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“Space Mountain” Pump Prices

Testimony of Robert McNally
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Committee on Small Business
Hearing on Gasoline Prices
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Chairman Graves, Ranking Member Velázquez, members of the Committee, thank you for the opportunity to provide testimony to you on gasoline prices and their impact on the economy. I appreciate your calling this hearing on the crucial topic of rising gasoline prices, and I am honored that you have asked me to share my perspective and views.

I approach this subject with twenty-one years of professional experience analyzing and participating in energy markets and policymaking. I have spent the bulk of my career analyzing the global oil market, energy, and economic policymaking. I also served as Special Assistant to the President for Economic Policy on the White House National Economic Council from January 2001 to June 2003 and Senior Director for International Energy on the National Security Council from January 2003 to June 2003. I am currently an independent analyst and do not represent any entity. The views expressed here are entirely my own.

The subject of today’s hearing is rising gasoline prices, which hurt small businesses and imperil our economic recovery. Before evaluating the factors that contribute to the most recent rise, it is worth considering that gasoline price upswings are becoming more frequent and consumers are wondering why this is the case. As Michael Levi and I wrote last summer in *Foreign Affairs*¹:

For most Americans, from the late 1970s until just a few years ago, following the price of gasoline was like riding the Disney World attraction *It’s a Small World*: a shifting but gentle, basically unremarkable, experience. But since 2005, it has felt more like *Space Mountain*--unpredictable, scary, gut-wrenchingly volatile. Between January 2007 and July 2008, the price of a barrel of oil rose from \$50 to more than \$140; by the end of 2008, it had crashed to just over \$30; less than a year later, it had breached \$80 again. In early 2011, on the back of strong global demand and the political turmoil in the Middle East and North Africa, oil sold for over \$120 a barrel. Today, as prices continue to swing wildly, most Americans are wondering why they are on this ride and how to get off.

In 2012 we find ourselves again on the upswing, with pump prices having made all-time highs in March for that time of year. Gasoline prices are rising mainly because crude oil prices are rising, though the shutdown of refinery capacity in the US, Europe, and Caribbean have also played a role.

Crude oil prices are rising mainly because demand for oil is oustripping net supply growth, requiring price increases to ration consumption. Geopolitical disruptions and risk add to the problem. President Obama has recently underscored the role these supply-demand and geopolitical events lay in rising fuel prices. On February 23, 2012 he said, “If we’re going to take control of our energy future and can start avoiding these annual gas price spikes that happen every year -- *when the economy starts getting better, world demand starts increasing, turmoil in the Middle East or some other parts of the world* -- if we’re going to avoid being at the mercy of these world events, we’ve got to have a sustained, all-of-the-above strategy that develops every available source of American energy.” [Emphasis added.]

President Obama also aptly summarized *ongoing role* strong demand for oil will play in driving oil prices higher:

Over the long term, *the biggest reason oil prices will probably keep going up is growing demand in countries like China and India and Brazil*....In five years, the number of cars on the road in China more than tripled -- just in the last five years. Nearly 10 million cars were added in China in 2010 alone -- 10 million cars in one year in one country. Think about how much oil that requires. And as folks in China and India and Brazil, they aspire to buy a car just like Americans do, those numbers are only going to get bigger.² [Emphasis added]

As demand for oil outstrips net supply growth, the market becomes “tight.” By tight I mean spare capacity is unusually low. Spare capacity is potential oil production that can be started up in 30 days and sustained for at least three months. As noted below, normally oil supply is very slow to respond to price changes because of long investment lead

¹ “Crude Predicament: The Era of Volatile Oil Prices,” *Foreign Affairs*, July/August, 2011, see attachment.

² Energy remarks by President Barak Obama, February 23, 2012.

times. But by holding spare or quickly-producible production, suppliers can add supply quickly when demand is strong relative to production or disruptions occur. Adding quick supply from spare capacity prevents the need for big price swings to balance the market. For the past thirty years, spare capacity has been the primary tool by which OPEC has attempted to stabilize global oil prices and reassure market participants that geopolitical disruptions could be offset. Nearly all spare capacity is held by Saudi Arabia.

It is crucially important to realize spare capacity has been unusually low since 2003, with the exception of the Great Recession in 2009 when OPEC producers cut production. At present, EIA noted spare capacity is “quite modest by historical standards, especially when measured as a percentage of global oil production and considered in the context of current geopolitical uncertainties, including, but not limited to, the situation in Iran.”³ Please see Figure 1 for EIA’s estimate of geopolitical and unplanned disruptions in global oil supply and Figure 3 illustrating historical spare capacity and geopolitical disruptions and risks.

The combination of low spare capacity and high disruption risk adds a risk premium on to the price of oil.

Unfortunately, there are no effective policy options to counter the *short-term* crude and fuel price volatility caused by a fundamentally tight and fearful global oil market. Using the Strategic Petroleum Reserve to counter short-term price volatility - absent a severe supply interruption - would not only be irresponsible, but also counterproductive. Blaming oil price behavior mainly on financial market participants misdiagnoses the problem. And the prescription - unnecessarily burdensome or restrictive regulations or controls – would needlessly increase the cost of energy on small businesses and consumers without addressing the causes of underlying price gyrations.

There are longer term policies that can reduce future price volatility and enable small businesses and consumers to adjust to it in the medium and longer term. They range from improving the quality of data in order to reduce the uncertainty that contributes to volatility, facilitating large and well-regulated financial markets so companies exposed to oil price risk can hedge, and improving the funding and focus of energy-related research and development. A crucial step is to increase oil supply everywhere: In a tight market and especially when spare capacity is otherwise low, every extra barrel of supply on the margin counts and can help reduce future price volatility.

I would like to now elaborate on some of these points.

Rising oil prices have important and negative impacts on our macroeconomy

EIA aptly summarized the impact of rising oil prices on the macro economy:

- When the prices of petroleum products increase, consumers use more of their income to pay for oil-derived products, and their spending on other goods and services declines. The extra amounts spent on those products go to foreign and domestic oil producers and, if wholesale margins increase, to refiners. Domestic producers may pay higher dividends and/or spend more on oil discovery, production, and distribution. Foreign producers may spend some or all of their extra revenues on U.S. goods and services, but the types of goods and services they buy will be different from those that domestic consumers would buy. How quickly and how much domestic and foreign oil producers spend on U.S. goods and services and financial and real assets will be critical in determining the effects of higher oil prices on the aggregate economy.
- Oil is also a vital input for the production of a wide range of goods and services, because it is used for transportation in businesses of all types. Higher oil prices thus increase the cost of inputs; and if the cost increases cannot be passed on to consumers, economic inputs such as labor and capital stock may be reallocated. Higher oil prices can cause worker layoffs and the idling of plants, reducing economic output in the short term.
- Because the United States is a net importer of oil, higher oil prices affect the purchasing power of U.S. national income through their impact on the international terms of trade. The increased price of imported oil forces U.S. businesses to devote more of their production to exports, as opposed to satisfying domestic demand for goods and services, even if there is no change in the quantity of foreign oil consumed.
- Changes in oil prices can also cause economic losses when macroeconomic frictions prevent rapid changes in nominal prices for final goods (due to the costs of changing “menu” prices) or for key inputs, such as wages. Because there is resistance on the part of workers to real declines in wages, oil price increases typically lead to upward pressure on nominal wage levels. Moreover, nominal price “stickiness” is asymmetric, in that firms, unions, and other organizations are much more reluctant to lower nominal prices and the wages they receive than they are to raise them. When a nominal increase in oil prices threatens purchasing power, the adjustment process is slowed, with multiplier effects throughout the economy.
- Finally, higher oil prices cause, to varying degrees, increases in other energy prices. Depending on the ability to substitute other energy sources for petroleum, the price increases can be large and can cause macroeconomic effects similar to the effects of oil price increases.⁴

³ <http://www.eia.gov/analysis/requests/ndaa/>

⁴ http://205.254.135.24/oiaf/aeo/otheranalysis/aeo_2006analysispapers/efhop.html

Rising oil prices as well as volatile oil prices pose special burdens for small business

Small businesses are the powerhouse of the US economy. Rising oil prices hurt them directly by increasing input costs, such as fuel, and reducing the purchasing power of their customers. And higher fuel prices feed into higher prices of many goods and services, including food and materials. These wholesale cost increases get passed along to small businesses, who must then contend with difficult choices as to whether to absorb or pass them along.

It would be easier for small businesses to adapt to higher oil prices if they were stable. *Gyrating oil prices are even worse because they* increase uncertainty about future fuel costs and sales prospects, which can delay decisions on hiring and expansion. The main challenge facing small businesses and the US economy is not high oil prices, but gyrating ones.

Recent gasoline price increases are due to tight global supply demand fundamentals, some downstream or refinery-level challenges, and geopolitical risk

EIA has noted that “[t]he single biggest factor in the price of gasoline is the cost of the crude oil from which it is made.”⁵ Crude price increases earlier this year were followed by gasoline price increases of similar magnitude and were due to unexpected tightening in global supply demand fundamentals, lower than expected OPEC spare capacity, and considerable geopolitical disruptions and disruption risk, especially related to Iran. Citing from EIA’s February 29 report:⁶

EIA estimates that the world oil market has become increasingly tight over the first two months of this year. Oil prices have risen since the beginning of the year and are currently at a high level. Global liquid fuels consumption is at historically high levels. While the economic outlook, especially in Europe, remains uncertain, continued growth is expected. Unusually cold weather in Europe contributed to tighter markets by increasing the demand for heating oil, particularly during February. With respect to supply, the world has experienced a number of supply interruptions in the last two months, including production drops in South Sudan, Syria, Yemen, and the North Sea. Both the United States and the European Union (EU) have acted to tighten sanctions against Iran, including measures with both immediate and future effective dates. There is some evidence that these measures may already be causing some adjustments in oil supply patterns. For example, there is emerging evidence that some shipments of Iranian crude oil under existing contracts are being curtailed due to the unwillingness of U.S. and EU insurance providers to cover them, even though the EU sanctions only require existing oil contracts to be completely phased out by July 1, 2012.

Finally, spare crude oil production capacity, while estimated to be higher than during the 2003 to 2008 period, is quite modest by historical standards, especially when measured as a percentage of global oil production and considered in the context of current geopolitical uncertainties, including, but not limited to, the situation in Iran.

As shown in Figure 3, commercial oil inventories in OECD countries *outside North America* are low.

As shown in Figure 4, a conflict that would block the Strait of Hormuz would dwarf any disruption in modern history and rattle traders’ nerves, contributing to a risk premium (see Figure 4).

In addition to the pressure imposed by rising crude prices, gasoline prices rose earlier this year on reports of an unusually large shutdown of refineries serving the US market. As EIA noted,⁷ in September, 2011 two Pennsylvania refineries amounting to 27% of East Coast refining capacity closed. If a third, planned Pennsylvania refinery closure is included, East Coast refinery capacity is set to fall 52% within one year. In addition, the Hovensa refinery in the US Virgin Islands closed, as did refineries in Europe that supply the US with gasoline. This rash of refinery closures is expected to considerably tighten the East Coast gasoline market and sparked buying of gasoline futures starting in January. Going forward, and irrespective of underlying crude oil prices, the East Coast – the nation’s largest gasoline market – will need to pay higher prices for long-haul imports, competing for waterborne barrels in South America, where gasoline demand is rising sharply.

In recent weeks and days, crude oil prices and gasoline prices have dropped due to renewed worries about slower economic growth, some indications of softening in global supply-demand fundamentals such as unseasonal inventory builds in March, and a perceived reduction in geopolitical tensions concerning Iran.

Crude oil price volatility is here to stay, and wider fuel price swings will unavoidably result

To understand why oil prices have been gyrating in recent years we must consider a couple of economic concepts. First, oil as a commodity exhibits what economists call a very low price elasticity of demand. In plain English, this means supply and demand are very slow to respond to price shifts. Oil is a must-have commodity with no large scale substitutes; when pump prices rise, most small businesses have little choice in the near term but to pay more rather than

⁵ http://www.eia.gov/energyexplained/index.cfm?page=gasoline_factors_affecting_prices

⁶ *The Availability and Price of Petroleum and Petroleum Products Produced in Countries Other Than Iran*, EIA, February 29 2012

⁷ *This Week In Petroleum*, EIA, January 19, 2012

buy less. And on the supply side, it takes years to develop new resources, even when the price incentive to do so rises sharply. Commodities with such low short term demand and supply responsiveness tend to have big price swings.

Oil's tendency toward booms and busts has vexed oil producers and consumers since the beginning of the modern oil market in the mid-1800s. In response, various oil producers have tried to stabilize prices by controlling production. Standard Oil, the Texas Railroad Commission and the "Seven Sisters" (major western oil companies) succeeded at stabilizing prices by controlling supply, partly by holding spare production capacity back from the market and using it to balance swings in supply and demand. The 1967 Arab oil embargo did not lead to a major oil disruption or price spike, partly because the United States had spare capacity in reserve and increased production to make up for lost Arab producer exports. The 1973 Arab oil embargo did lead to an oil price spike, mainly because the year before – in March 1972 to be exact – the United States ran out of spare capacity.

OPEC took over control of the global oil market from the US and the Seven Sisters in the early 1970s. Since the mid-1980s, OPEC's main tool to stabilize prices has been holding and using spare production capacity. If demand jumped unexpectedly or if supplies were suddenly disrupted, OPEC producers with spare capacity, especially Saudi Arabia, would release more oil, reducing the need for prices to swing in order to balance supply and demand.

But the 2004-2008 period marked the first time since 1972 that capacity nearly ran out⁸ absent a major supply disruption or conflict in the Persian Gulf. As in 1972, the reason was demand was racing faster than production. But today, no new cartel is waiting in the wings to satisfy global crude appetites. In 2008, market balance was achieved by sharply rising oil prices along with a sharp decline in demand induced by the financial crisis. While many in Washington, Paris, Riyadh, and Beijing publicly blamed financial market participants, energy experts and economists pointed instead to strong demand for a price inelastic commodity running up against a finite supply.

Going forward, OPEC may still exert some control over when falling oil prices make a bottom. The cartel can and likely will still take oil off the market to keep prices from falling or to raise them afterward, as it did in late 2008 and 2009.

But OPEC's ability – really, Saudi Arabia's ability – to prevent damaging price *spikes* has eroded. Therefore, a replay of the mid-2000s is more a question of when than if. Recently, non-OPEC supply growth and OPEC spare capacity were revised sharply down, suggesting the tightening trend may be underway, though an economic downturn may still soften up the global oil market and cause oil prices to fall.

In general, global GDP growth remains oil intensive, driven by voracious consumption in fast-growing Asian and Middle Eastern markets. While world GDP grows strongly, non-OPEC supply growth is not expected to rise fast enough to meet incremental oil demand, requiring OPEC producers to increase production. But OPEC is not investing enough in total production capacity to meet demand growth and still maintain the *minimum* 4-5 mb/d spare capacity buffer needed to assure market participants it can respond to disruptions or tighter-than-expected fundamentals by adding supply. Saudi Arabia, the main spare capacity holder, says it will hold only 1.5 to 2.0 mb/d of spare capacity, and most other OPEC countries hold little if any back in spare.

Taken together, voracious demand and constrained supply trends mean the world can experience 4% GDP growth or double digit crude oil prices, but probably not both. As OPEC fails to cap rising prices, price increases large enough to ratchet down demand will enforce the iron law that at the end of the day the world cannot consume what it cannot produce.

Soaring global demand and constrained supply growth is causing OPEC to lose its spare capacity cushion and therefore its ability to stabilize oil prices. While intuitively OPEC losing control may seem like a good thing, it actually means global oil prices, and therefore fuel prices small business face, are going to swing much more wildly in the future, at times high enough to contribute to recessions as they did in 2008.

Lower import dependence is welcome but will not insulate motorists from gyrating fuel prices

Higher US and hemispheric oil and gas production is great news for our economy and energy markets. If the investment and regulatory climate allows industry to realize the full supply potential, it will mean more jobs, improved resilience to supply disruptions, and a lower current account deficit. Our companies and workers will have opportunities to take advantage of these same techniques and technology to unlock unconventional oil and gas resources abroad.

But the good news must be viewed in perspective. Even if we were entirely self-sufficient in oil, our pump prices would still move up and down with global crude oil prices. Oil is fungible, widely traded, and priced in a global market. A crude price shock anywhere is transmitted to pump price changes everywhere.

⁸ Many market participants believe Saudi spare capacity was completely exhausted in the summer of 2008, despite EIA data indicating less than 1 mb/d was remaining. Generally, private market participants tend to believe official estimates of spare capacity are overstated.

Therefore our gasoline and diesel prices are and will remain strongly linked to trends and developments in the global oil market, not our import share. As leading oil expert Daniel Yergin wrote in a recent Washington Post editorial, “[t]here is only one world oil market, so the United States – like other countries – will still be vulnerable to disruptions, and the sheer size of the oil resources in the Persian Gulf will continue to make the region strategically important for the world economy.”⁹

Financial market participants contribute to the formation of prices but there is no evidence they are distorting or manipulating them

Spot and futures oil prices are determined in a global market by numerous physical and financial participants. Physical participants are in the business of producing and consuming energy, and include producers such as oil companies and users such as airlines. Financial market participants range from hedge funds to longer term investors such as pension funds and typically do not have physical exposure to energy production or consumption.

Futures markets exist primarily because physical participants wish to hedge or transfer price risk to financial market participants willing to bear it. Producers may wish to sell their production forward and lock in prices. Consumers may wish to lock in their future purchase price.

Financial speculators assume price risk other market participants wish to avoid. The active participation of financial investors in oil futures and derivatives markets is legal and desirable, as it enables energy consumers and producers to transfer price risk and protect against price swings. They also help bring information to the market and can smooth price swings.

If there were no speculators, there could be no hedging. Without hedging, energy producers and consumers could not manage their oil price risk, which would increase uncertainty, risk aversion, and ultimately the cost of producing and consuming energy in the economy.

There is considerable focus in the public policy debate on the role of speculation in affecting oil prices. It is crucial to define speculation and differentiate it from manipulation (or distortion).

Speculation is basing purchases or sales based on anticipated price moves. Both physical and financial market participants speculate. For example, a trucking fleet owner who must buy large quantities of diesel fuel decides not to lock in a future sales price using futures or derivatives is effectively speculating that future prices will not rise.

Manipulation or distortion involves activities that cause prices to diverge from levels justified by market conditions. There is no compelling evidence that any group of market participants, including financial ones, are distorting oil prices. In order to “distort” or “manipulate” prices, financial market participants would have to hoard physical supply and take advantage of weak or broken convergence between paper and physical markets. There is no evidence of such hoarding or weak paper-physical convergence in the global oil market.

Moreover, in recent years both prices of exchange-traded commodities such as oil, which include financial speculators, and commodities that are not exchange-traded, and there for not include financial speculators, have risen more or less in tandem (see Figure 5 below).

In the past years, many US and international regulators, energy officials, and independent academics have investigated the role of financial market participants and oil prices. The overwhelming view of official investigations and analyses holds that supply and demand fundamentals and not financial market participants were the primary drivers of oil prices.¹⁰ This conclusion was reached in a 2008 interim report by an interagency task force headed by the Commodities Futures Trading Commission and consisting of representatives from the Departments of Treasury, Energy, and Agriculture as well as the Federal Reserve, Federal Trade Commission, and the Securities and Exchange Commission.

The view that supply-demand fundamentals explain price behavior and not the actions of financial market participants is also supported by most leading independent academics.¹¹

The reality is we will need bigger and deeper financial markets because wild price gyrations are going to increase demand for hedging, including by small businesses. In the new “Space Mountain” era of gyrating oil prices, there will be greater demand by energy consumers and producers to buy insurance from oil price swings and therefore a bigger need for financial market participants to provide that insurance. As Michael Levi and I wrote last summer:

⁹ Daniel Yergin, “Oil’s new world order,” Washington Post, October 28, 2011.

¹⁰ Medium Term Oil and Gas Markets 2012, International Energy Agency, p. 29. See also “Energy and Financial Markets Overview: Crude Oil Price Formation,” EIA, May 5, 2011; Box 1.4, IMF World Economic Outlook, September 2011, pp 56-60; Dallas Federal Reserve, October 2011, <http://dallasfed.org/research/eclett/2011/el1110.html>; and “Interim Report on Crude oil, Interagency Task Force on Commodity Markets, CFTC, July 2008.”

¹¹ Fattouh, Bassam, Lutz Killian, and Lavan Mahadeva (2012). “The Role of Speculation in Oil Markets: What Have We Learned So Far?” Discussion Paper. Centre for Economic Policy Research.

Policymakers should help facilitate more hedging by encouraging the development of well-regulated financial markets: the point is to relieve those who are exposed to price risks today—from motorists to airlines and other oil-intensive industries—and transfer those risks to speculators, who are more willing and better able to bear them. The Dodd-Frank financial reform legislation of 2010 took some helpful steps in this direction, such as requiring that most transactions be conducted on regulated exchanges and that the Commodity Futures Trading Commission collect and publish better data on a wider range of transactions.

Officials should take care not go too far, however, and prescribe overly harsh limits on speculative bets in energy futures, and other costly barriers for firms that need to hedge. A blanket crackdown on hedging and speculation would only increase firms and consumers' exposure to volatility, by shrinking financial markets and chasing hedging to less transparent and less regulated venues.¹²

The activities of financial market participants should be well policed for manipulation and fraud. The CFTC and other regulators police actively against instances of fraud or manipulation in financial markets, and recently imposed position limits under Dodd-Frank are intended to prevent excessive speculation, though there is no clear cut way to identify when speculation becomes “excessive.”

The CFTC is working carefully to build a solid foundation for appropriate position limits in futures and over-the-counter markets, which requires an enormous amount of data collection. If the CFTC is overly hasty or incautious, it could subject the position limits rule to legal challenge or inadvertently chase financial market activity to other, less transparent or well-regulated venues.

Strategic stocks should not be used to smooth gasoline prices

As it becomes clearer that OPEC can no longer cap oil and therefore gasoline prices, clamor for the United States to use its strategic reserves to moderate prices will rise. Absent a severe supply disruption, this would be deeply unwise. If the US tries to use strategic stocks to keep gasoline prices stable, it is likely to end up with neither strategic stocks nor gasoline price stability. There are several points to consider:

- Strategic stocks are finite and too small to have a lasting impact on oil prices. In a 90 million barrel per day market prone to large, unexpected swings in supply and demand, sporadic SPR withdrawals of 1 to 3 million barrels a day which last only a few days are unlikely to influence global fundamentals and therefore prices other than in the very short term, if at all.
- Officials do not have sufficient information to know when or how much oil to add or subtract from the global market to keep prices stable, and could well run out of supplies before they managed to flatten prices. Good data on global oil market supply and demand is lacking, and the best data are available only with lags measuring calendar quarters and years.
- Even if the US had sufficient information, decisions on when to use the SPR would be influenced by political pressures and factors rather than economic ones.
- Using the SPR would induce private companies to hold lower stocks, and OPEC could offset the impact by cutting production, as seen after President Clinton ordered an SPR stock draw in September 2000.
- Frequent, capricious frittering away of strategic stocks in a futile attempt to influence global oil prices would *increase* market uncertainty and price volatility.

¹² “A Crude Predicament: The Era of Volatile Oil Prices,” Robert McNally and Michael Levi, *Foreign Affairs*, July/August 2011

Figure 1. Estimated Unplanned Production Disruptions Among non-OPEC Producers, October 2011 - April 2012

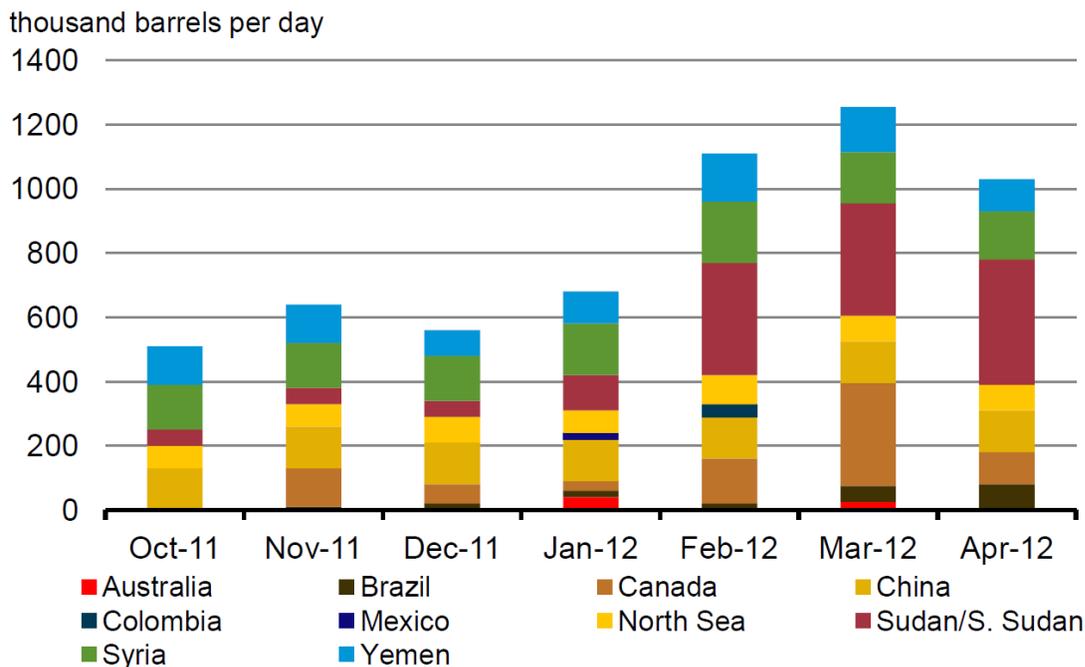


Figure 1

Oil Disruptions, OPEC Spare Capacity, and Crude Prices

Prices: '72-'73 Arab Light, '74-present US Refiner Average Imported Crude Cost

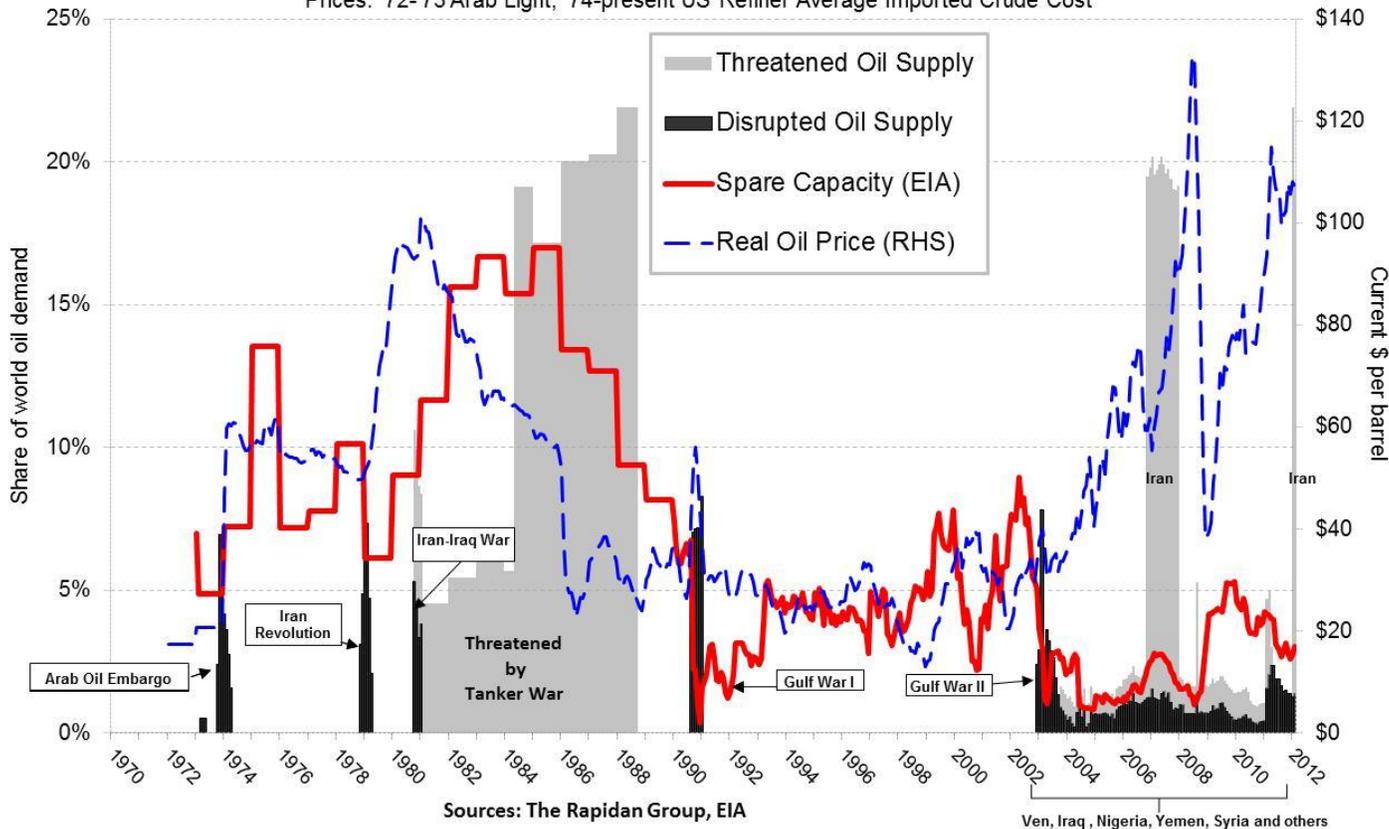
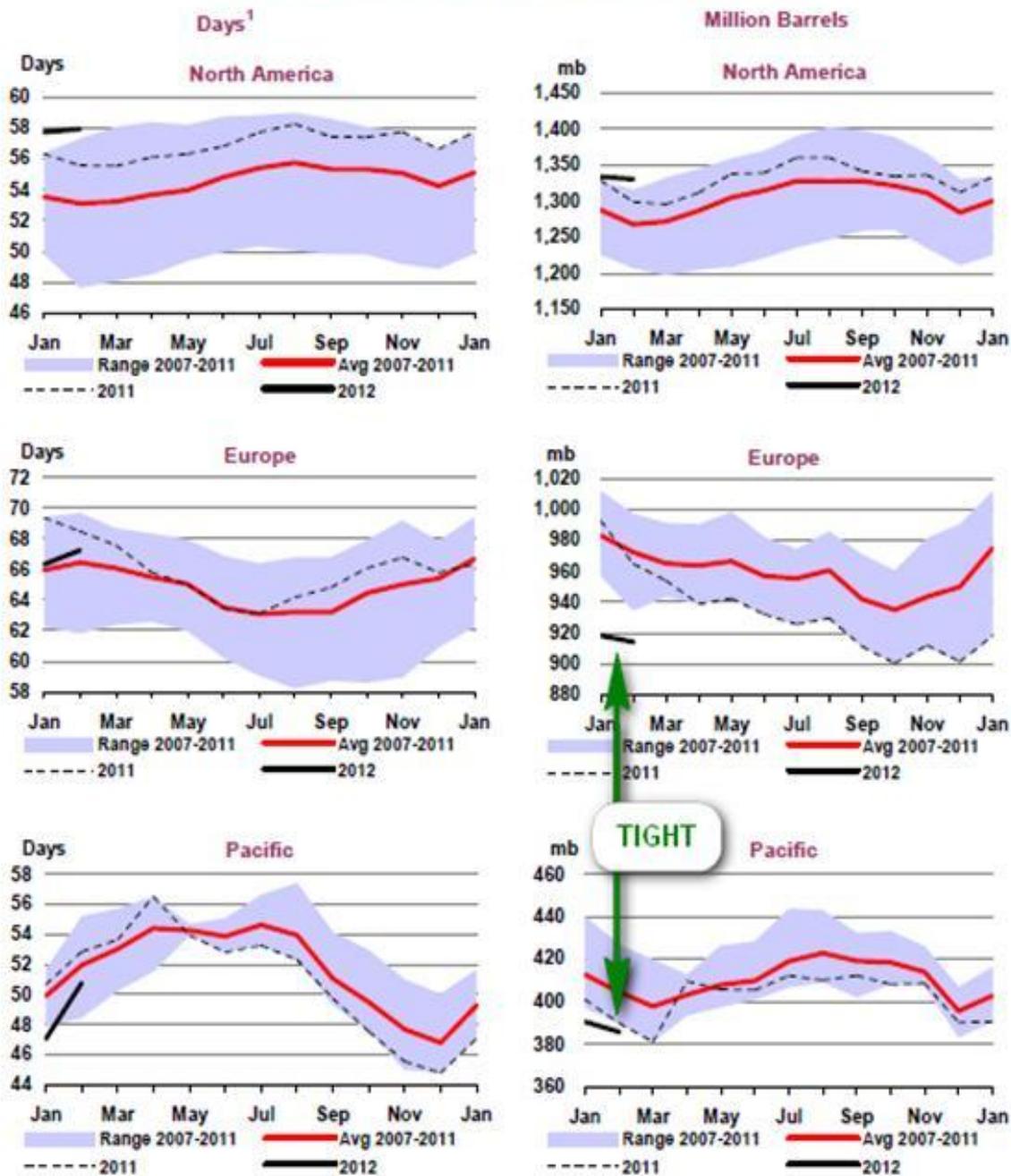


Figure 2

Regional OECD End-of-Month Industry Stocks (in days of forward demand and millions barrels of total oil)



IEA Oil Market Report, April, 2012

Figure 3

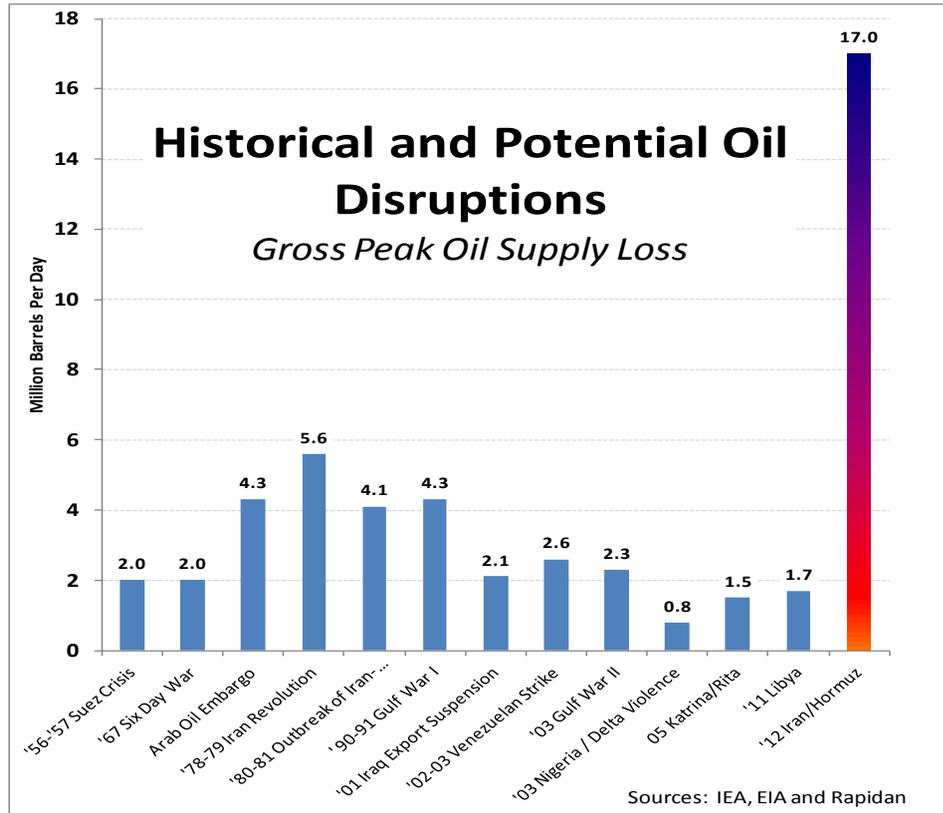
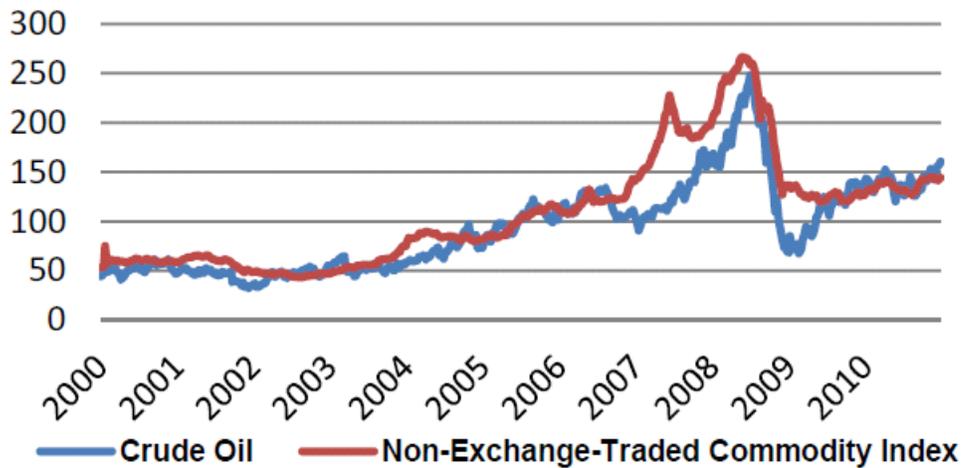


Figure 4

Figure 1: Price of Non-Exchange Traded Commodities and Price of Crude Oil



Source: Computations of the authors based on data in the *IEA Oil Market Report*, March 15, 2011.

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Figure 5