

Rationing oil demand in the medium term

In the medium term, still expect robust oil demand growth

What is in store for global oil demand in the medium term? We project global oil demand to grow at a cumulative 6.15 million b/d over the next 5 years. Global oil demand in 2016 will likely stand at 95 million b/d, relative to 85 million b/d in 2005. The developing world, which already accounts for half of the world's output, will in 2013 overtake the developed world in terms of oil consumption. By 2016 we estimate that EMs will comprise 53% of global oil consumption, with China alone making up 12.8% or 12 million b/d of global consumption.

Our outlook on medium term supply is cautiously optimistic

On the non-OPEC supply side, we see non-OPEC supply growth drop steadily through 2014, though we now believe that volumes will flatten rather than contract. 2015 will likely show the strongest output growth through the medium term, followed by much lower growth in 2016. On our latest estimates, non-OPEC supply will grow by a cumulative 2.4 million b/d from 2011 to 2016, up from 0.9 million b/d previously. Despite these upward revisions it is important to point out that production growth over the next 5 years will be below the historical average.

Globally, decline rates are not improving due to OPEC

Improving decline rates are a key supporting factor. Based on an analysis of the IEA's field-by-field database, non-OPEC production is now declining at a rate of 4.2%, a slight improvement from 4.4% that was observed last year. OPEC, however, faces the opposite problem. OPEC decline rates continue to rise, with the existing production base declining at a rate of 4.5% per year, compared to 3.9% observed a year ago. Overall, given improving non-OPEC decline rates combined with deteriorating OPEC rates, we estimate that global production is declining at an average annual rate of 4.3%, from 4.2% last year.

Prices unlikely to fall much below \$80/bbl through 2016

How will oil prices behave over the next 5 years? In our view, Brent oil is unlikely to dip below \$80/bbl, on average, as significant non-OPEC supply constraints and rising OPEC budgets will create a high floor on oil prices. But oil is unlikely to hover around its floor. Rather, we believe oil will remain a key constraint on global economic growth, suggesting that prices will continue to spike to ration demand back down to the limited supplies. What constitutes the upper bound for oil? The world economy can hardly afford to spend more than 9% of GDP on energy. In a supply-constrained world, increased liquidity should set oil prices on an upward path. In other words, with nominal global GDP estimated to expand to \$92tn through 2016, demand rationing will likely require ever higher \$/bbl prices. On our estimates, oil prices could even spike to \$200/bbl over the next 5 years.

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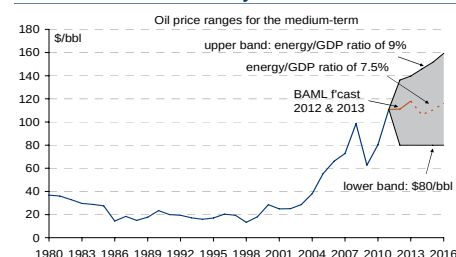
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Chart 1: On our estimates, occasional demand rationing episodes could push oil as high as \$200/bbl over the next 5 years



Source: Bloomberg, BP, BofA Merrill Lynch Global Commodities Research

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Refer to important disclosures on page 31 to 32. Link to Definitions on page 30.

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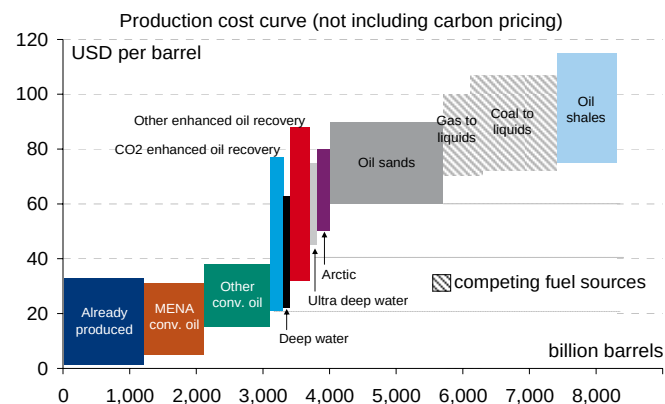
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Medium term macro outlook for oil

Prices unlikely to fall much below \$80/bbl through 2016...

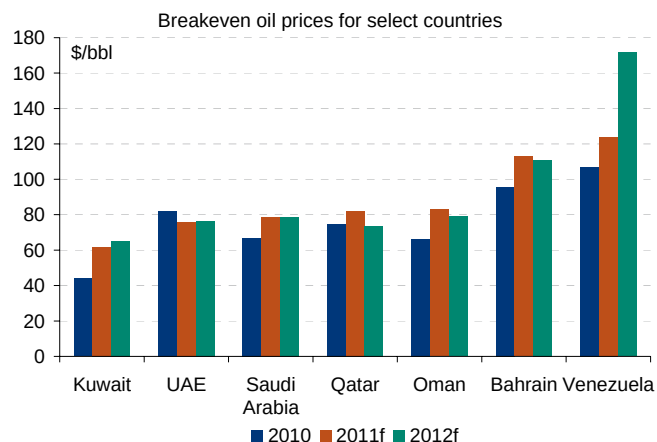
Global crude oil prices averaged \$60/bbl in 2006 and 2009, \$80/bbl in 2007 and 2010 and over \$100/bbl in 2008 and 2011. How will oil behave over the next five years? In our view, Brent crude oil prices are unlikely to dip below \$80/bbl on average, as significant non-OPEC supply constraints and rising OPEC budgets will likely create a high floor on oil prices. But equally we see the need for oil prices to spike occasionally to ration surging Emerging Market demand. Since 2000, the world economy has endured a five fold increase in oil prices, as constraints on conventional crude oil production ultimately had to force an increase in investment in oil sands, oil shales, gas-to-liquids or biofuels (Chart 2). Much of these non-conventional barrels have an investment hurdle of about \$80/bbl. Similarly, many OPEC countries have sharply increased their budgetary requirements and now need \$80 to \$90/bbl to break even (Chart 3). In short, both OPEC and non-OPEC barrels have a strong floor at \$80/bbl.

Chart 2: Constraints on conventional crude oil output had to force an increase in investment in oil sands, shales, gas-to-liquids & biofuels



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 3: Many OPEC countries have sharply increased their budgetary requirements and now need \$80 to \$90/bbl to break even



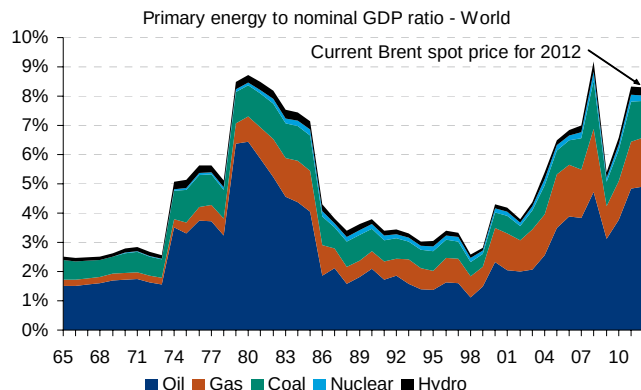
Source: BofA Merrill Lynch Global Research

...and could spike to \$200/bbl to further slow down demand

In a supply-constrained world, however, oil is unlikely to spend much time hovering around its price floor. Rather, we believe oil prices will likely remain a key constraint on global economic growth. This suggests that prices will continue to spike over the next five years to keep on rationing demand back down to the limited available supplies. As we have highlighted before, the world economy can hardly afford to spend more than 9% of its GDP on energy (Chart 4). But central banks such as the Fed or the ECB will likely remain focused on expanding their nominal GDP values to smooth out the ongoing deleveraging cycle in the US and European economies. In a supply constrained world, increased liquidity should set oil prices on an upward path. In other words, as nominal global GDP in USD expands to \$92tn through 2016, demand rationing will likely require ever higher \$/bbl prices. On our estimates, occasional demand rationing episodes could result in prices occasionally spiking to \$200/bbl over the next five years (Chart 5).

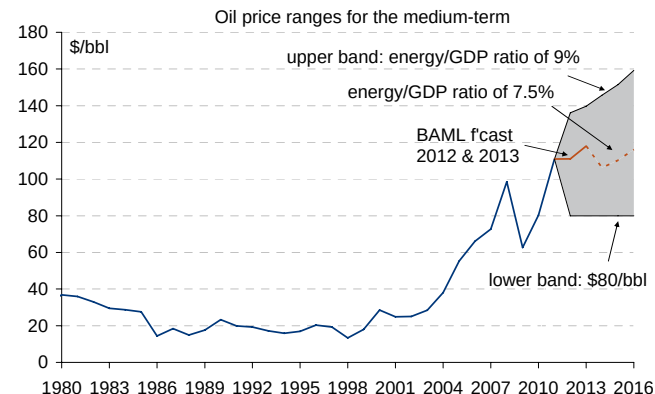
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Chart 4: The world economy can hardly afford to spend more than 9% of its GDP in energy



Source: IEA, BP, IMF, WB, Bloomberg, BofA Merrill Lynch Global Commodities Research

Chart 5: On our estimates, occasional demand rationing episodes could push oil as high as \$200/bbl over the next five years

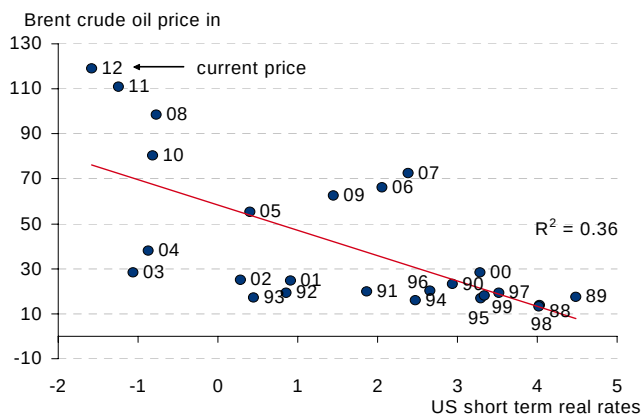


Source: Bloomberg, BP, BofA Merrill Lynch Global Commodities Research

High liquidity is likely boosting Brent crude oil prices

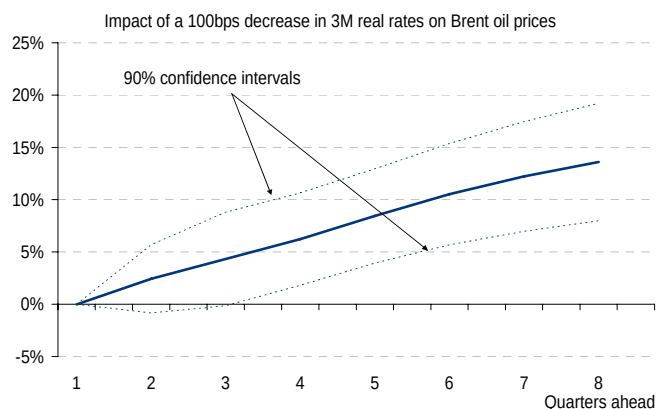
As we have explained in previous notes (see [Oil is liquid money](#)), the prices of constrained real assets tend to appreciate in times of ample liquidity. Oil prices are no exception and have been supported by the environment of negative real interest rates prevalent in DM, in our view (Chart 6). Using historical data on USD real interest rates, we have previously tried to estimate the impact of negative interest rates on oil prices (Chart 7). Our conclusion is that a 100bps decrease on USD real interest rates historically increased Brent crude oil prices by more than 6% in the subsequent year.

Chart 6: Oil prices have been supported by the environment of negative real interest rates prevalent in DM



Source: Bloomberg, IMF, BofA Merrill Lynch Global Commodities Research

Chart 7: We estimate that a 100bps decrease on USD real rates historically has increased oil prices by more than 6% one year later



Source: Bloomberg, BofA Merrill Lynch Global Commodities Research

Note: Estimates obtained through a Vector Autoregressive model with two lags on quarterly data on 3M real interest rates, industrial production growth and oil price pct changes from 1Q80q1 4Q12. M1 and IP growth are GDP weighted average growth rates for OECD countries and the BRICS.

Liquidity impacts oil prices through several mechanisms

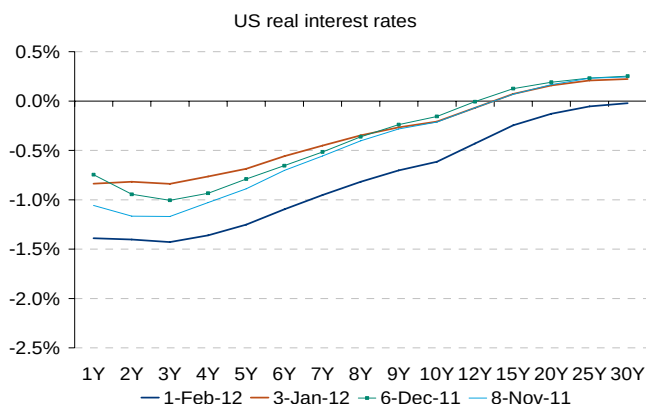
This negative correlation between real rates and oil prices is the result of several mechanisms; some very direct and some more subtle. First, not all sectors of the economy respond in the same way to monetary policy. As a sector with severe supply constraints, oil prices should behave differently from other prices in the economy when demand is expanding (or contracting less) due to easy monetary policy measures. In addition, if easy monetary policies are to force consumers to

consume and companies to invest, the impact of low real rates is likely to gear consumption towards durable goods and investment towards infrastructure, both of which are energy intensive components of GDP. Finally, oil producing nations have very little incentive to produce beyond their budgetary requirement if returns on their assets, held in international reserves or in a SWF for instance, are yielding below inflation expectations (Chart 8).

High prices will ultimately cure high prices

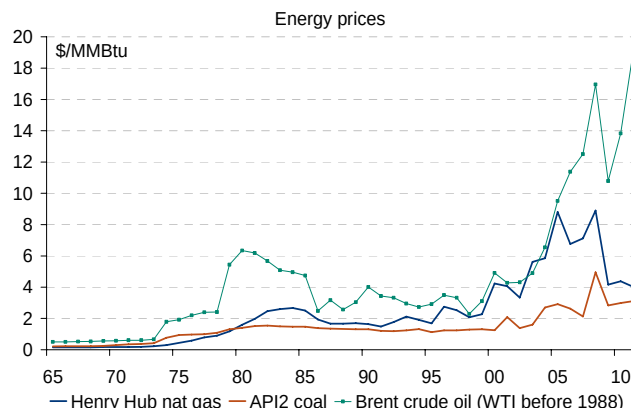
But oil prices cannot go up forever. Should the price differential to natural gas stay this wide or even continue to widen, large-scale substitution could come into play. Substitution out of oil has been going on for decades, but the price differential between oil and other fuels is now at record levels (Chart 9). Inevitably, ingenuity will trigger unforeseeable changes in energy demand patterns on a ten year time horizon. So even if the super-cycle in oil continues for the next five years on tight supply and demand balances, new technologies should start to reduce global oil consumption in a meaningful manner by 2016. Having said that, we believe that oil will continue to trade at a substantial premium over other fuels through the end of the decade, even if the current Brent crude oil to US natural gas price ratio of 10 to 1 seems unsustainable in the long run.

Chart 8: Oil producing nations have little incentive to produce beyond their budgetary requirements if assets yield below inflation



Source: Bloomberg, BofA Merrill Lynch Global Commodities Research

Chart 9: Substitution out of oil has been going on for decades, but the price differential between oil and other fuels is now at record levels

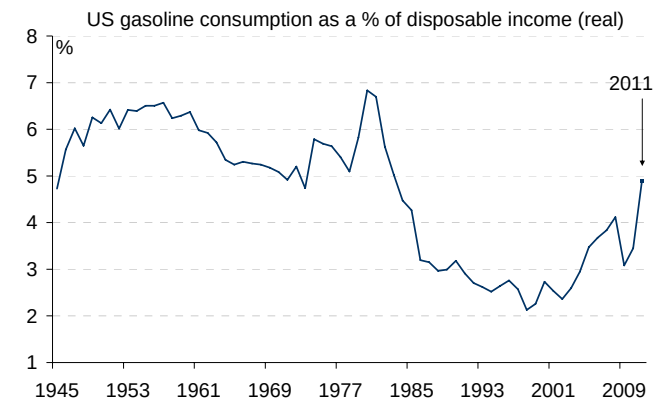


Source: BP, Bloomberg, BofA Merrill Lynch Global Commodities Research

Demand is turning more elastic, at least in the OECD

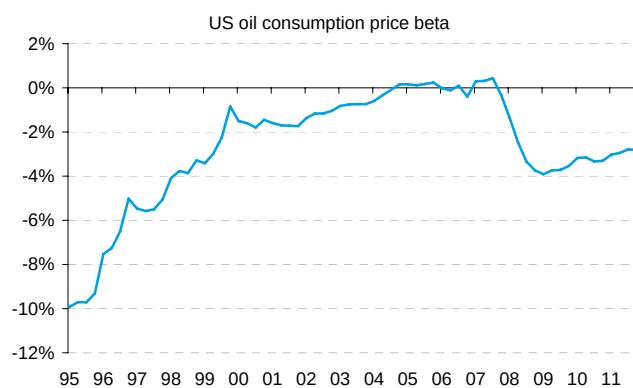
In fact, demand is already reacting to the price spikes of the last few years. Surely, the price elasticity of US oil demand had been on a downward trend (in absolute terms, moving towards zero) for decades as oil consumption had increasingly been concentrated in transportation where it has few close substitutes, making consumers increasingly less willing to give up oil consumption despite price increases (Chart 10). The average decrease in US oil consumption associated with a 100% increase in oil prices was around 10% in 1995 and decreased to close to zero in 2004-07. However, price elasticities have risen again recently given the high oil prices in recent years which have made oil spending an increasingly larger part of consumers' budgets (Chart 11), and most recently (over the past 32 quarters) the average decrease in US oil consumption associated with a 100% increase in oil prices was around 3%.

Chart 10: Given the high oil prices in recent year the budget share of transportation fuel in the consumers' budgets has risen dramatically...



Source: EIA, Bloomberg, Bureau of Labor Statistics, BofA Merrill Lynch Global Commodities Research

Chart 11: ...making driving decisions (and hence gasoline demand) more sensitive to price changes



Source: Bloomberg, BofA Merrill Lynch Global Research

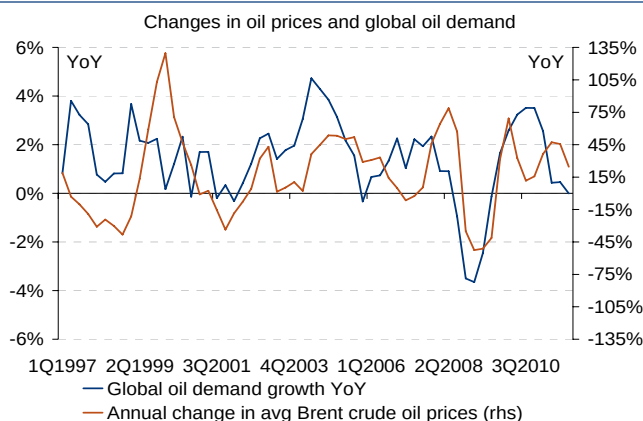
The beta expresses the association of US oil demand with respect to oil prices and is based on a rolling OLS regression over a 32 quarter window of US oil consumption on GDP, oil prices and natural gas prices (% changes YoY).

Medium term demand outlook

No growth in oil consumption globally

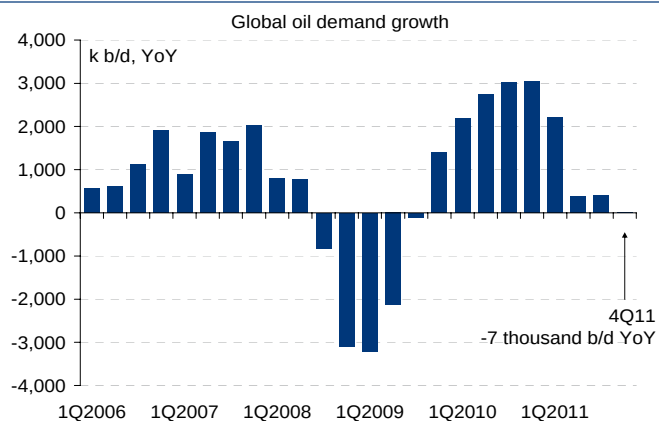
Global oil consumption has been decelerating sharply over the past few months at a time that prices have held up extremely well (Chart 12). In fact, world oil demand in the last quarter of 2011 did not expand at all compared to the prior year even with the onset of cold winter temperatures in Europe (Chart 13). This slowdown stands in contrast to rampant consumption growth one year earlier. As the global economy decelerated sharply from 5.1% in 2010 to 3.8% GDP growth in 2011, demand growth also slowed but the magnitude of the slowdown was still remarkable. In just four quarters, the world economy moved from posting the second largest annual oil demand gain in more than three decades to experiencing zero growth in 4Q11.

Chart 12: Global oil demand growth has been slowing down sharply over the past few months at a time that prices held up



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 13: Demand for oil around the world surprisingly contracted in the last quarter of 2011



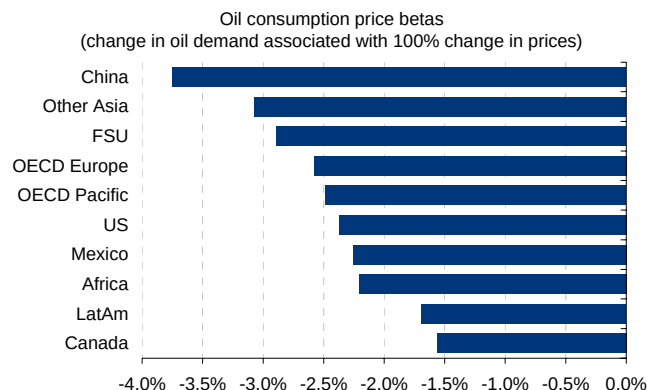
Source: IEA, BofA Merrill Lynch Global Commodities Research

...following supply scarcity and price gains

As we have said many times, supply scarcity is, first and foremost, to blame for the demand slowdown. Following the Libyan oil supply disruptions and a raft of outages in the North Sea, Azerbaijan, Canada and Nigeria, prices had to spike in order to cut back on global oil consumption. Given the high price elasticity of demand in the developed world (Chart 14), it is no surprise that the demand decline was led by the OECD (Chart 15). As the chart below suggests, consumption has been particularly weak in OECD economics, now posting three straight quarters of declines. The contractions are particularly stark in Europe, with France posting an 11% annual demand decline in December, followed by about 7.5% in Italy and Spain. Overall, OECD Europe experienced a demand contraction of almost 700 thousand b/d in 4Q11.

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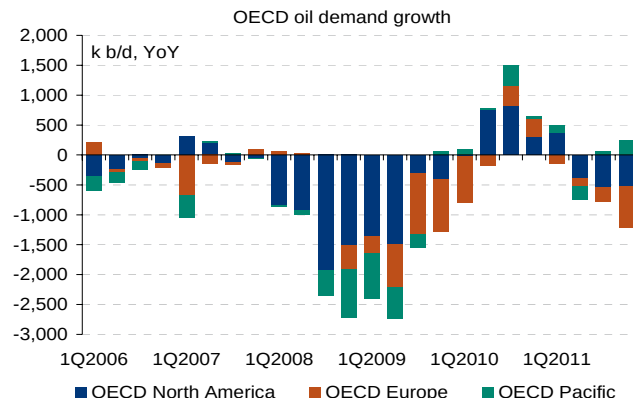
Chart 14: Given the high price elasticity of demand in the developed world, it is no surprise that the demand decline was led by the OECD



Source: BofA Merrill Lynch Global Commodities Research

For some country/regions the price coefficient is lagged (up to the 4th lag). Based on quarterly data, 1995-present

Chart 15: Consumption has been particularly weak in OECD economies, now posting three straight quarters of demand declines

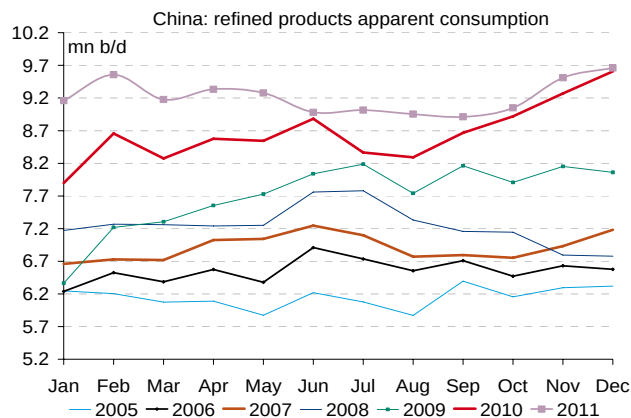


Source: IEA, BofA Merrill Lynch Global Commodities Research

Even EM nations have seen a marked deceleration

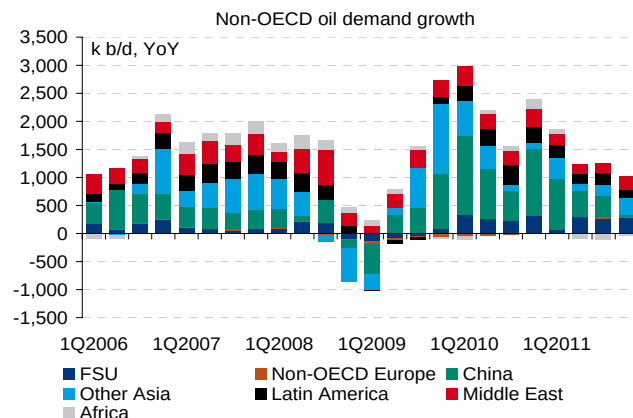
Interestingly, emerging economies are also starting to see a marked deceleration in their consumption patterns. China's oil demand picture is striking, with consumption in December of 2011 pretty much at the same level of the previous year despite a GDP growth rate of 8.9% in 4Q11 (Chart 16). In fact, only the Former Soviet Union, the Middle East and other parts of Asia are posting positive demand growth in 4Q11 (Chart 17). The fact that oil demand is only holding up in countries that produce it, speaks to the lack of available supplies, the large-scale domestic subsidies offered by oil exporters, and the extremely high prices.

Chart 16: China's oil demand in December was mostly flat year-over-year despite a GDP growth rate of 8.9% in 4Q11



Source: CEIC, BofA Merrill Lynch Global Commodities Research

Chart 17: For the most part, only the Former Soviet Union, Middle East and other parts of Asia are posting positive demand growth in 4Q11



Source: IEA, BofA Merrill Lynch Global Commodities Research

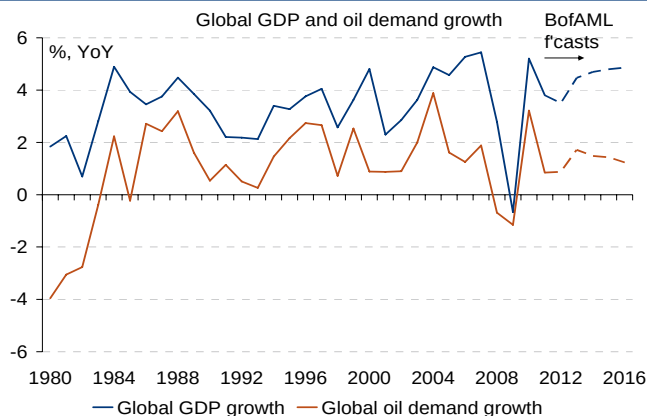
Wait until 2013 for a real recovery in global oil demand

With Europe already in a small recession in early 2012 and US economic growth likely slowing in 2H12, global GDP growth will likely slow in the short-run. Still, we do not expect global oil consumption growth to drop further from 2011 as the impact of lagged EM interest rate cuts combined with further unconventional monetary policy measures in the US and Europe will likely cushion the impact on consumption in EMs. For 2012, we expect 780 thousand b/d of oil demand growth globally.

Expect global oil demand to grow by 6 mn b/d in 5 years

What is in store for global oil demand in the medium term? In our view, we will have to wait until 2013 to see a real recovery in global oil demand growth (Chart 18). Then, an acceleration of the business cycle combined with continued accommodative monetary policy could create a sweet spot for oil consumption growth which we see rebound to an above-trend 1.54 million b/d in 2013. Thereafter, we see global oil demand growth at an average of 1.3 million b/d in the 2014-16 period. All in, we project global oil consumption to grow at a cumulative 6.15 million b/d over the next five years (Chart 19). Global oil demand in 2016 will likely stand at 95 million b/d, relative to 85 million b/d in 2005.

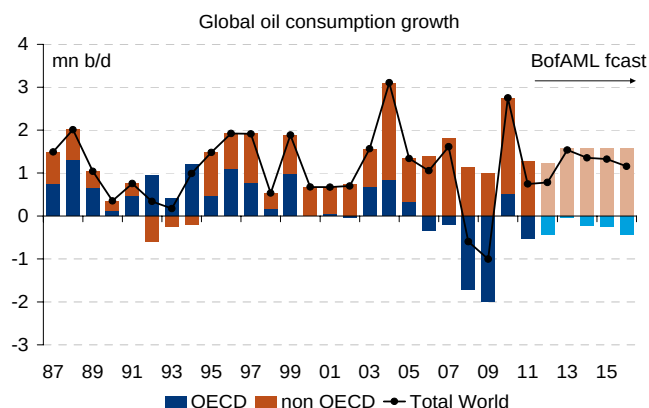
Chart 18: In our view, we will have to wait until 2013 to see a real recovery in global oil demand growth



Source: IEA, IMF, BofA Merrill Lynch Global Commodities Research

Note, global GDP growth forecasts for years 2014 and beyond are IMF estimates.

Chart 19: Over the medium term we see global oil demand growth at an average of 1.2 mn b/d, above the 25 year trend of 1.1 mn b/d



Source: IEA, BofA Merrill Lynch Global Commodities Research

Low real rates, efficiency and demographics

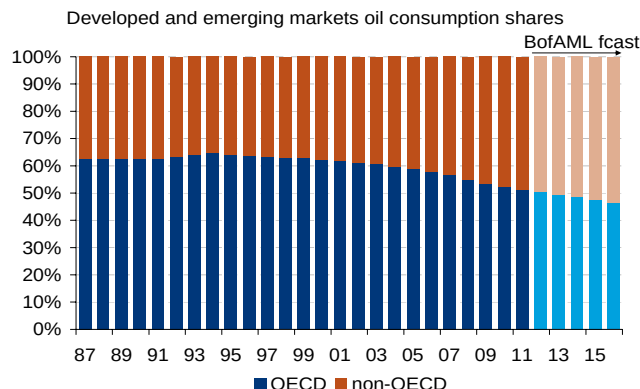
Underlying the overall deceleration is a diverging picture of oil consumption in EMs and DMs. In DMs, oil consumption growth is contracting through 2016, continuing a trend that has been in place roughly for the past 6 years, in contrast to EMs where oil consumption growth is positive and strong. Combined, this diverging path results in overall positive but falling global oil demand growth. Aside from global GDP growth, oil consumption will be mainly driven by three factors over the medium term: (1) efficiency and substitution (2) demographic changes, including aging populations in DMs and ongoing urbanization in EMs, and (3) low real USD interest rates, at least until late 2014.

The EM-DM divide

In absolute terms, we find that oil consumption growth over the medium term to 2016 is driven entirely by EMs where rapid income growth, expanding car fleets and urbanization underpin strong oil demand growth. On our estimates, the developing world, which already accounts for half of the world's output, will in 2013 also overtake the developed world in terms of oil consumption (Chart 20). By 2016 we estimate that emerging markets will comprise 53% of global oil consumption, with China alone making up 12.8% or 12 million b/d of global consumption, up from 9.5 million b/d in 2011 (Chart 21).

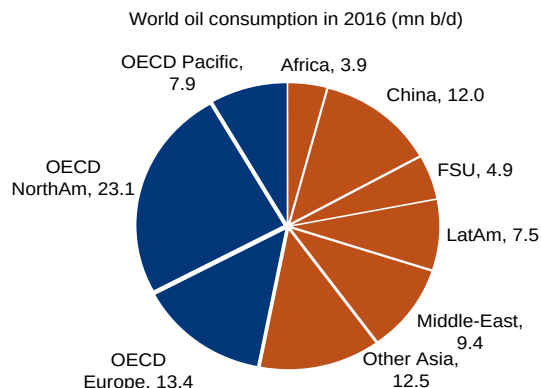
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Chart 20: The developing world will in 2013 also overtake the developed world in terms of oil consumption



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 21: By 2016 we estimate that DMs will comprise 53% of global oil consumption, with China alone comprising 12.8% or 12 million b/d

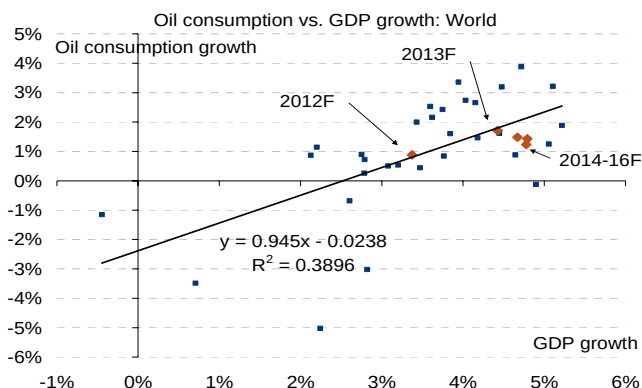


Source: IEA, BofA Merrill Lynch Global Commodities Research

Deleveraging and aging populations are an impediment in DM

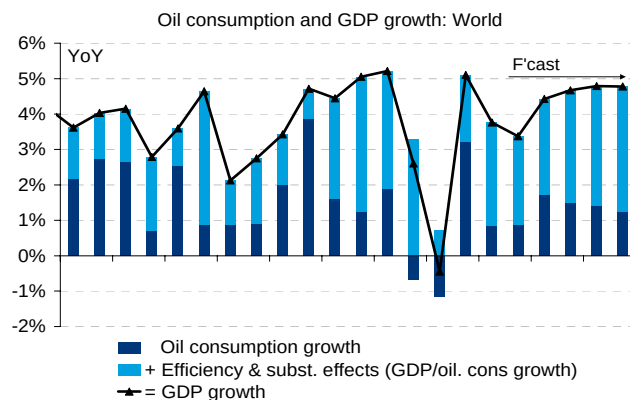
By contrast in DMs, oil consumption will likely continue to fall. We find that deleveraging cycles following financial crises can be drawn-out and pose a significant impediment to economic growth, and thus energy demand, for many years. Burgeoning government deficits and fractious politics will prevent a big demand-side policy response in the form of a fiscal stimulus. Meanwhile, demographics are not helping either. An aging population reduces the demand for transportation and thus the demand for oil. Finally, technological improvements continue to squeeze more output out of every barrel of oil consumed.

Chart 22: Global oil consumption is strongly driven by GDP growth



Source: IMF, IEA, BofA Merrill Lynch Global Commodities Research

Chart 23: However, global GDP growth rates usually outpace oil consumption growth rates, implying that oil efficiency



Source: IMF, IEA, BofA Merrill Lynch Global Commodities Research

Scarce supplies drive efficiency growth

Global oil consumption has a tight link to GDP growth (Chart 22). However, global GDP growth rates usually outpace oil consumption growth rates, implying that the economic output per barrel of oil consumed in the economy is falling over time. This is due to a combination of substitution effects and improvements in oil efficiency (Chart 23). Given high enough oil prices, on strong EM demand and supply scarcity, we see continued strong oil efficiency growth and substitution over the medium term as each barrel has to become increasingly more productive to maintain economic growth in a world of scarce supplies.

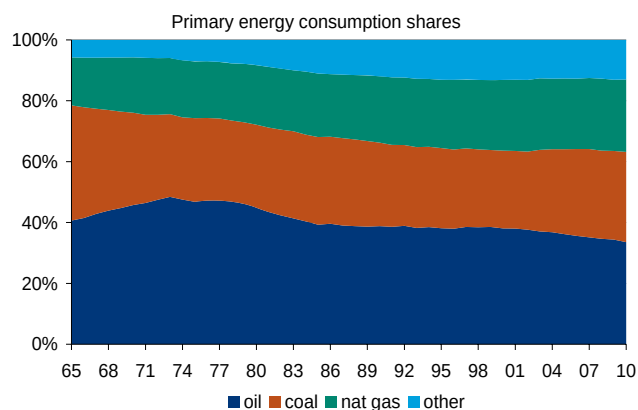
Efficiency or substitution?

The main question is whether substitution out of oil into other fuels (thermal or alternatives) or efficiency improvements will do the job. On a 3-5 year horizon, we believe the answer lies primarily in the latter of the two, where technological improvements such as improving mileage in cars and airplanes reduce demand growth. This stands in contrast to the aftermath of the oil crisis of the 1970s and 1980s which saw large-scale substitution out of oil into cheaper thermal fuels (Chart 24).

Substitution is tough in the transportation sector

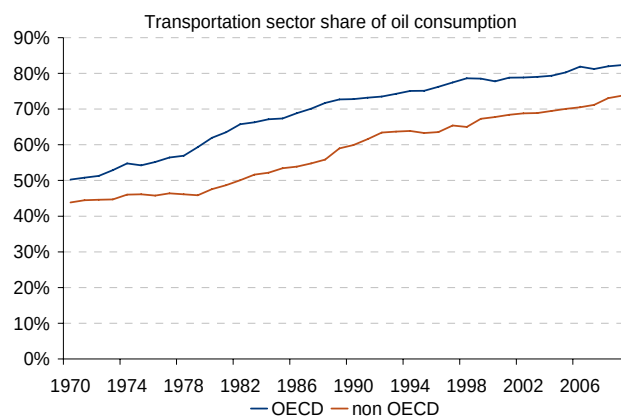
Oil today is primarily a transportation fuel (Chart 25). Even if technology were to allow for large scale substitution out of oil in transportation, via natural gas powered vehicles or plug in hybrid vehicles, there is limited scope for large scale substitution out of oil unless energy policies set the right incentives and unless the necessary infrastructure and distribution systems are developed. Thus oil efficiency improvements will near-term primarily hinge on fuel efficiency advancements in transportation and upgrading of the fleet.

Chart 24: The aftermath of the oil crisis of the 70s and 80s saw large-scale substitution out of oil into other and cheaper thermal fuels



Source: IEA, BofA Merrill Lynch Global Research

Chart 25: Oil is today primarily a transportation fuel



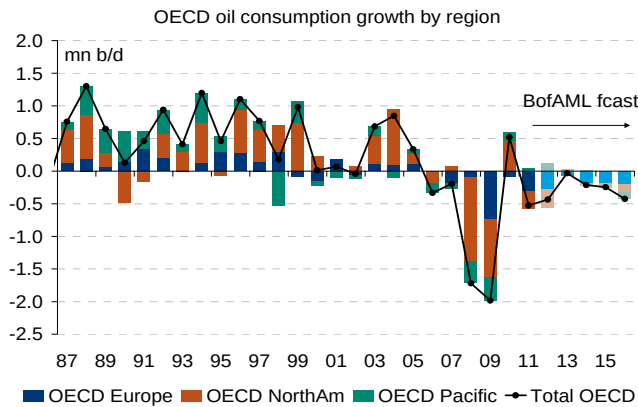
Source: IEA, BofA Merrill Lynch Global Research

OECD demand growth will contract medium term

On our estimates, oil consumption in the OECD countries will continue to decelerate beyond 2012. We see OECD demand shrink by an average of 0.3 million b/d YoY from 2012 to 2016 (Chart 26 and Chart 27), with the strongest decelerations in OECD Europe. Over 80% of oil demand in the OECD is generated by the transportation sector. Fuel efficiency standards of new cars and airplanes have steadily improved since the 1970s, and further improvements in fuel efficiency will provide a negative contribution to oil consumption growth in the OECD over the medium term.

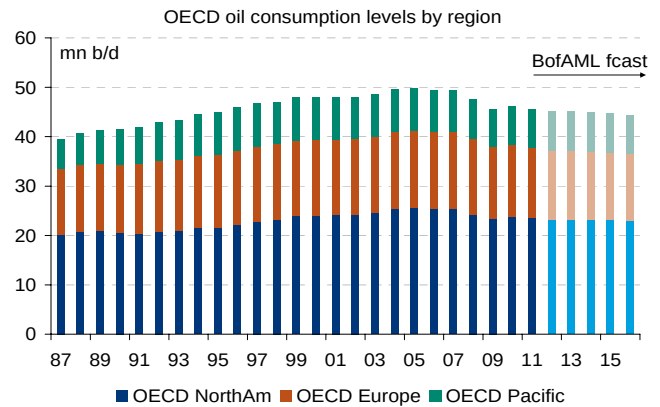
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Chart 26: We see OECD demand shrinking by an average of 0.3 million b/d YoY from 2012 to 16...



Source: IEA, BofA Merrill Lynch Global Research

Chart 27: ...with the strongest contractions being experienced in OECD Europe



Source: IEA, BofA Merrill Lynch Global Research

OECD North America demand will continue to contract

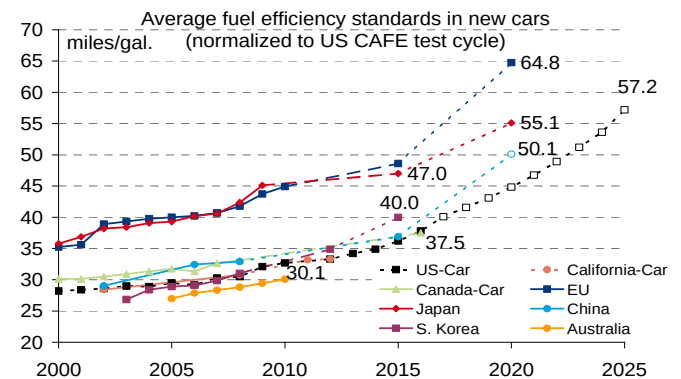
On our estimates, North American demand is expected to fall by a cumulative 0.44 million b/d for the period of 2012-16, with US consumption declining by 0.54 million b/d, partially made up by growth in Mexico and Canada. The contraction in demand is particularly sharp in 2012, given the drag on miles travelled from a weak economy (Chart 28). On the other hand, US targets for fuel efficiency standards by 2016 are among least ambitious in the OECD (Chart 29), in contrast to standards in the EU and Japan, emphasizing the potential for further substantial efficiency improvements by moving to smaller or diesel engine cars.

Chart 28: A weak US housing sector and a high unemployment rate continues to act as a drag on miles travelled



Source: US Department of Transportation, BofA Merrill Lynch Global Research

Chart 29: Targets for improvements in fuel efficiency standards of new cars in the US by 2016 are among least ambitious targets in the OECD



Source: ICCT, BofA Merrill Lynch Global Research

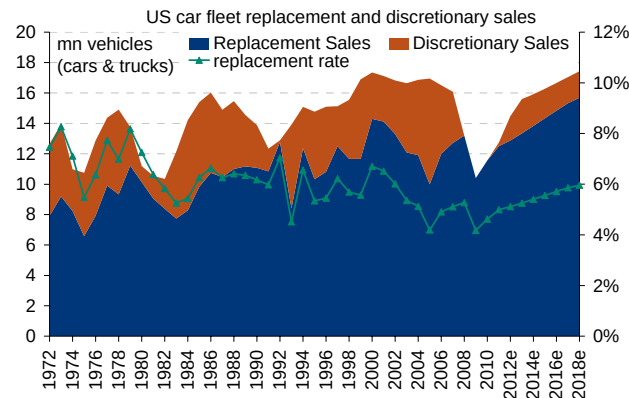
Solid dots and lines represent historical performance; Solid dots and dashed lines: enacted targets; Solid dots and dotted lines: proposed targets; Hollow dots and dotted lines: unannounced proposal

There is scope for large efficiency gains in North America...

Should US policy targets on car fuel efficiency become more ambitious to 2016 (Chart 30), we could see significantly larger reductions in oil consumption over the medium term. High fuel prices and low real rates, however, may already be doing part of the work for policy makers. The median age of the US fleet has been rising in recent years, and our equity research colleagues predict that we are about to face the beginning of a fleet replacement cycle (see [Automotive Industry](#) report). Not only is the fleet replacement rate picking up, but there is a shift towards small to medium sized cars while SUVs are falling from grace (Chart 31).

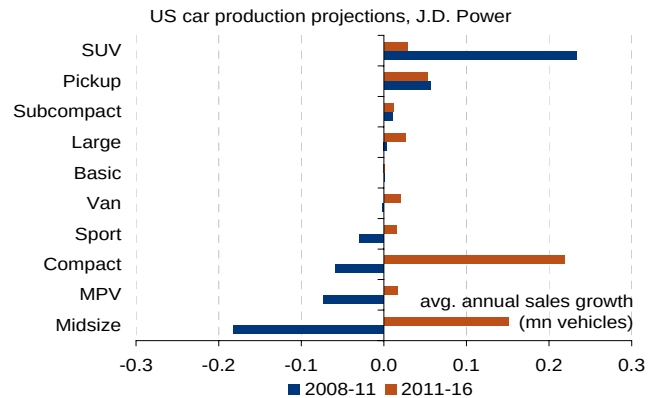
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Chart 30: With a fleet replacement rate of around 5.4% per year we could see larger reductions in oil consumption in the US



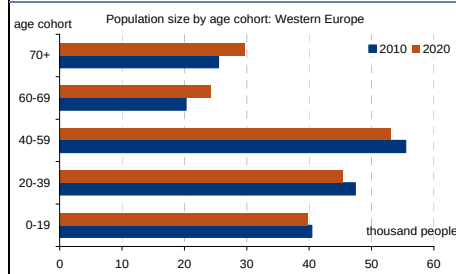
Source: Ward, BofA Merrill Lynch Global Research

Chart 31: Small to medium sized cars gaining market share while SUVs are falling from, adding to fuel efficiency improvements



Source: JD Power, BofA Merrill Lynch Global Research

Chart 32: Europe's population is aging rapidly



Source: UN, BofA Merrill Lynch Global Commodities Research

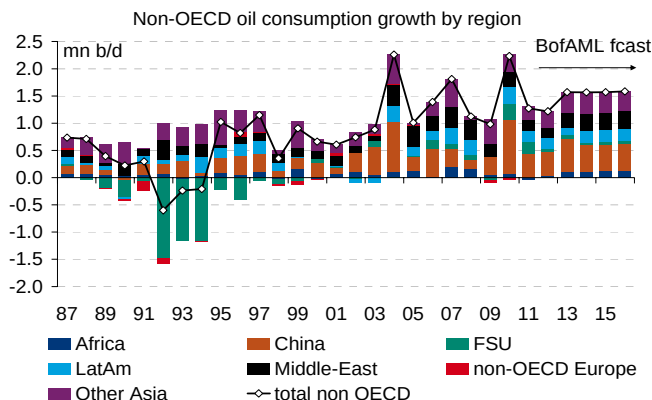
Western Europe is aging rapidly and oil demand is shrinking

Meanwhile, we expect even larger demand contractions in Europe over the medium term due to ongoing efficiency gains and a rapidly aging population (Chart 32). For the whole period, we expect OECD Europe demand to decline by a cumulative 0.9 million b/d. Moreover, Europe continues to push the global frontier for fuel efficiency targets in new cars (see Chart 29 above).

Non-OECD oil demand growth will stay strong medium term

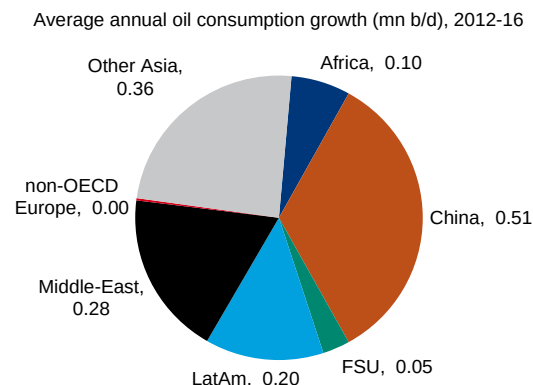
Non-OECD oil demand growth has been on a clear accelerating path for the past two decades, and our outlook for the next five years remains on trend (Chart 33). We estimate that EM oil consumption will grow by an average of 1.5 million b/d per year from 2012 to 2016 (Chart 34). Perhaps more startlingly, we see emerging markets boost their appetite for oil by 7.5 mn b/d over the forecasting period. Much of the strength can be attributed to ongoing urbanization trends, infrastructure expansions and a rising middle class. Subsidies and price caps will likely continue to protect consumption in some countries, most notably in the Middle East.

Chart 33: Non-OECD oil demand growth has been accelerating for two decades, and our outlook for the next five years remains on trend



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 34: We estimate EM oil demand will grow by 1.5 mn b/d per year on average from 2012 to 2016, led by Asia, Middle East, Latin America

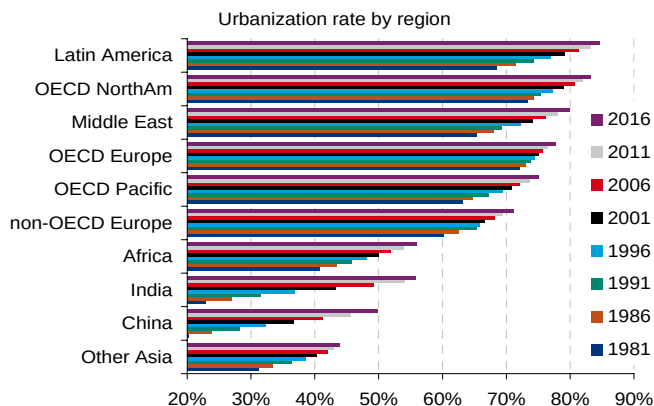


Source: IEA, BofA Merrill Lynch Global Commodities Research

Urbanization and transportation drive EM oil demand

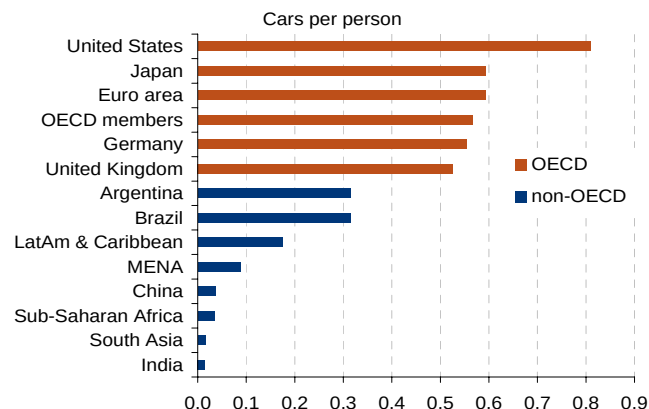
Urbanization and industrialization increase the demand for transportation as people commute to work in urban areas (Chart 35). Moreover, rising incomes of the middle class come with a higher demand for cars. In EMs, most car sales are obviously additive to the fleet. Thus, with car penetration per capita in EMs still far behind most DMs, we see significant potential for higher oil consumption (Chart 36).

Chart 35: The process of urbanization increases the demand for transportation as people commute to work in urban areas



Source: World Bank, UN, BofA Merrill Lynch Global Commodities Research

Chart 36: With car penetration per capita in EMs far behind most DMs, we see potential for rising car fleets and thus higher oil consumption



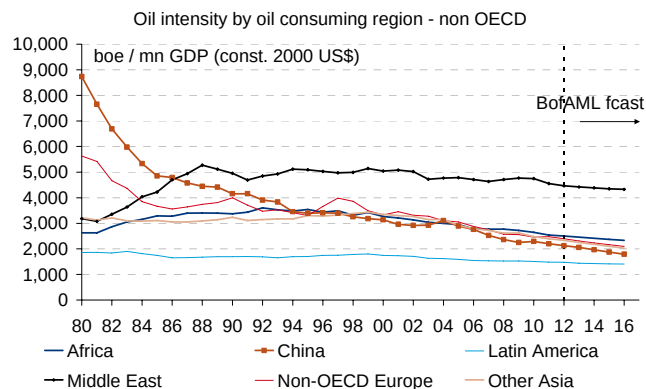
Source: World Bank, BofA Merrill Lynch Global Commodities Research

Energy efficiency might not fully converge in EMs

Over time, we have observed a high degree of convergence in energy efficiency across countries, although levels can still differ dramatically across countries (Chart 37). In general, EM consumers tend to spend a much larger share of their income on oil compared to DM consumers, leading to lower energy efficiency (Chart 38). Skewed energy policies also add further negative pressure on energy efficiency, as subsidies artificially reduce domestic prices and often lead to excessive consumption. The Middle East has a long history of employing oil subsidies, making it the least oil efficient region in the world.

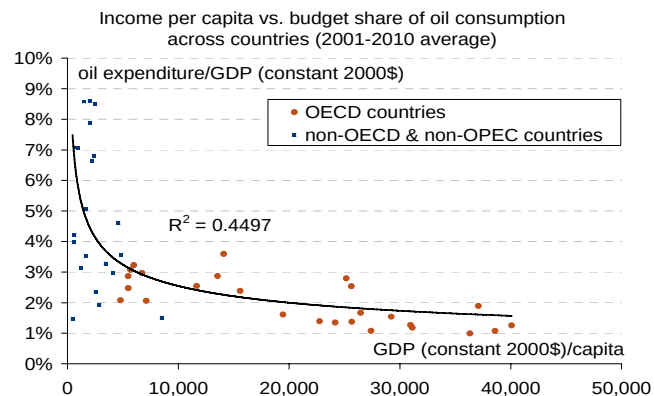
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Chart 37: Over time we observe a degree of convergence in energy efficiencies across regions



Source: IEA, IMF, BofA Merrill Lynch Global Commodities Research

Chart 38: EM consumers spend a higher share of their income on oil consumption, thus efficiency tends to be lower

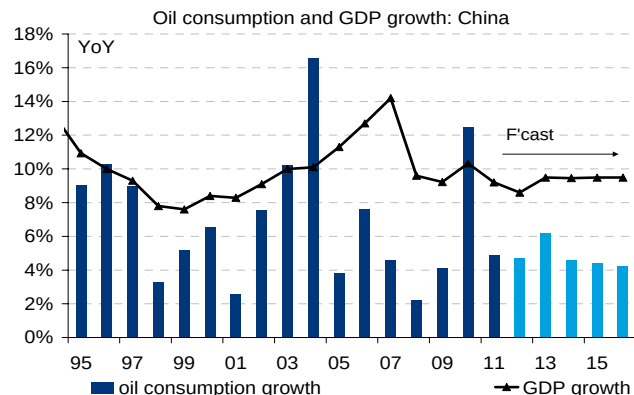


Source: BP, IMF, BofA Merrill Lynch Global Commodities Research

The outlook for China's demand growth remains positive

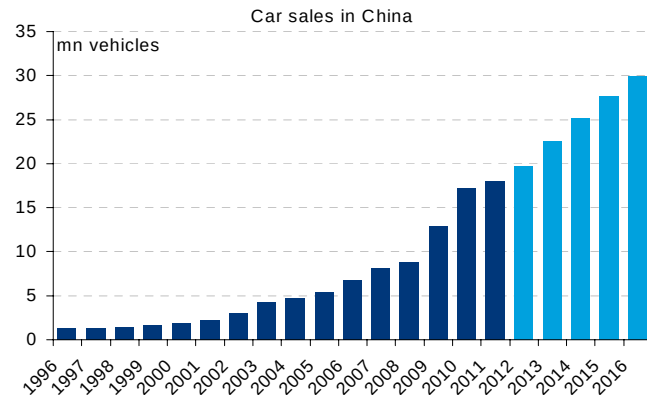
Through 2016, we see China's oil consumption grow by an average of 0.5 million b/d p.a. from 2011 levels, or a cumulative 2.5 million b/d (Chart 39). Consumption in 2013 will likely expand by a strong 600 thousand b/d, followed by more sustainable growth of 490 thousand b/d, on average, until 2016. Overall, the outlook for Chinese oil demand growth remains positive through the medium term given our expectation of an exponential rise in car sales (Chart 40). More than half of China's population could live in urban areas by 2016, up from 45% in 2011, implying that the urban population could grow by 80 billion people between 2011 and 2016. Meanwhile, the car fleet could expand by 125 million cars. Still, China's urbanisation rate through 2016 is low compared to other EMs such as Latin America (over 80%), India (56%) and even Africa (56%).

Chart 39: Through 2016, we see China's oil consumption growing by an average of 0.5 million b/d per year



Source: IEA, IMF, BofA Merrill Lynch Global Commodities Research

Chart 40: Rising incomes and urbanization will likely lead to an exponential rise in car sales in China



Source: JD Power, IMF, BofA Merrill Lynch Global Commodities Research

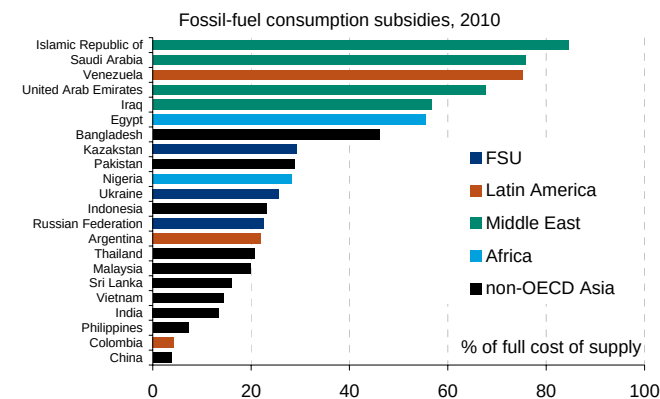
Other Asian countries should also see strong growth...

Oil consumption in non-OECD Asia excluding China is also set to expand significantly over the medium term, with annual average growth of 0.4 million b/d from 2012 to 2016. About one-third of the growth in this region will come from India, which has just 0.015 cars per person, lower than China's 0.037 and much lower than the OECD average of 0.57.

...although high oil prices could put some subsidies at risk

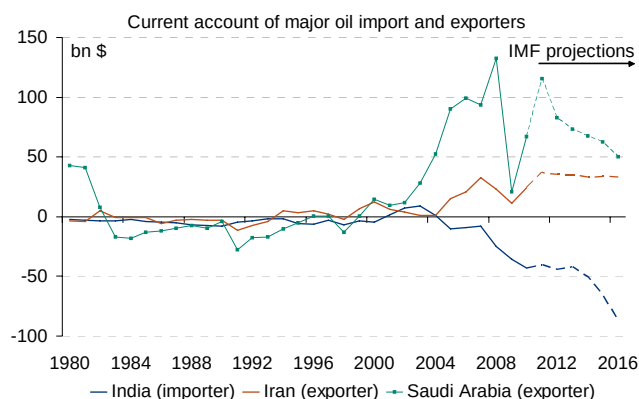
India, like many other EMs in Asia, has fuel subsidies in place which lead to excessive oil consumption (Chart 41). However, as most of these countries are net importers of oil, high oil prices are increasingly putting government budgets under pressure (Chart 42). Thus, fuel subsidies could be reduced substantially over the medium term simply because countries can no longer afford them.

Chart 41: India, like many other EMs in Asia, has vast fuel subsidies in place which often lead to excessive oil consumption



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 42: High oil prices are increasingly putting trade balances and government budgets under pressure



Source: IMF, BofA Merrill Lynch Global Commodities Research

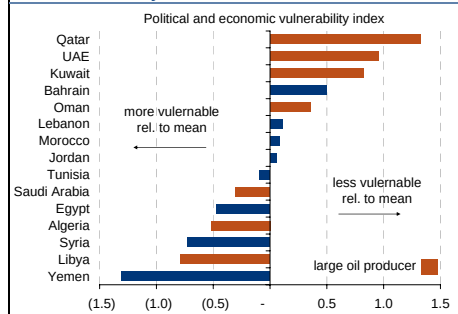
Latin America gasoline demand will continue to grow

For Latin America, we estimate that oil demand will grow by an annual average of 0.2 million b/d from 2011 to 2016. Brazil will account for the bulk of this growth, driven in large part by growth in the transportation sector. In 2011, robust economic activity and an expanding middle class lead to record high car sales in Brazil. Further, rising ethanol prices helped support stronger gasoline demand. This is because drivers of flex fuel vehicles, which currently make up about 50% of the Brazil's fleet and 80-85% of new car sales, increasingly turned to blended gasoline, as opposed to hydrous (standalone ethanol) fuels.

MENA is more concerned about social spending.

We forecast MENA oil consumption to grow by a cumulative 1.4 million b/d over the next five years. Despite having some of the highest fuel subsidies in the world, we believe there will not be much reduction in fuel subsidies in the Middle East given the recent popular uprising. Leaders across the region have ramped up social spending programs in order to appease an increasingly disenfranchised population (Chart 43). Most notably, Saudi Arabia's government spent nearly \$215bn in social spending during 2011, which was almost 40% above target and close to 25% above 2010. In Nigeria, the government's attempt to remove petrol subsidies backfired, resulting in strikes throughout the country.

Chart 43: Large MENA producers rank highly in our vulnerability index



Source: BofA Merrill Lynch Global Commodities Research

Medium term oil supply outlook

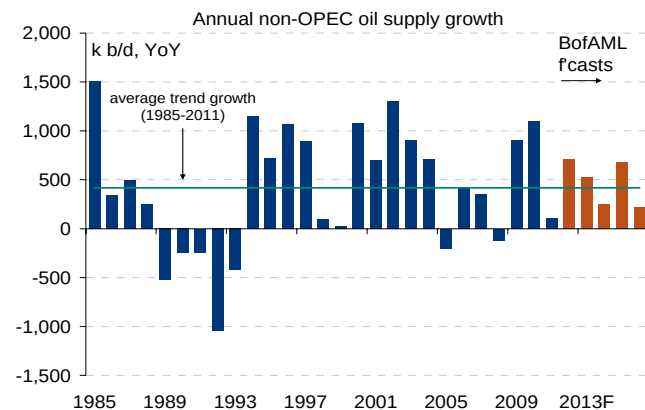
Non-OPEC oil supply growth disappointed in 2011...

Following two years of impressive output growth, non-OPEC oil supply barely expanded at all in 2011 (Chart 44). In the two prior years, non-OPEC supply grew by a combined 2 million b/d, with 2010 witnessing the highest production growth outside OPEC since 2002. Such strength was attributed to major new projects starting up in Brazil, Kazakhstan, and Russia, as well as upside surprises in the US and China. However in 2011, the production profile turned sharply. Against our initial expectations, non-OPEC oil supply growth was nearly flat last year, growing by just over 100 thousand b/d to 52.7 million b/d.

...due to a host of unplanned outages

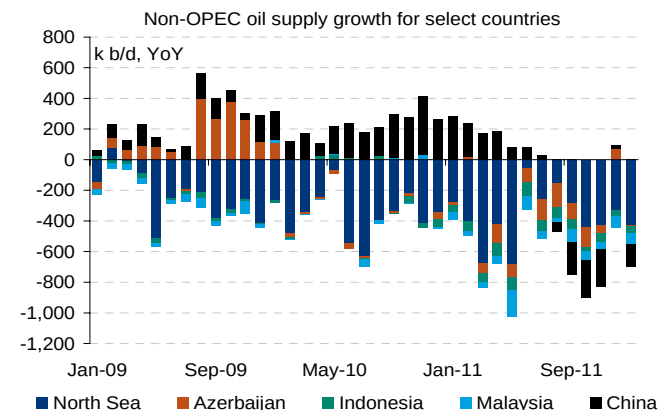
In our view, 2011 does not necessarily mark a new trend. Rather, a raft of special factors such as outages and supply shocks pushed output down. With the exception of the US and Russia, oil production from nearly every other non-OPEC country fell short of expectations (Chart 45). Much of the disappointment came from the North Sea, where unplanned outages at fields like Buzzard, Valhall, and Ekofisk exacerbated the natural field decline, with output falling by a total of 370 thousand b/d in 2011. Elsewhere, leaks at offshore projects in both Brazil and China cut into production growth, ongoing technical problems at the ACG field continued to plague production in Azerbaijan, and mature field declines in countries like Indonesia or Malaysia weighed on oil supply in 2011. On the other hand, strong onshore production growth in the US and favourable government policies in Russia enabled these countries to offset declines elsewhere.

Chart 44: In a major trend reversal, non-OPEC oil supply growth in 2011 was minimal following two years of phenomenal growth



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 45: With the exception of the US and Russia, oil production from nearly every other non-OPEC country came in short of expectations



Source: IEA, BofA Merrill Lynch Global Commodities Research

Volumes should recover in 2012

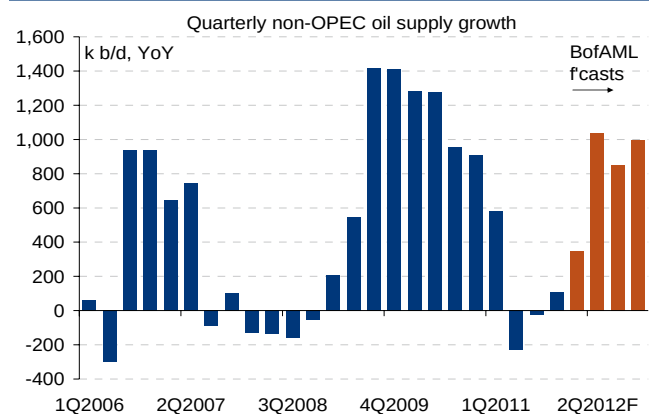
Going forward, we expect strong volume growth in other regions as well. In aggregate, non-OPEC oil supply should recover strongly this year, growing by 705 thousand b/d to an average of 53.4 million b/d (Chart 46). The US and Russia will still add meaningfully to growth this year but will likely be joined by Canada (Chart 47), supported by new oil sands projects, and Brazil, supported by the ongoing development of deepwater offshore projects (Table 1).

Table 1: Major projects ramping or starting up in 2012

Country	Project	start year	peak prod (k b/d)
Brazil	Marlim Sul (P-56)	2011	100
EG	Aseng	2011	100
Canada	Firebag 3	2011	63
Canada	Christina Lake C	2011	40
Vietnam	Te Giac Trang	2011	40
Canada	Jackfish 2	2011	35
Brazil	Carioca NE EWT	2011	30
Vietnam	Chim Sao	2011	25
Brazil	Roncador (P-55)	2012	180
Brazil	Guara Pilot 2	2012	120
Canada	Kearl 1	2012	110
Brazil	Baleia Azul	2012	100
Norway	Fast track projects (4)	2012	90
UK	Jasmine	2012	85
Brazil	Tiro/Sidon	2012	80
Norway	Skarv	2012	80
US	Cascade-Chinook	2012	80
Brazil	Waimea	2012	50
India	Bhagyama	2012	50
Oman	Mukhaizna EOR	2012	50
US	Santa Cruz/Isabella	2012	50
Canada	Christina Lake D	2012	40
India	Aishwariya	2012	40
US	Caesar-Tonga	2012	40
Australia	Montara	2012	35
UK	Athena	2012	20

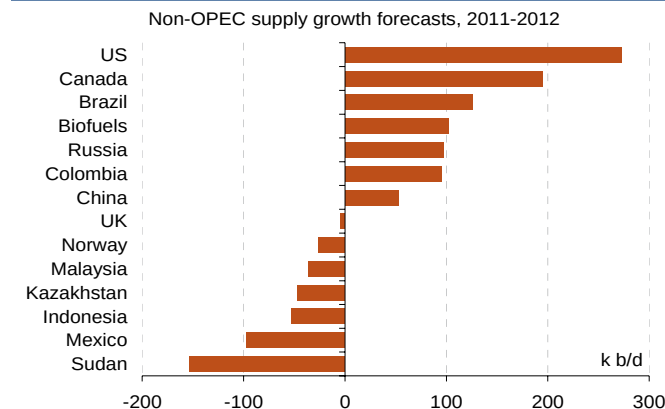
Source: IEA, Reuters, company reports, BofA Merrill Lynch Global Commodities Research

Chart 46: Non-OPEC oil supply should recover strongly this year, growing by 0.7 million b/d to an average of 53.4 million b/d



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 47: The US and Russia will still add meaningfully to growth this year but will likely be joined by Canada and Brazil



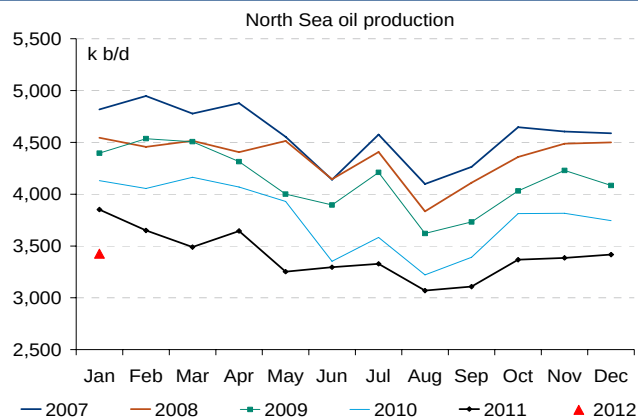
Source: IEA, BofA Merrill Lynch Global Commodities Research

Our forecast is not without risk

However, recent data has been disappointing. North Sea volumes continue to come in much weaker than expected (Chart 48). Clearly, the North Sea issues do not just stem from temporary technical problems but big underlying structural field declines. Ongoing unrest in Africa and the Middle East, particularly in Sudan, Yemen and Syria, also helps to dampen production. Although Syria is only a small net exporter of about 120 thousand b/d, the latest disruptions in South Sudan are more significant (Chart 49). Here, production has fallen to near zero

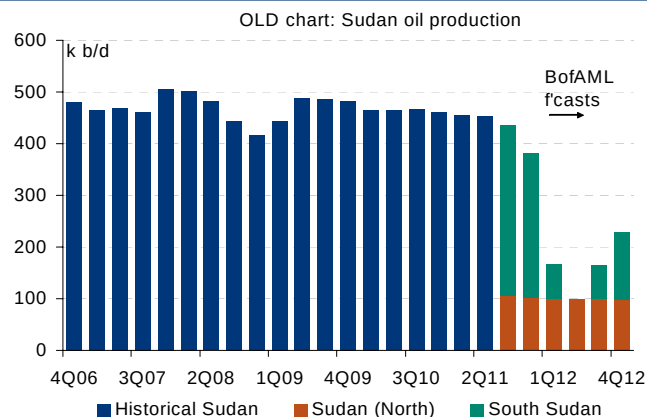
recently of total capacity of 260 thousand b/d. Although better performance in the US and Canada should offset some of these outages, they can not fully absorb them. As a result, we have slightly reduced our expectations for non-OPEC output this year to reflect a slower than expected trajectory through the year.

Chart 48: North Sea volumes continue to come in much weaker than expected, posing a risk to our expectation of a recovery this year



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 49: Ongoing unrest in Africa and the Middle East particularly in Sudan, Yemen and Syria also help to dampen production



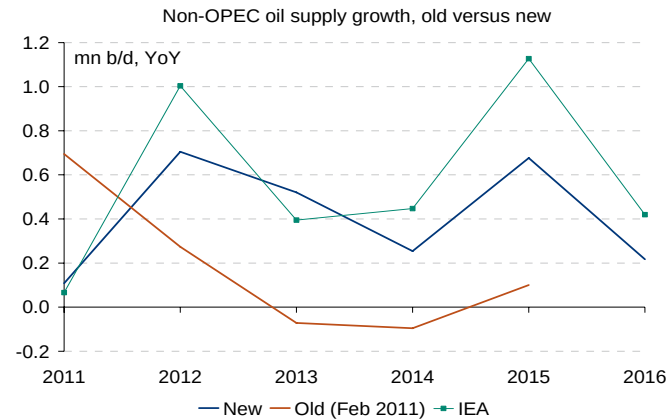
Source: IEA, BofA Merrill Lynch Global Commodities Research

Our outlook on medium term supply remains cautious

When we performed our last medium term analysis one year ago, we expected non-OPEC output growth to contract in 2014 and then tick up ever so slightly in 2015. Since then, we have updated our model for the unexpected slowdown in growth in 2011 and the subsequent recovery in 2012 and also added a year to our forecasting period. While we continue to see non-OPEC supply growth drop steadily through 2014, we believe volumes will flatten rather than contract. However, we still expect 2015 to show the strongest output growth through the medium term. This will likely be followed by much lower growth in 2016 (Chart 50). Despite these upward revisions to our estimates from last year it is important to point out that relative to historical performances, combined production growth over the next five years will be below the historical average (Chart 51). Overall, we now believe that non-OPEC supply will grow by a cumulative 2.4 million b/d from 2011 to 2016, compared to our previous estimate of 0.9 million b/d from 2010 to 2015.

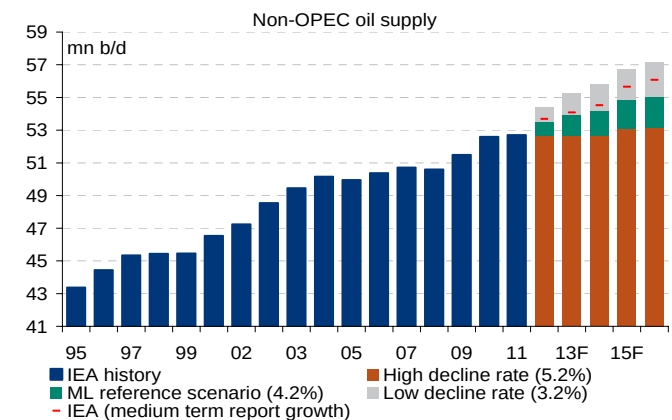
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Chart 50: We still see non-OPEC supply growth steadily dropping through 2014, but we believe volumes will flatten rather than contract



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 51: Overall, we now believe that non-OPEC supply will grow by 2.4 million b/d from 2011 to 2016

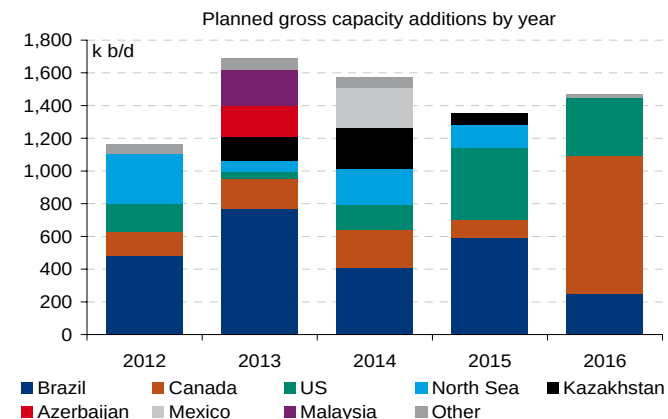


Source: IEA, BofA Merrill Lynch Global Commodities Research

Non-OPEC supply growth will slow through 2014...

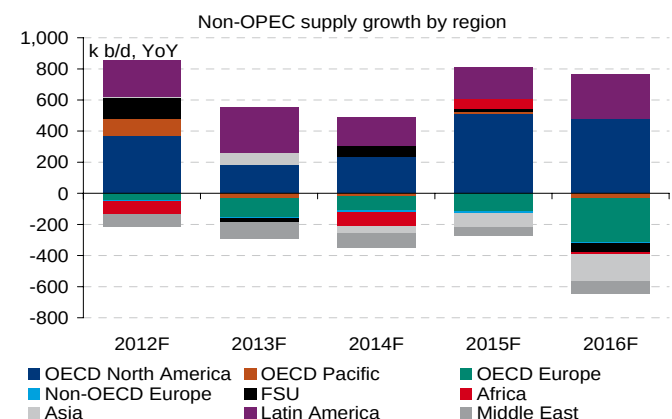
Through 2016, we expect a total of 7 million b/d of gross capacity additions to start up, having a meaningful impact on non-OPEC supply growth particularly in North America, Latin America and FSU (Chart 52 and Chart 53). New projects that are scheduled online in 2013 and 2014 will come predominantly from Brazil and Canada, and involve large and complex operations that could take longer to ramp up to full capacity. These regions have seen some underperformance in recent years due to unplanned outages. Projects coming online in Malaysia and the North Sea will likely not make a much of an impact on oil supply after factoring in declines elsewhere in the country. And finally, expansions in troubled Kazakhstan and Azerbaijan will likely take longer than expected to fully ramp up.

Chart 52: New projects 2013 and 2014 will come predominantly from Brazil and Canada, and involve large and complex operations



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 53: New projects will have a meaningful impact on non-OPEC supply growth particularly in North America, Latin America & FSU



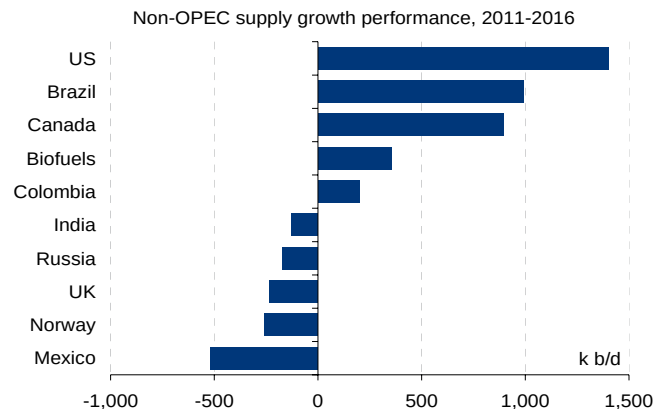
Source: IEA, BofA Merrill Lynch Global Commodities Research

...but improvement in 2015 will be lead by key players

Non-OPEC oil supply growth over the past few years has been dominated by the US, Russia, Canada, and of course, offshore Brazil. Looking forward, we continue to see these same countries leading growth. In our model, the US overtakes Brazil as the leading contributor to growth, adding a significant 1.4 million b/d of oil supply from 2011 through 2016 (Chart 54). Coming in second, Brazil is expected to add 1.0 million b/d of output through the period. Because of its

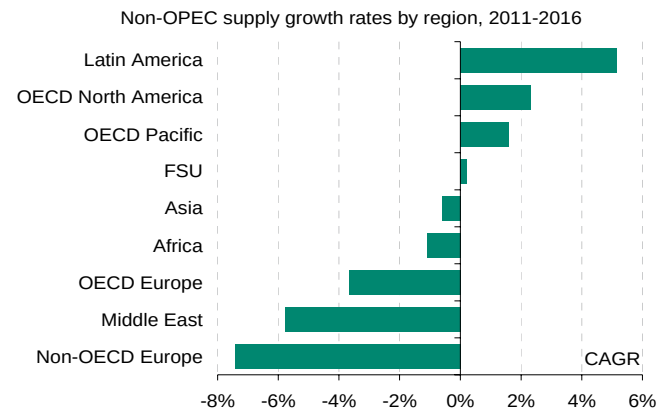
contribution, Latin America is the fastest growing region (Chart 55). Canada is expected to also add meaningfully to non-OPEC supply with 0.9 million b/d of growth through 2016. Russia, on the other hand, is forecast to experience declines through the end of the period given a lack of greenfield projects and a large, mature asset base.

Chart 54: The US could overtake Brazil as the leading contributor to growth, adding 1.4 million b/d of oil supply from 2011 through 2016



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 55: Brazil is expected to add 1.0 million b/d of output through the period, helping Latin America be the fastest growing region



Source: IEA, BofA Merrill Lynch Global Commodities Research

Table 2: Major Canadian projects starting up through 2016

Project	start year	peak prod (k b/d)
Kearl 1	2012	110
Christina Lake D	2012	40
Firebag 4	2013	63
Kirby	2013	45
Christina Lake E	2013	40
Christina Lake 2B	2013	35
Sunrise 1	2014	60
Foster Creek F	2014	45
Long Lake/Kinosisis	2014	40
Jackfish 3	2014	35
MacKay (PetroChina)	2014	35
Taiga 1	2014	23
Kearl Phase 2	2015	110
Surmont Phase 2	2015	83
Dover	2015	50
Corner	2015	40
Foster Creek G	2015	40
Nabiye	2015	40
Fort Hills	2016	165
Horizon Phase 2B	2016	45
Christina Lake F	2016	40
Foster Creek H	2016	40
Kirby Ph 2	2016	40
MacKay River 2 (Suncor)	2016	40

Source: IEA, company reports, BofA Merrill Lynch Global Commodities Research

North America is expected to dominate non-OPEC growth

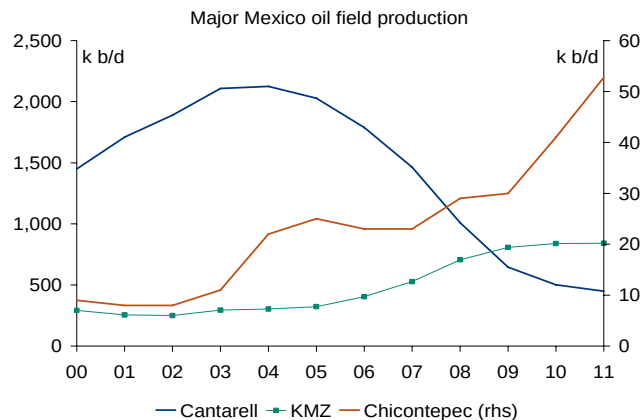
Perhaps somewhat surprisingly, North America will account for about three-quarters of non-OPEC supply growth from 2011 to 2016. In Mexico, we have seen decline rates at one of the country's largest fields, Cantarell, moderate in recent years, from over 35% in 2009 to about 10% last year, and the smaller onshore Chicontepec continues to ramp up (Chart 56). However, with growth at KMZ slowing and only two new projects starting up in late 2014 (Ayatsil and Tsimin), we believe declines will depress production.

Canadian oil supply growth is set to accelerate by 2016

Still, output from the US and Canada will more than offset these declines. In Canada, we believe oil production growth will accelerate rapidly in the 2014-2016 period given the ongoing ramp-up of several oil sands projects (Chart 57). In 2011, the start up of Firebag 3, Jackfish 2, and Christina Lake Phase C contributed significantly to oil supply growth, offsetting losses from fires at both Horizon and more recently Syncrude. Looking forward, we expect production to rise by 0.9 million b/d by 2016 to 4.4 million b/d given the robust project pipeline including Kearl 1 and 2 (200 thousand b/d), four additional phases at Christina Lake (155 thousand b/d), and three additional phases of Foster Creek (125 thousand b/d) (Table 2).

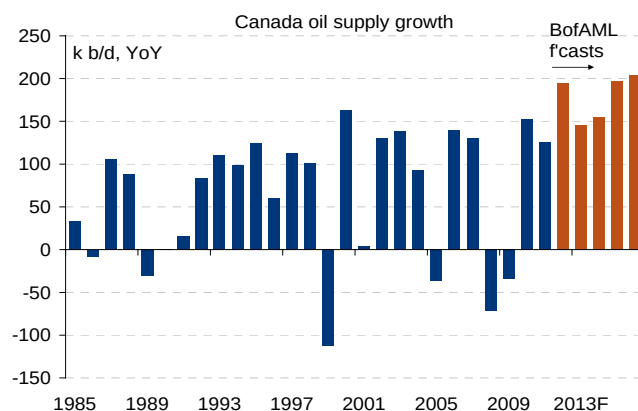
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Chart 56: In Mexico, we have seen decline rates at Cantarell moderate and the smaller onshore Chicontepec continues to ramp up



Source: Mexico National Hydrocarbon Commission, BofA Merrill Lynch Global Commodities Research

Chart 57: In Canada, oil production growth could accelerate rapidly in 2014-2016 given the ongoing ramp-up of several oil sands projects

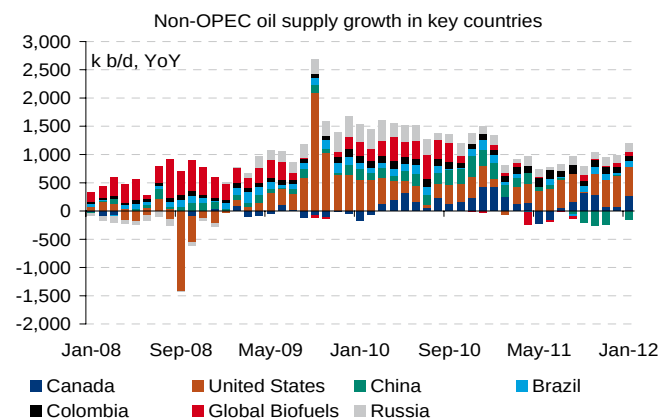


Source: Mexico National Hydrocarbon Commission, BofA Merrill Lynch Global Commodities Research

US output continues to exceed expectations...

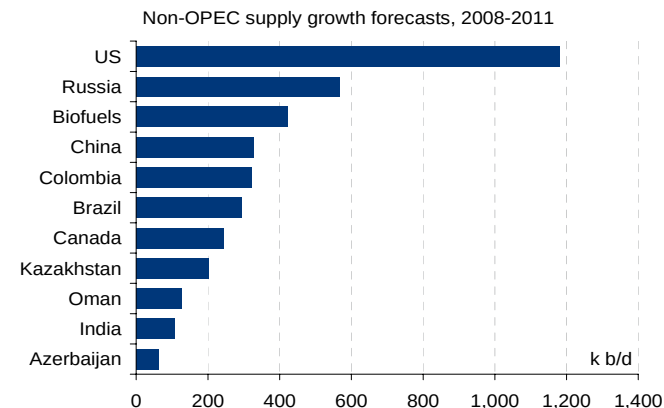
The US has without question been the biggest contributor to non-OPEC supply growth (Chart 58). In fact, it has been the single largest contributor to growth in 2009, 2010, and again in 2011, and is on track to do the same in 2012 (Chart 59). Onshore shale oil production has been the primary driver of US output growth. We do see growth rates slowing through 2016 from current rates of about 50%, but shale oil output is still expected to average an impressive 2.9 million b/d in 2016, from 1.1 million b/d in 2011 (Chart 60). As a result, shale oil is expected to make up about 30% of total US oil production in 2016, up from 15% in 2011.

Chart 58: The US has without question been the biggest contributor to non-OPEC supply growth in recent years



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 59: In fact, it has been the single largest contributor to growth in 2009, 2010, and again in 2011, and is on track to do the same in 2012



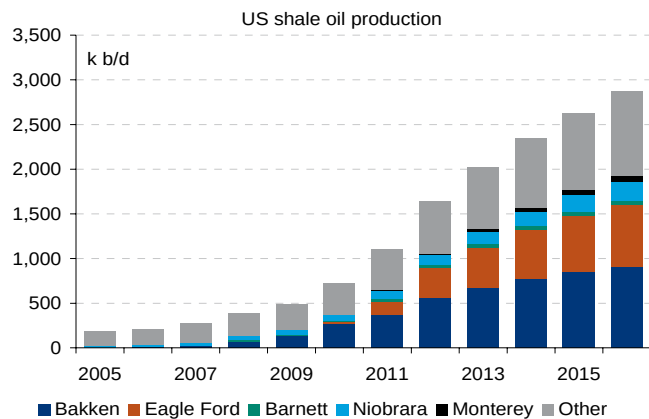
Source: IEA, BofA Merrill Lynch Global Commodities Research

...and will further be supported by the Gulf of Mexico

In addition to growing onshore production in the US, major Gulf of Mexico offshore projects will also contribute to growth. Following a slowdown in the aftermath of the Macondo event as a drilling moratorium and rising safety concerns limited activity in the region, we now expect new projects to ramp up through 2016, particularly in the latter part of the period. Overall, we see nearly 1.2 million b/d of new capacity coming online by 2016, 70% of which will start in 2015 or 2016 (Chart 61). Most of these are large, deepwater projects with capacity of over 100 thousand b/d, such as Jack-St Malo and Kaskida, which will

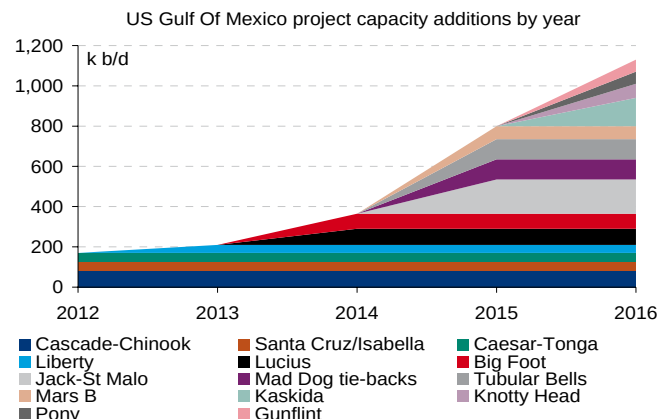
help GOM production reach 1.7 million b/d in 2016, up from 1.4 million b/d in 2011. Overall, we estimate US oil supply will rise from 8.1 million b/d in 2011 to 9.5 million in 2016, growing at an average rate of 3.2% over the next five years.

Chart 60: US shale oil output is still expected to average a phenomenal 2.9 million b/d in 2016, from 1.1 million b/d in 2011



Source: IEA, Woodmac, BofA Merrill Lynch Global Commodities Research

Chart 61: Following a drilling slowdown after the Macondo event, we now expect new projects in the GoM to ramp up through 2016

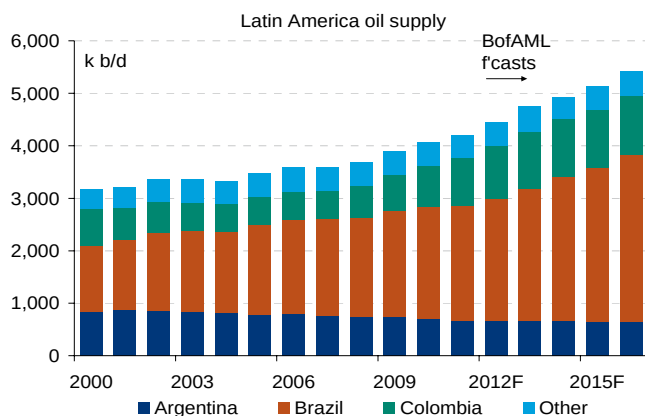


Source: BofA Merrill Lynch Global Commodities Research

Latin America is still a major source of growth...

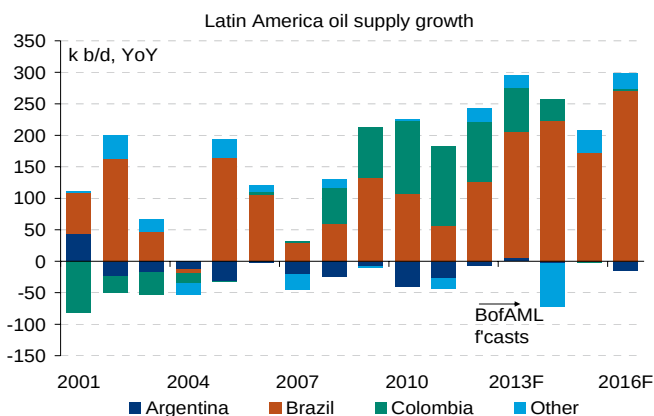
Still, Latin America is the fastest growing region with average annual growth of 5.2%. On our estimates, oil supply in Latin America will grow by 1.2 million b/d from 2011 levels to 5.4 million b/d by 2016 (Chart 62). While Brazil is clearly leading growth in the region, it is also important to note Colombia's contributions (Chart 63). In the last three years, oil output in Colombia has increased by 55%, or 325 thousand b/d, and even reached a record high of 960 thousand b/d in November 2011. A favorable investment environment has supported projects like Rubiales and Quifa as well as exploration efforts, most notably at CPE-6 block. Despite recent worker strikes, we estimate that Colombian oil output will rise to 1.1 million b/d in 2016, up from 914 thousand b/d in 2011.

Chart 62: On our estimates, oil supply in Latin America will grow by 1.2 million b/d from 2011 levels to 5.4 million b/d by 2016



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 63: While Brazil is clearly leading growth in the region, it is also important to note Colombia's contributions



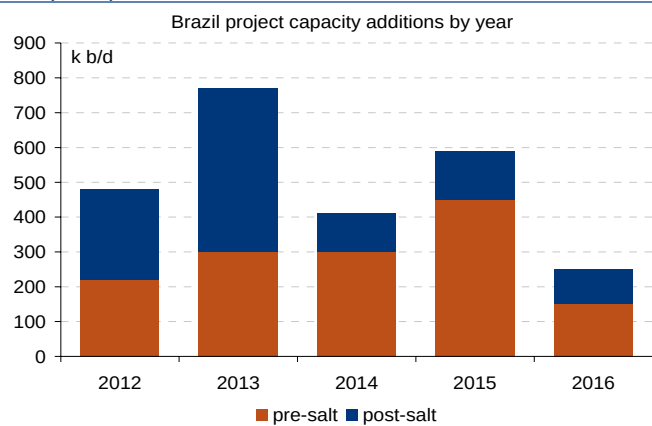
Source: IEA, BofA Merrill Lynch Global Commodities Research

... as pre-salt Brazil continues to emerge

But of course the real growth story lies in Brazil. The project pipeline in Brazil is nothing short of remarkable, with an estimated 2.5 million of capacity via more

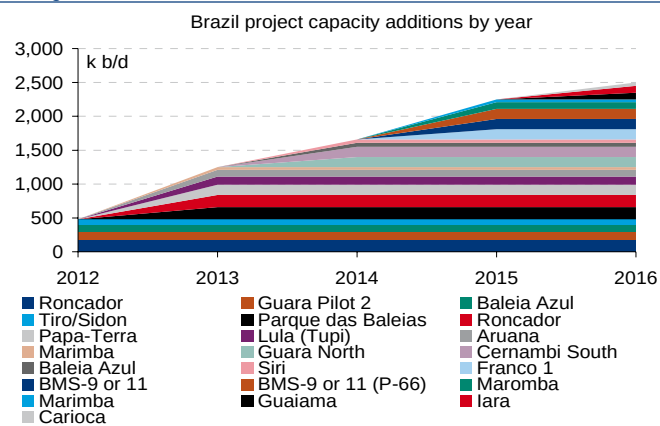
than 20 projects scheduled to come online over the next five years. Most of projects come from the highly anticipated pre-salt area, which includes Guara, Lula (formerly Tupi), Parque das Baleias, and Baleia Azul (Chart 64). According to Petrobras, pre-salt production currently stands at about 200 thousand b/d. Given that 60% of the new capacity scheduled to come online through 2016 encompasses pre-salt projects (Chart 65), this figure will likely rise to at least 800 thousand b/d in 2016. We remain cautious, however, as 2011 Brazilian output came in at nearly one-third of expectations from one year ago on the back of unplanned outages and heavy maintenance. Still, we forecast that Brazil production will rise to 3.2 million b/d in 2016, up 1.0 million b/d from 2011.

Chart 64: Most of volume growth in Brazil will come from highly anticipated pre-salt areas...



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 65: ...which represent 60% of the new capacity scheduled online through 2016



Source: IEA, BofA Merrill Lynch Global Commodities Research

Strength in Russian supply growth will wane...

Russian oil production was one of the biggest surprises throughout 2011, as an unexpected reduction in crude export duties helped drive production to new post-Soviet record highs of 10.7 million b/d in October 2011. Much of the growth can be attributed to the ongoing ramp-up of key greenfield projects in East Siberia (such as Talakan, Vankor, and Verkhnechonsk) representing about 750 thousand b/d of capacity. However, with approximately 90% of Russian production coming from a mature asset base that declines at 3-5% per year, maintaining growth rates similar to the ones we have seen in recent years may be difficult (Chart 66). Instead, we expect declines will set in through the end of the period, with production falling by 0.2 million b/d from 2011 levels to 10.4 million b/d in 2016.

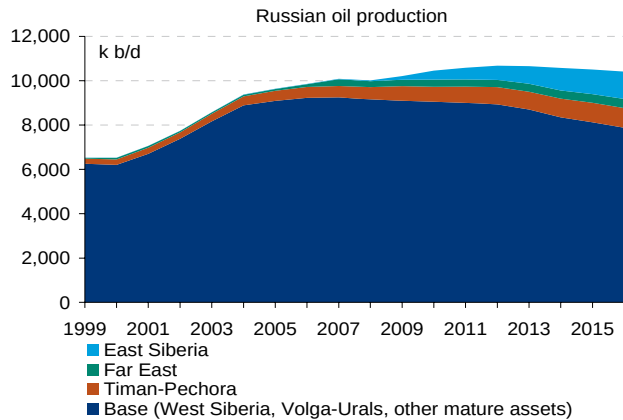
...as it will in non-OPEC Asian producers like China & India

Russia will not be the only country to see growth slow significantly through the medium term. In China, rising production from offshore fields like Bohai Bay has offset declines in older onshore areas, helping production grow by 0.4 million b/d, or 12%, in the last five years through 2011. However, the lack of new large projects suggests that Chinese oil production will start to decline by 2014, which will keep growth mostly flat from 2011 to 2016 at 4.1 million b/d (Chart 67).

In India, oil supply growth has been strong over the last two years, growing by 100 thousand b/d in 2010 and 2011, or 13%, on the back of fields coming online at the Mangala-Bhagyama-Aishwariya complex, supporting production through 2013. However, we expect Indian supply to start declining in 2014 as new volumes are insufficient to offset ongoing declines elsewhere in the country.

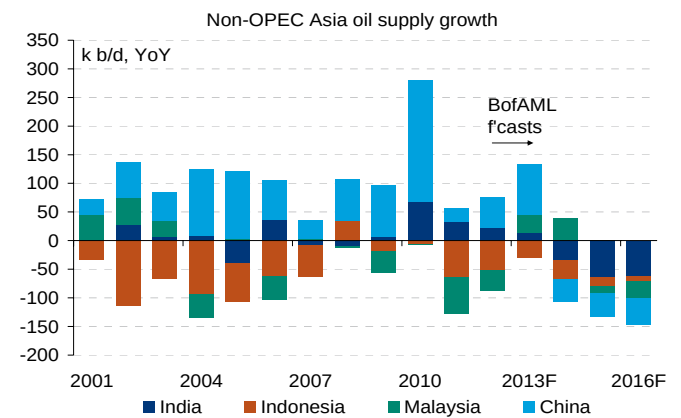
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Chart 66: With 90% of Russian production from a mature asset base that declines at 3-5% per year, maintaining growth may be difficult



Source: IEA, WoodmacBofA Merrill Lynch Global Commodities Research

Chart 67: In China and India, the lack of new large projects suggests that output will start to decline by 2014

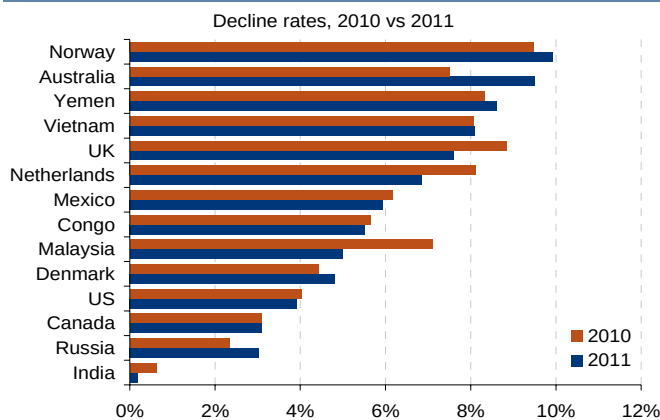


Source: IEA, BofA Merrill Lynch Global Commodities Research

Decline rates for non-OPEC production are improving...

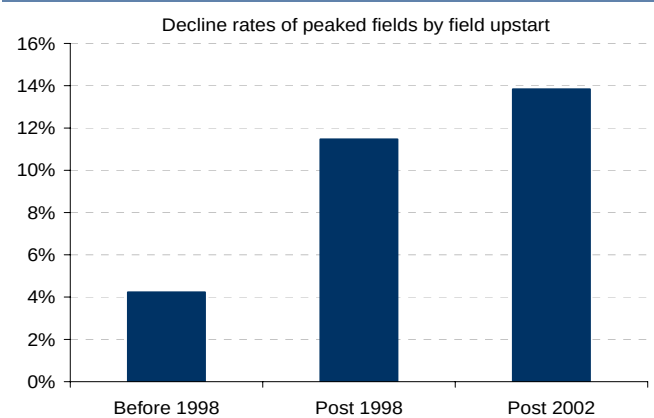
Supporting medium term non-OPEC oil supply are improving decline rates. Based on our analysis of the IEA's field-by-field database, we find that non-OPEC production is now declining at an average rate of 4.2%, a slight improvement from the 4.4% that was observed last year (Chart 68). This marks the second consecutive year of lower sequential decline rates. Similarly, the IEA comments that non-OPEC decline rates have improved by 0.5% in the past year. Meanwhile, we still find a strong trend whereby newer fields decline significantly faster than older fields. For fields that have started after 2002, production continues to decline at a very fast pace of 14%, compared to about 11% for fields that have started after 1998 and 4% for fields that have started prior to 1998 (Chart 69).

Chart 68: Non-OPEC production is declining at an average rate of 4.2%, which a slight improvement from the 4.4% last year



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 69: Meanwhile, we still find a strong trend whereby newer fields decline significantly faster than older fields



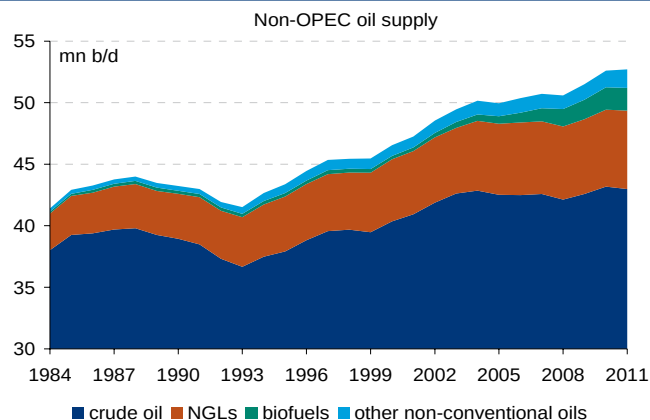
Source: IEA, BofA Merrill Lynch Global Commodities Research

...but OPEC is keeping global decline rates steady at 4.2%

However, while progressive decline rates are supporting non-OPEC supply growth, OPEC faces the opposite problem (Chart 70). OPEC decline rates continue to rise, with the IEA estimating that the existing production base is declining at a rate of 4.5% per year, compared to 3.9% observed a year ago, and 3.3% the year prior. Overall, given improving non-OPEC decline rates combined with deteriorating OPEC rates, we estimate that global production is declining at an average annual rate of 4.3%, compared to 4.2% last year (Chart 71).

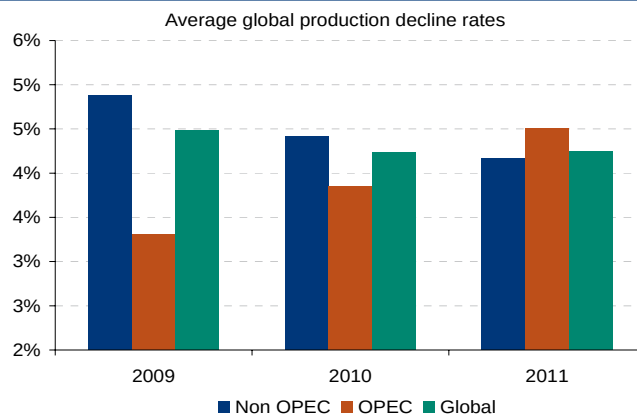
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Chart 70: However, while progressive decline rates are supporting non-OPEC supply growth, OPEC faces the opposite problem



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 71: Given improving non-OPEC and deteriorating OPEC decline rates, we estimate that global production is declining at 4.3% p.a.

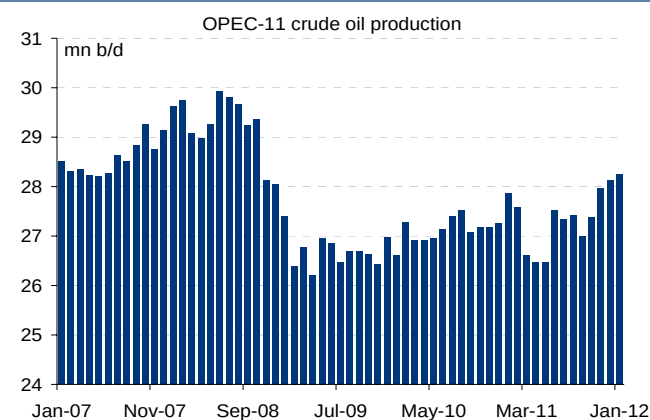


Source: IEA, BofA Merrill Lynch Global Commodities Research

OPEC spare capacity will rise with the return of Libya...

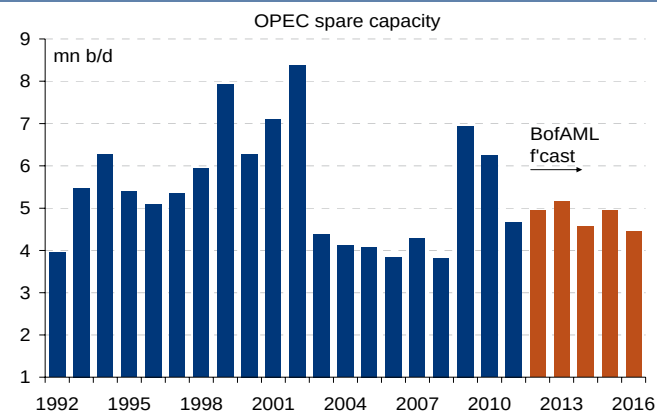
With the loss of Libyan oil supplies and the myriad of non-OPEC supply disruptions throughout 2011, OPEC led by Saudi Arabia moved to replace any shortfalls in supply. In 2011, Saudi Arabian crude production rose by 0.9 million b/d, helping OPEC-11 production rise by 0.2 million b/d to 27.3 million b/d (Chart 72). As a result, OPEC spare capacity fell dramatically from 6.1 to 4.6 million b/d, the lowest level since 2008. Still, OECD inventories remain below 5-year averages, suggesting that global supplies are tight. With non-OPEC supply growth staying moderate and global oil demand set to increase going forward, OPEC spare capacity will likely remain low through the period (Chart 73).

Chart 72: For the full year of 2011, Saudi Arabian production rose by 0.9 mn b/d, helping OPEC-11 output rise by 0.2 million b/d to 27.3



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 73: As a result, OPEC spare capacity fell dramatically from 6.1 to 4.6 million b/d, the lowest levels since 2008



Source: IEA, BofA Merrill Lynch Global Commodities Research

...but OPEC capacity growth will be limited

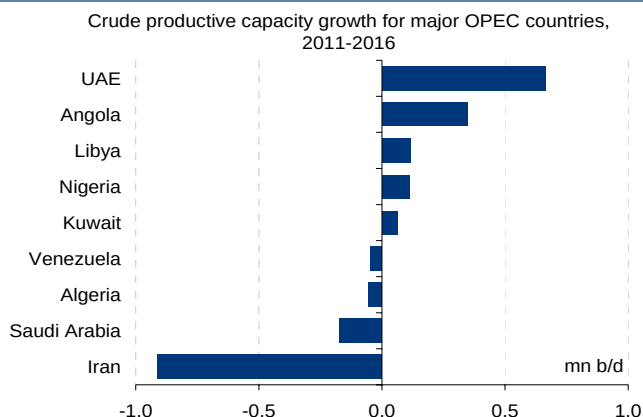
Still, spare capacity will not collapse given the growth in OPEC productive capacity. Last year, crude capacity in OPEC-11 contracted by 1.3 million b/d to 31.9 million b/d. Libya made up 1.2 million b/d of the contraction. Over the next five years, though, we expect OPEC-11 crude capacity to rise by 1.3 million b/d to 33.3 in 2016. The UAE and Angola will account for the vast majority of the growth (Chart 74). Together, we estimate they will add 1 million b/d of capacity with expansion projects at Lower and Upper Zakum and offshore Blocks 15, 17, and

31. Saudi Arabia is not adding any projects until 2014 with the 900 thousand b/d Manifa project, the first new project since the 1.2 million b/d Khurais field was added in 2010. Still, this new project will serve more to offset declines rather than add to capacity.

The outlook for Iraq remains uncertain

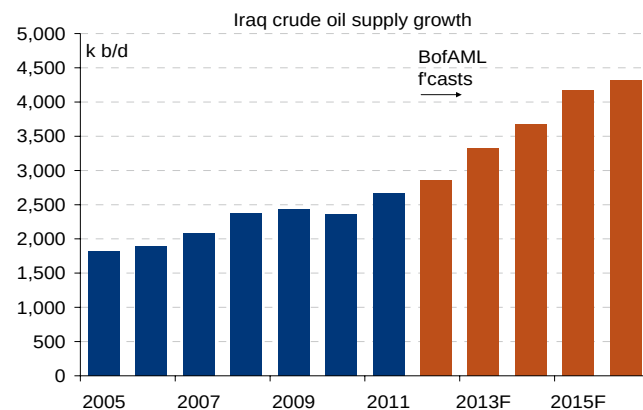
Iraq remains a key uncertainty in our medium term global oil supply outlook. About a year ago, we were expecting Iraqi oil production to reach 4.4 million b/d in 2015, after having reached 2.5 million in December of 2010, the highest level since late 2001. However, since then growth has slowed on the back of pipeline attacks and export capacity constraints. Further, it appears that the infrastructure build-out is falling behind, limiting production growth going forward. The first new oil export facility (single point mooring dock) is now not expected to be operational until at least March (from January originally) and will likely operate at only a fraction of its 900 thousand b/d nameplate capacity given that construction of other supporting equipment like tank farms and connecting pipelines remain behind schedule. We now expect Iraq crude production to reach 4.3 million b/d by 2016, from an average of 2.7 million b/d in 2011 (Chart 75).

Chart 74: Over the next five years, though, we expect OPEC-11 crude capacity to rise by 1.3 million b/d to 33.3 in 2016



Source: IEA, BofA Merrill Lynch Global Commodities Research

Chart 75: We now expect Iraq crude production to reach 4.3 million b/d by 2016, from an average of 2.7 million b/d in 2011



Source: IEA, BofA Merrill Lynch Global Commodities Research

Table 3: BofA Merrill Lynch global oil supply forecast (in thousand b/d)

	2005	2006	2007	2008	2009	2010	2011	2012F	2013F	2014F	2015F	2016F
OECD North America	13,891	13,906	13,846	13,343	13,627	14,102	14,537	14,907	15,089	15,326	15,836	16,317
Canada	3,052	3,192	3,323	3,251	3,217	3,370	3,496	3,690	3,836	3,991	4,188	4,392
Mexico	3,769	3,691	3,487	3,174	2,980	2,961	2,943	2,846	2,723	2,598	2,539	2,424
United States	7,071	7,023	7,037	6,919	7,429	7,772	8,099	8,371	8,530	8,737	9,109	9,501
OECD Pacific	598	580	626	648	650	612	521	630	596	580	594	564
Australia	545	526	548	550	553	514	433	553	526	517	527	512
OECD Europe	5,661	5,272	4,983	4,762	4,512	4,144	3,831	3,785	3,666	3,572	3,457	3,176
Norway	2,961	2,773	2,551	2,466	2,358	2,138	2,035	2,009	1,939	1,855	1,838	1,777
United Kingdom	1,839	1,664	1,664	1,569	1,481	1,359	1,122	1,117	1,081	1,029	963	890
Non-OECD Europe	159	152	155	146	144	140	138	135	126	115	105	94
Former Soviet Union	11,834	12,294	12,813	12,824	13,265	13,545	13,624	13,762	13,742	13,807	13,827	13,773
Russia	9,635	9,851	10,086	10,013	10,209	10,450	10,579	10,677	10,653	10,579	10,503	10,409
Azerbaijan	448	650	863	907	1,050	1,042	968	1,008	1,055	1,169	1,233	1,227
Kazakhstan	1,296	1,361	1,419	1,443	1,575	1,635	1,645	1,598	1,542	1,661	1,780	1,859
Non-OPEC Africa (ex Angola)	2,476	2,540	2,608	2,601	2,562	2,520	2,525	2,324	2,413	2,329	2,409	2,390
Egypt	678	678	700	737	708	698	692	677	659	641	624	604
Sudan	306	345	476	461	475	465	431	165	231	200	169	140
Non-OPEC Asia	7,437	7,470	7,370	7,464	7,526	7,797	7,670	7,672	7,753	7,704	7,610	7,443
India	771	808	801	792	798	865	898	920	933	899	835	772
Indonesia	1,084	1,022	966	1,000	981	975	911	858	828	795	778	769
Malaysia	794	753	757	754	717	716	653	617	649	689	678	649
China	3,628	3,697	3,729	3,801	3,891	4,103	4,128	4,181	4,269	4,229	4,187	4,141
Non-OPEC Latin America*	3,475	3,594	3,580	3,687	3,890	4,073	4,212	4,448	4,743	4,928	5,134	5,418
Argentina	791	789	767	743	736	694	667	659	665	663	660	645
Brazil	1,703	1,809	1,838	1,898	2,030	2,137	2,193	2,319	2,520	2,742	2,915	3,185
Colombia	528	532	534	591	672	788	914	1,009	1,077	1,111	1,111	1,115
Non-OPEC Middle East	1,844	1,743	1,653	1,674	1,715	1,743	1,643	1,559	1,455	1,361	1,304	1,220
Oman	777	740	713	759	815	867	886	931	911	892	868	849
Processing Gains	1,963	2,032	2,024	2,036	2,022	2,096	2,169	2,249	2,330	2,387	2,438	2,494
Global biofuels	623	788	1,061	1,414	1,581	1,826	1,837	1,939	2,018	2,078	2,151	2,194
Non-OPEC** (incl. processing gains)	49,959	50,369	50,719	50,598	51,493	52,598	52,706	53,411	53,932	54,186	54,863	55,081
OPEC-11 crude	28,804	28,990	28,589	29,243	26,715	27,119	27,315	27,437	27,657	28,297	28,172	28,797
<i>OPEC-11 crude plus Iraq</i>	30,617	30,886	30,673	31,623	29,148	29,484	29,987	30,293	30,988	31,977	32,341	33,116
<i>Saudi Arabia crude</i>	9,353	9,219	8,756	9,184	8,164	8,391	9,337	9,064	9,184	9,299	9,224	9,324
<i>Other OPEC-11 crude</i>	19,451	19,771	19,833	20,059	18,552	18,728	17,978	18,372	18,472	18,997	18,947	19,472
<i>Iraq crude</i>	1,814	1,896	2,085	2,381	2,433	2,364	2,672	2,857	3,332	3,681	4,170	4,320
<i>OPEC NGLs + Non-conventional</i>	4,185	4,272	4,316	4,517	4,915	5,339	5,784	6,181	6,376	6,553	6,847	7,003
Total OPEC	34,801	35,158	34,990	36,140	34,063	34,823	35,771	36,474	37,364	38,530	39,188	40,119
Total World Supply	84,760	85,421	85,040	86,130	85,512	87,421	88,478	89,885	91,296	92,716	94,052	95,200

Source: Reuters, Bloomberg, IEA, US DOE, BofAML Global Commodity Research

*Non-OPEC Latin America excludes Mexico (OECD North America) and Ecuador (now OPEC)

Table 4: BofA Merrill Lynch global oil demand forecast (in thousand b/d)

	2005	2006	2007	2008	2009	2010	2011	2012F	2013F	2014F	2015F	2016F
TOTAL OECD Demand	49,870	49,537	49,343	47,624	45,641	46,163	45,638	45,203	45,171	44,959	44,714	44,288
OECD North America Demand	25,599	25,405	25,484	24,182	23,293	23,764	23,494	23,213	23,247	23,212	23,179	23,057
United States	21,168	21,053	21,028	19,789	19,065	19,476	19,185	18,936	18,925	18,850	18,788	18,644
Canada	2,315	2,229	2,283	2,232	2,157	2,215	2,230	2,229	2,236	2,243	2,250	2,256
Mexico	2,117	2,123	2,173	2,161	2,071	2,073	2,078	2,048	2,085	2,119	2,142	2,157
OECD Europe Demand	15,666	15,666	15,474	15,390	14,663	14,584	14,280	14,008	13,945	13,753	13,559	13,362
OECD Pacific Demand	8,605	8,466	8,385	8,052	7,685	7,815	7,864	7,982	7,980	7,993	7,976	7,869
TOTAL NON-OECD Demand	34,628	36,017	37,826	38,949	39,929	42,160	43,432	44,649	46,219	47,786	49,355	50,940
China Demand	6,728	7,241	7,574	7,744	8,063	9,069	9,514	9,962	10,579	11,064	11,554	12,047
Other Asia Demand	8,858	9,109	9,613	9,673	10,123	10,436	10,685	10,998	11,378	11,773	12,145	12,500
Middle East Demand	6,266	6,532	6,902	7,272	7,526	7,816	8,011	8,188	8,459	8,766	9,077	9,405
Latin America Demand	5,241	5,422	5,733	5,995	5,995	6,298	6,483	6,685	6,821	7,036	7,258	7,485
FSU Demand	3,890	4,049	4,133	4,229	4,180	4,463	4,690	4,735	4,798	4,844	4,890	4,937
Africa Demand	2,902	2,913	3,109	3,274	3,328	3,395	3,349	3,380	3,485	3,598	3,720	3,851
Non-OECD Europe Demand	743	751	762	762	714	683	700	700	700	706	711	715
TOTAL Demand	84,498	85,554	87,169	86,573	85,570	88,323	89,070	89,852	91,391	92,744	94,069	95,228

Source: Reuters, Bloomberg, IEA, US DOE, BofAML Global Commodity Research



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Macro

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