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## Oil and the Economy

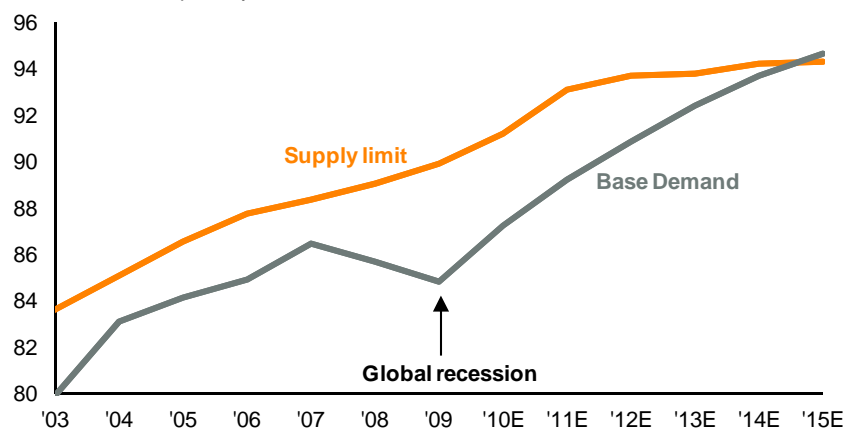
Recent tensions in the Middle East have caused crude oil prices to move as much as 30% higher in recent weeks, from roughly \$80 at the beginning of the year to roughly \$100 at the end of February. Market participants will be monitoring further developments closely, as oil prices can have a significant impact on U.S. and global growth. The following discussion will examine several key dynamics related to oil, including drivers of oil prices, the economic impact of higher oil prices, as well as ways for investors to prepare their investment portfolios to address both higher and lower oil prices.

### The oil markets: Supply and demand

Like any commodity, the forces of supply and demand play a central role in price movements over time. As exemplified by the 1973-1974 OPEC oil embargo (and to a lesser extent in the aftermath of Hurricane Katrina), any disruption in the supply-demand dynamic, however temporary, can send prices sharply higher. Even anticipation of a future supply disruption can cause futures prices to climb, having serious implications for both investors and the global economy. Conversely, as shown in Chart 1 below, a decline in demand for oil during the global recession in 2008 and 2009 resulted in an abundance of additional supply and a collapse in oil prices from \$146 in July 2008 to \$30 in December of that year. Another important point illustrated in the chart is the gap between the Supply Limit and Base Demand, as this represents spare capacity, which is presently estimated to be roughly 5.2 million barrels per day. Based on projections from Macquarie Capital, this spare capacity could dwindle over time, as global economic growth and rising demand could eventually overtake the ability of oil producers to add enough capacity to satisfy demand.

**Chart 1: Oil Supply and Demand Dynamics**

Millions of barrels per day



Sources: Macquarie Capital, J.P. Morgan Asset Management.

**The spread between WTI & Brent: It's logistics**

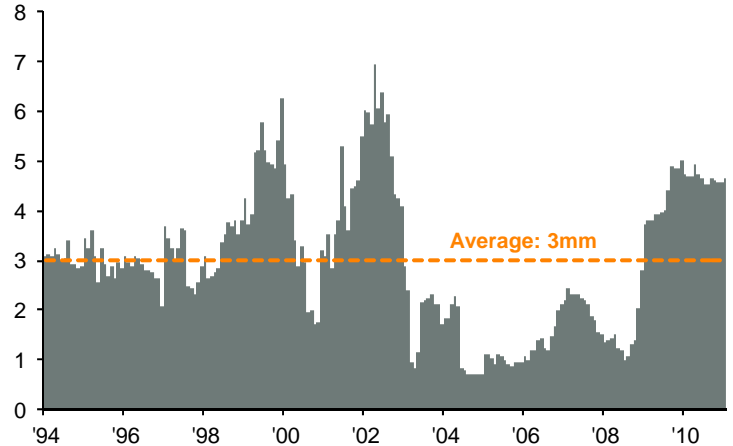
Another issue of interest has been the recent divergence in price between the two most commonly quoted types of oil: Western Texas Intermediate (WTI) and Brent Crude. First, WTI is “lighter” and “sweeter” than Brent crude, meaning that it has a lower sulfur content and a slightly higher API gravity (a measure of how heavy or light a petroleum liquid is compared to water). The rest relates to simple logistics; WTI, for example, is landlocked at the Cushing, Oklahoma, delivery point. At present, inventories there are extremely high due to an increase in domestic and Canadian production that has yet to be met with a corresponding increase in domestic demand. Brent, on the other hand, is considered to be representative of the global price of oil, suggesting that this imbalance may have been a function of increased global demand. Moreover, Brent is more easily transported than WTI; for example, Louisiana Light Sweet Crude is priced more in line with Brent as it is located near a port and can therefore access global markets. And while some may suggest that the excess supply in Cushing can be shipped the 550 miles to Port Arthur, Texas, and then distributed globally, trucking this oil costs approximately \$10 per barrel, and because there is currently not enough trucking capacity, it is not possible to arbitrage away this spread.

**Oil reserves & spare capacity: Keeping a lid on prices**

Despite a looming long-term supply/demand imbalance as noted in Chart 1, oil traders would be wise to proceed with caution, as many countries and organizations have built large strategic reserves as protection against a supply shock. For example, Charts 2 and 3 on the right look at the Organization of the Petroleum Exporting Countries (OPEC) spare capacity, as well as the Organization for Economic Cooperation and Development (OECD) and U.S. commercial oil inventories.

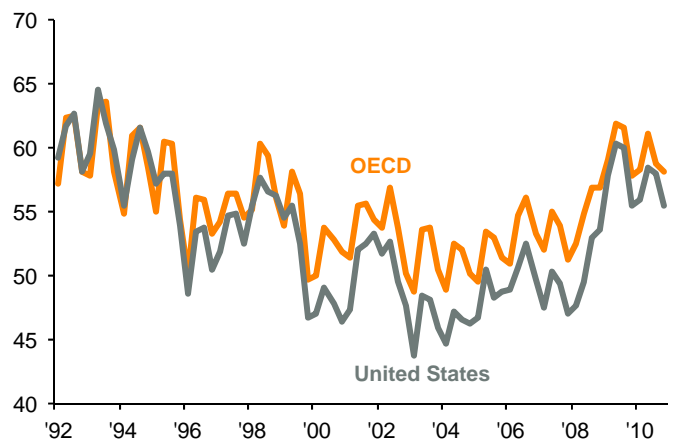
**Chart 2: OPEC Spare Capacity – Crude Oil**

Millions of barrels per day



**Chart 3: Commercial Oil Inventories**

Days of consumption



Sources: EIA, J.P. Morgan Asset Management.

OECD and U.S. reserves remain on the high end of where they have been for the last decade, and the International Energy Agency (IEA) currently claims to have around 90 days of demand cover. China, which has one of the largest oil reserves in the world, has also continued to build its strategic stock of oil. Back at home, the U.S. Strategic Oil Reserve, according to the U.S. Department of Energy, is the world’s largest emergency oil supply, and is filled to capacity at 727 million barrels. While the President can make a decision to draw on this supply if deemed necessary, this has only happened twice, once during Operation Desert Storm (1991) and once during Hurricane Katrina (2005).

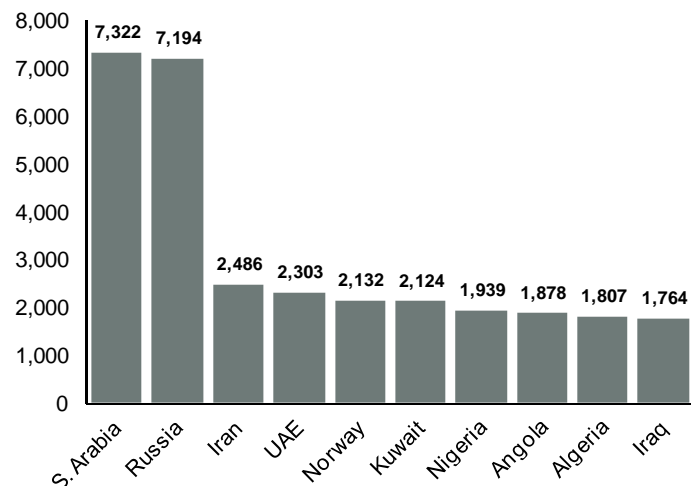
Given the magnitude of oil reserves, investors should not underestimate the ability of certain authorities to drive the price of oil down by increasing production or releasing additional supply into the marketplace if they deem it appropriate.

### Oil and the Middle East

When considering the supply and demand dynamics of the global marketplace for crude oil, the Middle East is the elephant in the room. Chart 4 below looks at the top 10 oil exporting nations in 2009, five of which are located in the Middle East.

**Chart 4: Top 10 Oil Exporters – 2009**

Millions of barrels per day



Sources: EIA, J.P. Morgan Asset Management.

The largest exporter in 2009, Saudi Arabia, is currently in a tricky situation. While they have not yet been faced with civilian protests, recent turmoil in surrounding nations has pushed the price of oil higher. While on the surface this seems like a “positive,” given that they are the largest oil exporter in the world, high oil prices may eventually begin to threaten their market share if consumers decide to pursue alternative sources of energy. Given that the Saudi Arabian economy primarily relies on oil as a driver of growth, a move away from oil consumption could threaten the economic stability of the country. As anecdotal evidence of this,

Deutsche Bank has noted that by next year, more than 130 different hybrid and electric vehicles will be on the market, up from just 12 in 2008<sup>1</sup>.

Developments like this should be cause for concern for large oil producing nations, as higher oil prices can lead to demand destruction, and act as a catalyst for innovation in alternative energy solutions. In short, it may be counter to Saudi Arabia’s interests to see oil prices rise too high or stay there for too long, and investors shouldn’t underestimate the propensity or ability of the Saudis, OPEC or the IAE, to push prices down.

### Unrest in the Middle East and higher oil

At the root of oil’s surge has been unrest in the Middle East-North Africa (MENA) region, as oil buyers have bid up oil contracts on fears over even greater supply disruptions resulting from spreading protests. While it is impossible to predict what will happen next in the Middle East (or with oil prices), we believe that understanding the basic geopolitical dynamics at play in the region can be instructive. Stated simply, the failure of “oil richness” to trickle down to the citizenry in the form of jobs, wealth and opportunity has led to massive income inequality and a groundswell of anger towards the respective governments in the affected countries. The breaking point came in mid-December, when a Tunisian street vendor set himself ablaze in protest of the confiscation of his merchandise, enraging the public and inciting protests in Tunisia that have since spread to Egypt, Bahrain, Libya, Algeria, Jordan, Sudan, Yemen and most recently, Oman.

While thus far the result has been only a modest oil shock from a supply/demand perspective, the output of these countries is by no means inconsequential. According to work from the J.P. Morgan Private Bank, a shutdown in Libya and Algeria could reduce global spare capacity to 2 million barrels per day, a level similar to the 1990-1991 Gulf War when oil prices rose 140% (prompting the U.S. to tap its Strategic Petroleum Reserve).

<sup>1</sup> Auto-Parts Stores Watch New Cars Fly By.” WSJ page C1. 3/1/11.

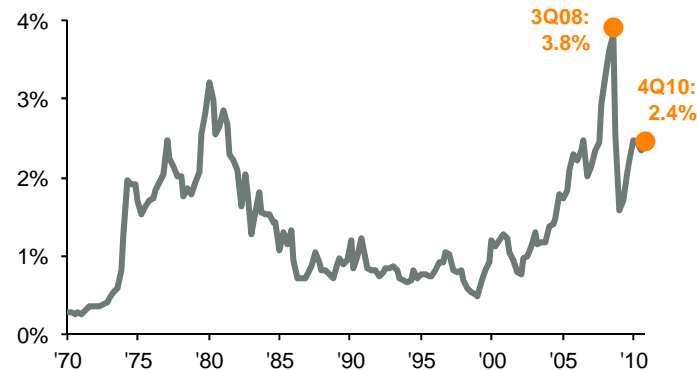
**As such, the key message here should be simple: if the type of unrest we've seen in the smaller oil producing nations were to spill over into some of the larger oil producing nations (Saudi Arabia or Iran are of particular concern), the impact on oil markets could overwhelm the global economic recovery.**

**Oil and the U.S. economy: A tax on the consumer**

It should not come as a shock that so many are concerned with the recent rise in oil prices, as four out of the last six recessions have been preceded by a spike in oil. While this doesn't necessarily imply causality (i.e. many would agree that housing and credit were bigger factors in the 2008-2009 recession than was the rise in oil prices), it is nevertheless a troubling statistic.

The primary transmission mechanism by which higher oil prices impact the U.S. economy is through gasoline prices; although U.S. consumers pay substantially lower prices for gasoline than our friends in Europe (where taxes are much higher on gas), increased gas prices eat into the amount of disposable income that American consumers have left to spend on other goods. Therefore, it can be said that higher gas prices act like a "tax" on the U.S. economy. Chart 5 below examines one way of quantifying this drag by illustrating the total value of imported petroleum as a percentage of U.S. real GDP. When oil prices spiked to \$146 in 2008, oil imports rose to 3.8% of GDP, before falling to under 2% of GDP as the recession took hold of the U.S. economy.

**Chart 5: Economic Drag of Oil Prices**  
U.S. petroleum imports as a % of GDP



Sources: BEA, J.P. Morgan Asset Management.

Assuming \$95 per barrel oil prices, this ratio hovers close to 3% of GDP, a significant economic speed bump, but not likely enough to derail the recovery. This is likely something that economists will be watching closely in the coming months.

In addition, proprietary econometric analysis that looks at the impact of higher oil prices on key economic indicators has found, for example, that a 10% increase in stock prices (which is obviously a benefit to confidence) would be fully negated by a 10% year-over-year increase in the price of a barrel of oil. Being that consumers tend to spend based as much on the way they feel as what they can afford, higher gas prices could be enough to cause an already cautious consumer to retrench, resulting in slower growth, lower profits and muted investment returns.

In terms of quantifying the extent to which higher gasoline prices can impact consumption, consider that Americans used an average of 378 million gallons of gasoline each day in 2009, according to the EIA. With about 305 million people in the U.S., statistically, each person consumed an average of more than one gallon of gas each day, and based on an average price of \$2.40 per gallon in 2009, Americans spent nearly \$908 million dollars each day on gasoline. If, for illustrative purposes, gas were to rise to \$3.00 per gallon (and assuming constant demand), Americans would have spent \$1.13 billion on gas each day, essentially causing an additional \$226 million per day to be spent on gasoline rather than on other goods and services.

This problem is particularly insidious in that it disproportionately affects lower-income American households. According to the Bureau of Labor Statistics (BLS), energy makes up roughly 9.1% of the average consumer's spending. But not every household is average; for example, a millionaire probably spends a much smaller percentage of his or her disposable income on energy when compared to a household earning a lower income.

**Is higher oil really inflationary?**

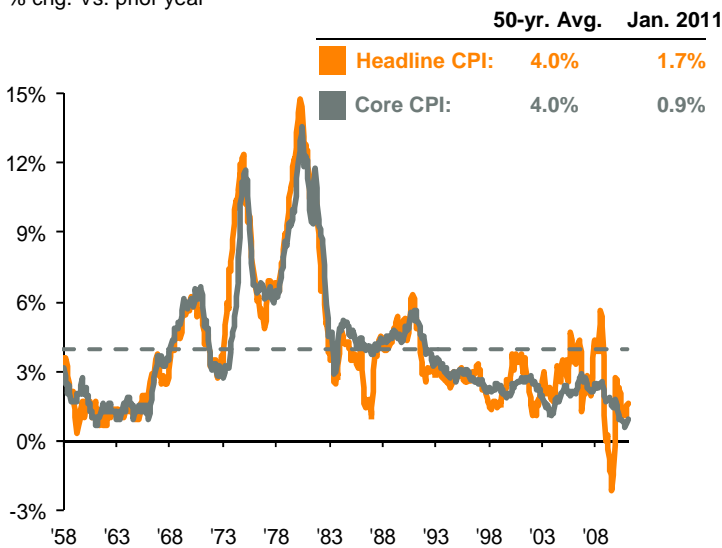
While we can't prove it, we suspect that the most "known" price of any particular good or service in America is the price of a gallon of gasoline. Maybe milk or bread is the second. As

such, when oil and gas prices rise, the tendency is for American consumers to believe there is an “inflation problem”.

Perhaps the most commonly used inflation metric in the United States is the Consumer Price Index (CPI), which is calculated by the BLS. The Core CPI Index, which excludes volatile food and energy prices in order to get a better sense of the underlying direction of overall inflation, has been very low, but positive, in recent years. Chart 6 examines both current inflation levels, as well as the various components of the CPI Index.

**Chart 6: CPI and Core CPI**

% chg. Vs. prior year



As mentioned previously, according to the BLS, energy makes up roughly 9.1% of the average consumer’s spending, while food is roughly 13.7% and housing is the largest, at 42%. But here is where the plot twist comes in; though higher food and energy (commodity) costs show up in the near term as “inflation” in the Headline CPI Index and make for higher costs to consumers at the pump, the intermediate-to-longer-term impact of sustained high gas prices is actually more deflationary than inflationary. In other words, if American consumers are suddenly paying \$0.50 more per gallon of gas today than they were one year ago, it means they have less money available to them to spend on other things, like going to the movies, buying clothes or a flat

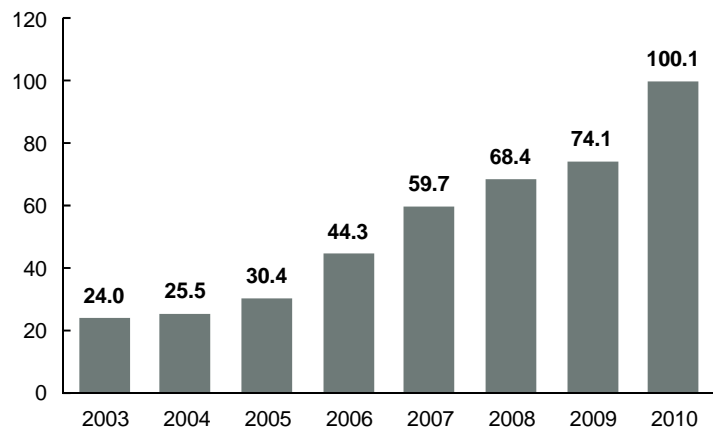
screen TV. As a result, higher oil prices act like a giant speed bump for the economy, and ultimately result in the opposite of inflation by reducing demand for finished goods and services. In our view, this is the real danger to the U.S. economy in higher oil prices, rather than inflation.

**The role of oil as an investment**

Finally, investment has played a role in driving oil prices higher. There are two types of investors when it comes to oil: those who are interested in an investment in oil as part of a long-term asset allocation strategy, and those who take a shorter-term view and are looking to profit from price fluctuations. Along with the general proliferation of alternative investment vehicles and categories, investment in oil has increased significantly in recent years, as evidenced by the average 23.4% annual increase in Brent Crude Futures trading on the Intercontinental Exchange (ICE) since 2003, as shown below:

**Chart 7: Brent Crude Futures Contract Volume**

Annual data, millions



A 2006 report from the U.S. Senate estimated that non-commercial investment in oil contracts has added as much as \$20 to \$25 per barrel, which has created an incentive for oil companies to purchase more oil and place it in storage if the futures price suggests that it will be worth more down the road. While increases in oil prices due to investment may be seen as “artificial,” as they are not a function of a supply/demand imbalance in the traditional sense, it is something that needs to be considered when evaluating oil prices.

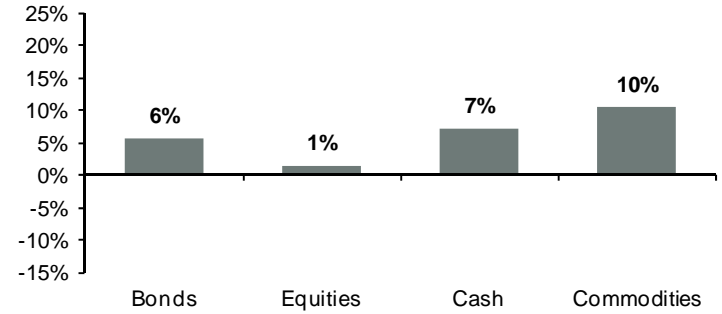
**What is an investor to do?**

When asked which investments typically perform well in inflationary environments, most people would be quick to respond that commodities and equities are the best investments. However, taking this analysis one step further, the charts on the right illustrate four different inflation scenarios based on historical data since 1971. The four scenarios, shown in Charts 8 - 11, look at investment returns in key asset classes in both low and high inflation environments (high and low are defined as “above” or “below” median inflation levels) given either a rising or falling rate of inflation.

Today, inflation remains very low, but is gradually rising as the economy continues to recover. For investors, the “Low and Rising Inflation” chart on the bottom right best describes our current environment. As indicated in the chart’s subtitle, this scenario of low but rising inflation has occurred in seven years since 1971, per our research. Instructively, commodities and equities seem to have been the best performers in those environments - again, food for thought for investors thinking through this complex situation.

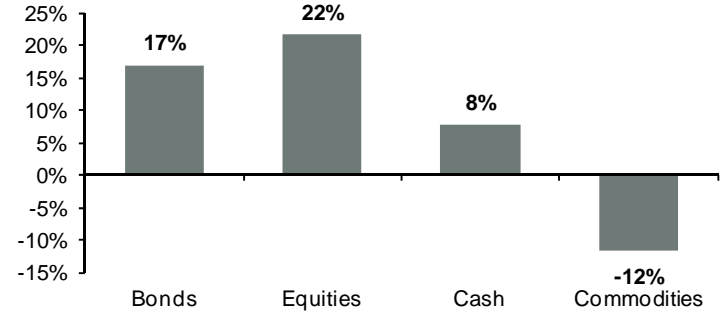
**Chart 8: High and Rising Inflation**

Occurred 13 times since 1971



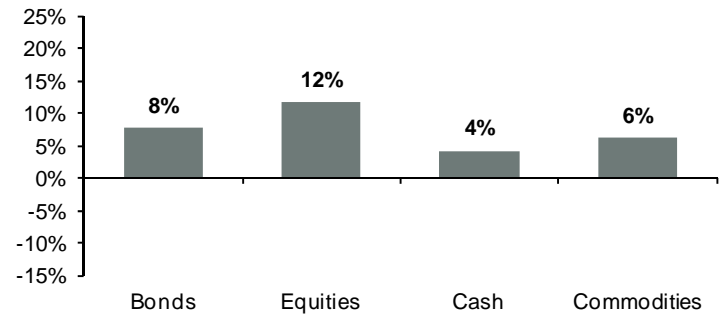
**Chart 9: High and Falling Inflation**

Occurred 7 times since 1971



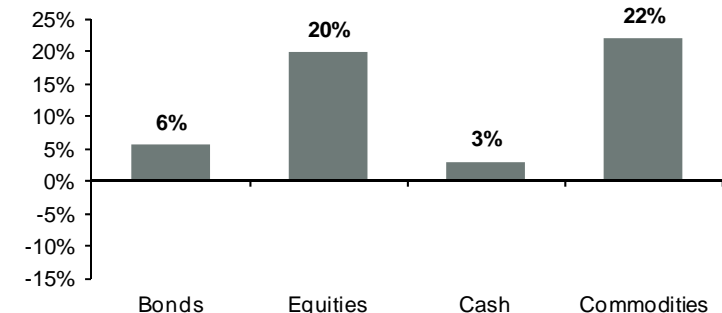
**Chart 10: Low and Falling Inflation**

Occurred 13 times since 1971



**Chart 11: Low and Rising Inflation**

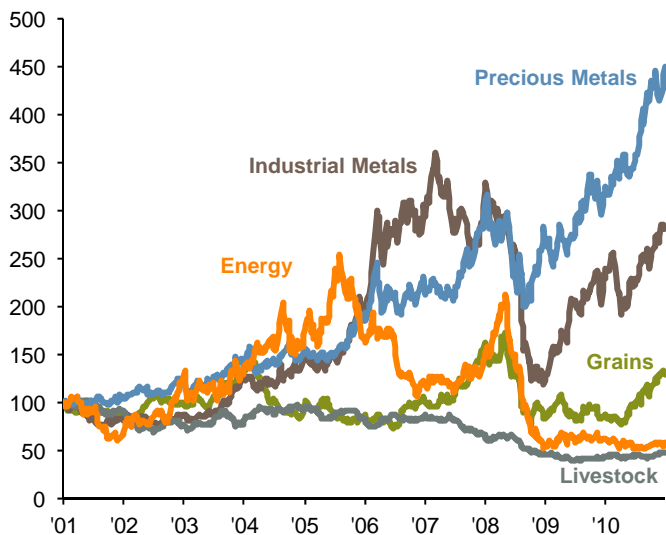
Occurred 7 times since 1971



Sources for charts: BLS, Barclays Capital, Robert Shiller, Federal Reserve, Strategas/Ibbotson, Standard & Poor’s, FactSet, J.P. Morgan Asset Management.

While we are firm believers in a well-diversified portfolio, which includes an allocation to commodities, we are often troubled in hearing investors discuss commodities from what we believe is an all-too-narrow approach. Some investors are “gold bugs,” while some like oil. In fact, much like they are with respect to equities, we believe that investors should be well-diversified in their approach to investing in commodities in order to weather the volatility that is inherent in this asset class, and highlighted in the chart below.

**Chart 12: Commodity Prices**  
Weekly index prices rebased to 100



Sources: Dow Jones/UBS, FactSet, J.P. Morgan Asset Management.

As you can see, these declines also don't always come at the exact same time, which is why we strongly believe that investors should seek to utilize professional management when it comes to this important, but sometimes volatile and misunderstood, asset class.

### Investment implications

As the situation in the Middle East continues to develop, and inflation concerns arise both here and abroad, it is important to understand the drivers of oil prices, and how they can impact both the economy and markets. Given that the future price of oil is uncertain, investors should position their portfolios in a way that allows them to deal with the volatility that is inherent in oil prices. Rising oil prices are a double-edged sword; on the one hand, they force the consumer to spend more of their hard-earned money on imported petroleum products, rather than on domestic goods and services that would contribute to U.S. GDP growth. On the other hand, higher oil prices can stimulate investment in exploration and alternative energies in an effort to fight these rising oil prices, thereby bringing prices back down and removing them as an obstacle to economic growth. As noted earlier, the virtual explosion in the offering of hybrid and electric vehicles on the U.S. market in the three years since the 2008 oil price spike is a prime example.

Nevertheless, high oil prices will generally act to dampen both economic growth and demand for oil products, which can result in demand destruction. If this scenario were to play out, a decline in prices could set the stage for a rally in the stock market, pushing long-term rates higher due to improved prospects for future economic growth. However, investors should remain vigilant in their asset allocation in an effort to protect their portfolios in the event of escalating tensions in the MENA region and another spike in crude.

Since the future price of oil is impossible to predict with 100% accuracy, we believe investors will be best served by investing in a balanced and diversified portfolio, with some investments that will benefit from higher oil prices and a falling dollar, like commodities and international equities, and some that will outperform if oil prices fall, like U.S. stocks. In the case of commodities, we believe they can play an important role in a portfolio, but given the volatile nature of this asset class, active management is the preferred vehicle for gaining exposure. The speed of a rise in oil prices can be more damaging than the level they actually rise to, and for this reason, it is important to build a portfolio that can perform in a variety of different economic environments.

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