The Perverse Dynamics of Long-term Low Interest Rates: Evidence from Oil Prices
Dr. Joseph R. Mason

“Small businesses are the historic source of new job creation in the economy, but are currently facing many challenges, including the burden of high fuel prices. Small businesses need certainty to run their businesses, hire more employees, and plan for the future, and they can’t do that if they are consistently subject to the volatile global oil market.”

Statement of Chairman Sam Graves (R-Mo)
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Introduction

Our nation’s small business owners and entrepreneurs are still struggling to regain stable footing in the aftermath of the deep and historic recession. Revenue and sales growth is weak or erratic in many sectors, while rising costs exacerbate existing cash flow challenges. Access to capital is tough for many firms, while policy uncertainties continue to undermine confidence and investment.

Certainly, economic conditions have improved since the depths of the Great Recession. Yet, small business owners are facing economic, market and policy head winds that are working against their outlook and financial performance. The health of the U.S. economy requires that its small business base grows and thrives. After all, the bulk of new jobs hail from this sector. A growing, vibrant small business community will lead to robust job creation.

Small business owners are in need of a period of stability and certainty in order to generate the type of positive momentum that will lead to vigorous job creation and sustained economic growth. Obviously, costs are a major issue for small businesses. Rapid increases in any number of cost areas are more challenging for small firms. Tight cash flow combined with slim profit margins limit the flexibility that small business owners have in responding to unexpected cost increases. Increasing gas prices is one such cost area making it difficult for small business owners to grow and be nimble in their operations. These higher costs are draining business owners of precious resources and profits that are necessary for not only growth, but survival.

In late March 2012, SBE Council released the findings of its latest “Entrepreneurs and the Economy Survey” conducted by TechnoMetrica, which found that high gas prices were dramatically impacting the health of small businesses. Small firms are dealing with higher costs in ways that are undermining their competitiveness, and the economic recovery. For example, when asked how they are responding to higher gas prices, 22 percent said they cut back on employee hours, and 40 percent raised their prices. Forty one percent said higher prices were affecting their plans to hire, while 43 percent of small business owners felt their businesses would not survive if gas prices remain high.

Various factors impact the price of oil and gas, including energy demand and economic growth. But governmental policies also play a major role. SBE Council has long supported common sense policies that lower and remove regulatory obstacles and restrictions to energy production. Monetary policy also plays a role. Since oil is priced in dollars, the value of the dollar and Federal Reserve monetary policy as it pertains to inflation and inflation expectations affect the price of oil and gas. The Federal Reserve has been running an expansive monetary policy since September 2008 that is without precedent. The risks regarding inflation and the value of the dollar have had and will continue to have a key effect on the prices of oil and gasoline.

This policy paper – “The Perverse Dynamics of Long-term Low Interest Rates: Evidence from Oil Prices” – examines how the inflationary bias in U.S. monetary policy has worsened pressures pushing up the prices of oil, and therefore, the price of gasoline in the U.S. As noted in this study by Dr. Joseph Mason, “supply and demand are the most important influences over oil prices. But it is important to remember that oil supply shocks can reasonably be expected to interact with monetary policy in such a historically unique loose policy environment to accentuate the rise.”

“The price of gasoline often determines where and when consumers will shop, what it costs a small business to deliver products and services and the cost of purchasing materials and other inputs necessary for business operations.”

Statement of Chairman Sam Graves (R-Mo)
For good measure, Dr. Mason factors in other governmental policies that contribute to higher gas prices: prohibitions and regulatory obstacles to offshore energy development, proposed tax increases singling out oil and gas, and energy infrastructure shortfalls.

SBE Council encourages policy makers and political leaders to continue to examine the impact of monetary policy on gas prices, along with the other critical factors that hinder future supply. The nation’s economic recovery is being undermined by high gas prices. Affordable energy is a key element in helping U.S. entrepreneurs gain traction and confidence so they can focus on business growth, innovation and job growth, thus helping our nation move toward sustained economic growth.

Karen Kerrigan
President & CEO
Small Business & Entrepreneurship Council

Raymond J. Keating
Chief Economist
Small Business & Entrepreneurship Council
Executive Summary

It’s been said that little can be done by public policy makers to alleviate the rising price of gasoline. The President has said it. Members of his cabinet have echoed it. And the media has validated it.

But is it true? This paper argues that, both in the short term and in the long term, there are steps government should take that can demonstrably reduce gasoline prices.

The Obama administration has made a point recently of refusing to act to stem increasing prices of oil and gas. “The price of gas depends on a lot of factors that are often beyond our control,” said the President on March 17. “Unrest in the Middle East can tighten global oil supply. Growing nations like China or India adding cars to the road increases demand.”

Ben Bernanke has backed the President’s view since at least mid-2011, when he made the same points in discussing oil markets in his “U.S. Economic Outlook”: “When the price of any product moves sharply, the economist’s first instinct is to look for changes in the supply of or demand for that product. And indeed, the recent increase in commodity prices appears largely to be the result of the same factors that drove commodity prices higher throughout much of the past decade: strong gains in global demand that have not been met with commensurate increases in supply.”

I agree, we are experiencing a global supply shock in oil markets. But as the illustration below demonstrates, oil and gas prices increases have been gradual, accelerating from the depth of the crisis in 2009 through mid-2011, when Bernanke gave his speech. By February 2012, when the President opined that the situation is “beyond our control,” in fact over three years had passed without a policy response.

…both in the short term and in the long term, there are steps government should take that can demonstrably reduce gasoline prices.

Figure 1: Oil prices ($US and €Euro, both expressed in $US)

So while I agree with President Obama’s assertion that “There are no quick fixes to this problem,” it is hard not to see the missed opportunities in those three years that are still not being addressed.

Indeed, now that the problem has grown so large, “we can’t just drill our way to lower gas prices,” [emphasis added]. While drilling, of course, is part of the solution, we need a multifaceted energy policy that can help in the short term while setting focused long-term energy goals for the nation.

In this paper, I argue that in the short term, reducing the inflationary bias in Federal Reserve policy and improving the quality of the U.S. energy infrastructure can help bring down prices. In the long term, as new drilling projects can get underway, supply will eventually balance with demand at a market-determined price level.

In the meantime, a natural market advantage will be conferred to alternative energies, allowing them to prosper. Without a buffer of focused, articulated energy policy, though, U.S. energy markets will continue to flounder upon global imbalances caused by economic cycles, geopolitical instability, uncoordinated economic policies, and physical infrastructure shortcomings.

As stated above, oil prices are currently being buffeted by an imbalance between supply and demand. But that imbalance has also combined with current U.S. monetary policy to cause a variety of perverse effects in U.S. markets that are worsening, rather than alleviating, price pressures.

Below, in Section I, I discuss standard policy responses to oil shocks and the obvious inflationary effect of higher gasoline prices. Of course, excluding gasoline and energy from explicitly in targeted inflation measures allows monetary authorities to downplay their effect on price levels.

Without an obvious inflationary effect, monetary authorities can justify a low interest-rate policy and avoid policy tradeoffs that can lead to them being accused of “chooking off the recovery.” In Section II, therefore, I show that low-interest rate policy, itself, can prevent price declines in commodity markets like those for oil and gasoline and, unintentionally, “choke off the recovery,” nonetheless.

In Section III, I show that the impact of gasoline prices varies regionally with access to crucial pipelines and refineries necessary to carry refined petroleum products to end users.

Section IV concludes with a review of other impediments to oil and gas price recovery that are, as yet, keystones in the Obama administration’s platform.
I. Policy Responses to Oil Prices and Inflation

Economists have long sought to understand commodity price dynamics. Since the oil shocks of the 1970s, oil and gas prices have been of especially intense interest.

Whether arising from the Arab embargo of the 1970s or more recent geopolitical disruptions in Libya and Iran, spikes, supply and demand conditions have always been at the heart of oil price movements. When demand outstrips supply – whether because of runaway economic growth or supply shocks – oil prices rise.

Analysts, however, track supply and demand closely to measure potential imbalances and gauge the propensity for price shocks. Back in January 2009, Jan Stuart, Global Oil Analyst at UBS, decomposed such pressures for world oil markets. Stuart hypothesized that there existed a long-term relationship between conventional monthly crude output growth outside of Iraq, Iran, Kuwait, Mexico, and Saudi Arabia (areas where output is controlled by government fiat, rather than private markets) and Brent oil prices.6 That is, supply usually rose to meet demand. (See Figure 2.)

Stuart noted, however, that the long-term relationship had already broken down. While there had previously existed a positive relationship between price and supply (more quantity is supplied at a higher price), the slope of that relationship had become significantly more steep in 2007 and 2008, compared to previous years (the price elasticity of supply had declined, meaning less additional oil was supplied for a given price increase). This condition, Stuart maintained, constituted a “brick wall” for the industry, beyond which private sources could not increase supply no matter the price increase.7

If the industry had, indeed, hit such a wall by the end of 2008, Stuart hypothesized, normal extrapolations of demand growth would inexorably produce a price shock. (See figure 3.)

It should not be surprising that oil prices spiked in the years following Stuart’s analysis. But that is a standard oil price shock. Whether it is OPEC output restrictions in the 1970s or geopolitical disruptions today, it takes supply restrictions to increase prices. What is most interesting, in each case, is what happens next.

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Figure 2: Monthly Crude Output and Brent Prices, 1995-2008

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Oil – whether directly or indirectly – is an input into a vast proportion of economic activity in the world. So when oil prices rise, other prices tend to rise as well.

Broad-based price increases like this are commonly thought to represent inflation. So when oil shocks affect price levels, central banks have historically tended to steer policy toward increasing benchmark rates to slow economic growth and concomitant inflationary pressures. (See figure 4.)

Looking closely at Figure 4, there exists a clear relationship during the 1970s and 1980s of increasing oil prices being followed by Fed tightening to reduce overall price levels.

Now, of course, higher energy prices restrict economic growth. But contractionary monetary policy to pull down energy prices also restricts economic growth. So the historical cure for oil price shocks can be thought of as a moderate dose of the same poison that is ailing the economy in the first place.

Such observations led Ben Bernanke and others to try to disentangle which effect was worse: the high energy prices or the monetary tightening? Bernanke et al. (1997) cite the typical facts about oil price shocks suggesting that “...an exogenous increase in the price of oil has the expected effects on the economy: output falls, prices rise, and monetary policy tightens (presumably in response to the inflationary pressures from the oil shock).” Testing the effects of contractionary monetary policy against those of the oil price shock, the authors suggest that, “an important part of the effect of oil price shocks on the economy results not from the change in oil prices, per se, but from the resulting tightening of monetary policy.”

Those results – suggesting that the monetary cure is worse than the oil shock disease – are crucial to understanding Bernanke’s reluctance to address oil prices in today’s policy environment.
Figure 4: Oil Prices and Interest Rates, 1955-2012

II. Unlike Previous Oil Price Shocks, Today’s Shock is Taking Place in an Environment of Near-zero Interest Rates

Today’s policy environment, however, is very different from that relevant to the oil shocks researched by Bernanke. Today’s interest rates and inflationary bias are meant to encourage specifically economic growth and competitiveness. That is, they are keeping interest rates low and the U.S. dollar cheap.

Today’s interest rate environment is unlike any other save that of the Great Depression. Since 2006, the Federal Reserve has continued to target decreased Fed Funds rates, moving from 5.25% in June 2006 to 3% by the end of January 2008, 2% by the end of April 2008, 1% by the end of October, and a range of zero to 0.25% by December 16, 2008, where the target remains to this day.

No economist would argue that the interest rate response was the wrong way to address the financial crisis. There is, however, an argument to be made that broad interest rate policy affects dimensions of the economy far beyond the financial sector that was the source of the downturn. Monetary economists are in widespread agreement that broad monetary policy is “a blunt instrument that has a wide set of intended but also unintended consequences that can and have worsened economic outcomes including misallocation of precious resources, inflation and long term unemployment.”

Currently, interest rates are not only low but remain below what many consider to be benchmark targets for steady state growth. The figure below, for instance, shows that while nominal Fed Funds rate target was above the Taylor Rule target briefly during 2009 (because nominal rates cannot fall below zero), the Taylor rule suggests the Fed Funds rate should have been raised by the end of 2010, continuing to today.

Over three years of near-zero rates, therefore, have spawned perverse economic incentives that now, in many ways, impede economic recovery.

Over three years of near-zero rates, therefore, have spawned perverse economic incentives that now, in many ways, impede economic recovery. In what follows, I discuss three key elements of those perverse effects: inflationary bias, domestic production incentives, and foreign competition.

A central bank lowers rates to stimulate nominal economic growth in the short term. In the long term, that monetary stimulus merely pushes up inflation with no effect on real economic growth.

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Figure 5: Actual Federal Funds Rate vs. the Rate Prescribed by the Taylor Rule since 1986 (using the PCS Deflator)

Source: Federal Reserve Board. (Shaded region represents the 2002-2005 policy deviation.)
None of that is controversial. Nor is it controversial that recent Federal Reserve policy is centered around the lowest Fed Funds target ever implemented and the longest period over which interest rates have been held at a such a massively stimulative level since the Great Depression.

During the Great Depression, the Federal Reserve Bank of New York held its discount rate (the rough equivalent of the Fed Funds rate during the period) at 1.5% from February 1934 to July 1937, and then reduced that to 1.0% from September 1937 through January 1948. While that policy lasted about seven years prior to WWII, those rates were still nowhere near as low as they are today.

Even the Greenspan Fed tried to hold the Fed Funds target at below 2% from November 6, 2001 to November 10, 2004 (with a minimum of 1% announced June 25, 2003), a period of roughly three years. The lowest actual Fed Funds rate achieved in that period was 0.96%. And that period is widely thought to have contributed to a bubble in bank lending that fueled the run-up to the present crisis.

To give an even wider perspective, the Fed Funds rate has only been below 1% 224 of the 3,015 weeks it has been tracked by the Fed, since July 7, 1954, or 7.04% of the time (it wasn’t always targeted explicitly by the Fed during the entire period). Only 51 of those weeks lie outside the most recent period for which the Fed has held their “zero to 0.25%” target, beginning December 16, 2008 and continuing to this day. Another 9 of those weeks immediately preceded the explicit December 16, 2008 target, and therefore can be considered implicitly targeted to the December 16, 2008 rate. That leaves only 42 weeks during the entire history of the Fed Funds market (1.4% of the time) where rates were as low as they are today, none lasting more than 4 weeks, the most recent of which occurred in July 1961.

Given the tenets of modern economics and the uniqueness of today’s interest rate environment, it is hard to disagree that the search for reducing unemployment by maintaining a Fed Funds target of “zero to 0.25%” for over three years now is inevitably pushing up inflationary pressures.

Those pressures are most pronounced in global commodity markets, like oil, particularly since oil production constraints impede the market’s ability to raise supply to stave off inflation. So while it is historically accurate that the long-term relationship between the trade-weighted dollar and the price of oil has been statistically indistinguishable, it is not clear whether that would remain the case in the face of zero interest rates and the present inflationary bias. Nor is there reason to believe that such a strong intentional inflationary bias would exhibit the historical neutral effect on commodity prices.

Moreover, inflation, properly measured, is merely a mathematical, not an economic, phenomenon: a mathematical reality. Higher prices of any of the components of a basket of commodities represent inflation.

The propensity for oil price shocks to be transient, historically, has lead central banks to tackle the problem by merely omitting oil and energy prices (among other common expenditures) from inflation targets rather than dealing with the problem of deflation that is the logical monetary
response. \textsuperscript{13} Merely ignoring such price shocks means you don’t have to issue a monetary policy response.

But even Bernanke is stretching when he tries to reason the mathematically obvious effects away. For instance, in his June 2011 speech Bernanke opined that, “since February 2009, the trade-weighted dollar has fallen by about 15 percent. However, since February 2009, oil prices have risen 160 percent … implying that the dollar’s decline can explain, at most, only a small part of the rise in oil and other commodity prices.” \textsuperscript{14} Such policy is tantamount to imagining that there is no problem and taking the position that even if you want to imagine a problem exists, there is nothing we can do, anyway (just as has been done in recent speeches).

Leaving aside that notion that the relationship does not have to be one-for-one, Bernanke’s characterization of the present relationship between the inflationary bias and oil prices is simplistic and ignores the uniqueness of today’s interest rate environment. As noted in the Wall Street Journal, “The current moment of ‘massive global QE’ is helping stocks, which boosts confidence, but it is also lifting commodity prices, which undermines consumer spending and business confidence.” \textsuperscript{15}

More to the point, a March 28, 2012 Washington Post editorial noted that “among the biggest risks is that easy money from the Fed enables banks and firms to postpone necessary restructuring — and for Congress and the White House to postpone getting the federal government’s long-term fiscal situation under control.” \textsuperscript{16} That same editorial cited Bank of Japan governor Masaaki Shirakawa, former European Central Bank president Jean-Claude Trichet and Jaime Carauna, general manager of the Swiss-based Bank of International Settlements, as making the same point at a Federal Reserve conference in Washington the week prior. According to the Washington Post, “Bernanke-style policies ‘can make it easier to waste time.’ The Fed has bought the U.S. economy time, but if that breathing space is not used wisely, the long-term result could be inflation and higher interest rates.” \textsuperscript{17}

In both the Great Depression and today, low rates create a variety of perverse effects for economic growth and development. Those effects confound policy decisions that are already economically complex and politically difficult. As discussed above, supply and demand are the most important influences over oil prices. But it is important to remember that oil supply shocks can reasonably be expected to interact with monetary policy in such a historically unique loose policy environment to accentuate the rise.

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\textsuperscript{12} The Perverse Dynamics of Long-term Low Interest Rates: Evidence from Oil Prices
III. In the Long-term, Low Interest Rates Cause More Problems than Just Inflation

The important aspect of research on oil price shocks and policy responses since Bernanke et al. (1997) is that there is no one-size-fits-all approach to interest rate policy for oil shocks. The reason is that the price of oil is not strictly independent of (exogenous to) U.S. monetary policy conditions, but varies interactively with (is endogenous to) such conditions.

Bodenstein et al. (2012) note that older analyses of appropriate monetary policy responses to oil price fluctuations have been conducted under the former assumption of independent effects: a shock hits the U.S. economy and the central bank responds.\textsuperscript{18}

While some recent academic studies attempt to take into account the interaction between price shocks and policy responses, those studies typically make strong and unrealistic simplifying assumptions about the determination of the price of oil in global markets,\textsuperscript{19} ignore monetary policy altogether,\textsuperscript{20} or ignore the global economic aspects of the transmission of oil price shocks.\textsuperscript{21}

Moreover, typical economic research striving to account for even those endogenous interrelationships focuses on “normal” price shocks, i.e., those that would not be expected to be accompanied by existing low-interest rate policies and quantitative easing, which have never before occurred. In fact, Boednstein et al. (2012) note explicitly that “Our analysis deliberately abstracts from the presence of a zero lower bound following the financial crisis of 2008... [and] quantitative easing policies. Rather our focus is on characterizing the appropriate policy responses to shocks that shift the demand for oil or the supply of oil during normal times.” [emphasis added]\textsuperscript{22}

Still, some literature on oil price shocks has attempted to isolate the effects of low interest rates on economic recovery. In particular, there exist two relevant hypotheses: the Frankel hypothesis and the “Dollar Bloc” hypothesis.\textsuperscript{23}

Jeffrey Frankel, of Harvard University, has pioneered the hypothesis that since domestic interest rates can be thought of as an “opportunity cost,” low rates give reason to curtail domestic production (relative to its potential), storing oil above or below ground until the cost of such storage rises (the “Frankel” argument).

The Dollar Bloc hypothesis suggests that other countries that “peg” their monetary policy to that of the U.S. may experience greater economic stimulus than the U.S. due to low

The important conclusion is that domestic U.S. monetary and energy policies are pushing prices higher and US economic output lower in the face of existing supply concerns. Instead, both must work together for economic recovery.

U.S. interest rates – i.e., benefiting from low U.S. interest rates without the drag of recovery from the financial crisis – and can therefore expand production more freely to meet worldwide demand (the “Dollar Bloc” argument).

In summary, while energy price inflation increases price pressures on U.S. consumers, the Frankel and Dollar Bloc effects restrain U.S. production and prevent the domestic economy from benefiting from the oil price boom, respectively. Failing to ramp up domestic U.S. production in the face of high prices, the industry does not increase supply as quickly as would otherwise be the case and cannot create the domestic jobs and economic growth that are necessary to lead the economy to recovery.

I describe the two economic dynamics below. As those are presented, it is important to keep in mind they are primarily propagation effects. That is, they don’t cause the initial shock to oil prices. Rather, they originate from stale low-interest rate policies and prolong price shocks arising from other influences for longer than would otherwise be the case.

The important conclusion is that domestic U.S. monetary and energy policies are pushing prices higher and U.S. economic output lower in the face of existing supply concerns. Instead, both must work together for economic recovery.

A. The Frankel Argument: Low Interest Rates Dis-incentivize Domestic Production

The Frankel argument begins with the postulate that commodities tend to have flexible prices, much like financial assets, while the prices of other goods and services are relatively “sticky,” and fail to move quickly in response to demand pressures. That postulate, dating from the classic work of Arthur Okun,\textsuperscript{24} has been borne out in myriad studies.
One implication of such an assumption is fairly simple: all other aspects held constant, commodity prices will exhibit greater volatility than other prices, which has led food and energy prices, in particular, to be separated from other prices in measures of "core inflation." Jeffrey Frankel has pointed out in a variety of research, however, that commodity prices – particularly oil – react in such a volatile fashion to all monetary variables, including interest rates. Moreover, Frankel points out that because most commodities are produced in globally competitive economies, the relative (domestic, relative to other countries) rate of production is also affected by such monetary variables.

Thus Frankel sets up two-layer framework for analyzing the effects of monetary policy on oil prices. First, low long-term interest rates create inflation, increasing the prices of all goods, including oil. Second, though, low interest rates decrease the domestic rate of production, slowing down economic activity in the sector and denying the domestic economy the output growth they would otherwise experience from the higher nominal price.

The reason for those results lies in the fact that oil is a perfectly storable commodity – in other words, unlike corn or wheat, it does not spoil or become stale over time. Thus, as with any commodity, low interest rates affect oil markets through three channels: incentives for extraction, incentives for storage, and yields to commodity contracts.

Low interest rates decrease incentives for domestic extraction because the cash receipts from the sale of the commodities can only be reinvested at low interest rates. Stated another way, the alternative to extraction – borrowing to finance extraction later – comes at a relatively low cost. Of course, the failure to produce oil worsens existing supply shortages and drives prices up further.

In March 2012, the EIA reported that "Domestic crude oil production increased by an estimated 120 thousand bbl/d to 5.60 million bbl/d in 2011." But remember, energy prices are a function of global supply and demand, not just domestic supply and demand. Global production increased "less than 1 percent per year since 2004, compared with nearly 2 percent per year in the prior decade," and global markets have lost an estimated 1 million bbl/d of supply in recent months.

Similarly, low interest rates encourage producers to hoard above-ground oil rather than sell it because borrowing to store the oil until later, when prices are higher, comes at low interest rates. Again, the failure to sell existing oil stocks wors-

<table>
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<th>Table 1: Relationship between Desired Oil Inventories and Real Interest Rates</th>
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<td>Weekly Data (1114-1190 observations, depending upon availability)</td>
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Non-stationary variables by including quadratic terms in each regression

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* Asterisks indicate significance at the 5% level of significance. (standard errors are given below coefficient estimates)

ens existing supply shortages and drives prices up further.

In normal periods, storage always acts to reduce volatility. With low interest rates, however, storage, itself, becomes speculative rather than playing a mere mitigating role in consumption.31 Thus, both incentives for extraction and incentives for storage tend to drive down supply and drive up expected prices. Recognizing the obvious supply/demand imbalances and resulting inflationary pressures, speculators are incentivized to shift out of Treasuries and into commodity contracts.

Frankel has established over and over again the relationship between interest rates and oil inventories. Frankel’s empirical model, however, relates the stock of inventories that firms desire to hold to real interest rates.32 Frankel’s results are reported in Table 1. They show the hypothesized sign on all variables, usually with statistical significance, generally supporting Frankel’s hypothesis that low interest rates are associated with lower production, higher storage, and greater speculation.

Frankel’s hypothesis, however, is often confused in the press and among lay observers because it relies upon estimates of desired oil inventories (relative to demand and supply), not actual oil inventories.33 Even Bernanke used that inappropriate characterization in his June 2011 speech, maintaining that if low interest rates had reduced the cost of carrying inventories and “...were driving commodity prices materially and persistently higher, we should see corresponding increases in commodity inventories, as higher prices curtailed consumption and boosted production relative to their fundamental levels,”34 [emphasis added]. While the press can be excused for getting it wrong, Bernanke knows better.

Still, even the simplest rendition tells the story if one abstracts from short-term movements. Figure 6 shows the obvious negative long-term relationship between the Fed Funds rate and actual inventories.

Of course, this interest rate dynamic eventually sows the seed of its own demise.
B. The Dollar Bloc Argument: Low Interest Rates Incentivize Firms to Move Domestic Production Abroad

While domestic production may fall below potential, foreign production will still respond to the price increases that are fueling the oil price shock. In particular, the demand for higher priced oil will be met by countries with higher real interest rate gaps relative to those in the U.S.

Foreign production, therefore, is booming. The Economist reports that, as in 2008, “oil exporters, from Venezuela to the Middle East, are gaining,” while oil importers are experiencing worsening trade balances. Deep-water drilling is proceeding at a frenetic pace outside the U.S. “The industry is moving full speed ahead in places like the Gulf of Guinea, the Mediterranean and the Turkish Black Sea” and especially Brazil, where state-run Petroleo Brasileiro SA, known as Petrobras, is exploiting one of the largest oil fields discovered in the Western Hemisphere in 30 years. Another “recently discovered field nearby could contain the equivalent of 15 billion barrels of oil, say Brazilian regulators, equal to almost two-thirds of the total proven deposits of crude in the U.S.”

The reason for such frenzied activity is that many developing countries – formally or informally – peg their monetary policies – and, therefore, exchange rates – to the policies of the U.S. Federal Reserve so that they can systematically maintain a competitive exchange rate and trade balance. But when the U.S. Federal Reserve is trying to expand economic production at home by weakening the U.S. dollar, it also fuels expansion of other economies linked to the dollar.

Some emerging economies, however, may already be experiencing high growth so that the inadvertent loosening has the effect of overheating developing-country economies, increasing demand for commodities from abroad, and thus global prices for those commodities.

Even when developing economies are already growing at breakneck speed, therefore, U.S. policy accelerates growth by even more. In the words of Martin Wolf, of the Financial Times, “Ben Bernanke is running the monetary policy of the People’s Bank of China. But the policy appropriate to the U.S. is wildly inappropriate for China and indeed almost all the other countries tied together in the informal dollar zone….. When most emerging economies need much tighter monetary policy, they are forced to loosen still further.”

To illustrate, consider the different economic performance of countries in the Euro area. Countries at the core of the Euro area are recovering from the crisis, necessitating higher rates than others, as estimated by a Taylor rule. Countries on the periphery, on the other hand, need a lower interest rate to fuel their continued growth (again, as estimated by a Taylor rule). As illustrated in Figure 7 the

![Figure 7: Illustrative Taylor Rule and Actual Central Bank Targets in the Euro Area (Quarterly Average)](image-url)

The Perverse Dynamics of Long-term Low Interest Rates: Evidence from Oil Prices

ECB rate is in between the targets appropriate for both sets of countries, lower than the target rate for the core countries (so that it stimulates growth) but higher than the target rate for the periphery countries (choking off recovery).

For Brazil, the Taylor rule target has recently been estimated as just over 5%, whereas central bank rates are about 4.3%. Not only is Brazil at a stimulative stance, therefore, but its rate – even its Taylor rule “natural” rate – is far above that for the U.S.39

Research from the International Monetary Fund confirms that the dollar has an impact on commodity prices that works through (at least) three channels. “First, a dollar depreciation makes commodities, usually priced in dollars, less expensive in non-dollar countries,” encouraging the demand (and supply) for commodities to increase. “Second, a falling dollar reduces the foreign currency yield on dollar denominated financial assets, making commodities a more attractive investment alternative to foreign investors” (as with speculative demand in the Frankel conjecture). Third, a weakening dollar – and pegged foreign currency – induces an expansionary policy effect in the foreign country, as well.40

The same IMF study estimated that if the dollar had remained at its peak of early 2002, by the end of 2007, the price of gold would have been $250 per ounce lower, the price of a barrel of crude oil would have been $25 a barrel lower, and nonfuel commodity prices would have been 12% lower.41

U.S. low interest rate policies, therefore, export U.S. inflation to the rest of the world. On March 30, the Financial Times cited Dilma Rousseff, Brazil’s President, as accusing western countries of “causing a ‘monetary tsunami” by adopting aggressive expansionist policies such as low interest rates, which are making emerging economies less competitive globally.”42

“We’re in the midst of an international currency war,” Brazil’s Finance Minister Guido Mantega told a meeting of industrial leaders in September 2010. Devaluation of developed country currencies, “threatens us because it takes away our competitiveness.”43

The issue goes far beyond Brazil. “Brazil and Thailand have used tax measures to slow the [capital] inflows. Japan, South Korea and others have intervened in the currency markets, buying foreign currency in an attempt to interrupt the rise of their own.” 44 Brazil needs to maintain parity more than some of those economies, however, due to rising energy exports from huge recent offshore oil discoveries.

The U.S. “Treasury, Fed and administration still don’t understand that you can’t print jobs, and devaluing your currency doesn’t boost exports or balance the trade deficit,” said Michael Pento, senior economist at Euro Pacific Capital in New York. “All it does is send everything priced in dollars up, while creating huge imbalances in the economy.”45

Like before, the Frankel and Dollar Bloc effects will not typically cause – nor can alleviating them, alone, cure – an oil or commodity price shock. Rather, those effects constitute propagation mechanisms that accentuate the effects of the shock over the longer-term.46

Like before, the Frankel and Dollar Bloc effects will not typically cause – nor can alleviating them, alone, cure – an oil or commodity price shock.
IV. Other Impediments to U.S. Production
Accentuate the Existing Supply Shock
and Monetary Influences

Of course, energy policies like decreased access to energy
resources and increased taxation further exacerbate the ef-
fects of low interest rates, leaving U.S. producers lagging be-
hind foreign counterparts in meeting worldwide demand and
sacrificing needed economic recovery in doing so. Hence,
energy policy can exacerbate the Frankel and Dollar Bloc ef-
facts, worsening the propensity for recovery still further.

Recovery from the present price shock faces additional
complexities, therefore, arising from familiar sources like
OCS drilling restrictions, tax policy, and lack of distribution
infrastructure, all of which put pressure on national and re-
gional gasoline prices by impeding investment and con-
straining further future production capacity.

A. Drilling and Development in Other OCS
Planning Areas Remains Prohibited

Even if we wanted to increase domestic crude production
to meet U.S. and global supply shortfalls, U.S. oil and gas
firms remain hindered from doing so by a plethora of reg-
ulatory and social restraints. For instance, U.S. regulatory
and drilling policies still do not “…allow the U.S. to explore
in Alaska or along the East and West Coasts, which could
be our equivalent of the Tupi oil fields,” which are set to
make Brazil a leading oil exporter.47

Congressional and Presidential leasing moratoria have with-
drawn from production oil and natural gas resources lying
between 3 and 200 miles off the coast of 20 U.S. states.48

We have long been aware of the importance of those re-
sources. In 2006, the U.S. Minerals Management Service
(MMS) reported to Congress that, “much of the growth in
the Nation’s energy demand will have to be met by OCS…if
further increases of imported supplies are to be avoided.”49
MMS also estimated back then that “OCS oil production
could have accounted for as much as 40 percent of do-
mestic oil production by 2010.”50

Apart from national energy concerns, however, economic
considerations also favor increased development of OCS
energy resources. Specifically, the boost provided to local
onshore economies by offshore production would be par-
ticularly welcome in the present economic climate. Similar
to fiscal alternatives presently under consideration, OCS
development would provide a long-run economic stimulus
to the U.S. economy. Unlike standard fiscal policies, how-
ever, that stimulus would not require government expendi-
tures to support such long-term growth.

Mason (2009) shows that increased offshore investment and
production would support hundreds of thousands of new
careers and provide billions of dollars in new wages and tax
revenues. By those estimates, increased production is likely
to contribute an additional 0.5 percent of GDP in immedi-
et new economic activity each year and will ultimately con-
tribute more than 2 percent of GDP each year for thirty or
more years of production.51

Such conclusions lend support to recent claims like that of
Sen. David Vitter, R-La., who opined that, “It’s ridiculous to
ignore our own resources and continue going hat-in-hand
to countries like Saudi Arabia and Brazil to beg them to
produce more oil,” when we can do that right here.52

B. U.S. Corporate Tax Proposals Single Out
Oil and Gas for Higher Taxes

On top of the drilling slowdown and OCS restrictions, the ad-
iministration continues to threaten to tax the oil and gas in-
dustry punitively compared to other U.S. industries, even
though both public and private research shows time and again
that oil and gas pays the highest tax rates of any U.S. firms.

The administration’s comprehensive budget proposals have
repeatedly included repeals of Section 199 of the American
Jobs Creation Act and Section 1.901-2 of the U.S.
Department of the Treasury Regulations (“dual capacity”).53

These prospective changes would eliminate domestic tax
deductions and international tax credits designed to pre-
vent double taxation, but just for the U.S. energy sector.
Although the administration and some legislators are hop-
ing to raise substantial revenues from the repeals, the economic cost of the regressive legislation could cripple the oil and gas sector.54

Moreover, U.S. oil and gas firms already pay some of the highest taxes of all U.S. corporations, which pay some of the highest corporate taxes in the world. For instance, the U.S. Energy Information Administration, a Department of the U.S. Department of Energy, reports that the oil and gas industry paid some $35.7 billion in corporate income taxes in 2009, the latest year for which data are available. That alone is about 10% of non-defense discretionary spending. The EIA figure also does not include excise taxes, state taxes and rents, royalties, fees and bonus payments. All told, the government reaps $86 million from oil and gas every day, more than from any other business.55

The Tax Foundation estimates that, “between 1981 and 2008, oil and gas companies sent more dollars to Washington and the state capitols than they earned in profits for shareholders.”56

<table>
<thead>
<tr>
<th>Sector</th>
<th>Five Year Average Effective Tax Rate</th>
<th>Adjusted Effective Tax Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy—Integrated</td>
<td>54.4</td>
<td>50.6</td>
</tr>
<tr>
<td>Energy—Global Independents</td>
<td>45.6</td>
<td>45.6</td>
</tr>
<tr>
<td>Energy—Refiners</td>
<td>39.8</td>
<td>39.7</td>
</tr>
<tr>
<td>Energy—U.S. Independents</td>
<td>35.8</td>
<td>35.5</td>
</tr>
<tr>
<td>Retail</td>
<td>37.3</td>
<td>35.2</td>
</tr>
<tr>
<td>Transportation</td>
<td>37.6</td>
<td>34.1</td>
</tr>
<tr>
<td>Media</td>
<td>42.0</td>
<td>32.9</td>
</tr>
<tr>
<td>Building and Materials</td>
<td>25.7</td>
<td>29.6</td>
</tr>
<tr>
<td>Consumer</td>
<td>30.8</td>
<td>29.3</td>
</tr>
<tr>
<td>Natural Resources</td>
<td>31.7</td>
<td>29.1</td>
</tr>
<tr>
<td>Food and Tobacco</td>
<td>28.2</td>
<td>28.5</td>
</tr>
<tr>
<td>Telecom</td>
<td>30.7</td>
<td>28.3</td>
</tr>
<tr>
<td>Aerospace and Defence</td>
<td>30.1</td>
<td>27.9</td>
</tr>
<tr>
<td>Chemicals</td>
<td>28.3</td>
<td>27.3</td>
</tr>
<tr>
<td>Diversified Manufacturing</td>
<td>27.0</td>
<td>25.1</td>
</tr>
<tr>
<td>Tech</td>
<td>28.5</td>
<td>24.9</td>
</tr>
<tr>
<td>Capital Goods</td>
<td>24.8</td>
<td>24.6</td>
</tr>
<tr>
<td>Healthcare</td>
<td>25.2</td>
<td>24.2</td>
</tr>
<tr>
<td>Energy—Drillers</td>
<td>22.9</td>
<td>32.6</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>35.2</strong></td>
<td><strong>32.9</strong></td>
</tr>
</tbody>
</table>


All told, the government reaps $86 million from oil and gas every day, more than from any other business.

Global oil and gas firms pay the highest book tax rates due to their vast international operations, particularly in many developing countries that are subject to significantly higher incremental taxes imposed for the privilege of extracting natural resources. (See Table 2.)

Healthcare and technology generate some of the lowest book tax rates due to their massive international operations in low-tax jurisdictions such as Ireland, Switzerland, and the Cayman Islands, but policy makers, in fact, champion those industries instead of singling them out for punitive tax rates.57
C. Energy Infrastructure Shortfalls

It is widely known that the Gulf Moratorium took its toll on the industry in the last several years and that effect is now being felt in U.S. production constraints. Data from the Bureau of Safety and Environmental Enforcement shows that through the end of 2011, permitting activity for new drilling remains at roughly half the pre-Moratorium rates. As a result, drilling rigs that could not be put to work were relocated elsewhere and have yet to return.58

But while rigs can be moved, pipelines and refineries cannot. The slowdown in Gulf drilling activity has lead, two years later, to a slowdown in Gulf oil production as new wells are not put into production and old wells taper off. The slowdown shows up in U.S. EIA data. In March 2012, the EIA reported that “Domestic crude oil production increased by an estimated 120 thousand bbl/d to 5.60 million bbl/d in 2011.” But the EIA also notes that the figure results from a 390 thousand bbl/d increase in lower 48 onshore production in 2011 that was partly offset by a 40 thousand bbl/d decline in Alaska and a 230 thousand bbl/d decline in output in the Federal Gulf of Mexico (GOM).59

Problems became apparent over a year ago, when GOM production declines led to refinery shutdowns in the region. At that time, oil produced elsewhere could not be delivered effectively to existing refineries. Since then, conditions have worsened. As refineries along the coasts have imported more Brent crude from abroad (substituting for West Texas Intermediate crude), price differentials opened up between the two products that indicate the shortcomings. Since that time, other geographic regions have been similarly affected. Since they can’t get crude from elsewhere, either, “East Coast refineries are getting squeezed by the soaring cost of crude oil, the major component in gasoline. The cost of oil has jumped in the past year due to global economic growth and rising tensions between Western nations and Iran, a major producer.” “From New York to Philadelphia, refineries that turn oil into gasoline have been idled or shut permanently because their owners are losing money on them.”60 Some of the affected operations operate at significant scale and supply the entire region. The East Coast lost two refineries in 2011, and another in the U.S. Virgin Islands in February 2012. Sunoco Inc. is expected to close the region’s largest refinery in July 2012, “taking another 335,000 barrels per day in production capacity off the market….”61 According to the U.S. EIA, “Adequate refining capacity is available outside of the East Coast to replace product supplies, but logistical constraints to delivering product to the Northeast in the short term may present significant challenges.”62

Hence, while global demand and supply imbalances affect oil prices, generally, infrastructure bottlenecks associated with transporting domestic production to regional refineries contribute substantially to regional variations at the pump.
...while global demand and supply imbalances affect oil prices, generally, infrastructure bottlenecks associated with transporting domestic production to regional refineries contribute substantially to regional variations at the pump.

Two pieces of evidence point to the presence of such infrastructure bottlenecks. First, the price differential between domestic and imported crude indicates reduced demand for domestic crude relative to imported crude. Second, the variation of regional gas prices with idle refinery capacity in the region indicates bottlenecks in transporting cheaper domestic supply of crude to refineries.

Figure 8 shows the price gap between West Texas Intermediate (WTI) crude that is traded in Cushing, Oklahoma and Brent Crude from the North Sea. A report from Tiberius also points to larger price differentials between Canadian crude and WTI, and between other regional crudes and WTI, highlighting the distributional issues associated with moving cheaper crude to regional refineries.

The differences from WTI show, generally, that something has changed regarding how oil from different sources is positioned in the market, but it doesn’t show that those changes are associated with distribution.

Figure 9, however, shows that regional access is directly associated with prices at the pump. The Figure plots the difference in gas prices between the PADD1 region (the East Coast, where refineries could potentially source more domestic crude) and PADD4 region (the Rockies where the refineries source production from North Dakota and Canada) against differences in idle refinery capacity in both these regions. As the Figure indicates, the excess idle refinery capacity in the PADD1 region relative to the PADD4 region is correlated with higher gas prices in the PADD1 region.

**Figure 9: Gasoline Prices and Idle Refinery Capacity in PADD 1 and PADD 4**

*Source: EIA. Price is the average price of a gallon of gasoline of all grades in conventional areas. Idle operable capacity is the difference between operable capacity and operating capacity. Operable capacity is the amount of capacity that, at the beginning of the period, is in operation; not in operation and not under active repair, but capable of being placed in operation within 30 days; or not in operation but under active repair that can be completed within 90 days. Operating capacity is measured in barrels per calendar day or barrels per stream day. Operating capacity is the component of operable capacity that is in operation at the beginning of the period.*
A regression of gas price differences on idle capacity differences controlling for differences in the cost of crude oil, including transportation and other fees paid by the refiner, as well as idle capacity (plotted in Figure 9) confirms that price differentials at the pump are being driven by infrastructure bottlenecks that fail to deliver cheaper domestic crude to operable refining capacity. While a more detailed model, taking into account the reasons for idle capacity, would help further confirm the hypothesis, the initial results suggest that idle capacity – largely caused by high oil prices – is leading to higher prices at the pump.

It is reasonable to conclude, therefore, that updating transportation infrastructure to deliver lower-cost crude from North Dakota and Canada to refinery locations throughout the country would benefit refineries forced to process expensive imported crude. Such an initiative would bring jobs and production to important regions of the U.S.

### Table 3: Regression of Gasoline Prices on Infrastructure and Oil Prices

<table>
<thead>
<tr>
<th></th>
<th>Coefficients</th>
<th>Standard Error</th>
<th>t Stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.00887</td>
<td>0.01832</td>
<td>-0.4845</td>
</tr>
<tr>
<td>Cost Difference</td>
<td>0.00092</td>
<td>0.00245</td>
<td>0.3755</td>
</tr>
<tr>
<td>Idle Capacity</td>
<td>0.00042</td>
<td>0.00010</td>
<td>4.2334</td>
</tr>
<tr>
<td><strong>R Square</strong></td>
<td><strong>0.176</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: EIA and author’s calculations (see above for data details)

Figure 10: U.S. Pipelines and Refinery Capacity

Source: Bloomberg
While there are other ways to move crude, those are more expensive and less efficient than pipelines. Bloomberg quotes a differential of about $3 per barrel, using prices for freight on board in North Dakota, between pipeline and rail transport.

Based upon President Obama’s recent campaign speeches, the administration is aware of this problem. But while it intends to fast track the Keystone leg from Cushing to the Gulf, refineries are closing on the East Coast for lack of affordable crude.

Moreover, it is doubtful that merely extending the southern leg of the Keystone pipeline will do much to help distribution in other PADD districts. “Even the Gulf Coast leg (of the Keystone Pipeline) and Enbridge’s [Seaway] project may not be enough to relieve the bottleneck at Cushing. Alex Pourbaix, president of TransCanada’s oil-pipelines division, said he believes at least two million barrels a day of oil will need to flow between Cushing and the Gulf Coast over the next decade to relieve the bottleneck there.”

While there are other ways to move crude, those are more expensive and less efficient than pipelines. Bloomberg quotes a differential of about $3 per barrel, using prices for freight on board in North Dakota, between pipeline and rail transport. That is big business for railroads like Warren Buffett’s Burlington Northern, and it is attracting newcomers like Bill Ackman, who recently launched a bid for Canadian Pacific. As long as the transport price differentials remain so high, much more work remains.
V. Conclusions and Policy Recommendations

In summary, the present oil price shock is the result of global supply and demand shocks. But U.S. long-term low-interest rate monetary policy and overall energy policies continue to aggravate those imbalances by increasing pressures on global demand abroad while pushing away domestic production.

We already know that while monetary policy can address oil price shocks, the monetary policy response in the present case is likely to be complex. Thus, simple rate increases, by themselves, will not be sufficient to bring down oil prices.

Even more importantly, however, simply maintaining a zero-bound nominal interest rate target will not be sufficient to stimulate recovery and will have the tendency to skew prices and economic growth in directions that can impede recovery. According to John B. Taylor, “the combination of the prolonged zero interest rate and the bloated supply of bank money is potentially lethal…. By replacing large decentralized markets with centralized control by a few government officials, the Fed is distorting incentives and interfering with price discovery with unintended consequences throughout the economy.”

Put another way, “far from increasing stability, Mr. Bernanke’s extraordinary monetary efforts are keeping everyone guessing about his next move. An economy that hangs on the words of a monetary Wizard of Oz is not one that is, to borrow a phrase, ‘built to last.’”

Put another way, “far from increasing stability, Mr. Bernanke’s extraordinary monetary efforts are keeping everyone guessing about his next move. An economy that hangs on the words of a monetary Wizard of Oz is not one that is, to borrow a phrase, ‘built to last.’”

While President Obama continues to court the green lobby by maintaining that we “can’t just drill our way to lower gas prices,” Bernanke seems to disagree. Bernanke, in his June 2011 speech, notes that; “…over time, high prices should elicit meaningful increases in supply… as investments in productive capacity come to fruition.”

The evidence seems to be with Bernanke. While natural gas markets are currently facing a glut of domestic supply due to high local production and an inability to economically export, the laws of supply and demand seem to be ineluctably reminding us that they always bind, whether we like it or not. Moreover, those markets are posing valuable investment opportunities, including an approved $10 billion LNG terminal in Louisiana that will contribute substantially to economic growth in the region.

Without Bernanke’s crucial “investments in productive capacity,” we cannot expect supply to increase to meet global demand. So, President Obama, while we cannot drill and develop our way out of high energy prices in the short term, it is the only way out of both high energy prices and stagnant economic growth in the long term.
Endnotes

1 Hermann Moyse, Jr./Louisiana Bankers Association Endowed Professor of Banking at Louisiana State University and Senior Fellow at The Wharton School. The author gratefully thanks Rajesh P. Narayanan for research assistance.

2 “Ending Subsidies for Big Oil Companies,” Weekly Address, March 17, 2012.


4 In fact, the geopolitical shocks in Libya and elsewhere actually slowed, rather than increased, the rate of the price increases.


7 Given the large increases in Brent shown in the graph, steady increases in the Brent marker relative to other benchmarks like WTI do not account for the shift.

8 While the U.S. economy has become less oil intensive over the past 30 years, oil is still very important to economic growth.


10 Bernanke B.S. et al. op cit.


12 Hoenig, T., 2010. “The High Cost of Exceptionally Low Rates,” speech given at Bartlesville Federal Reserve Forum, Bartlesville, Oklahoma, http://www.kansascityfed.org/SpeechBio/HoenigPDF/Bartlesville.06.03.10.pdf; “Certainly lowering interest rates is the appropriate policy response to the onset of an economic recession and rising unemployment. But it is also a blunt instrument that has a wide set of intended but also unintended consequences that can and have worsened economic outcomes including misallocation of precious resources, inflation and long term unemployment.”

13 As mentioned above, Bernanke’s own research results suggest that – viewed as an inflation problem – the monetary cure to the inflation caused by oil price shocks is worse than the economic effects of higher oil prices.

14 Bernanke, op cit.


17 Ibid.


23 Bernanke similarly attempted to dismiss these two effects of the Fed’s low interest rate policy in his June 2011 speech, in addition to the inflationary bias.


27 Moreover, moving production to the future will also result in growth in commodities futures contracts, which may look like speculation, even if it is not.


29 Bernanke (2006), “In part, the slower increase in the supply of oil reflected disappointing rates of production in countries that are not part of the Organization of the Petroleum Exporting Countries (OPEC). However, OPEC has not shown much willingness to ramp up production, either. Most recently, OPEC production fell 1.3 million barrels per day from January to April of this year, reflecting the disruption to Libyan supplies and the lack of any significant offset from other OPEC producers. Indeed, OPEC’s production of oil today remains about 3 million barrels per day below the peak level of mid-2008. With the demand for oil rising rapidly and the supply of crude stagnant, increases in oil prices are hardly a puzzle.”


31 “We show that the role of storage when demand is subject to persistent growth shocks is speculative, instead of its classic mitigating role. This result helps to account for the increased volatility of oil price we observe in these periods.” (Dvir, E. and Rogoff, K.S., 2009, “Three Epochs of Oil,” NBER Working Paper No. 14927, available at http://www.economics.harvard.edu/faculty/rogoff/files/Three_Epochs_of Öl.pdf)

32 “In practice the actual level of inventories generally deviates from the desired levels. For example, a sudden unexpected acceleration of industrial production will, in the short run, show up as a fall in inventories held, even though the desired level of inventories goes up. Only over time are firms able to adjust their actual level of inventories in line with the desired level. This phenomenon is very well known and was the origin of the “stock adjustment” specification in regression equations. For our purposes, it simply means we want to include a lagged endogenous variable, and that we should expect its effect on current measured inventories to be very strong.” (Frankel, J.A., 2008, op. cit.)
The Economist reported March 10, 2012, that “if rising prices are being driven by speculators you should see a rise in inventories — exactly the opposite of what has happened.” Of course, that observation loses sight of the fact that the economic relationship is posed in terms of desired inventories, not actual. (“The New Grease?” op. cit.)

Bernanke, op cit.


Ibid.


International Monetary Fund, World Economic Outlook — April 2008, pp. 48-50.


Ibid.


U.S. Department of the Interior, Minerals Management Service, Report to Congress: Comprehensive Inventory of U.S. OCS Oil and Natural Gas Reserves, Feb. 2006, at xii (“Part or all of nine OCS planning areas, which include waters off 20 coastal states, have been subject to long-standing leasing moratoria enacted annually as part of the Interior and related agencies appropriations legislation, or are withdrawn from leasing until June 30, 2012, as the result of presidential withdrawal (under section 12 of the OCSLA). Some of these areas contain large amounts of technically recoverable oil and natural gas resources.”). See also Ibid. at 3 (“The Federal OCS generally extends from 3 to 200 miles offshore and covers an area of about 1.7 billion acres.”).

Ibid. at 5 (“Much of the growth of the Nation’s energy demand will have to be met by OCS production, especially from new frontier areas in the GOM [Gulf of Mexico], if further increases of imported supplies are to be avoided.”). Note that the Congressional and Presidential moratoria were still in effect at this time, precluding the MMS from discussing new OCS production in OCS areas other than the Gulf of Mexico.

Ibid. at 6 (“The OCS oil production could account for as much as 40 percent of domestic oil production by 2010.”).


Mason, J.R., 2010b, “The Regional and National Economic Impact of Repealing the Section 199 Tax Deduction and Dual Capacity Tax Credit for Oil and Gas Producers, American Energy Alliance, September 2010.


Ibid.


Quest Offshore Resources, The State of the Offshore U.S. Oil and Gas Industry, American Petroleum Institute, December 2011. The report estimates that the eleven rigs that left the Gulf of Mexico to November 2011 could have drilled roughly 103 wells in the Gulf since June 2010. Instead, those rigs are operating in new deep water fields off Brazil (2 rigs accounting for 25 wells) as well as areas off of Egypt (3 rigs accounting for 35 wells) and regions with lax environmental regulations like Angola and Nigeria (3 rigs accounting for 27 wells).


Western Canadian Select crude (WCS) is currently priced at a discount of roughly 33 USD/barrel in relation to WTI crude. By comparison, the average discount in 2011 was 16.50 USD/barrel. Canadian Syncrude, which was still trading at an average premium of 9 USD/barrel to relation to WTI in 2011, now costs 18.75 USD/barrel less than WTI. (Tiberius, Market Commentary, January 2012.)

“But not just Canadian crude is trading at a discount to WTI; Bakken crude is also some 20 USD/barrel cheaper than WTI. Even U.S. Midwest crude is now priced roughly 5 USD/barrel below WTI. These price premiums for WTI over other regional crude varieties offer strong incentives for the transport of crude oil to Cushing, Oklahoma.” (Tiberius, Market Commentary, January 2012.)

“Now, under my administration, America is producing more oil today than at any time in the last eight years. That’s important to know: Over the last three years, I’ve directed my administration to open up millions of acres for gas and oil exploration across 23 different states. We’re opening up more than 75 percent of our potential oil resources offshore. We’ve quadrupled the number of operating rigs to a record high. We’ve added enough new oil and gas pipeline to encircle the Earth and then some.

So we are drilling all over the place — right now. That’s not the challenge. That’s not the problem. In fact, the problem in a place like Cushing is that we’re actually producing so much oil and gas in places like North Dakota and Colorado that we don’t have enough pipeline capacity to transport all of it to where it needs to go — both to refineries, and then, eventually, all across the country and around the world. There’s a bottleneck right here because we can’t get enough of the oil to our refineries fast enough. And if we could, then we would be able to increase our oil supplies at a time when they’re needed as much as possible.” (President Obama, Cushing, OK March 22, 2012)


As Bodenstein et al. establish, “positive U.S. investment shocks, U.S. and foreign oil supply shocks, U.S. and foreign oil intensity shocks,


73 Bernanke, op cit.

74 Crooks, Ed. “LNG plant to be first in U.S. for 40 years,” Financial Times, April 17, 2012.

75 Bernanke, op cit.