyadh).

The 2017 workshop analyzed the impact of abrupt variations of oil prices on the macroeconomic conditions in oil-exporting economies. More than two years of low oil prices have resulted in unfavorable macroeconomic conditions for producing countries, including record budget deficits.

It is also clear that the emergence of unconventional oil and gas represents a critical change in markets. Investments in these types of unconventional resources react quickly to changes in international

prices. In this context, discussions focused on the question of whether the emergence of unconventional oil and gas reduced the likelihood of oil price shocks in the medium term.

Oil price volatility directly affects fiscal budgets, prompting reduced spending and adding uncertainty to the investment climate. To avoid fiscal policies that can produce or exacerbate cycles, oil-exporting countries often create stabilization funds to cushion unavoidable adjustments in the economy. Discussion centered around questions such as: Which countries have been successful in developing stabilization funds? Have such stabilization funds been effective in reducing fiscal volatility? What is the optimal fiscal framework for creating and managing these funds?

Economic diversification plays an important role in protecting economies against oil price shocks. For this reason, governments try to enhance non-oil GDP growth, non-oil exports and private sector investments. In the current context of low oil prices, which are the best sectors to diversify into? What roles do sovereign wealth funds and fiscal rules play?

The 2014 Oil Shock on Oil-Exporting Countries: Lower Long-Term Growth?

While episodes of extreme price volatility characterize the international oil markets, the most recent example of this volatility – i.e. the price collapse in the second half of 2014 – has been unusual for resulting in an extended period of low prices. Traditionally, these episodes have been a source of macroeconomic disruptions that harm economic activity in the short and medium term. However, the emergence of non-conventional oil appears to be changing the dynamics of the oil markets, perhaps launching a period of lower, but less volatile, prices.

During the first decade of the 21st century, production from the Organization of the Petroleum Exporting Countries (OPEC) dominated the dynamics of the international oil markets. Output from these countries was one of the key elements to understanding the evolution of oil prices. While non-OPEC countries also had a role, their direct impact on international markets was marginal. Global demand growth was the third main driver in this interplay.

In the current decade, however, the market structure changed. The emergence of non-conventional oil – in particular, light, tight oil – has been identified as the main reason for this. Analysis suggests that the sharp drop in energy prices in 2014 was two-thirds attributable to supply side factors, while demand side factors were only one-third responsible.

Producers of light, tight oil can more quickly expand or contract output in response to changes in market prices than can producers of conventional oil. This represents a critical change in the structure of oil

markets, which could lead to reduced volatility. Conventional oil production reacts much more slowly to abrupt changes in prices; in other words, conventional oil investments show little short-term reaction to oil price fluctuations, but have a more pronounced response to long-term changes in prices.

At present, the price of long-term futures contracts for crude oil stands at around \$55.00 per barrel. This price may be little higher than the perceived marginal cost of tight oil production. Debate is ongoing as to the true cost of non-conventional oil production and the extent to which a low oil price leads to a lower cost structure.

The role of environmental policy in relation to the oil price is another open question. If climate policy aims to curb demand for oil, consumers may ultimately have to pay much higher prices for oil products. As such, environmental policy and policymakers can influence oil markets in much the same way as unexpected shifts in aggregate demand or supply. Given the lower outlook for oil prices, it would appear that consumer governments have plenty of room to maneuver in terms of consumption taxes or carbon prices. In other words, an aggressive environmental policy could leave less of the price of a barrel available for producers.

With the economies of oil-exporting countries being vulnerable to low energy prices, the new scenario of sustained low oil prices appears to be having negative consequences for exporters' long-term growth, unless they can develop suitable counterstrategies.

Mechanisms to Minimize Adverse Energy Price Shocks

Stabilization and sovereign wealth funds

The question of the exchange rate regime, which in GCC countries is pegged against the U.S. dollar, gained increased prominence following the 2014 oil price shock. Due to the specific characteristics of their economies, a fixed exchange rate has been an appropriate monetary policy for these Gulf nations. These economic features include large and persistent balance of payments surpluses, the structure of their labor markets, which rely heavily on foreign workers, and prudent fiscal policies.

A change in the link to the dollar, some experts argue, could be used to manage volatility in the macroeconomy, bringing some short-term advantages. In particular, since oil export revenues are dollar denominated, devaluation would boost public finances. However, a devaluation could also negatively influence the credibility of the exchange rate regime, making it very difficult to sustain the currency peg in the future. Consequently, this does not appear to be an appropriate policy alternative for the GCC countries.

“Sovereign wealth funds do not change the economic nature of a country.”

The creation of sovereign wealth funds is a widely used way of sheltering the economy from oil price volatility, with few negative consequences. The number of sovereign wealth and stabilization funds has increased substantially in the past few years. Currently, more than 100 sovereign wealth funds

globally are managing assets worth more than \$7.2 trillion. Revenue from hydrocarbons is one of the main financial resources for these funds, and GCC countries are major players.

Depending on the policy objective, three different types of funds can be developed. Intergenerational funds have a very long-term approach, with the aim of saving for future generations and sheltering the economy from commodity price fluctuations. Parking funds are a mid-term approach, and often focus on developing strategic non-oil sectors. Stabilization funds are designed as a short-term approach to address budget volatility.

Because they are specifically designed to react to extreme price fluctuations, stabilization funds are typically managed by investing in short-term assets that can be easily accessed to quickly finance government budget shortfalls in the event of a sharp decline in oil export revenue. The amount of money being managed by these funds will be critical to their effectiveness.

The most relevant policy issues that crop up during the creation of a sovereign wealth fund are how to define an effective fiscal rule and how to ensure transparent governance. These issues raise the following questions: What should be the size of the fund? When should the government transfer money to the fund and vice versa? What are the appropriate types of assets for the fund? To address these policy objectives effectively, successful funds have clear and transparent rules to protect against politically oriented, but economically damaging, deployments of capital resources. An approach that optimizes drawdowns to minimize cost to the economy may be an

improvement on the ‘rule of thumb’ approach that is often adopted for its simplicity.

Another issue of concern for such government funds is that, in general, private funds obtain higher returns on investments than sovereign wealth funds. This raises the questions of the economic efficiency of such funds and whether there is a need for a change in management approach.

Diversifying the economy to shelter it from oil price shocks

Economic diversification is another way that oil-exporting countries can shelter their economies from energy price shocks. Mexico is commonly seen as a successful example of an oil-exporting country that pursued this approach. In 1980, around 70 percent of its exports were oil, compared with the current 5 percent. The Mexican case is not perfect, however; while exports have been diversified, it has been at the cost of a geographical concentration. To a large extent, Mexican economic diversification is linked to its North American Free Trade Agreement (NAFTA) with the U.S. and Canada. As a result, the U.S. absorbs 80 percent of Mexican exports and fiscal revenues are still highly dependent on oil income. The Mexican example is thus difficult to replicate. Ultimately, GCC countries will need to diversify their economies using a customized strategy.

An innovative approach to planning a more diversified economy would be to consider it as a portfolio of assets, with each asset defined by the two key variables of profitability, or economic efficiency, and risk, that is, exposure to macroeconomic shocks. To achieve a balanced economic structure, a successful diversification process must take account of both variables.

“Getting rid of oil dependence may not mean the same thing as becoming a diversified economy.”

An effective diversification process would create an efficient economy — i.e., an economy with the highest sustainable growth rate for any given level of volatility within that growth. In the case of GCC countries, analysis suggests that stimulating activity to substantially increase the manufacturing sector’s share of GDP, while reducing the share of the energy sectors, would be logical. Areas of policy action that could help achieve this objective could be incentives in the tradable sector — including promotion of foreign direct investment — fostering a positive private business climate and favoring the development of skilled human capital.

Diversifying the energy mix

As GCC economies move toward deregulated energy pricing, another option for sheltering the economy from oil shocks would be through investments in renewable energy. Climate change concerns are driving this process in many countries, often stimulating innovation in both technology and market design. A decarbonization of the electricity generation sector can both reduce domestic consumption of fossil fuels and diversify a country’s energy mix.

While it may seem intuitive that reducing domestic consumption of oil can protect the economy from volatile prices in liberalized markets, this is not backed by the evidence. The energy transition from coal to natural gas which the U.K. and Germany pursued in the 1990s appears to have led to higher macroeconomic volatility in both countries, largely because liberalized natural gas prices were much

more volatile than those of coal. In addition, the current shift toward renewable energy in some European countries is driving a decline in electricity prices, but at the same time increasing their volatility.

“Renewables in Saudi Arabia would limit the transmission of liberalized oil and gas price volatility to the domestic economy.”

Deployment of renewable energy sources in the GCC countries is intended to displace oil in

electricity generation, with the aim of increasing oil exports. This change in the electricity energy mix could eventually lead to a larger contribution of oil exports to GDP and fiscal revenues, thus increasing the macroeconomic volatility of these oil-exporting countries. The reality of diversifying the energy mix so as to reduce macroeconomic volatility is more complex, however, and depends on multiple factors, such as the type of renewable technology deployed, the existing energy mix and regulatory design. More importantly, it requires that additional revenues are either deployed through stabilization fund buildup or through economic diversification.

About the Workshop

KAPSARC convened its second workshop on Energy Vulnerability in May 2017. The overarching aim of this series is to facilitate dialogue to advance progress on the framework KAPSARC is developing to improve understanding of potential financial and economic options for minimizing the adverse impacts of oil price shocks. The workshop was held under a modified version of the Chatham House Rule, according to which participants consented to be listed below. However, the content in this briefing cannot be attributed to any individual attendee.

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