

# MAKENA STRATEGY INSIGHTS – December 31, 2015

Oil: A Buy for the Long-Run Investor

Q4

PERIOD ENDING  
December 31, 2015

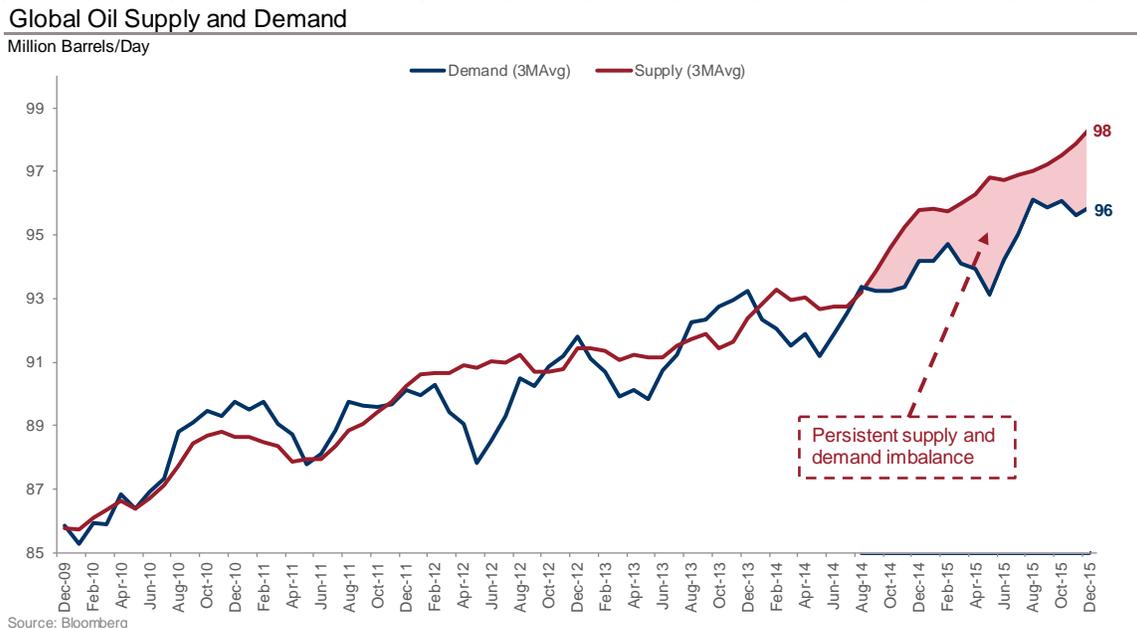
## Portfolio Strategy & Macroeconomic Outlook

### *Back in Black - Oil for the Long-Run Investor*

Cyclical sectors are a particularly attractive area for longer-term investors that can stomach near-term volatility, eyes focused on the horizon rather than the path to get there. It is no secret that oil is down approximately 50% from its recent peak in the summer of 2015. But questions abound: how low can oil go? How big is the supply “glut”? And most importantly, what do the announced capex cuts imply regarding global oil demand if oil prices are to stay in the \$30-\$40/barrel range? We carefully analyze the pros and cons for investing in oil from both the supply and demand side of the equation. While we fully recognize the inherent risks in owning such equities in the short term, we firmly believe we are not able to predict when the bottom will hit, and we will show that *oil-related equities can be extremely interesting at current levels, if the balance sheets of these companies are strong enough to survive the path through this low price environment*. In a slight departure from our usual format we will be using more charts than is our custom, as there are many variables to consider in building this argument.

### *Supply & Demand Imbalance - is 2% really a glut?*

We begin with the big picture. Figure 1 below shows the supply/demand balance for oil. Note how oil supply began to rise steadily in the summer of 2014, and oil prices, not surprisingly, fell in response. Currently, the market stands at about 1.9 million barrels/day of oversupply, which represents 102% of total global demand. The intuitive reaction that 2% is not a large amount of oversupply underscores the cost of storing oil and highlights why commodity prices in general are highly volatile.



**Figure 1: Global Supply / Demand Imbalance ~2% Of Total Market**

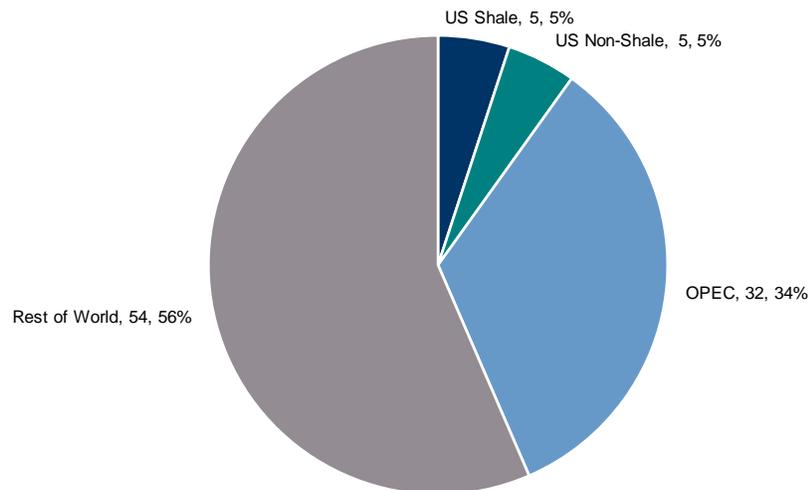
In order to fully understand the dynamics at work, we will need to look at both supply and demand separately, highlighting why the current situation is unusual, and what tail risks might be lurking in the oil markets. On balance, we will show that tail risks are on the positive side of the ledger (i.e. bullish oil), as supply is bound to decrease dramatically with the measures *already being implemented* by the oil industry. The most important negative tail risk we can think of is a deep global recession that could quash demand, though a recession large enough to account for the drop in demand that would keep prices where they are today would be significantly larger than the global financial crisis.

Supply-side arguments*US Shale*

The introduction and growth of US shale oil production over the last decade has been an important contribution to global supply. Figure 2 below shows that ~5% of total global oil output is currently produced from US shale, which implies that a 40% drop in shale output alone would be sufficient to correct the global oversupply in oil. In the analysis we present next, a 40% drop in shale output is not unreasonable; yet as we will show further on, other areas of the world are also adjusting supply, so shale is not bearing the adjustment burden alone (though it is capable of doing so).

**Recent Global Oil Production Sources**

Group, Million Barrels/Day, % of Global Production



Source: Bloomberg, International Energy Agency

**Figure 2: A Correction In US Shale Alone Could Re-Balance The Market**

The important distinguishing characteristic of shale wells, unlike other oil wells, is their extremely brief production life. Figure 3 below shows that 60% of a shale well's total lifetime output is produced within 6 months and 80% within 18 months. Said differently, in order to keep production constant, let alone grow total production, shale producers are on a fast-moving treadmill – if drilling slows down, output will follow suit in short order. The other important aspect of Figure 3 below is that as production technology has advanced, the initial amount of output from shale wells has gradually increased: from 2009 to 2015 shale well initial output increased by 25% on average. Unfortunately, technology has not been able to extend the life of shale wells, and therefore the feature of rapidly declining output requiring sustained high levels of capex remains true. In particular, note how coupled with the improvements in initial oil output from new wells is an *even steeper* decline curve for output. Traditional oil basins have much slower production ramp up and ramp down times, with many decades-old oil fields continuing to produce substantial oil output – this slower response curve has colored the history of oil production and led to extended periods of lower or higher pricing. Historic oil price behavior is therefore much less relevant today.

The implication is twofold: i) a slowdown in capex by shale producers will translate into total global output dropping much more rapidly than historically; and ii) output will be much more responsive to oil prices, leading to a more volatile price environment relative to history.

Main-Plays Average Oil Production Per Well

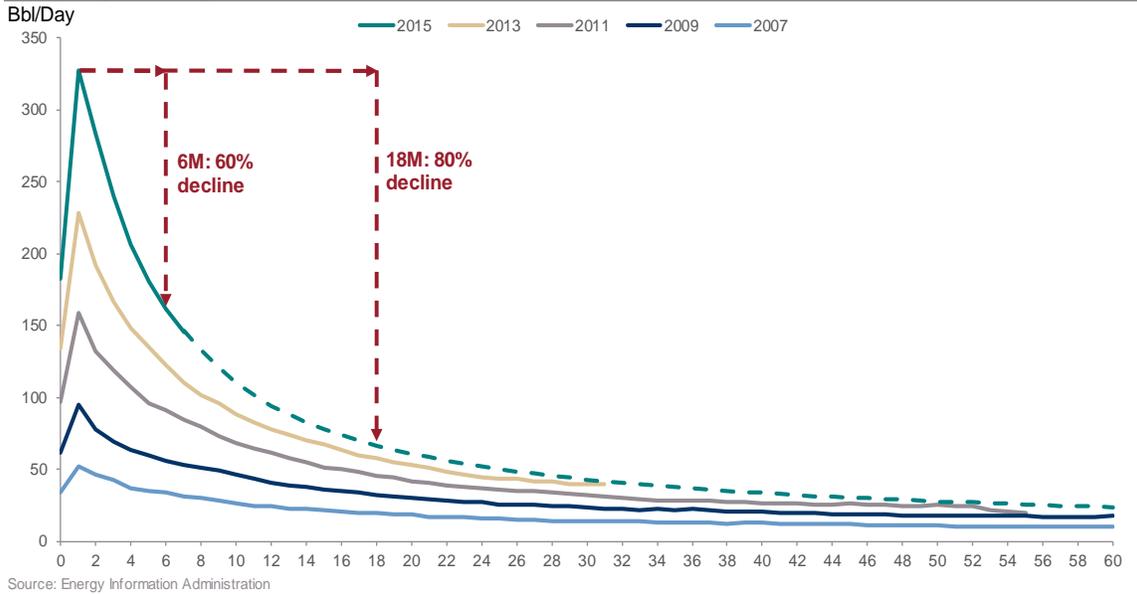
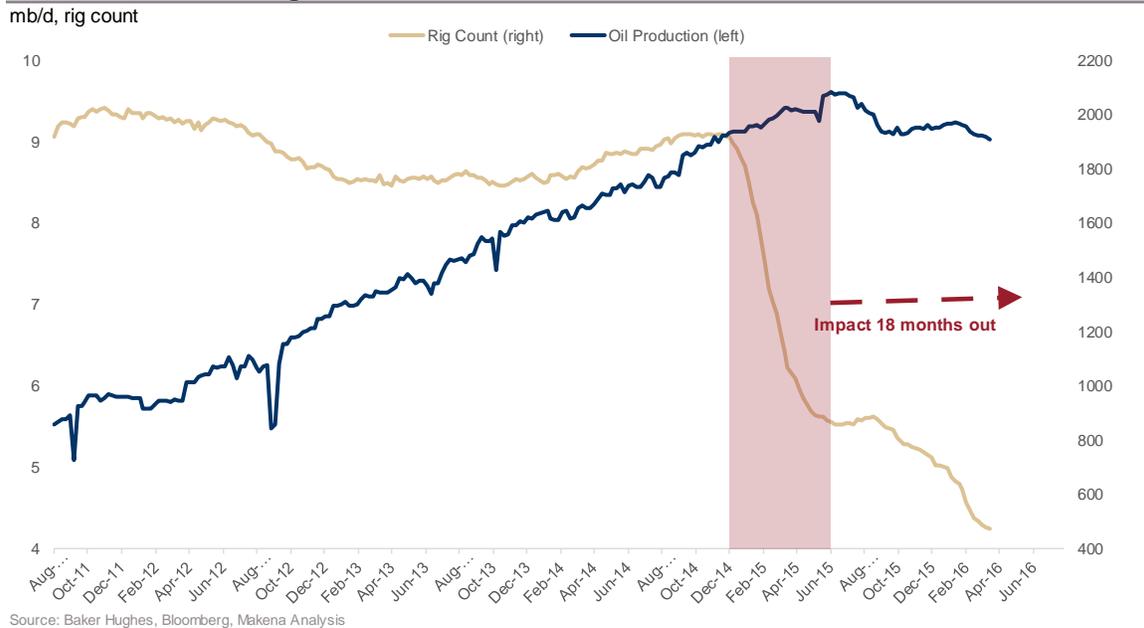


Figure 3: Technology Has Increased Initial Output But Also Increased Decline Rate

Since shale production is dependent on sustained capex to constantly drill new wells to replace the existing short-lived wells, the natural question is: what is currently happening to drilling and associated capex?

Figure 4 below shows how the drilling rig count has fallen dramatically over the last few months, dropping by more than 50% since early 2015. Note that while output has decreased, many market participants have been surprised that output has not dropped in proportion to the decreased drilling activity. The resilience in output is in large part thanks to the improvements in initial oil output per well we highlighted in Figure 3 above. However, recall that these newer wells are initially more productive, but also have even more rapid decline curves than wells from only a few years ago. Shale oil output is therefore in a transitional state whereby output has remained higher than anticipated thanks to these newer and more productive wells, but the steeper declines have yet to significantly affect output since these wells are relatively new. In the next 12-18 months we should anticipate a sizeable drop-off in production as wells drilled within the last year enter their terminal decline. While the exact magnitude of the drop-off in production is dependent on many factors, a reasonable range seems to point to a 30-40% decline in output should prices stay too low to incentivize new drilling.

## US Oil Production and Rig Count



Source: Baker Hughes, Bloomberg, Makena Analysis

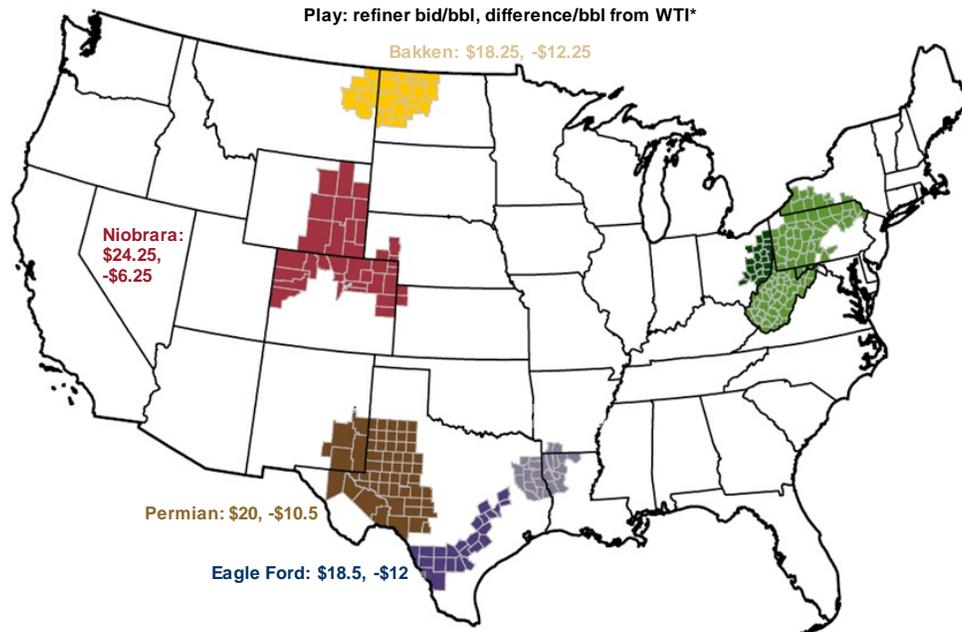
**Figure 4: Substantial Capex Cuts Will Inevitably Lead To Significant Output Declines**

An important caveat to note: drilling new wells has a much higher hurdle than shutting down existing wells. In a capital intensive activity like drilling, most of the expense is incurred in the drilling process, and once a well is operational, operating expenses (a.k.a. variable costs) are very low. For this reason we have not seen significant existing production being shut down even with oil at \$30 per barrel. Additionally, the shutdown option is not free: closing and capping a well can cost hundreds of thousands of dollars, so a producer is loath to shut down wells that might be slightly cash flow negative in the hopes that oil prices increase over the lifespan of the well. Much of the popular press conflates capex and opex, so the headlines saying that shale oil is currently not profitable are mostly accurate for new oil wells, whereas for existing wells to shut down it is clear from production data that we would need oil to be lower than current levels. In other words, *the price recovery in oil will not be driven by a sudden shutdown of existing wells of US shale producers over the short term*. Rather, the natural decline rates of existing wells will be the principal driver of reduced shale output.

Highlighting this is Figure 5 below, which illustrates the price that a prominent refiner is offering to pay for oil in several different regions in the US. Note how oil prices paid to producers (“wellhead prices”) are much lower than the headline WTI (West Texas Intermediate) price, due to transport costs and quality adjustments. The so-called differential to WTI can range from \$6 to \$12 a barrel, a significant amount considering WTI is currently in the high \$30s (at the time of writing). Despite wellhead prices in the teens in many areas, production is continuing, indicating that the operating expenses of these existing wells are very low. Said differently, much of the existing production is therefore profitable at current prices (excluding sunk capital costs). The flip side of these low wellhead prices is that drilling new wells is even more uneconomic than the headline WTI price might suggest. Even if WTI were to revert to \$50 a barrel, many new wells would still be uneconomic given the \$6-\$12 differentials shown in Figure 5 below. In other words, a price recovery to the high \$40s to low \$50s will not revive US shale to its former glory, and the oversupply situation we are in would not be repeated by a recovery in shale output.

## Crude Oil Refiner Price Postings

\$/Bbl



Source: Flint Hills Resources Crude Oil Postings. Utica/Marcellus is primarily Gas. \*As of Feb 8, 2016

Figure 5: WTI Headline Price Can Be Poor Indicators of Wellhead Economics

*More traditional basins outside US shale*

As we showed above, decreases in US shale output could correct much of the global oil oversupply on their own. However, capex cuts are not only being carried out in the US. We now look to the rest of the world to attempt to roughly quantify a likely range of output decreases implied by capex cuts.

*Currency weakness sustains significant non-OPEC output*

In addition to the “shale revolution” we just discussed above, there are other non-OPEC countries that are considerable producers (Russia) or have significant oil reserves in the form of oil sands (Canada) or ultra-deep water wells (Brazil). We focus on these three producers for two reasons: i) they currently represent about 18mm barrels/day of output (18% of global supply), and ii) they have benefited disproportionately from their weak currencies - enough of their production remains profitable today that they are currently forecasted to continue production at current rates if not grow slightly from here. Figure 6 below shows oil prices in local currency terms for Brazil, Russia and Canada. Given that these countries’ expenses are denominated in local currency, the decrease in oil prices has been substantially less harmful to margins relative to most other producers - Brazil’s currency has depreciated 40% since March 2014 during which Brent oil has fallen 60%. For Russia and Canada, the figures are 50% and 18%, respectively.

Perhaps counterintuitively, this is a positive factor for oil prices, especially so for Russia and Brazil. The key insight is that Russia and Brazil’s currencies have weakened because of deep recessions not necessarily driven by low oil prices - Russia entered a recession following the imposition of sanctions due to their engagement in the Ukrainian civil war long before oil prices collapsed and Brazil entered a recession due to dysfunctional domestic politics. Should these countries only modestly emerge from the political and economic quagmire they are currently facing, their currencies could appreciate significantly (even without oil prices moving much), leading to a compression of margins for local oil producers. In other words, if Russia, Brazil and Canada put their domestic economies in order, the irony will be that their oil companies are likely to suffer significant damage.



**Figure 6: Currency Movements Have Blunted the Sting of Depressed Oil Prices**

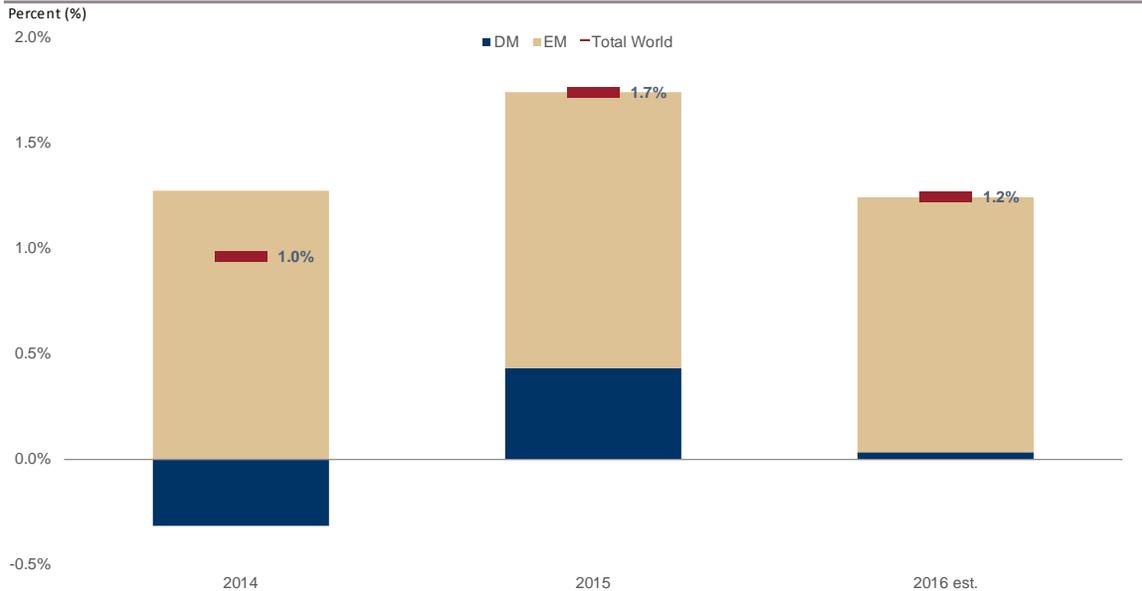
In the other regions of the world, there have already been significant capex cuts announced. Unlike for shale wells; however, the decrease in production will be gradual, measured over several years. It is hard to calculate a cumulative impact to global production from capex cuts, as many producers are not transparent with their activities. If oil were to remain around \$40 from now through 2020, estimates we have seen vary, but generally are in the 2-3 mm bbl/day of output decreases. Adding in a decrease in US shale of 1-2 mm barrels/day, we arrive at 3-5 mm barrels/day of output reduction over the next three years. That represents a reduction of 3-5% of total global oil output vs the oversupply today of ~2%.

To put that figure in context, during the global financial crisis of 2008-9, oil demand fell by less than 2%. Said differently, assuming we are on a path of 3-5% of total output decreases, *oil prices and associated capex plans by producers globally are currently implying that we are on the brink of a global recession larger than the global financial crisis.* The question is: are there any scenarios out there that would plausibly lead to demand plummeting 3-5% by 2020?

#### Demand-side arguments

While we have only focused on supply so far, demand is of course an important factor to consider as well. Given that the global economy is growing, albeit in a subdued fashion, oil demand has also been growing in a subdued fashion. Figure 7 below highlights this growth, and the fact that it is concentrated in developing economies. If low oil prices are here to stay, signaling a collapse in oil demand, should we consider EM oil demand growth in Figure 7 to be irrational? Nothing in the data supports an outright decline in EM consumption, and a decline in consumption makes little sense intuitively: a majority of the world's population growth occurs in these countries; many continue to transition from agrarian to urban economies; human mobility is on the rise. This leads us to the conclusion that *even if supply does not adjust from here (which we hope we have demonstrated makes little sense), demand growth alone could mop up excess supply over the next few years.*

**Oil Demand Growth**

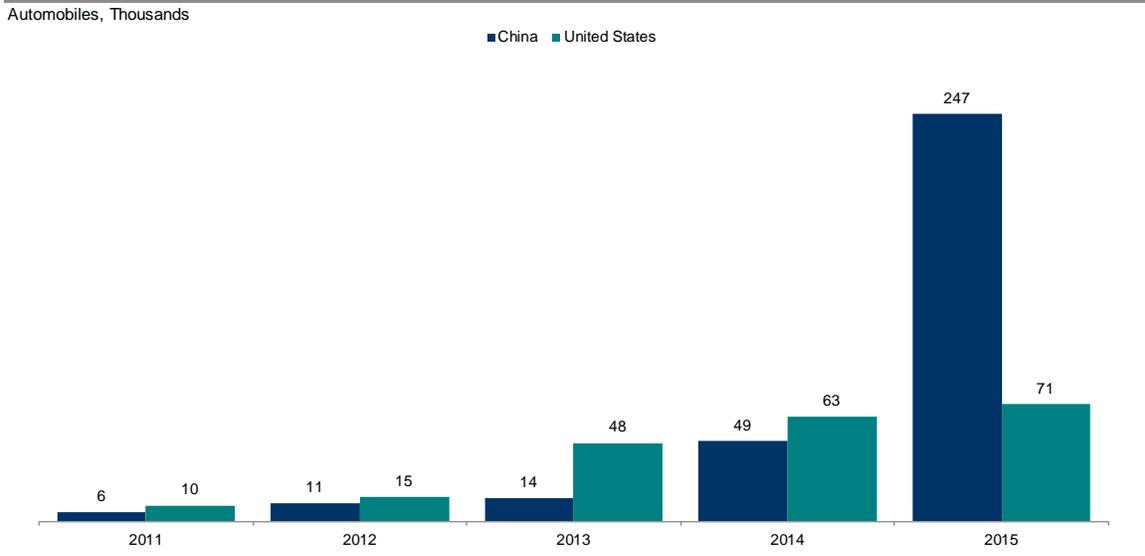


**Figure 7: Moderate Demand Growth Expectations Can Correct Imbalances Even Without Supply Changes**

*Technology-driven tail risks - still a ways out*

One argument we often hear is that technology will make oil obsolete: electric autos will become so predominant over the next few years that oil demand will plummet. That scenario seems very unlikely at present. Electric car sales in the US this year represented only about 0.4% of total sales, a tiny share. In China, the government has made significant policy concessions to encourage electric car sales (reduced local driving restrictions, taxes, fees, etc.). Despite those costly concessions, electric auto sales represent only 1.2% of the total. So while we are not Luddites, and do believe that technology will eventually change our driving habits, that day is too far in the future to significantly affect oil demand over the next several years.

**China & United States Electric Vehicle Sales**



**Figure 8: Electric Car Adoption Growing But Will Remain Irrelevant For Oil Consumption Mid-Term**

*Summary of Investment Strategy*

In our Q3 2015 letter we outlined a series of investment recommendations. Many of those themes remain unchanged, and the above analysis lends further support to these recommendations in the context of oil prices.

- i. *Caution over growth companies during the run-up to and immediate aftermath of the Fed's first hike.*  
Growth companies will likely exhibit heightened sensitivity to the effects of a rate hike. However, in a world of scarce growth, they may be able to attract and sustain higher valuation multiples than they have attracted historically, suggesting that risk is perhaps somewhat muted.
- ii. *Similar to (i) above, buy into long-term growth via EM equities*  
Growth countries will also likely exhibit heightened sensitivity to the effects of a rate hike. Indeed, many EM markets seem to have already priced-in the effect of lift-off. Moreover, in a world of scarce growth, they should be able to attract and sustain higher valuation multiples than they have historically. Said differently, some EM countries currently represent “growth at a reasonable price.”
- iii. *Longer duration vs. shorter duration in Fixed Income portfolios*  
Uncertainty over the timing and pace of the coming Fed hiking cycle is likely to continue generating substantial volatility in the short end of the curve and potentially less volatility in the longer end. Additionally, should market expectations price a lower growth rate and a lower inflation outlook following a rate hike, we could actually see a rally in the long end.
- iv. *Continued overweight to US dollar in currency portfolios*  
Q1 dollar weakness was driven by delayed Fed expectations, causing the trading community to re-position for a second hike in 2H16. We try to ignore near-term volatility and focus on the substantial and growing rate differential between the USD and the rest of the G-10, especially the Euro.
- v. *US small and medium enterprise (including Private Equity) vs. large-caps*  
With a strong dollar and therefore weaker commodity prices, the US consumer will continue to favor more domestically-oriented companies.
- vi. *Competitive EM over commodity EM (across asset classes)*  
While weaker commodity prices hurt commodity exporting nations, it also benefits manufactured goods producing nations through lower input costs. The stronger dollar and increased disposable income available to the US consumer should also benefit manufactured goods-producing nations.
- vii. *Long Europe exporters and periphery intra-Europe exporters*  
Between lower commodity prices and lower wages, thanks to internal deflation across most of Europe, European exporters should see margins continuing to improve. The weaker Euro will also bolster exports to outside the Eurozone and from peripheral Europe to the core as a substitute for imports from outside the Eurozone.
- viii. *Long US services / non-traded goods companies vs. US exporters*  
The flip side of a strong dollar is that export-led US companies will likely see earnings and earnings growth hampered from overseas operations. On the other hand, due to weak wage inflation dynamics, US services will benefit from a slower unwind of high margins as it takes time for declining labor slack to drive wage pressures.
- ix. *Long EM reformers vs. laggards (across asset classes)*  
Some countries have embraced reforms since the last few crises, implementing flexible exchange rates, minimizing interventions in their domestic economies, and in general fostering an environment where private industry can thrive. These countries should be able to navigate volatility driven by exchange rates and the Fed's moves more successfully than the laggards who have not reformed.

## The Partners of Makena Capital Management

Analysis by

Michel Del Buono, Global Investment Strategist

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