A CommodityPoint Whitepaper

Global Oil Markets – Increasing Uncertainty and Risk

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Executive Summary

Oil markets are in a state of tenuous balance. On one side of the fulcrum is a global supply that is distributed amongst several regions around the world, in which many of the component countries (under which lay huge reserves and produce much of the world's supply of crude) are undergoing significant political upheaval, or are trending toward increasing nationalism and are attempting to exert greater control over their domestic energy resources. On the other side sits a global demand outlook that is increasingly blurred by economic uncertainties in the major consuming countries and the European Union. Attempting to forecast oscillations in that balance and the subsequent impact on prices is exceedingly difficult on its own; however, when the balance is constantly buffeted by influences outside of traditional supply and demand modeling, forecasting price movements becomes little more than a gamble.

In a market faced with potential losses of production from an increasingly tense Middle East and difficult business conditions in several South American countries and Russia, traders have a difficult task anticipating the magnitude of any potential supply shock as the denominator of the balance equation is equally uncertain. With reduced demand from the US, Europe and a potential slowing of the fuel-hungry Chinese economy, the outlook for near-term demand is only slightly clearer than the 10 year outlook. Additionally, the impact of a weak and wandering dollar versus global currencies and the influences on near-term prices by speculative traders who value volatility makes it exceedingly difficult to react appropriately without a full and complete picture of exposures and positions in an oil-heavy portfolio.

Achieving that full and complete picture requires a sophisticated trading solution that can not only capture, manage and value trades and hedges positions; but can also model the entirety of the physical operations of oil market participants – from source to market, including trading, refining, terminal operations and distribution – providing a clear view of physical positions and valuing all appropriate risk exposures. Utilizing a system such as Commodity XL for Oil™ from Triple Point Technology enables traders to gain additional control over their risks by providing a holistic view of their business, allowing them to react more quickly and more appropriately to both any large-scale market shocks and the daily volatilities common to a market which is often clouded in uncertainty.
Introduction

The global oil markets are unique in their scope and scale, and therefore their complexity, as compared to other energy commodities. Crude oil is primary feedstock for motor fuels, chemicals and plastics in all markets around the globe, with more than approximately 90 million barrels consumed every day. As a commodity, it is readily transportable from source to destination, whether by pipeline, truck, train, barge, or ocean going vessels. Natural gas and electricity are bound to specific infrastructures that cannot easily pass geographic barriers so trading remains regionalized to a large extent (though growth in LNG markets could ultimately create a truly global market in natural gas in the future). Coal, while reasonably easy to transport, is largely a primary fuel source in power generation, does not have the breadth of utility found in oil and isn't as exposed to the plethora of market influences that impact global and regional crude oil prices and contribute to that commodity's volatility.

Given its critical role in the global economy, crude and crude products are the most widely traded commodities both physically and financially on exchanges around the world. Crude oil futures have also become a popular instrument for individual and institutional trading via exchange traded funds (ETFs).

As the vast majority of global trade in crude is dominated in US dollars, foreign exchange rates play a key role in price formation both in the spot and forward markets for both the physical commodity and its derivative financial instruments.

Given the dynamics of this vast market, price clarity is hard to come by for the producers, refiners,
merchants and traders whose commercial operations are intertwined with oil and its products. While the markets are clearly impacted by the "typical" supply and demand balances, within either side of that balance, geo-political risk is rampant and the future of price movements is anything other than certain.

Geo-Political Risk in Crude Supply

Much of the crude produced in the world is from regions that have recently seen significant levels of political unrest, particularly countries in the Middle East. The "Arab Spring" uprising in Libya and Egypt has directly resulted in loss of production. Production infrastructures were impacted by the loss of key operations personnel who fled the countries, and also by producing fields that were shut in. In Libya, crude output fell more than 95%, with the loss of approximately 1.5 MMbbl/day for a period of 2 months. While Libyan production has recovered recently to pre-war levels, the political movement that fostered the uprisings threatens to spread to other key oil producing countries in the region. In Iran, the second largest producer in the OPEC cartel with potential production of 3 MMbbl/day, economic sanctions brought to bear by the international community due to the country's suspected nuclear weapons development program have impacted the country's ability to export crude and import spare parts needed to maintain production facilities. Though it's difficult to fully measure the impacts of these sanctions, most experts agree that the country's production and exports have fallen sharply within the last year. While Saudi Arabia has made up shortfalls in OPEC's production, it's unclear how long it will continue to do so. Given the increasing tensions in the region, a potential shut-down of the Strait of Hormuz, the busiest crude shipping route in the world, could occur and interrupt up to 17 MMbbl/day of supply, with some experts predicting a corresponding price shock of up to $60 incremental per barrel.

Outside of the Middle East, political developments in other important supply regions are creating additional market uncertainty. Political uncertainty in Argentina (which has recently nationalized some foreign investments related to energy production) may limit continuing investment in production infrastructure, and threaten some portion of the country's 700,000 bbl/day of production. Russia, with production of more than 10 MMbbl/day and second only to Saudi Arabia as a global oil producer, has become a challenging business environment for Western countries attempting to partner with Russian oil and gas producers. Though several Western companies, including BP, ConocoPhillips and ExxonMobil have developed joint ventures with leading Russia producers, some of these arrangements have proven to be problematic and have dissolved into dispute, with a loss of foreign investment and expertise necessary to maintain and grow production. Market observers believe that without such help,
Russia will miss its planning targets of almost 11 MMbbl/day of crude and 85 bcf/day of natural gas production by 2030.

In the US, the world's third largest oil producer, production has increased in the last several years primarily due to newly developed technologies enabling production from tight sands and shale deposits, such as the Bakken Shale underlying North Dakota and the Eagle Ford Shale deposit in southwest Texas. Despite this increased production, there is much disagreement over the long term potential of these newly exploitable reserves, with estimates ranging from a low of 700,000 bbls/day in 2035 to a high of 2.8 MMbbls/day, a potential swing of more than 2 MMbbls/day. Recently, the International Energy Agency (IEA) in their 2012 World Energy Outlook report stated that with the addition of reserves from shales and tight sands, "By around 2020, the United States is projected to become the largest global oil producer...The result is a continued fall in U.S. oil imports to the extent that North America becomes a net oil exporter around 2030," with US total production peaking at 11.1 MMbbls/day in 2020, an increase of 3 MMbbls/day over 2011 production figures. Despite this projection, a number of unknowns continue to cloud the outlook for US production, including an uncertain economic growth picture and potential regulations limiting development of reserves on public lands and in deep offshore waters.

Canada, the world's sixth largest oil producer, has seen dramatic growth in production over the last several years that is driven primarily by the development of oil sands production, increasing from slightly less than 2 MMbbl/day in 2000 to 2.8 MMbbl/day in 2011. Though environmental concerns threaten to limit expansion of production due to high water usage and high levels of CO2 production generated during production, oil sands contributes to 95% of the country's total estimated oil reserves of 175 billion barrels, third in the world in total reserves behind Venezuela and Saudi Arabia.

**Demand Side Uncertainty**

While geopolitical developments and technical uncertainties create significant doubt as to the levels of future global supplies of crude oil and liquids, forecasting market demand is no less daunting. According to the IEA, the global economic slowdown since 2010 has significantly reduced the rate of growth in global crude demand, falling from an annualized growth rate of 3.2% in 2010 to .9% in 2012.
In Europe, the Euro crisis that has gripped the European markets for the last couple of years has significantly impacted economic growth in the region and has reduced demand for crude and crude products to levels not seen since 1987. Full year demand in 2011 fell below 13.5 MMbbl/day, some 1.5 MMbbl/day lower than the 10 year high set in 2006, and more than 2.1 MMbbl/day below the all-time high for the region set in 1979 when daily consumption reached 15.6 MMbbl/day. Should a worst case scenario arise, that being dissolution of the Euro, few analysts can reliably predict either the short or long term implications on the economic well being for the current members of the EU27, and the subsequent impact on crude demand in the region.

China, the world's second largest consumer of crude and products, has seen a significant slowing of economic growth in 2012. With factory output and exports of finished products down, the growth in the country's appetite for raw materials has also slowed. Though China's total oil consumption reached 9.8 MMbbl/day in early 2012, IEA estimates of import growth were revised downward in the latter half of 2012 and there are indications that total imports of crude and products for 2012 may ultimately be flat to 2011. Given that the country has accounted for the vast majority of the global growth in demand for crude over the last decade, a slowing Chinese economy could add significant downward pressure to prices in the coming year.

In the US, the world's single largest consumer of crude oil, a number of factors, including economic recession, have led to decreased demand for crude and crude products. In particular, decreased demand for motor fuels has driven oil consumption down to a 12 year low, currently standing at 18.8
MMbbl/day, down some two MMbbl from 2005. The huge growth in natural gas production from tight sands and shale has resulted in some transportation fuel switching from crude products to the now cheaper alternative, though the impact on crude demand hasn't yet been significant given the technological challenges associated with fueling and tanking of natural gas in motor vehicles.

**Impact of Speculators in Financial Oil Markets**

As previously mentioned, crude and crude product futures are the most widely traded exchange-based commodities, with market participants from all industry segments including producers, traders, industrial consumers, merchants, hedge funds and even individuals actively involved in the market. And, despite the slowed global economy, trading in crude futures continues to grow across many exchanges around the world. For example, the NYMEX/CME exchange has recovered from the financial crisis of 2008, and saw significant growth throughout 2012 including its busiest month to-date in 5/2012. While many crude futures trades are associated with oil traders versed in oil market fundamentals, other newer players that don't necessary possess the same depth of understanding are quickly moving in and out of the market, basing their trading decisions almost entirely on price momentum and volatility.

Despite much research and expert opinion into what impact such speculative crude futures trading may have on physical crude prices and volatility, there is no real consensus to indicate that there exists such a sustained and quantifiable effect. Nonetheless, given the influx of new traders into this market, many who are not versed in the fundamentals of the underlying physical products, it is possible that volatility could be exacerbated through high volume trading (the "speculators" effect), especially when there are high levels of market uncertainty.
Managing Risk in an Uncertain Market

The US Energy Information Agency (EIA) regularly monitors the US and global energy markets and is tasked with preparing periodic independent forecasts of prices for various energy commodities. Its most recent price outlook for oil reflects the tremendous uncertainty concerning global economic events and the impact on prices going forward, with forecast prices in 2035 ranging from a high of $200/bbl to a low price $50/bbl.

Given the potential for volumetric shocks on both the supply and demand side of this market, combined with the potential for increased volatility, oil market traders are increasingly exposed. In order to better manage this exposure, these companies require a real-time, holistic view of their businesses, one that combines their physical and financial exposures alongside other enterprise risks including operational, credit and regulatory risks.

A modern, full-featured commodity trading and risk management (CTRM) system can provide not only the metrics required to measure these risks, but also...
provide better insights into trading strategies. These systems can improve hedging (cross commodity or FX) and rapidly identify arbitrage opportunities across multiple markets and amongst products.

Utilizing a modern crude-capable CTRM system provides additional benefit for physical oil traders and merchants, from improved inventory management (including maximizing the value of products via blending or regrading), through optimization of product movements and asset operations.

Without the capabilities offered by a modern CTRM system, oil traders and merchants will not only not realize the benefit of operational improvements, they will be less likely to be able to react quickly enough, and in an appropriately measured manner, should the global crude markets make a sudden lurching movement.

Triple Point’s Commodity XL for Oil is one such modern CTRM system. CommodityPoint has tracked and been impressed with Commodity XL’s full functional footprint and its market success. Some of the largest and most sophisticated oil companies in the world, including Suncor, Petrobras, CNOOC, Reliance, Tesoro, and Valero have opted to rely on Commodity XL to navigate the volatile and complex waters ahead.
About CommodityPoint

CommodityPoint is the industry leader in providing Commodity Trading & Risk Management (CTRM) research, analysis and advisory services. Our services bring insight into business issues, trends, processes and technology, to utilities, energy companies, banks, brokers, funds, investors and vendors that enhance their competitive position and support critical business decisions around the wholesale commodity trading markets. Our team provides expert analysis of market trends and, in particular, the technologies and applications supporting those that participate in regional or global commodity markets.

With offices in Europe and the US, and backed by an experienced research team, our organization provides an unparalleled view of the marketplace. CommodityPoint is a division of leading energy and utilities analyst and consulting firm, UtiliPoint International, Inc.

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