

UNPREDICTABILITY OF OIL PRICES

Global Risk Background Paper

*"Oil prices have certainly become a threat to the global economy."
– Rodrigo Rato, Spanish Minister of the Economy (1996-2004)*

Introduction

The large economic contribution of the oil industry to many national economies makes its future of critical importance to the global community. Despite the fact that **crude oil** is likely to remain a major source of energy for decades to come, policy-makers and the public are re-evaluating the central role the industry plays in modern life. With rising concerns over future demand, **climate change**, **alternative energy** sources, and political instability, the market for crude oil is unpredictable and uncertain. The fluctuation of oil prices and potential **price shocks** to the economy will have great influence on future **global economic security**.¹



An offshore oil rig located in Norway's Heidrun oil field.

Price spikes in oil could lead to slower **global production** and disrupt ways of doing business. Even many **developed countries** are vulnerable – for example, geopolitical tensions threaten **energy security** in Europe, which gets around a quarter of its **natural gas** from Russia. Still, the risk of a price spike destabilizing society is greatest in **developing economies**, which are highly dependent on oil imports and have little **economic diversity**. Indeed, the risks associated with an undiversified **energy sector** are not limited to oil. For example, in 2008 water shortages caused by an extremely harsh winter impacted energy production in Tajikistan, which relies heavily on **hydroelectric power**.²

A Brief History of the Oil and Gas Market³

Since the **Industrial Revolution**, oil and natural gas have played an instrumental role in economic transformation and mobility in everyday life for the majority of the world's population. Oil was so fundamental to the development of modern society in the industrialized world that the 20th century is often referred to as the "Age of Oil." Today, oil continues to play a pivotal role in the current global energy

¹ ["Trust Challenge Facing the Global Oil & Gas Industry,"](#) World Economic Forum. April, 2016.

² ["The Global Risks Report 2016, 11th Edition,"](#) World Economic Forum. 2016.

³ This section was excerpted and adapted from ["Future Oil Demand Scenarios,"](#) World Economic Forum. April, 2016.



Continental risk to the development of oil and natural gas.

system. Roughly 31% of **primary energy** used globally is met by oil-based fuels, and natural gas represents a further 21% of the total world energy supply.

Since the 1980s, many oil-producing countries and oil companies have operated from the assumption that **advanced economies** would progressively use up their easily accessed oil resources and become increasingly dependent on oil controlled by the **Organization of Petroleum Exporting Countries** (OPEC). Under this

prevailing world view, which lasted from the 1980s until recently, OPEC's **petro-power** would increase over time and eventually all consumers would be dependent on OPEC nations.

However, the **US shale boom**, the digital revolution, and the **Paris Agreement**, have changed the outlook for the future of the global oil and gas industry. Now, with the prospect that many major economies, like the United States, China, and Europe, will try to diversify their energy sectors and shift away from oil, producers are coming to realize that underground oil might someday be less valuable than oil produced and sold in the coming years.

Currently, the outlook for oil prices is uncertain. On the supply side, one key factor is whether or not OPEC nations, in particular Saudi Arabia, will continue with its strategy of not curtailing production despite price declines. Another factor is the extent to which investment in future exploration and drilling will fall in response to low prices, leading to a potential rise in the unemployment rate of oil-exporting countries.⁴

If current low prices continue, the implications for oil-exporting countries may be severe. For instance, oil export losses in 2015 are expected to reach about \$300 billion in the **Gulf Cooperation Council** (GCC), which will have a heavy impact on governments' budget balances. The **International Monetary Fund** (IMF) expects more than 10 million people to seek employment by 2020 in the region's oil-exporting countries, which will challenge economic sustainability over the medium term. A combination of rising import prices impacting the populations of many oil-producing countries and a lack of job opportunities may lead to social instability.⁵

Why Do Oil Prices Fluctuate?⁶

Retail gasoline prices fluctuate because they are mainly affected by **crude oil** prices and the level of gasoline supply relative to demand. Even when crude oil prices are stable, gasoline prices fluctuate because of seasonal demand, geopolitical events, natural disasters, and technological innovation.

⁴ [The Global Risks Report 2017.](#) Global Economic Forum. 2017.

⁵ [The Global Risks Report 2017.](#) Global Economic Forum. 2017.

⁶ This section was excerpted and adapted from "[Gasoline Explained](#)," U.S. Energy Information Administration. January, 2016.

Gasoline prices can also change rapidly if something disrupts the supply of crude oil or if there are problems at refineries.

Seasonal Demand

In the U.S., oil prices have historically tended to gradually rise in the spring and peak in late summer when people drive more frequently. Oil prices then decline in the winter. In the U.S., warmer weather and vacation driving generally cause summer gasoline prices to be about 7% higher than demand during the rest of the year. From 2004 through 2014, the average monthly price of U.S. retail regular gasoline in June, July, and August was about 47 cents per gallon higher than the average price in January.

Geopolitical Events

In 1990, during the Iraqi invasion of Kuwait, the price of oil greatly increased, causing serious economic consequences throughout the world. Prices rose as a result of the invasion, as the United Nations imposed an **embargo** on oil exports from Iraq and Kuwait.

This was not the first time an embargo had a huge impact on oil prices. In 1973, in response to the U.S. involvement in the **Yom Kippur war**, OPEC nations declared an oil embargo, greatly increasing the price of oil. Geopolitical events, such as embargos, tariffs, sanctions, or conflict, both influence and are influenced by the supply and demand of oil.



Factors contributing to fluctuations in the price of oil.

Natural Disasters

In addition to geopolitical events, oil prices can also fluctuate as a result of natural disaster. In 2005, Hurricane Katrina, for example, damaged production capacity in the Gulf of Mexico, which then increased the price of oil. This caused then President George W. Bush to release \$30 million gallons from the U.S.'s **Strategic Petroleum Reserve**.⁷

Another example is Nigeria. In 2012, Nigeria experienced severe flooding, killing hundreds and displacing millions. The floods affected nearly all aspects of the Nigerian economy. Oil production was disrupted and as a result, prices rose.⁸

⁷ "Katrina and Oil Prices." *The Council on Foreign Relations*. 2005.

⁸ "Nigeria's economy suffers from floods." *Premium Times*. 2012.

Technological Innovation

Technological innovation has made it possible to extract fossil fuels that were not accessible just a decade or two ago. Natural gas from shale and oil are resources that were considered too difficult or expensive to access in the past. Now, they're transforming the marketplace in North America.⁹

Technological advances can reduce the cost of structural changes in the energy economy, meaning that alternative sources of energy are made cheaper. That increases the political feasibility of such changes, and could potentially enable economies to become less dependent on oil, and thus less vulnerable to the instability of oil prices.

Additional Factors to Oil Price Fluctuation

Oil prices tend to increase as the available supply of oil grows smaller relative to real or expected demand or consumption. Throughout the 1970s, the United States, Western Europe, Japan, Australia, and other advanced economies faced oil shortages, both real and perceived, that caused prices to rise. Petroleum-rich countries, like Saudi Arabia, Iran, Venezuela, and Norway, however, benefited from this increase in price.

Table 4.9: Number of Economies in which a Risk Appears as the Risk of Highest Concern for Doing Business

Risk	Number
Unemployment or underemployment	41
Energy price shock	29
Failure of national governance	14
Asset bubble	11
Fiscal crises	10
Cyberattack	8

Oil prices and economic concerns.

Economic Risks

Price shocks can refer to either sudden increases or decreases in the price of energy – whether in the form of electricity, oil, natural gas, or liquid fuels derived from these sources. As mentioned, these price shocks can come as a result of geopolitics, natural disasters, technological innovation, or global shifts in the economy.

While a given oil price increase may be perceived positively by oil exporting countries and negatively by importers, an increase in oil price volatility (i.e. consecutive positive and negative oil price shocks) increases perceived price uncertainty for all countries – regardless of their trade balance. Such oil price volatility makes it more difficult to effectively plan, causes firms to postpone investments, and may require expensive reallocation of resources. Formulating robust national budgets becomes more difficult, as importing countries face uncertainty regarding import costs and fuel subsidies levels, and exporters face volatile revenues. This may be a particularly profound problem in budget constrained developing countries, which rely on oil exports as a main source of public revenue. In order to protect firms and households against price volatility on international markets, particularly in developing countries, governments often allocate large parts of their budgets to subsidizing fuel. These subsidy systems not only expose governments to significant budgetary risks, but result in significant environmental costs, benefit mainly the wealthier, create disincentives for energy efficiency, and crowd out resources from education, health and other investments in development. Overall, oil price volatility typically results in an increased sense of economic uncertainty.¹⁰

⁹ "Gateway to Growth: Innovation in the Oil and Gas Industry." PricewaterhouseCoopers LLP. 2013.

¹⁰ This section was excerpted and adapted from the blog entry "Oil Price volatility – its risk on economic growth and development." The World Bank. 2013.

The cases of Mexico and Nigeria illustrate how the collapse of oil prices (to levels below \$50 per barrel) has hurt oil-producing countries by reducing their income from sales. In the case of Mexico, this situation is exacerbated by the continuing decline in oil production by *Pemex*, the state-owned oil company that has held a more-than-seven-decade monopoly (in 2014 *Pemex* reached its lowest extraction volume since 1986). The negative impact from the collapse in oil prices will be greater in Mexico than in other exporting countries because lower oil revenues decisively affect Mexican public finances (more than 30% of which depend on oil income). The inevitable cut in federal and local-level public spending may affect Mexican business due to a lowering of the number of public contracts available, as well as the impact from delays in payments to government suppliers, among other negative effects. Many analysts estimate that GDP growth in Mexico could decrease by half a point due to the drop in oil prices.¹¹

In 2016, the Central Bank of Nigeria had to devalue its currency twice in the space of one year as a result of falling oil prices. Oil revenue, which accounted for 67% of the gross federal revenue in the first quarter (Q1) of 2015 (compared to 72.5% in Q1 2014) has been on the decline. Earnings from oil is the major source of **foreign reserve** in Nigeria. The foreign reserve was \$29.01 billion at the end of 2015. So far, it has fallen by 22.3% since 2014—\$37.3 billion when oil prices started falling. If the economy is not well diversified (relying economically on a variety of businesses and industries), Nigeria's economy will continue to be affected by the changing price of oil in the future as the future of oil prices fluctuate.¹²

International Action

With speculation that oil prices may never again rise over \$100 per barrel, several oil producing countries and businesses are taking steps to protect their revenues, property, and interests. The government of Ecuador recently introduced a series of “safeguard” **tariffs** on a number of imported goods, as a measure to protect the national economy. This means that prices will increase by more than 30% on all imports.

With the drop in barrel prices since 2014, oil-exporting countries with their own currency have intentionally devalued their currency on world markets (as seen in the example with Nigeria). This results in a wide availability of that currency within the country's borders despite less revenue. Governments that find themselves in this situation have a number of ways of responding, with the measures implemented often reflecting the administration's politics.

Some governments choose to make consumers bear the burden of the cost by raising the prices of essential goods, such as gasoline. Saudi Arabia has done this most recently by raising crude oil prices for all buyers.¹³ Other governments, however, may implement tariffs on imported goods.¹⁴ If the population spends more on domestically produced products, then more money stays in the country, meaning that there is less money leaving the country.

¹¹ This section was excerpted and adapted from “[How Does the Changing Price of Oil Affect Economies around the World?](#)” Yale Insights. Yale University. 2015.

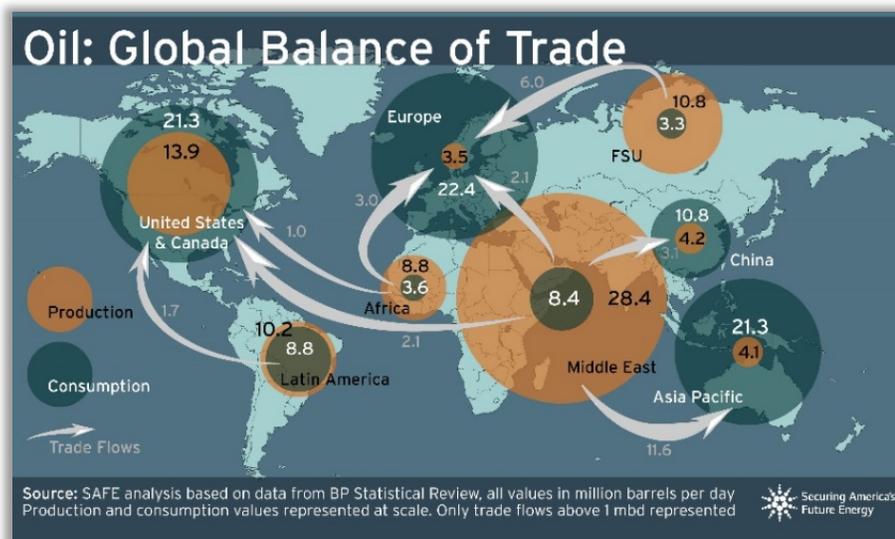
¹² This section was excerpted and adapted from “[How Does the Changing Price of Oil Affect Economies around the World?](#)” Yale Insights. Yale University. 2015

¹³ “[Saudi Arabia Raises March Crude Oil Pricing for All Buyers](#)”. Bloomberg Markets. 2017.

¹⁴ “[Ecuador Protects Local Economy in Light of Low Oil Prices](#).” *Telesur*. March 2015.

Solutions

Persistently low oil prices complicate monetary policy, which could destabilize the global market. Some believe this possibility makes demand by the global community—along with a range of country-specific structural and financial-sector reforms—urgent. Others contend that the drop in demand is a sign of a global trend away from oil and that we should continue along this path. Regardless, an oil price shock could greatly disrupt the global economy, with many negative effects.



Global oil trade market.

In response, countries have taken a variety of different approaches. Saudi Arabia and Nigeria have increased government spending in 2017, despite lower oil prices.¹⁵ Other countries, like Russia and Mexico, are doing the opposite and cutting government spending.¹⁶ And of course, factors unrelated to oil prices have been weighing on economic activity in a number of oil exporters—ranging from domestic strife in Iraq, Libya, and Yemen to sanctions in Russia.¹⁷

These two strategies are not the only available options, however. For example, in 1990, Norway established a sovereign-wealth fund to prepare the country for a post-oil future and to prevent deindustrialization. This was a strategy Norway adopted to safeguard and ensure against any potential decline in oil revenues, so that if the Norwegian economy had any problems, the country would have money in reserve. Norway has used the profits from its investments in the oil industry to promote other industries and provide social services.¹⁸ Now, for the first time in its history, Norway has reached into its wealth fund as profit from oil production.¹⁹

In the end, governments have a variety of long-run policy instruments at their disposal in order to reduce a country's vulnerability to the unpredictability of oil prices. Typically, these are measures aimed at transforming and reforming economic structures in order to reduce the level of dependency on international commodity markets where oil is bought and sold. This includes measures such as decreasing the fossil fuel share in the national energy portfolio, increasing energy efficiency, and developing structural and technological alternatives to make production processes less fossil fuel intensive. Since such structural policy measures have long-term timelines, they need to be complemented with short-term risk management plans, such as building oil reserves or strategic purchasing contracts, which are all

¹⁵ "Saudi Arabia to boost 2017 spending as it cuts into huge state deficit". CNBC News. 2016.

¹⁶ "Russia is slashing spending again due to oil slump". CNN. 2016.

¹⁷ "Oil Prices and the Global Economy: It's Complicated." *IMFDirect*. March 2016.

¹⁸ "The rich cousin." *The Economist*. 2013.

¹⁹ "Norway taps its oil fund for the first time". CNBC News. 2016.

common practice among many large private companies for hedging their supply risks. To facilitate the implementation of an integrated risk management plan, it is critical to make institutional arrangements with adequate technical capacity, political independence, and ability to coordinate across government departments and sectors. In developing countries, such actions could make a significant contribution for reducing the exposure of economic activity and protecting the livelihoods of the poor.²⁰

Questions to Consider

- 1) Why is the failure to address fluctuating oil prices a pressing global risk? What challenges and/or opportunities exist for your economic bloc in addressing this risk?

- 2) Is the instability of oil prices a high concern for your economic bloc? If so, what specific risks do oil prices pose? If not, how might your economic bloc be affected by the impact of unstable oil prices in other blocs?

- 3) How would reducing the risks posed by the volatile oil markets directly impact long-term economic stability and prosperity in your economic bloc?

²⁰ This section was excerpted and adapted from the blog entry "[Oil Price volatility – its risk on economic growth and development](#)," The World Bank. 2013.

4) What recent strategies or actions has your economic bloc taken to address the risks posed by erratic oil prices?

5) What type of action might be necessary to adapt to the rise and fall of the oil markets in your economic bloc?

6) Who should bear the primary responsibility for maintaining order and understanding after a sharp increase or decrease in global oil prices in your economic bloc (governments, business and industry, individuals or private organizations)? How should roles and responsibilities be allocated among these groups?

7) What benefits might come from the increase and decrease in oil prices for your economic bloc?

8) In what ways would addressing fluctuating oil prices reduce the impact and severity of the other global risks (nuclear proliferation, impacts of climate change, and political populism)?

Further Resources

- “Crude Oil Prices - 70 Year Historical Chart,” *Macrotrends LLC*. 2017.
<http://www.macrotrends.net/1369/crude-oil-price-history-chart>
- “Oil Prices: What’s Behind the Volatility? Simple Economics,” *New York Times*. 2016.
https://www.nytimes.com/interactive/2016/business/energy-environment/oil-prices.html?_r=1
- “The low oil price environment: Implications for NATO,” *NATO Review*. 2014.
<http://www.nato.int/docu/Review/2016/Also-in-2016/low-oil-price-russia-environment-implications/EN/index.htm>
- “Falling oil prices: How are countries being affected?” *BBC News*. 2016.
<http://www.bbc.com/news/world-35345874>
- “Oil Price Collapse Pushing Russia’s Economy To The Edge,” *Oilprice.com*. 2016.
<http://oilprice.com/Latest-Energy-News/World-News/Oil-Price-Collapse-Pushing-Russia-Economy-To-The-Edge.html>
- “Most Developing Countries Will Benefit from Oil Price Slump, Says World Bank Group,” *World Bank*. 2016.
<http://www.worldbank.org/en/news/press-release/2015/01/07/most-developing-countries-benefit-oil-price-slump-world-bank-group>
- “How is Saudi Arabia Reacting to Low Oil Prices?” *World Bank*. 2014.
<http://www.worldbank.org/en/country/gcc/publication/economic-brief-july-saudi-arabia-2016>
- “How is Oman Reacting to Low Oil Prices?” *World Bank*. 2016.
<http://www.worldbank.org/en/country/gcc/publication/economic-brief-oman-july-2016>
- “OPEC reaches deal to cut oil production,” *The Economist*, 2016.
<http://www.economist.com/news/finance-and-economics/21711088-oil-prices-surge-saudi-arabia-and-iran-sign-deal-opecs-meeting?zid=298&ah=0bc99f9da8f185b2964b6cef412227be>
- “OPEC Reaches Deal to Limit Production, Sending Prices Soaring,” *The New York Times*. 2016.
https://www.nytimes.com/2016/11/30/business/international/opec-energy-oil-saudi-iran.html?_r=0

Glossary of Terms

- **Advanced economies**: economies with a high level of gross domestic product per capita, as well as a very significant degree of industrialization
- **Alternative energy**: any different options to obtaining energy that do not rely on non-renewable resources and/or fossil fuels and have a minimal impact on the environment.
- **Brent crude**: a major trading classification of sweet light crude oil that serves as a major benchmark price for purchases of oil worldwide.
- **Climate change**: a change in global or regional climate patterns, in particular a change apparent from the mid to late 20th century onwards and attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.
- **Crude oil**: petroleum as it is extracted from the ground and before it has been refined.
- **Developed countries**: nations that has a lot of industrial activity and where people tend to have higher incomes.
- **Developing countries (economies)**: countries (economies) that have low levels of industrial and economic activity, and where people generally have low incomes.
- **Digital revolution**: the advancement of technology from analog electronic and mechanical devices to the digital technology available today. The era started to during the 1980s and is ongoing.
- **Economic diversity**: is the variance from one country to another in terms of what goods and services can be specifically produced based on factors of geographic location, demography, and governmental framework.
- **Embargo**: an official ban on trade or other commercial activity with a particular country.
- **Energy security**: The IEA defines energy security as “the uninterrupted availability of energy sources at an affordable price.”
- **Energy sector**: The energy sector is a category of stocks that relate to producing or supplying energy. This sector includes companies involved in the exploration and development of oil or gas reserves, oil and gas drilling, or integrated power firms.
- **Foreign reserve**: financial assets of the central banks and monetary authorities that are held in different reserve currencies (i.e. the U.S. dollar, the Euro, the Japanese yen and the Pound sterling) and which are used to back its liabilities (i.e. the local currency issued)
- **Global economic security**: is being able to assure the free movement of goods and services while also promoting the growth and stable society.
- **Global production**: the network of functions and operations that allow for goods and services to be created by the world economy.
- **Gulf Cooperation Council**: is a regional intergovernmental political and economic union consisting of all Arab states of the Persian Gulf, except for Iraq. Its member states are Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates.
- **Hydroelectric power**: is a clean and renewable energy resource generated when the natural energy of water currents pass through a turbine and be turned into electricity.
- **Industrial Revolution**: rapid development of industry that occurred in Britain in the late 18th and 19th centuries, brought about by the introduction of machinery. It was characterized by the use of steam power, the growth of factories, and the mass production of manufactured goods.
- **Inflation**: is the concept that there is a ratio of the value of goods and services are increasing while the purchasing power of money is decreasing.

- **International Monetary Fund**: an international organization consisting of 189 countries working to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world.
- **Natural gas**: flammable gas, and a form of fossil fuel, that often lies naturally deep underground and is used to generate energy.
- **Organization of Petroleum Exporting Countries (OPEC)**: a permanent intergovernmental organization of 13 oil-exporting developing nations that coordinates and unifies the petroleum policies of its member countries.
- **Paris Agreement**: an agreement within the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gases emissions mitigation, adaptation and finance starting in the year 2020. 175 nations have signed on to this agreement.
- **Petro-power**: is the idea that the world will eventually rely on specific oil rich countries as other producers deplete their supply.
- **Price shock**: an unexpected or unpredictable event that affects an economy, either positively or negatively.
- **Price spike**: A spike is a comparatively large upward or downward movement of a price in a short period of time. Spike also refers to the trade confirmation slip which shows all the pertinent data for a trade, such as the stock symbol, price, type and trading account information.
- **Primary energy**: energy that is found in nature, often contained in fossil fuels, but also contained in other forms i.e. nuclear, solar, wind, and hydroelectric energy.
- **Rapidly developing economies**: Countries like Brazil, China, India, Mexico, and Russia are often identified as rapidly developing economies, or markets that are experiencing a high level amount of growth relative to other economies.
- **Shale oil**: is a fossil fuel that is extracted from shale and other rock formations from which it will not naturally flow freely to be used for energy production.
- **U.S. Strategic Petroleum Reserve**: an emergency fuel storage of petroleum maintained underground in Louisiana and Texas by the United States Department of Energy. It is the largest emergency supply in the world, with the capacity to hold up to 727 million barrels.
- **Tariffs**: a tax or duty to be paid on a particular class of imports or exports.
- **U.S. shale boom**: Beginning in 2013, the United States began extracting oil from shale reserves throughout the Nation through the use of advanced technologies such as horizontal drilling and hydraulic fracturing (fracking).
- **Yom Kippur war**: a war fought by a coalition of Arab states led by Egypt and Syria against Israel from October 6 to 25, 1973.