

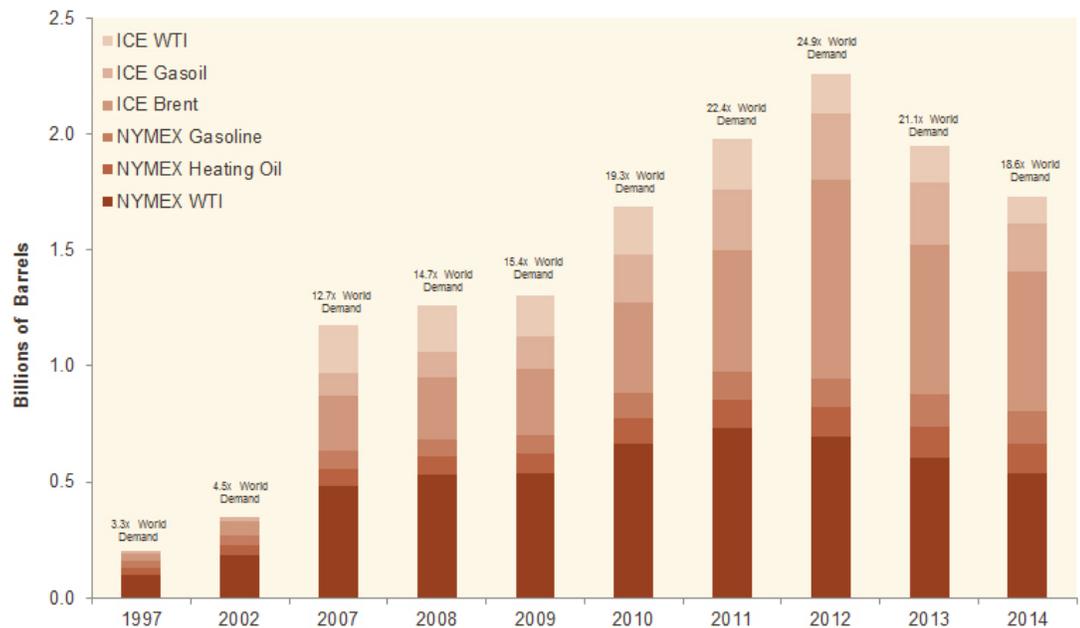


2015 Oil Outlook

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After trading in a range from \$90-\$110 per barrel from late 2010 through mid-2014, oil (Brent basis) has declined precipitously to a recent low of \$45 per barrel, down almost 60% from a late June price of \$112 per barrel. Supply has grown slightly more than expected due to U.S. shale oil production and demand has grown slightly less than expected due to economic weakness in Europe, slowing growth in China and substitution of coal for oil in Japan’s electric generation market. However, these changes alone cannot explain the plunge in crude prices. Discord among OPEC countries, a stronger dollar and extreme positioning by speculators in the “paper” market also contributed to the sell-off. Average daily trading volume in the futures market is almost 19x the volume in the physical market.

FIGURE 1: AVERAGE DAILY TRADING VOLUME OF KEY ENERGY FUTURES



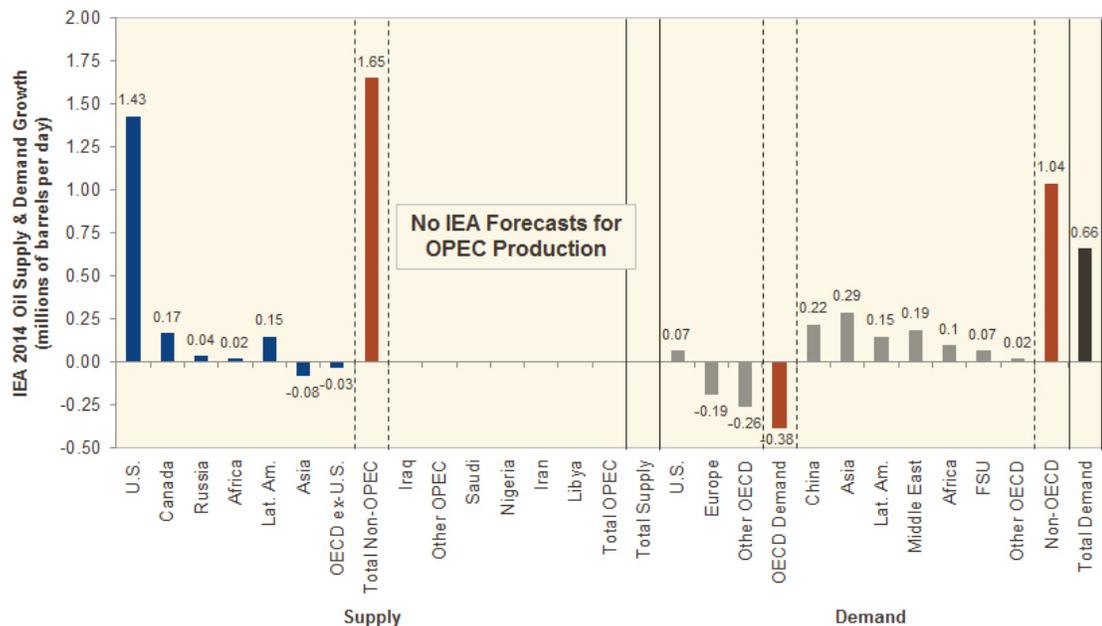
Source: Cornerstone Analytics; Epoch Investment Partners, Inc.; December 2014

Like the price of all commodities, the price of oil is determined by supply and demand. Demand depends on global growth, which has been sluggish in the developed economies following the Global Financial Crisis. As China's economic growth has slowed and as it attempts to shift its engine of growth from investment to consumption, its demand for oil and industrial commodities like copper and iron ore has slowed causing a slowdown in developing country economies. Demand in China and other developing countries is still growing, just not as fast as expected. Supply has been driven by U.S. shale oil production, which has grown by 3.0 million barrels per day since 2011.

Supply and demand in the physical oil market are not wildly out of balance. It is estimated that currently there is between 1.0 million and 2.0 million barrels per day of excess oil supply in a 93.0 million barrel per day market (Figure 2). This imbalance was caused by the return of Libyan production during the summer after having been interrupted by civil unrest, the continued increase in U.S. shale production and the unwillingness of Saudi Arabia, which had increased its production following the loss of production from Libya and Iran to reduce its output to prior levels. While OPEC theoretical spare capacity is about 4.0 million barrels per day, with almost three quarters of that in Saudi Arabia, effective OPEC spare capacity is likely closer to 3.0 million barrels per day (Figure 3). This is completely different from an over-supplied market such as the mid-1980s when OPEC spare capacity was 15 million barrels per day in an approximately 60 million barrel per day market.

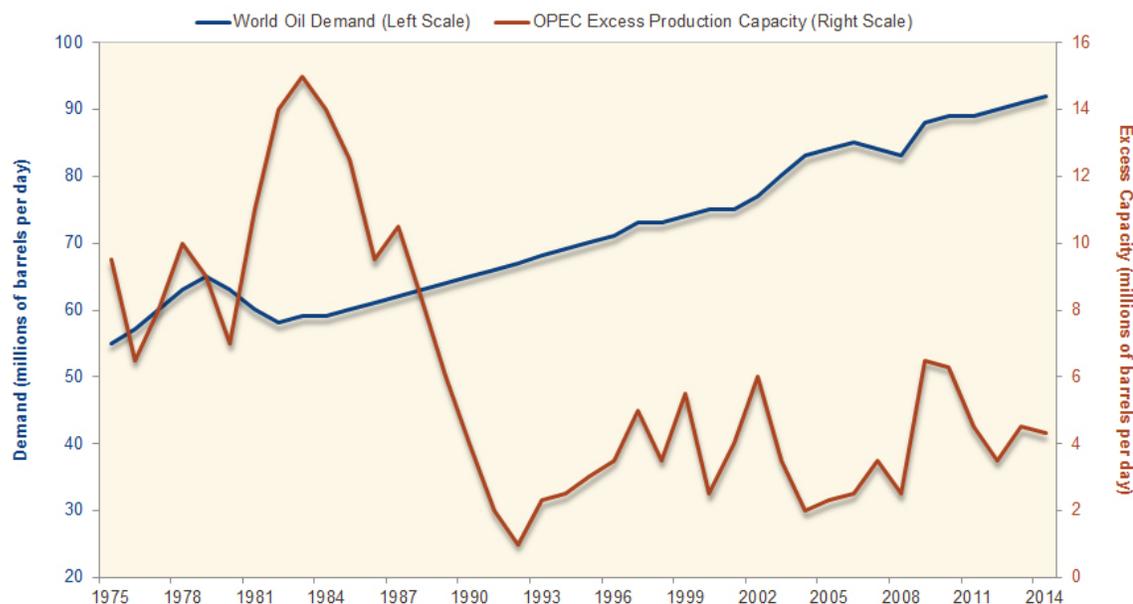
FIGURE 2: THE IEA'S FORECAST FOR 2014 GROWTH

Non-OPEC supply is expected to outpace demand by almost 1Mbpd, driven by higher U.S. production



Source: IEA, Bernstein Analysis; 2014

FIGURE 3: OPEC SPARE CAPACITY VS GLOBAL DEMAND



Source: Simmons & Company, 'Oil Macro: Oil Supply & Demand Balances,' December 2014

A recent survey of 476 global exploration and production companies by Cowen and Company found that the companies planned to cut capital expenditures by 17% in 2015, with North American capital spending down 22% and international capital spending down 17%. However, the survey was conducted when oil was \$70 per barrel. At \$60, North American capital spending would drop 32%, while international spending would drop 20%. Because of the high decline rates of U.S. shale production, the sharp projected drop in North American capital spending will likely slow U.S. shale production growth, but it will take time.

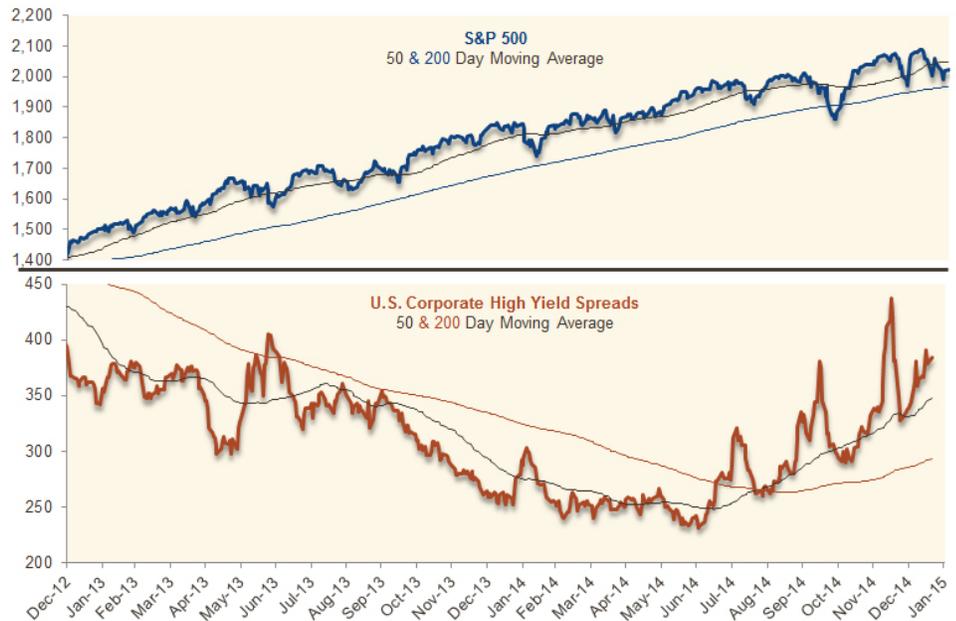
According to Simmons & Company, it will take a 500 rig count decline to slow U.S. shale oil production growth to 900,000 barrels per day in 2015. However, by year end the U.S. production growth will be approaching 600,000 barrels per day. In 2016, Simmons expects U.S. production growth of just 350,000 barrels per day (Figure 4). The rapid increase in high yield spreads will help to force a slowdown in production, as energy has become one of the largest issuers of high yield bonds (Figure 5). Slowing U.S. production growth combined with a modest pick-up in demand from lower prices should help stabilize prices, but it will take a formal production cut by OPEC, possibly at its June 2015 meeting, to boost oil to its new, lower equilibrium price. Brent oil forward prices for 2017 and 2018 are currently around \$70 per barrel. We expect a lower, more volatile oil price band due to sluggish global economic growth and the ability of U.S. shale producers to respond relatively quickly to future price hikes.

FIGURE 4: AVERAGE ANNUAL PRODUCTION (THOUSANDS OF BARRELS PER DAY)

Year	Average	Absolute Change Y/Y	Percent Change Y/Y
2011	5,643		
2012	6,496	853	15%
2013	7,440	944	15%
2014	8,576	1,136	15%
2015	9,490	913	11%
2016	9,844	354	4%
2017	10,132	288	3%
2018	10,318	186	2%

Source: Simmons & Company, 'Oil Macro: Oil Supply & Demand Balances,' December 2014

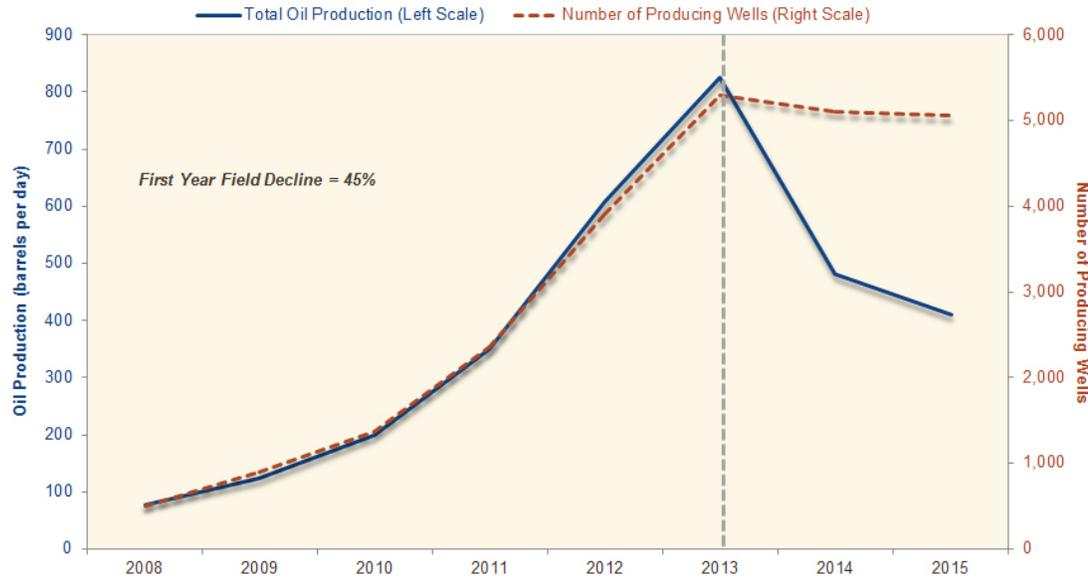
FIGURE 5: SPREADS HAVE OUR ATTENTION



Source: Strategas Technical Analysis; 2015

U.S. shale production is subject to high decline rates. Unlike conventional oil reservoirs which decline 3.0%-4.0% per year, shale oil wells decline 45%-60% in the first year and an additional 20%-30% in the second year, followed by an additional 15%-20% in the third year. Shale production requires constant drilling just to keep production level. A 13D Research study of the Bakken Shale by J. David Hughes of the Post Carbon Institute found that if no new wells had been drilled after the beginning of 2013, total field production would have fallen by 45% in the first year (Figure 6). Hughes estimates that 1,470 new wells would need to be drilled each year in the Bakken to offset decline at current levels. Assuming an average cost of \$8.0 million per well, this would require \$11.8B of capital spending per year.

FIGURE 6: PRODUCTION RATE AND NUMBER OF HORIZONTAL TIGHT OIL WELLS IN THE BAKKEN PLAY PRIOR TO 2013



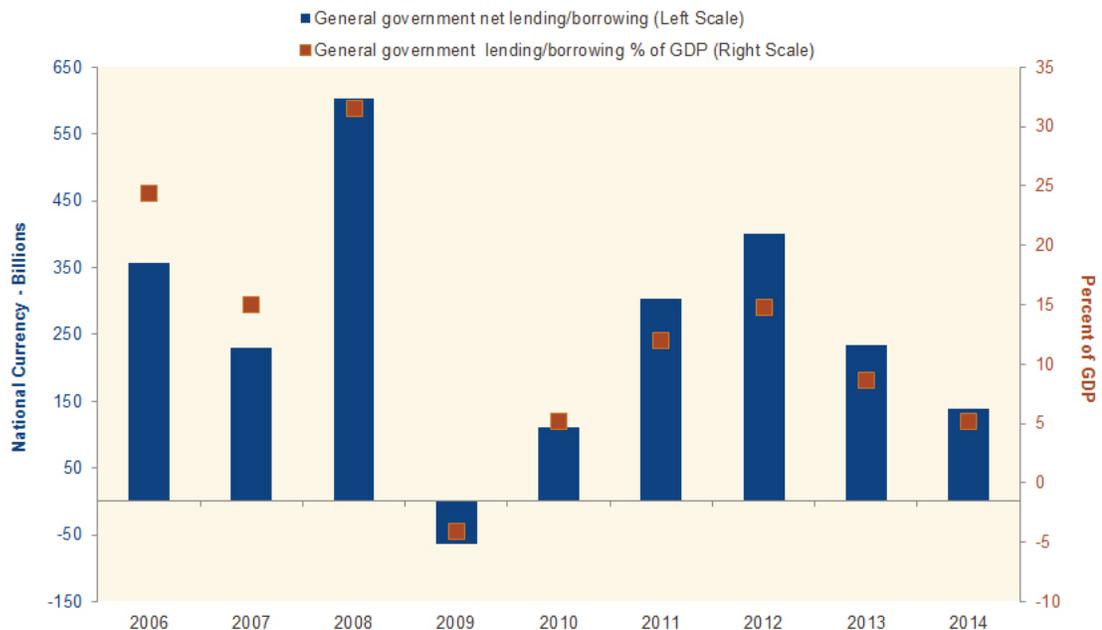
Source: David Hughes, Post Carbon Institute, *Drilling Deeper*; 2014; 13D Research

Despite its high decline rates, shale oil production is relatively flexible once production infrastructure is in place. At \$8.0 million per well, shale supply can respond relatively quickly to future price spikes. We expect this flexible source of supply to moderate future prices.

Although Saudi Arabia has the financial resources to cope with low oil prices, current prices will require it to run budget deficits in order to maintain substantial social spending needed to prevent civil unrest (Figure 7). Russia, Iran, Iraq and Venezuela all require substantially higher oil prices to achieve budgetary balance and prevent civil strife (Figure 8). Russia and Venezuela have substantial foreign debts. A default by either country could ripple through the global financial system and possibly affect global economic growth. While Libyan production has returned, it can hardly be described as a stable source of supply, as the country is on the verge of a civil war (Figure 9).

FIGURE 7: SAUDI ARABIA NET LENDING/BORROWING

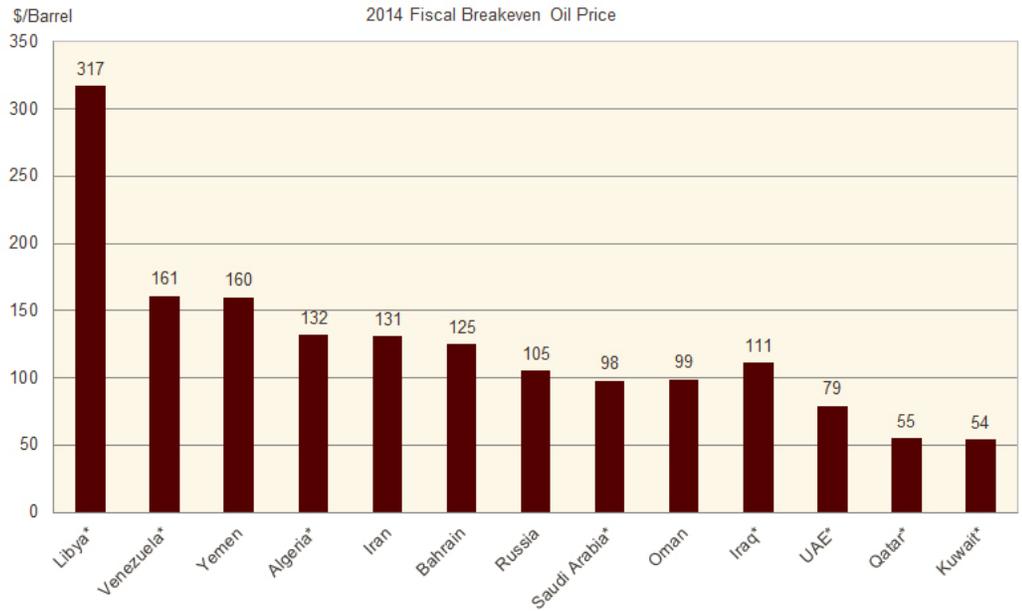
In Billions (national currency) and Percent of GDP



Source: International Monetary Fund, *World Economic Outlook Database*, October 2014

FIGURE 8: A LOWER OIL PRICE WILL LIKELY HIT COUNTRIES FACING U.S. SANCTIONS, SUCH AS IRAN OR RUSSIA, THE HARDEST

Breakeven oil prices for select countries, 2014

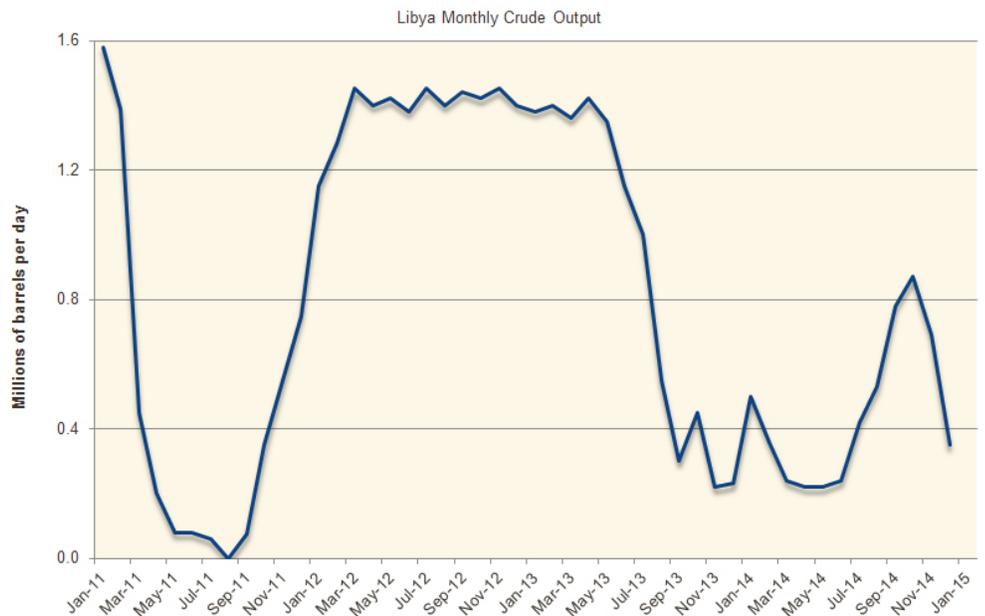


*OPEC Member

Source: MEES, IMF, Citi Research; January 2015

Assuming global economic growth remains relatively stable at current levels, the imbalance between supply and demand in the physical oil market is not substantial. Cutbacks in global capital spending led by U.S. shale producers following the recent sharp drop in crude prices and enforced by the spike in yields and spreads in the high yield bond market combined with the high shale oil decline rates should help slow U.S. production. An agreement by OPEC to reduce production, possibly at its June meeting, could also bolster prices. World oil supply is still very dependent on an increasingly

FIGURE 9: LIBYA'S MONTHLY CRUDE OUTPUT



Source: Cornerstone Analytics; December 2014

turbulent Middle East, which could be thrown deeper into chaos following the collapse in oil prices. Civil unrest in any of the major oil producing countries in the Middle East or in Venezuela could disrupt supply.

After an almost 60% fall, oil prices have likely dropped far enough to begin to cause a slowdown in supply growth, primarily in the U.S. The U.S. land rig count has dropped by 249 rigs or 13% from its October high and the capital spending intentions from the Cowen survey should be formally announced during fourth quarter earnings reports. While it will take 6-18 months to slow supply growth, the announced capital cuts should help the market to anticipate a bottom in oil prices. With average daily trading volume in the futures market almost 19x world demand and with participants still net long, further liquidation of those positions creates a temporary risk of further price weakness, making it difficult to call the bottom.

Epoch has invested in companies that we believe have strong balance sheets that can withstand low oil prices and capable managements that can take advantage of any opportunities brought about by those prices. Across the portfolios, we are generally underweight energy and may increase the weighting when we believe oil prices have bottomed.

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