



Industry
Global Oil

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North America
United States
Industrials
Integrated Oil



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F.I.T.T. for investors

China: Climbing the Wall of Worry

Even as China slows, we still think \$100+/bbl Brent - above LT futures strips

In this note we extend the work of our lead Asia oil analyst David Hurd and global oil macro analyst Soozhana Choi to provide a comprehensive reference to China's oil market dynamics. Clearly GDP and by extension oil demand growth rates are slowing, and the remarkable impact of China on global oil prices quintupling over the 2000s is now tempered. However, in this note we outline that China's oil demand growth will remain the single largest marginal driver of global oil demand and although slower, should provide sufficient support to the market to allow Saudi to control prices towards their \$100/bbl price target; assuming the US crude export ban stays in place.



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China is the dominant driver of global oil demand and will likely remain so

China needs economic growth to overcome its demographic and political challenges, and it has the balance sheet to generate its own growth. It cannot grow the economy without oil demand growth. That is a given, as an emerging economy substituting coal. The scale is massive. China represents 40% of global incremental oil demand, and we think it keeps going; hence, our view that Saudi will retain market control of the downside, even with the headwind of DB's bullish US\$ view. To the upside, we see oil prices capped at Chinese demand destruction, around Brent prices above \$120/bbl. That implies Brent averaging around \$110/bbl with a maximum upside of \$120/bbl. Long term futures are well below this (\$88/bbl nominal for 2020 delivery, lower real).

The challenge of geopolitics and demand growth

Dominating global growth even after a slowdown, Chinese demand is the key to this construct. In this note we show David Hurd's recent work on this subject – a slowdown but no collapse. The geopolitical implications of China demand are enormous. In 2012 China was 5.4mb/d short of supply and relied on the Middle East for half of its crude oil imports (9.3mb/d apparent demand). Building inventory to mitigate risk, the filling of strategic inventory adds 210kb/d to annual demand growth, on a pro-cyclical basis – the greater the risk in oil, the more China needs to build inventory. We note that China has also been a major buyer of international oil assets, but has now been more-or-less blocked from its number 1 market, Canada. The net effect has been/is very negative for implied CAD oil valuations. Australia and Kazakhstan have been the two alternates; West Africa is an obvious next target.

Offsetting dynamics in Chinese refining, and product pricing

As regards refining market impact, major capacity additions offset by an implicit shutdown in "teapot" refineries gives an overall picture that looks bearish but not nightmarish for Asian oil product markets and refining margins. China has also been subsidizing oil demand by forcing losses on its refining companies by price controls; preventing excessive price volatility to support the imperative of economic growth. Although pricing will be rationalised, we do not see a major negative effect on GDP-driven demand growth.

Valuation and Risks

With the picture one of relatively stable, high oil prices, we favour restructuring plays globally, whether Oxy, Hess, or Sinopec. We value oil stocks based on top-down forward earnings and NAVs. Risks to our theses include external shocks (terrorism, pandemic, revolution in oil demand or supply nations).

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Companies Featured

ExxonMobil (XOM.N),USD91.53		Hold	
	2012A	2013E	2014E
EPS (USD)	7.99	8.38	8.72
P/E (x)	10.8	10.9	10.5
EV/EBITDA (x)	5.7	7.5	7.3
Chevron (CVX.N),USD125.45		Buy	
	2012A	2013E	2014E
EPS (USD)	12.10	12.60	13.10
P/E (x)	8.9	10.0	9.6
EV/EBITDA (x)	3.9	5.1	5.0



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Executive Summary

Key investment conclusions

We believe bearishness regarding long-term oil prices and reflected in oil futures strips is excessive. In this note, we cover every major aspect of Chinese demand growth and conclude that while tempered, increased Chinese oil demand will continue at a globally significant pace, despite numerous perceived threats, such as new leadership targeting less GDP growth, less energy intensity and more environmental control, liberalised prices of refined products, less “tea-pot” refineries, and even geopolitical risk and reduced Chinese international oil M&A. We cover all these angles in this note.

Figure 1: Summary of China’s impact on global oil demand

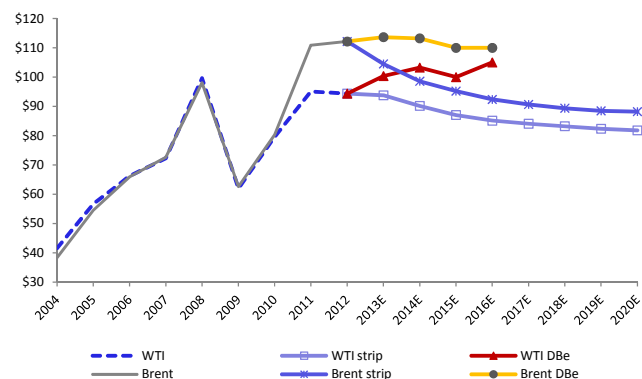
KEY TRENDS	REMARKS	Bullish / Bearish?	Global oil market impact
Demography	Huge population, low population growth, high per capita GDP growth	Bullish medium term	Demand growth 500kb/d annually
Urbanisation	Investment, housing & overall economic growth	Bullish medium term	
GDP growth	7.0% CAGR (Five Year Plan) implies 7% annual demand growth	Bullish	Annual demand increment 640kb/d
Energy consumption per unit of GDP	16% target reduction implies 50-60% annual oil demand reduction	Bearish	-380 to 405kb/d on 7.0% to 8.5% GDP CAGR
Domestic oil production	Flat to declining, leading to rising net imports	Bullish	-100kb/d supply pressure
Oil import dependence cap	Not more than 61% import dependence by 2015	Mildly bearish	Caps crude imports at ~6mb/d
Geopolitical risk of oil imports	China is dependent on Middle East for 50% of its imports	Bullish	+345kb/d (2011), +85kb/d (2012) in MidEast imports
Acquisitions abroad	China has driven global oil asset markets but number 1 target Canada closed	Bearish Canada	Reduces long term Canadian supply
Stockpiling - strategic & commercial	90 days net import cover by 2020 implies 600mmbbls+ oil storage	Bullish	+210kb/d in 2014-15, +170kb/d in 2016-20
Environmental protection	Mostly focused on coal; 17% reduction in CO2 emissions per unit of GDP	Neutral oil, bearish coal	-
Refining capacity add	From 10.5mb/d (2010) to 12.5mb/d (2015)	Bullish crude, bearish refining	+800kb/d in 2013
Refining capacity consolidation	Utilisation up from 75% toward 80% with fewer “teapots”, product pricing reform	Bullish refining bearish fuel oil	+550kb/d
US dollar strengthening	Oil gets more costly in local terms; bullish Chinese manufacturing exports	Neutral	-

Source: Deutsche Bank

Although weakening, Chinese oil demand is sufficiently strong, to allow Saudi to continue to exert control over Brent prices. We see Saudi as targeting \$100/bbl Brent with primary control to the downside – i.e., Saudi can prevent prices falling too far as long as there is sufficient global demand strength; and despite all the threats in China, we see oil demand growth as sufficient to give Saudi market power.

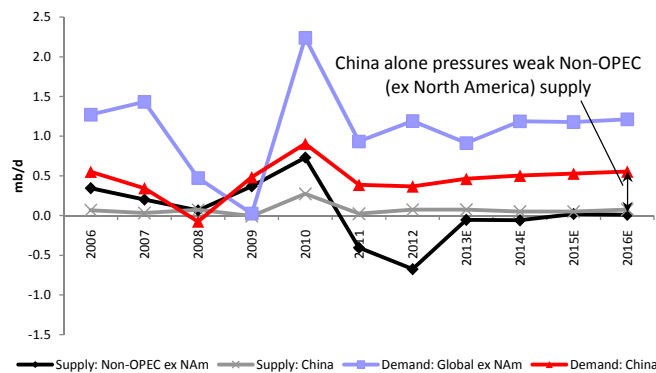
China limits oil price downside but also caps oil prices to the upside. For example, should global GDP growth surprise with its strength, we see Chinese demand destruction as the peak of oil prices, and believe this is at around \$120/bbl Brent. Overall, this is a muted but well-supported view of Brent being range-bound. We see Brent in the \$90-\$120/bbl range, implying a long run \$110/bbl price.

Figure 2: DB forecasts vs long term oil futures strip



Source: Deutsche Bank, Bloomberg Finance LP

Figure 3: Ex-North America global oil balance - bullish



Source: Deutsche Bank, IEA



As such, that is not particularly exciting at the margin, which is why globally we favour oil companies that are restructuring, whether BUY-rated Sinopec in China or Occidental in the US. The big issue for oils is the same globally, namely that the geopolitics and security risks of oil force governments to intervene in its margin through the chain, effectively distorting the cycle and under-mining returns. This occurs both on the supply side (Venezuela, Mexico, Nigeria, US – the list goes on) and demand side (China, US – the list goes on).

Because of the impact of government, and more challenged geology, we believe that major oils cannot grow without destroying returns. As such, they should restructure, by shrinking, selling assets, and focusing entirely on specific areas where they have real leadership and can actually grow at enhanced returns. Scale is a disadvantage. Integration is a myth – only Suncor among large cap oils is truly logically integrated. Cross theme synergy, for example between US unconventional and global deepwater, is a myth in terms of competitive advantage – major service companies commoditise best practice. Overall priority should be cash return to shareholders, particularly dividends. This is the end of the oil age, a decade-plus process that is defined by the peaking of supply and the rise of efficiency. Assets should be sold now before the long term downward pressure on prices starts. But there is time; we think we are at least five years from the downward cycle of demand and price. This China note underlines that point.

We return to the stability and strength of Brent prices repeatedly also as US refining analysts, wanting to set the Brent part of the Brent-WTI spread. Our view is that Brent is well underpinned by Chinese and Middle Eastern demand growth, and not threatened by US unconventional oil growth as long as there is a US crude export ban in place. In due course we will return to the WTI part of the equation, but our general view is WTI prices will be driven towards the marginal cost of supply of \$80/bbl by aggressive E&P companies generating significant supply growth in a limited North American light sweet crude market.

We think \$80/bbl WTI is the low point-in-time target, because of the short investment cycle (30 day) and high cost of unconventional, and lack of oil subsidy that natgas producers had, meaning that prices cannot go on a sustained basis below the cost of supply in US oil. Ostensibly the downward pressure on US price is very bullish US refining competitiveness, assuming that oil product exports can continue to grow. However the big picture of our analysis is bearish refining, because as this century-long oil demand up-cycle is ending, so refining faces the biggest risk, and US refining, exposed to US demand weakness, is very much exposed to that risk.

The down-cycle in oil will truly take hold when Chinese and Middle Eastern demand stops growing. That will happen in due course, quite possibly for political reasons. We outline the structural challenges of China's politics and socio-economy in this note. But for the purposes of our investment horizon, to 2020, the impact of China remains, although tempering, bullish.



Demography & Urbanisation

Demography

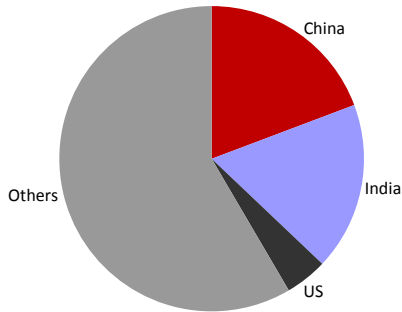
Perhaps the single greatest defining element of China is its enormous population, of over one billion three hundred million. This represents one-fifth of the world's total population (1.35bn out of 7.0bn, Indian population is 1.24bn). It is the combination of massive population and economic growth from a very low per capita base (US\$186 per capita GDP in 1980, now US\$2,700+ per capita) that has in turn become the single biggest driver of global oil demand since the break-out year of 2004 started the bull run to \$100/bbl+ oil.

There is a major distortion in Chinese demographics, caused by the "One Child Policy". To reduce the strain on scarce resources, population control began in the mid-1950s under Chairman Mao Zedong, abandoned temporarily during the famine resulting from the Great Leap Forward movement (discussed later). In 1979 the "One Child Policy" was instigated for urban residents and remains in place through this day. A second child is allowed for rural families (was ~70% of total population, now under 50%) if the first is a girl, and a third child is allowed for certain ethnic minorities (non-Han Chinese) and in remote, underpopulated areas. Under the policy, the State Family Planning Bureau sets overall targets for family size, late marriage, childbearing, and the spacing between children (where multiple children are permitted). Provincial and local level family-planning committees would then implement their own policies to meet the allotted targets. A carrot-and-stick system, it relies on financial incentives and preferential employment opportunities for those who comply, and huge "social service expenditure" fines, dismissal from work and confiscation of property for those who do not, leading to unwanted abortions (sometimes late-term), female infanticide and undocumented births.

The net result of the policy is that Chinese demography is negatively skewed towards an imbalance of men over women (105.2 per 100) and is aging with its own "baby boom" of 40-50 year-olds that form the largest part of the population. When the State Family Planning Bureau, created purely to control population growth, was merged with the health ministry at the March 2013 National People's Congress annual meeting, rumors abounded that the policy may be relaxed or abandoned in the near future despite official statements that this carries no implications. The challenge of China's demographic pyramid (excess men, 40-50 year old boom aging) strongly implies the policy will have to be relaxed.

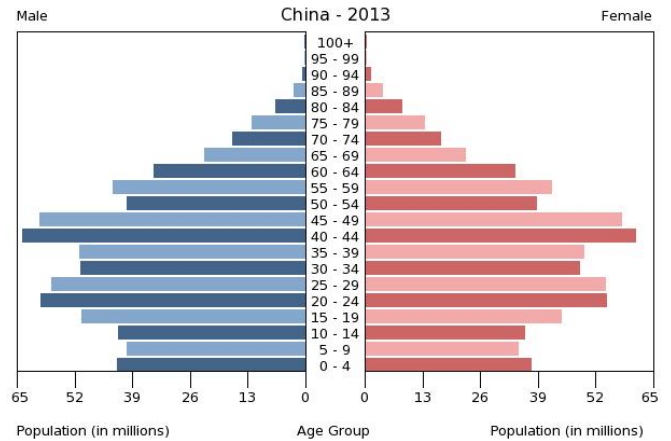


Figure 4: World Population Distribution



Source: World Bank

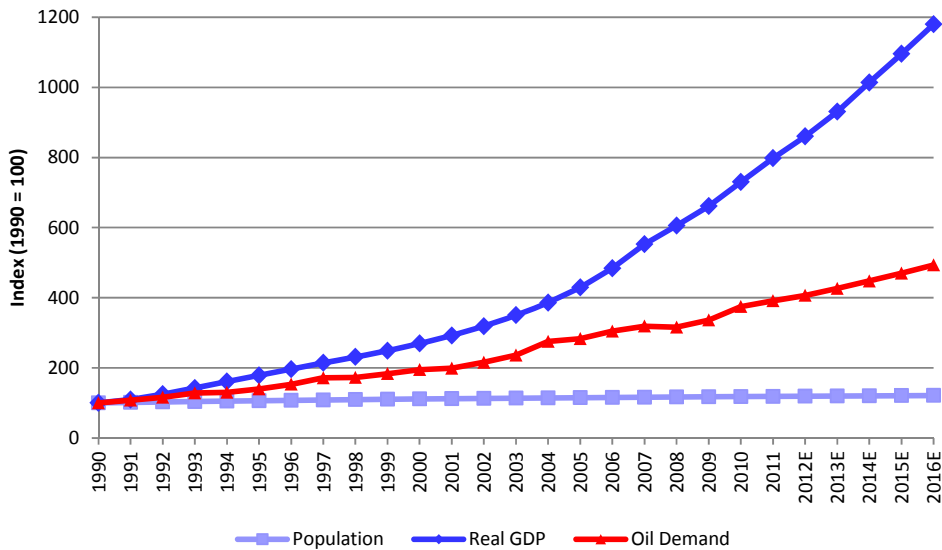
Figure 5: China's population pyramid



Source: CIA

As a result of subdued demographic growth, the key driver of Chinese GDP and oil demand has been increases in per capita economic output, as opposed to the demographically-driven oil demand of the Middle East. Chinese real GDP per capita has risen at a 10% CAGR since 1991, with population growth kept in check (0.8% per year) by the One Child Policy.

Figure 6: China's population vs real GDP vs oil demand (indexed)



Source: World Bank, CEIC, Deutsche Bank

Epidemics

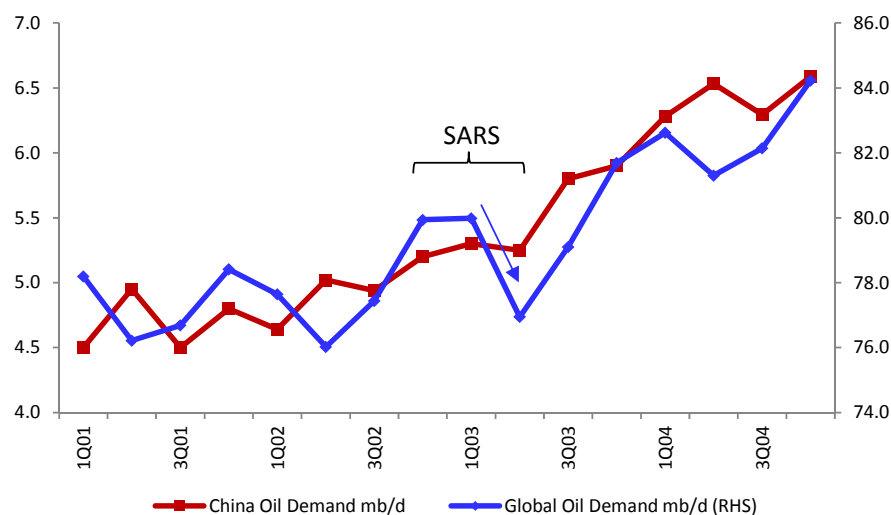
Epidemics such as SARS (Severe Acute Respiratory Syndrome) and bird flu represent unpredictable external shocks to demographic growth and oil demand.



Between November 2002 and July 2003, an outbreak of SARS, a viral respiratory disease, in South China and Hong Kong caused 775 deaths worldwide, a stunning 9.6% fatality from the 8,273 cases. 64% of the cases and 45% of the deaths occurred in mainland China across 24 of the 31 provinces and municipalities, but since the 349 deaths represented "only" 0.00003% of mainland China's population, the demographic impact was miniscule.

In response to the outbreak, China and other governments imposed 10-day quarantines on thousands of (potentially) affected individuals, temporarily closed schools, and screened airline passengers for SARS symptoms. In early 2003, the World Bank revised its estimate of 2003 China GDP growth down 50bps to 7%, representing a loss of \$6-\$7bn. In the end, 2003 GDP grew 10.0% yoy. Although flights to/from China and within China both plummeted (-45% and -16% yoy respectively in June 2003), China's jet fuel apparent demand in FY03 only declined 1.1% (-2kb/d) due to a 2H rebound. On a global level, however, our commodities team highlights that oil demand in 2003 plunged sequentially by 3-4%, particularly middle distillates (gasoil and jet), and oil prices fell by ~30% with greater declines observed in gasoil and jet prices. The emerging economy of China proved more resilient and total oil demand in 2003 only fell 1% (-50kb/d) sequentially and grew 5% (+230kb/d) on a yoy basis.

Figure 7: SARS impact on Global & China oil demand



Source: Deutsche Bank, IEA

The recent H7N9 bird flu virus, which has infected at least 130 people in 10 provinces in China since March this year and caused 36 deaths, appears under control. It has caused over \$6.5bn in losses in the agriculture sector according to China's Ministry of Agriculture. However the smaller scale and much shorter duration (two vs nine months) implies that the impact on global oil demand in 2Q13 will likely be less than a 1% sequential decline.

What is perhaps more concerning is the recent deadly SARS-like coronavirus. There have only been 44 cases worldwide, including 22 deaths, and have occurred mostly in Saudi Arabia but AvianFluTalk.com suggests it may have spread to New York as of mid-May; China has not been affected to date.

The impact of each epidemic on demographic growth and oil demand will be different, but with increasing globalization, similar outbreaks in the future will most likely have a global rather than localized impact.



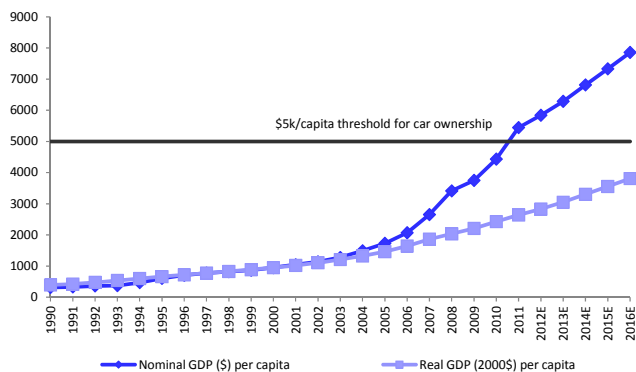
Urbanisation

The key offset to weak demography in China is the ongoing urbanisation of the population from rural to urban living. From a level of just 19% in 1980, over 50% (>710 million, i.e. 226% of total US population) of all Chinese currently reside in urban areas.

The central government targets a 4.0% growth in the proportion of urban population from 2010 to 2015, to reach 51.5% of total population according to the Five-Year Plan (although the official National Bureau of Statistics already reported 52.6% of urbanisation in 2012). An official outline to promote urbanisation is being co-drafted by the National Development and Reform Commission (NDRC), the Ministry of Land and Resources and several other ministries, and is due for release by the State Council before the end of June. The outline will provide a new push to urbanisation in China by addressing simmering tensions between surging demand for urban land and the preservation of farm land area, and reforming the inflexible “hukou” system for household registration (promulgated in 1958) to enable migrants to gain urban resident status and equal access to higher-quality urban public benefits. It is noteworthy that the changes will be implemented under new President Xi Jinping and Premier Li Keqiang, who were both sent to the countryside for multi-year stints of manual labor during the Cultural Revolution and therefore experienced first-hand the significant gap in living standard between the rural and urban Chinese. The ongoing urbanisation will be a key fundamental driver for investment growth and housing demand, and hence GDP growth.

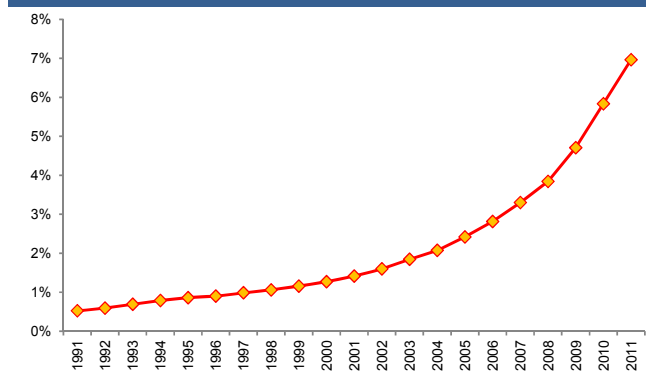
There was a time when China was a bicycle-driven economy. As per capita income rises, China’s car ownership has skyrocketed, although the surge has been somewhat suppressed by government policies on environmental protection. As we observed in our focus note, “Peak Oil IV: China autos and global oil” (May 2010), 400+ million Chinese were approaching the \$5,000 GDP/capita threshold (in nominal terms), historically the level where car ownership spikes. At a national level, China exceeded that critical threshold in 2011. Since the transportation sector represents 60% of China’s gasoline and diesel demand, or 35%-40% of China’s total oil demand, there is clearly a powerful driver to oil demand from increased per capita wealth. This presents the single biggest challenge to controlling oil demand growth. China’s level of oil demand per capita remains at one-tenth that of the US and one-quarter that of OECD Europe, but the sheer size of the population and its earnings growth potential will be an enormous oil demand growth driver.

Figure 8: China’s per capita GDP has now exceeded the \$5k car ownership acceleration threshold



Source: World Bank, CEIC, Deutsche Bank

Figure 9: China Light Vehicle Ownership Penetration



Source: CEIC



Government Policy

The interface between government and economic growth

It quickly becomes clear the overarching role of government in China is the key constraint/accelerator of economic output, ever since the formation of a Communist Government.

In more recent history the decision by Deng Xiaoping to allow Special Economic Zones to be developed in **key coastal provinces** in the early 1980s (namely Shenzhen, Shantou and Zhuhai in Guangdong province, and Xiamen in Fujian province). That decision triggered the explosion of economic growth that came with liberalisation of economic activity from a Communist controlled and limited model, to outright, export-oriented private enterprise growth.

Over time the relationship between free market entrepreneurial growth at rampant pace and the ongoing official Communist, one-party system has become the key tension to consider in long term China forecasting, alongside the tension of weak demographic growth off a huge base, and urbanisation.

Figure 10: China's real GDP (trillion yuan in 2011 terms), 1995 vs 2011 – growth most pronounced along the coast



Source: Wood Mackenzie (base map), Deutsche Bank (charts & labels)



Historical Backdrop

On January 1, 1912, the Republic of China, or Nationalist China, was formally established by Sun Yat-sen ("Father of the Nation") to replace the Qing Dynasty, ending 2,000+ years of imperial rule in China. Between 1912 and 1949, the republic's authority was challenged and plagued by warlords (1916-27), Japanese invasion (1937-45) and the Chinese Civil War (1927-49), and it was during this time that the Empire of Japan was defeated in World War II (1945) and surrendered control of Taiwan to the Allied Forces. In 1949 the Chinese Communist Party (CCP) took over mainland China, ending the Chinese Civil War and forcing the ruling Kuomintang, or Nationalist Party, to retreat to Taiwan – over which the CCP maintains sovereignty to this day; a major foreign policy tension.

Four years after the defeat of the Kuomintang and the founding of the People's Republic of China (PRC) in October 1949, the Mao era began and the central government implemented its first Soviet-style Five-Year Plan for National Economic and Social Development in 1953. This was a pure old-school communist central plan.

With the exception of 1963-1965 – the period of economic adjustment following the failed Great Leap Forward (1958-61) – the central government has drawn up and implemented twelve Five-Year Plans.

Under Mao's leadership, the first few plans focused on rapid socialist industrialization and agricultural collectivization, with financial, technological and manpower support from the Soviet Union. So ambitious was the Chinese Communist Party that in 1958, they expected China's industrial economy to surpass the UK and be on par with the US by 1962. Instead widespread discontent and famine ensued and GDP in fact regressed. The economic targets were eventually re-adjusted by the State Planning Commission (predecessor of the National Development and Reform Commission).

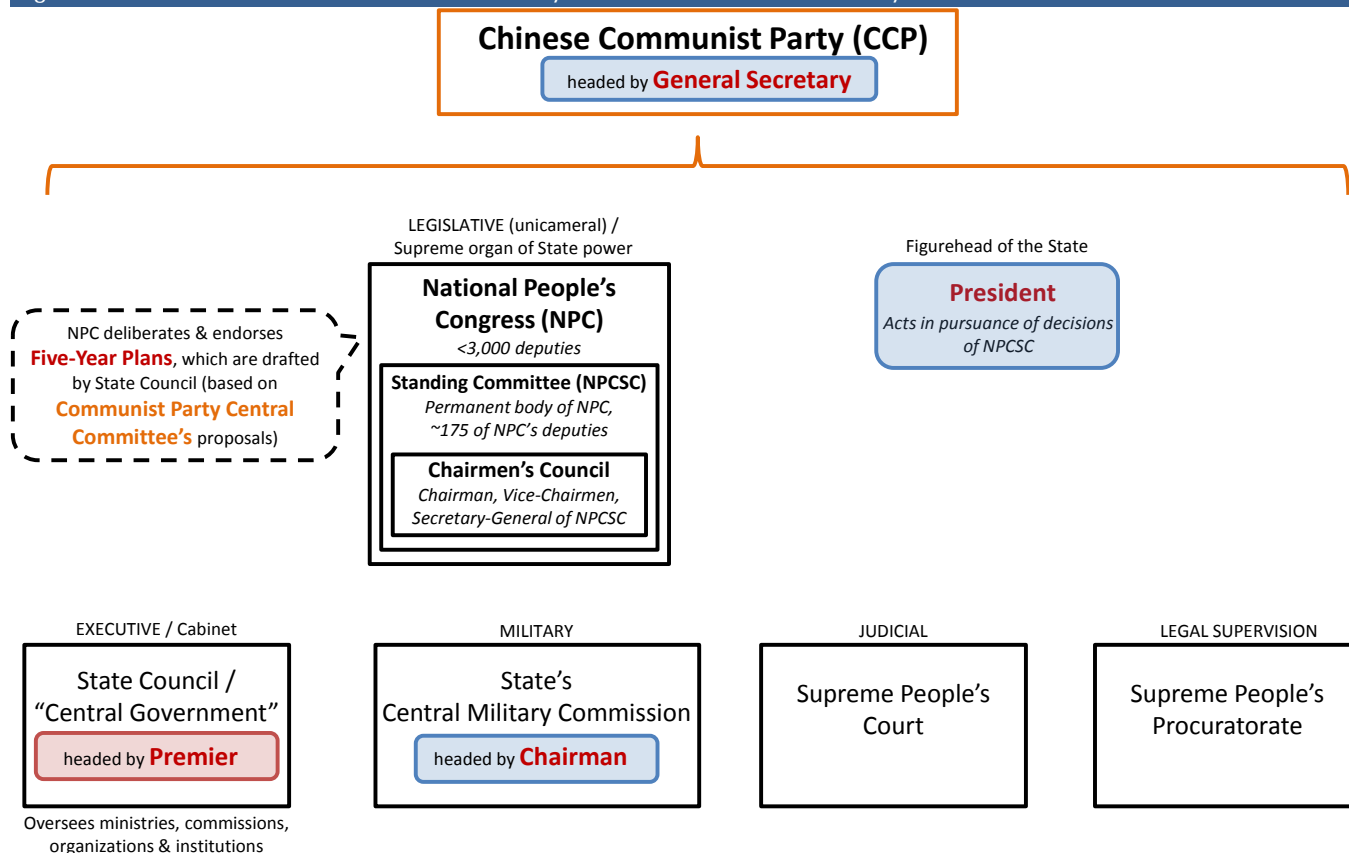
Fast forward to present-day China: central planning continues to be the hallmark of the world's most populous country, which features "socialism with Chinese characteristics" according to former leader Deng Xiaoping, the man who first selectively liberalised the Chinese economy, and triggered the remarkable economic transformation of this giant.



China's decision-makers

China is officially set up as a “multi-party cooperation and political consultation” system under the leadership of the Chinese Communist Party, where the CCP consults with the eight registered democratic parties and other unaffiliated persons on major state guidelines and policies. In practice the State (Figure 11), especially at the national level, is dominated and permeated by senior members of the CCP.

Figure 11: China's State Structure – controlled by the Chinese Communist Party



Source: Deutsche Bank, National People's Congress of China, Congressional Research Service

Within the Chinese Communist Party, there is a clear hierarchy (Figure 13). At the top of the pyramid is the Politburo Standing Committee, which comprises seven members, each with explicit ranks. The Standing Committee and hence the entire CCP is headed by the Party's General Secretary – **Xi Jinping** (习近平) (b. 1953) who succeeded Hu Jintao on November 15, 2012 – and he is often concurrently the Chairman of the Party's Central Military Commission. Within the State structure, Xi is the Chairman of the PRC's Central Military Commission as well as the President, both since March 14, 2013.

The position of President in itself gives Xi relatively little power and merely makes him the figurehead of the State, and a good analogy would be Queen Elizabeth II. However as Party General Secretary, Xi has immense authority to shape China's development. He will be the primary man striking trade and infrastructure deals on behalf of China, representing the world's largest marginal energy consumer at international summits.



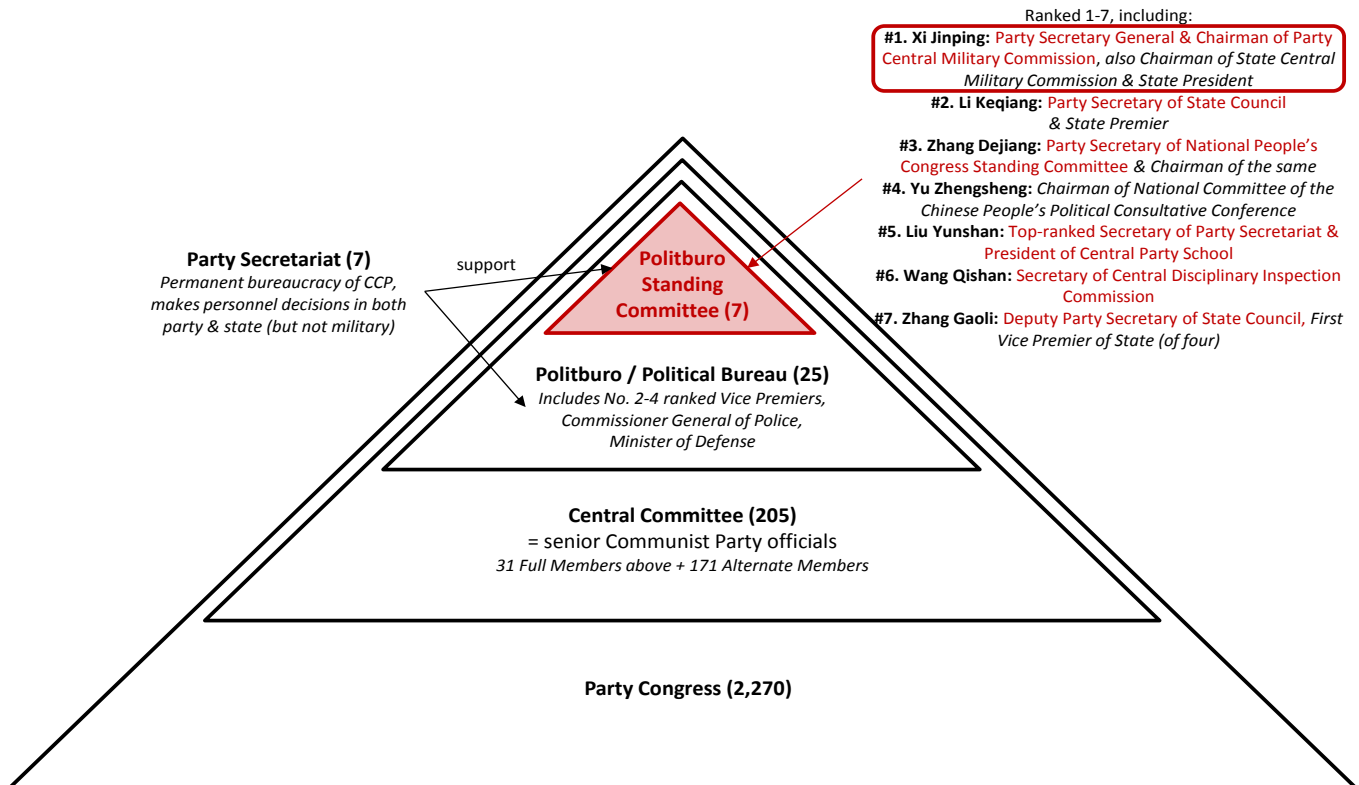
Figure 12: Political & Military Leadership – China vs. US vs. UK

	<u>China</u>	<u>US</u>	<u>UK</u>
President / Head of State	Xi Jinping	Barack Obama	Queen Elizabeth II
Premier / Head of Cabinet	Li Keqiang	Barack Obama	David Cameron
Majority Party Leader	Xi Jinping	Barack Obama	David Cameron
Military Commander-in-Chief	Xi Jinping	Barack Obama	Queen Elizabeth II

Source: Deutsche Bank, Wikimedia
 We consider Obama as the majority party leader in this analogy while recognizing there may be no single correct answer

The #2 ranked man on the Standing Committee since November 15, 2012 is **Li Keqiang** (李克强) (b. 1955), who represents the CCP on the State Council as Party Secretary. He also succeeded Wen Jiabao as China’s Premier on March 15, 2013, responsible for heading the State Council (cabinet), the executive branch of the government, and oversees multiple ministries, commissions, organizations and institutions. Notable ones include: the National Development and Reform Commission (NDRC), Ministry of National Defense, Ministry of Supervision, Ministry of Land and Resources, Ministry of Environmental Protection, Ministry of Transport, People’s Bank of China, State-owned Assets Supervision and Administration Commission of the State Council, National Bureau of Statistics and Xinhua News Agency.

Figure 13: Who’s ACTUALLY in charge – the Chinese Communist Party power structure



Source: Deutsche Bank, Congressional Research Service



Figure 14: Top Seven Men in China (Party positions in red, State positions in black)



#1. Xi Jinping:
Party Secretary General & Chairman of Party Central
Military Commission, also Chairman of State Central
Military Commission & State President



#2. Li Keqiang:
Party Secretary of State Council
& State Premier



#3. Zhang Dejiang:
Party Secretary of National People's
Congress Standing Committee &
Chairman of the same



#4. Yu Zhengsheng:
Chairman of National Committee of the
Chinese People's Political Consultative
Conference



#5. Liu Yunshan:
Top-ranked Secretary of Party
Secretariat & President of Central
Party School



#6. Wang Qishan:
Secretary of Central Disciplinary
Inspection Commission



#7. Zhang Gaoli:
Deputy Party Secretary of State
Council, First Vice Premier of
State (of four)

Source: Wikimedia, Deutsche Bank

Provincial level & below

China's ministries, commissions, organizations and institutions – all overseen by the State Council headed by Premier Li – are responsible for ensuring that the Chinese Communist Party's policies embodied in the Five-Year Plan are carried out. The actual implementation is carried out by provincial and local governments, which receive their respective targets from the State Council every five years. In China there are officially 23 provinces including Taiwan, 5 autonomous regions, 4 province-level municipalities, 2 special administrative regions (Hong Kong and Macau).

The provincial level of administration is set up as a dual party-government system, where:

- the China Communist Party Provincial Committee Secretary, colloquially termed the Party Chief, is in reality the #1 leader,
- and the Governor/Mayor/Chairman is the highest-ranking official in the government of the province/municipality/autonomous region, but is in fact the #2 man. (Hong Kong and Macau are special administrative regions and operate differently.)

Beneath the provincial level, there is the prefectural level of government, followed by county level, then township level, and finally village level.

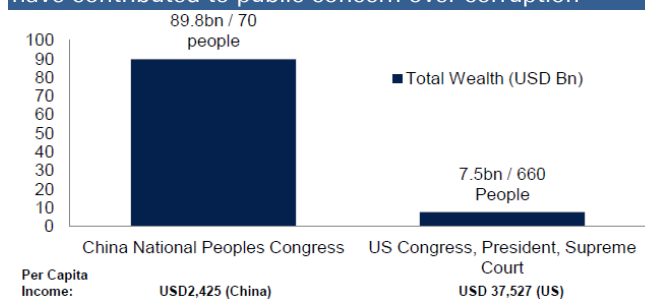


Other political factors

The following is a quote from The Congressional Research Service “Understanding China’s Political System”, March 20th 2013:

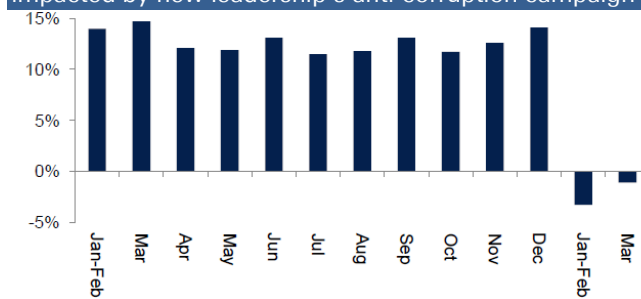
*“A detailed 2012 study conducted by scholars in the United States and China found no evidence of a correlation between rank in the Communist Party hierarchy and success in delivering “exceptional economic growth”—a strong indicator of professional competence. The authors did, however, find that **the Party awarded promotions based on factional ties, familial ties to senior leaders, and educational qualifications. The children of high-level officials, dubbed “princelings” (taizi) in colloquial Chinese, are particularly prominent at the highest levels of the Chinese political system, with four of the seven members of the current Politburo Standing Committee meeting that description. China’s most prominent princeling is Communist Party General Secretary Xi Jinping, the son of revered early revolutionary Xi Zhongxun. Meanwhile, corruption and sex scandals have undermined the Party’s claim to appoint leaders with “moral integrity.” China has also seen a rise in the practice of the buying and selling of public office.**”*

Figure 15: Immense wealth within Chinese government have contributed to public concern over corruption



Source: Bloomberg Finance LP, Hurun Report, Deutsche Bank Research

Figure 16: Chinese Catering sales growth (YoY) – 1Q13 impacted by new leadership’s anti-corruption campaign



Source: Deutsche Bank Research

Directly relevant to oil, Deputy head Liu Tienan of China’s National Development and Reform Commission (NDRC), the top economic planning agency, is officially being investigated for undisclosed “serious discipline violations” by the Communist Party’s Central Commission for Discipline Inspection as of May 12. Until March this year, he was also head of China’s National Energy Administration. This case is special because it was brought to light by a journalist (of the Caijing magazine), who reported in Dec 2012 that Liu (at first simply referred to as a high-ranking official with the national economic planning committee) fabricated academic credentials, improperly profited from his position and kept a mistress whom he met in Japan. The official Xinhua News even praised the journalist’s whistle-blowing efforts, saying they sent “a positive message” about the Communist Party’s anti-graft drive. Obviously President Xi Jinping is working hard to project his image as a corruption-fighter, though the party’s grip on media censorship will unlikely be relaxed anytime soon.

The scandal raises the question of how the Chinese political system can manage the communication revolution, notably the rise of the internet and the “micro blogger”. Powerful communication forces are at work, and we believe the most powerful offset to these is continued, sustained, economic growth.



The Five-Year Plan

The Five-Year Plan

As referenced, China's socio-economic policy, and key interface between the Communist political system and the high-growth economy, is the Five-Year Plan.

- The Five-Year Plans are drawn up by the State Council (China's cabinet), then the National People's Congress (China's parliament) deliberates and endorses the Plans.
- **Note: The State Council's Five-Year Plans are entirely based on proposals from the Chinese Communist Party's (CCP) 205-strong Central Committee, which holds the ultimate political power in China.**
- By extension the unicameral NPC is generally seen as a rubber stamp for party decisions and with few exceptions, endorses the State Council's policies with no objection.

A multitude of sectors now have their own Five-Year Plans, down to the wine industry. The current Five-Year Plan covers the period 2011-2015, focuses on high-grading the quality of economic growth, and shifts the country from exports-driven growth to environmentally and socially sustainable growth.

It designates the following as the seven Strategic Emerging Industries, giving them tax breaks and other incentives to encourage development:

- energy conservation and environment protection,
- new information technology,
- biology,
- high-end equipment manufacturing,
- new material,
- new energy, and
- new-energy autos.

Since the 11th Five-Year Plan, targets have been categorized as either "forecast" or "binding". In this note we examine the feasibility and implications of the key energy-related targets in the 12th Five-Year Plan (2011-15), in particular those which are "binding":



Figure 17: 12th Five-Year Plan (2011-15) – key energy-related targets

Indicator	Unit	2010	2015	CAGR/Change	Forecast	Binding
ECONOMIC RESTRUCTURING						
GDP	Trillion yuan	39.8	55.8	7.0%	x	
Service sector as % Total GDP	%	43	47	4.0	x	
Urbanization rate	%	47.5	51.5	4.0	x	
ENERGY CONSUMPTION AMOUNT & EFFICIENCY						
Primary energy consumption	Billion TCE	3.25	4.0	4.3%	x	
Non-fossil fuel as % Total energy consumption	%	8.6	11.4	2.8		x
Coal consumption	Billion tons	3.12	3.9	4.5%	x	
Natgas consumption	Bcm	107.6	230	16.4%	x	
Total electricity consumption	Trillion kWh	4.2	6.15	8.0%	x	
Energy consumption per unit of GDP	TCE/1,000 yuan	0.081	0.068	-16%		x
Emissions from thermal power generation	TCE/kWh	333	323	-0.6%	x	
Electricity grid rate of energy loss	%	6.5	6.3	(0.2)	x	
ENERGY PRODUCTION & SUPPLY						
Domestic primary energy production capacity	Billion TCE	2.97	3.66	4.3%	x	
Domestic & foreign primary energy supply	Billion TCE		4.30			- N/A -
Coal production capacity	Billion tons	3.24	4.1	4.8%	x	
Crude production capacity	Billion tons	0.2	0.2	0.0%	x	
Natgas production capacity	Bcm	94.8	156.5	10.5%	x	
Shale gas production	Bcm	0	6.5	NM	x	
Natgas supply capacity (inc. imports)	Bcm		>260		x	
Non-fossil fuel production capacity	Billion TCE	0.28	0.47	10.9%	x	
Foreign oil dependence	%		≤61%			- N/A -
ELECTRICITY/POWER GENERATION DEVELOPMENT						
Electrical installations capacity	Billion kW	0.97	1.49	9.0%	x	
of which Coal-powered	Billion kW	0.66	0.96	7.8%	x	
of which Hydro-powered	Billion kW	0.22	0.29	5.7%	x	
of which Nuclear-powered	1,000 kW	10820	40000	29.9%	x	
of which Natgas-powered	1,000 kW	26420	56000	16.2%	x	
of which Wind-powered	1,000 kW	31000	100000	26.4%	x	
of which Solar-powered	1,000 kW	860	21000	89.5%	x	
ECOLOGICAL & ENVIRONMENTAL PROTECTION						
Reduction in CO2 emissions per unit of GDP				-17%		x
Sulfur dioxide (SO2) emission from coal-fired powergen	Gram/kWh	2.9	1.5	-12.4%		x
Nitrogen oxide (NOx) emission from coal-fired powergen	Gram/kWh	3.4	1.5	-15.1%		x
Reduction in PM2.5				At least -30%	x	
IMPROVEMENT OF PEOPLE'S LIVELIHOOD						
Residents' average residential electricity consumption	kWh	380	620	10.3%	x	
Green energy pilot counties	Number	108	200	13.1%	x	
Population with access to natural gas	Billions	0.18	0.25	6.8%	x	

Source: Gov.cn, Deutsche Bank translation



Energy intensity per unit of GDP

It is clear, that the primary challenge for Chinese policy makers is to manage economic growth, not least to maintain political stability. At the same time, the scale of economic growth presents a massive driver to increased energy demand.

While the 7.0% average GDP growth is a "forecast" target, the Five-Year Plan mandates a 16% reduction in energy consumption per unit of GDP from 2010 to 2015, from 0.081TCE/1,000 yuan to 0.068TCE/1,000 yuan. To achieve this national target, the General Office of the State Council distributed individual targets to each of the 22 provinces (Taiwan not included), five autonomous regions, and four provincial-level municipalities. The provincial-level governments then set individual targets for their prefecture-level cities. In theory this binding target is bearish for oil, but the unreliability of GDP figures may create sufficient leeway for provinces to experience strong growth in oil and total energy consumption without necessarily missing the target reduction in energy consumption per unit of GDP.

Figure 18: Provincial-level Targets for Reduction in Energy Consumption per Unit of GDP (Graphical)

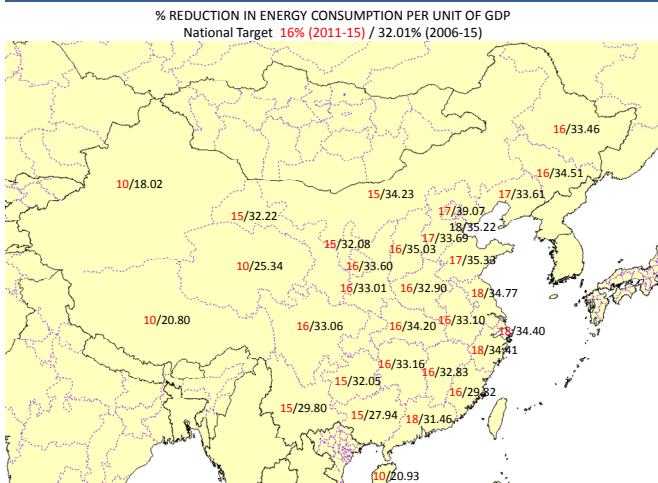
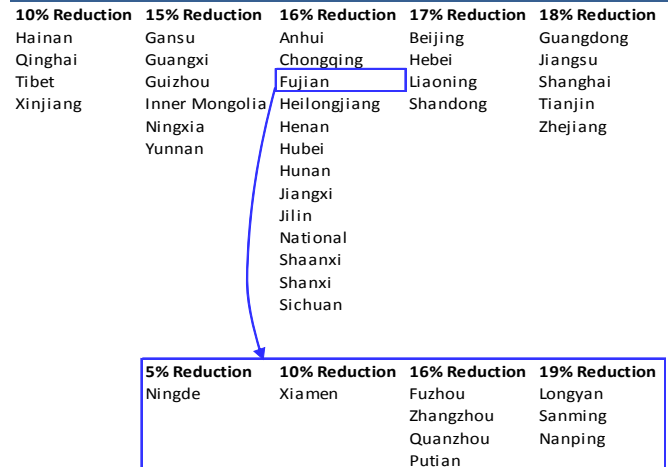


Figure 19: Targets for Reduction in Energy Consumption per Unit of GDP – Fujian province as an example



If China's GDP grows at DB's estimated 8.4% CAGR (2011-15), total energy consumption growth is capped at 4.5% CAGR, or 4.05bn TCE by 2015 (Figure 20). If GDP grows at a 7.0% CAGR per the Five-Year Plan (i.e., 6.0% average in 2013-15 given 9.3% in 2011, 7.8% in 2012), total energy consumption growth will be ~0.3bn TCE less.

To determine the impact of economic growth on crude oil demand, we first consider the impact on renewable, natgas and coal consumption. The current Five-Year Plan mandates that by 2015, non-fossil fuels (hydro-, nuclear and wind power) must constitute 11.4% of the nation's total energy consumption, an increase of 2.8% in consumption share from 2010. Natgas consumption is expected to rise to 230bcm (22.2bcf/d) in 2015, an increase of 56% from 147.1bcm (14.2bcf/d) in 2012, and to gain share vs. coal.

The NEA wishes to limit both coal demand and domestic output to 3.9bn tons (4.1bn tons production capacity limit) by 2015 to help reach the mandated 17% reduction in carbon emissions per unit of GDP. This means coal (and coke) will lose share in the total energy consumption pie (now 68%).



Figure 20: Impact of GDP growth on Energy demand growth

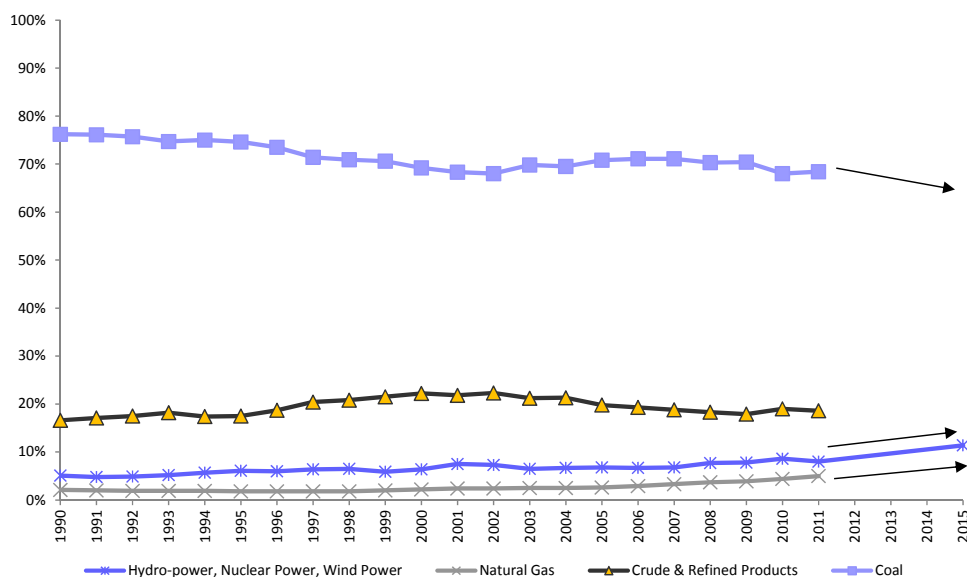
	Unit	2010	2015	CAGR	
Five Year Plan					
GDP	Trillion yuan	39.8	55.8	7.0% "forecast"	
Energy consumption per unit of GDP	TCE/1,000 yuan	0.081	0.068	-16% "binding"	
Primary energy consumption	Billion TCE	3.25	4.0	4.3% "forecast"	4.0bn TCE - stipulated limit
		3.2	3.8	3.3%	3.8bn TCE - implied by Energy intensity x GDP
Crude oil consumption	Billion TCE	0.43	0.49	= 9.9mb/d	Assuming unch. at 13% of total energy
DBe GDP growth					
GDP	Trillion yuan	39.8	59.5	8.4% DBe	
Energy consumption per unit of GDP	TCE/1,000 yuan	0.081	0.068	-16% "binding"	
Primary energy consumption	Billion TCE	3.25	4.05	4.5%	No meaningful breach , supports DBe's GDP est.
Crude oil consumption	Billion TCE	0.43	0.53	= 10.6mb/d	Assuming unch. at 13% of total energy

Source: Deutsche Bank, Gov.cn

Oil (crude and refined products) makes up 19% of China's total energy consumption and crude oil's share is 13% (8.6mb/d or 0.43bn tons of crude vs. 3.25bn TCE total energy in 2010). Assuming the share loss of coal is offset by the share gain of renewables (hydro, nuclear and wind) and natgas, and crude oil stays at 13% of total energy demand (4.0bn TCE by 2015), the 16% reduction in energy consumption per unit of GDP would imply crude consumption of 9.9mb/d (7.0% Five-Year Plan GDP CAGR) to 10.6mb/d (DB's 8.4% GDP CAGR) in 2015. The lower end stacks up with the 9.8mb/d crude demand in 2015 implied by the government's 61% foreign dependence cap. The range is also consistent with the 2015 refining capacity of 12.5mb/d, assuming utilisation rises from 75% to the low 80% range.

Thus the binding energy intensity reduction target and GDP growth estimates still imply a significant annual crude demand growth of 125-360kb/d through 2015.

Figure 21: China's Total Energy Consumption Mix



Source: CEIC, NBS, China State Council

NBS's definition of "Total energy consumption" includes that of coal, crude oil and their products, natural gas and electricity. However, it does not include the consumption of fuel of low calorific value, bio-energy and solar energy.



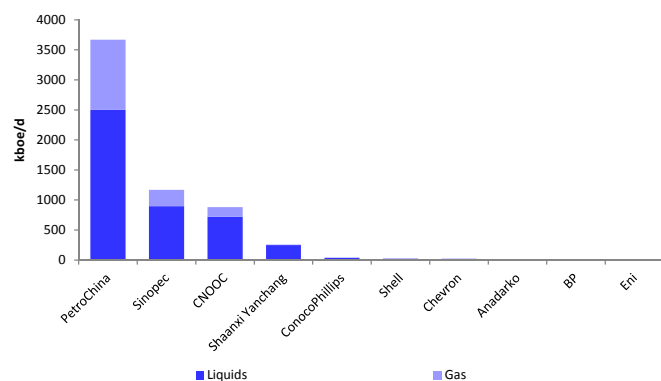
Domestic production of oil

The Five-Year Plan aims to keep domestic crude production flat from 2010 to 2015 at 200 million metric tons, i.e., 4.1mb/d. Since most producing fields are mature and unconventional resources will not be a significant growth contributor by 2015, the 4.1mb/d non-binding target calls for sufficient capital outlay to support enhanced recovery to exceed Wood Mackenzie's forecast that domestic liquids production has in fact already peaked and will decline after 2013.

Upstream production in China is dominated by PetroChina (60% of total), Sinopec and CNOOC. Historically, PetroChina was the oil producing company onshore, Sinopec the refiner and downstream company, and CNOOC, offshore. Before China's entry into the WTO, the petroleum industry was restructured between 1998 and 2001 to split upstream and downstream between CNPC/PetroChina and Sinopec, whereby each became integrated onshore major oils in preparation for competition with foreign companies. CNOOC has remained an offshore E&P with a more global footprint.

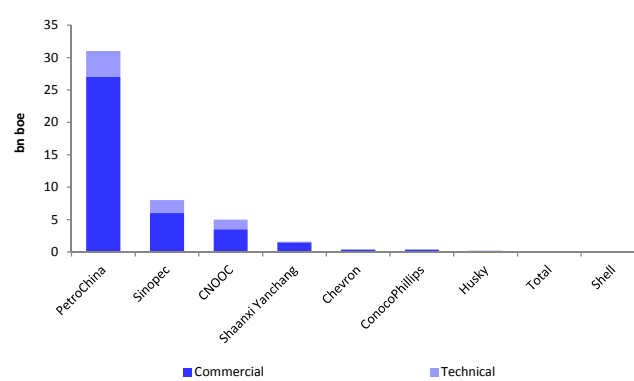
The IOCs including Shell, Chevron, BP and ConocoPhillips own legacy assets in Bohai Bay and South China Sea and have recently taken a foothold in deepwater plays and onshore unconventional gas. Smaller internationals are focused on enhanced oil recovery (EOR) projects in NE China (Anadarko and ROC Oil) or coal-bed methane (CBM) projects (Asian American Gas Inc, Green Dragon Gas, Far East Energy, Fortune Oil Energy, and Sino Gas and Energy).

Figure 22: Oil & gas production, 2012



Source: Company data, Wood Mackenzie, Deutsche Bank

Figure 23: Remaining Reserves as of Jan 1, 2012



Source: Wood Mackenzie, Deutsche Bank

Given conventional production in China has peaked, the government is encouraging foreign investment and technology to help unlock unconventional gas potential (tight, sour, CBM and shale) to provide the next leg of production growth. As illustrated above, foreign company production remains marginal in the overall Chinese and global context.

ExxonMobil has no current production in China but in July 2011, signed a Joint Study Agreement covering 900k acres in the Sichuan Basin and is working with Sinopec to evaluate shale gas potential on the block.

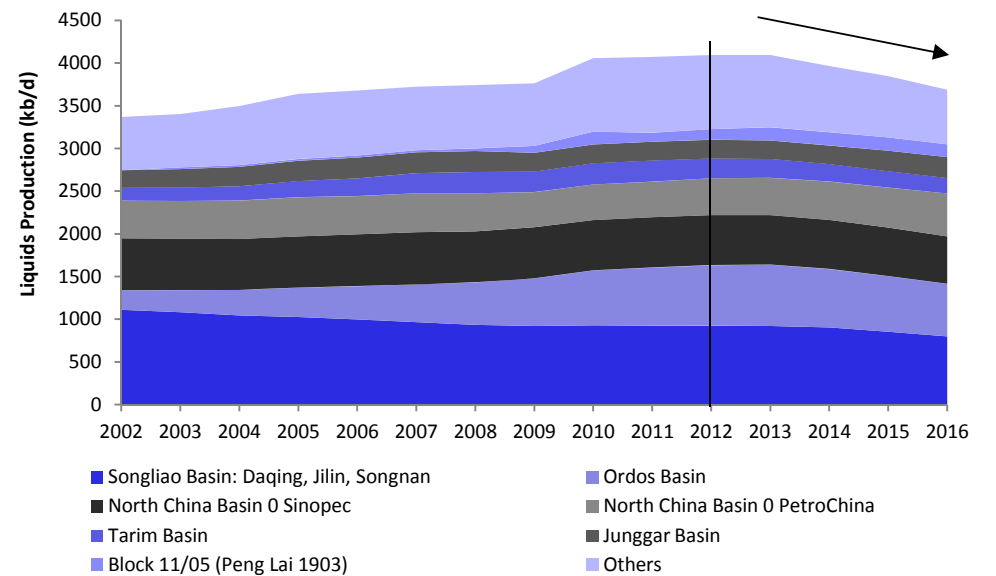


Chevron has four operated PSCs in China – Chuandongbei natgas project in the onshore Sichuan Basin and three deepwater/shallow water blocks in South China Sea – and four non-operated PSCs. The company’s net acreage in the country has fluctuated in the past four years, ranging from 294k acres at YE09 to 4,766k at YE10. Chevron held 921k acres at YE12. In 2012, CVX produced 20kb/d of liquids and 9mmcf/d of natgas in China, flat yoy, and commenced a shale gas drilling program in the Qiannan Basin in Guizhou province.

ConocoPhillips produced 39kb/d of liquids and 3mmcf/d of natgas in China last year, with Peng Lai operations (COP 49%) being conducted under the so-called reservoir adjustment and management plan supplement following the 2011 Bohai Bay spills. In December 2012, COP entered a two-year joint study agreement with Sinopec for the 1 million-acre Qijiang shale gas block in the Sichuan Basin.

Hess, which does not have production in the country, signed a joint study agreement with PetroChina in 2010 on enhancing output at the mature Daqing oil field in the Songliao Basin in NE China. Hess signed two agreements with Sinopec in 2011 to study tight oil and shale oil/gas at the Shengli oil field in the Bohai Bay Basin. And in 2012, Hess signed another joint study agreement with PetroChina to evaluate unconventional oil and gas resource potential covering 200k gross acres in the Santanghu Basin in Xinjiang province.

Figure 24: Wood Mackenzie believes China domestic liquids production has peaked



Source: Wood Mackenzie

So the first problem is that the aim to keep crude production even flat will be a challenge. Our suspicion is that it will be achieved, as Wood Mac has a tendency to under-estimate future production performance in oil, as a natural function of conservative forecasting on a field-by-field basis.

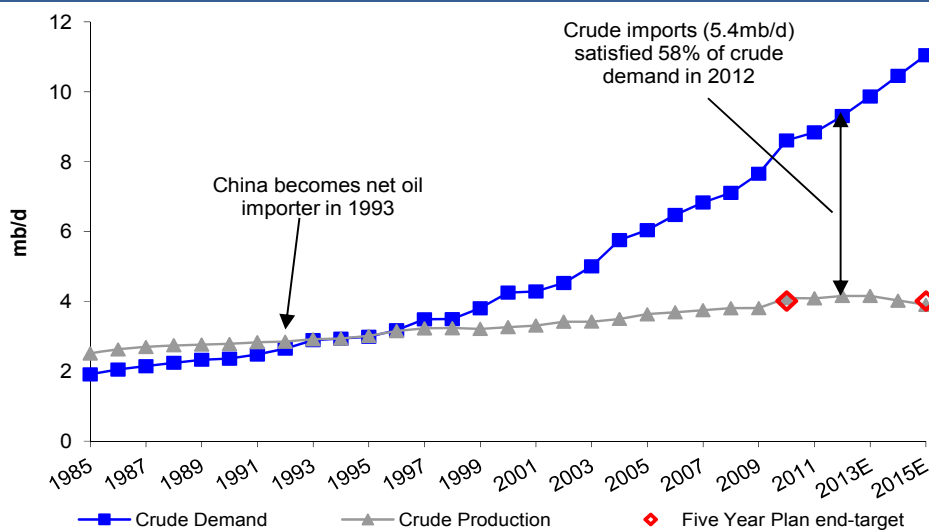


Oil import dependence

The obvious result of an economic growth plan, rising wealth and oil demand, and falling domestic supply, is rising net imports. In 2012, China's crude import dependence reached 58% (5.4mb/d imports, 9.3mb/d apparent demand).

In the current Five-Year Plan for Energy Development distributed to provincial and local governments in January 2013, the central government set the target of no more than 61% foreign oil dependence by 2015. Foreign oil dependence is defined as oil (crude & products) purchased from foreign sources plus overseas production from Chinese NOCs' overseas projects as a percentage of total oil consumption.

Figure 25: China's crude demand-supply gap continues to widen



Source: Deutsche Bank, CEIC, China's State Council

But China must either significantly rein in total crude demand or allow the 61% limit to be breached. By the crude demand estimate of our China oil analyst, David Hurd, China would reach 65% foreign dependence in crude oil by 2015, whereas abiding by the 61% limit would lower China's crude import demand CAGR from 10% to 3% (Figure 26), which is definitely bearish.

Figure 26: Foreign crude oil dependence implications

Scenario I: 61% foreign oil dependence

	2010	2012	2015E
Domestic Production	4.1	4.2	4.1
Import	4.8	5.4	6.0
Export	-0.3	-0.3	-0.3
Apparent Demand	8.6	9.3	9.8
Foreign Oil Dependence	56%	58%	61%
Import CAGR		6%	3% Bearish

1mb/d+ difference in import demand

Scenario II: DB China oil team's demand estimate

	2010	2012	2015E
Domestic Production	4.1	4.2	4.1
Import	4.8	5.4	7.2
Export	-0.3	-0.3	-0.3
Apparent Demand	8.6	9.3	11.1
Foreign Oil Dependence	56%	58%	65%
Import CAGR		6%	10%

DB regression implied
 Limit breached

Source: Deutsche Bank, CEIC



Geopolitical risk of oil imports

Of course, oil import dependence is more than just a question of balance of payments. Chinese oil imports, in the heart of oil-short North East Asian mega-demand markets Japan, Korea, and Taiwan, are heavily dependent not only on the Middle East, but also on transit through two of the world's most obvious geopolitically risky choke points, the Straits of Hormuz and Malacca.

Figure 27: China crude imports by source, 2010 – Straits of Malacca very vulnerable on top of Hormuz



Source: Deutsche Bank, China Customs
Actual trade routes may differ. Arrows on this map primarily serve to show direction and proportionate size of crude oil imports from various source countries. Arrow sizes are approximate. Only imports exceeding 10kb/d for the year are reflected on the map.

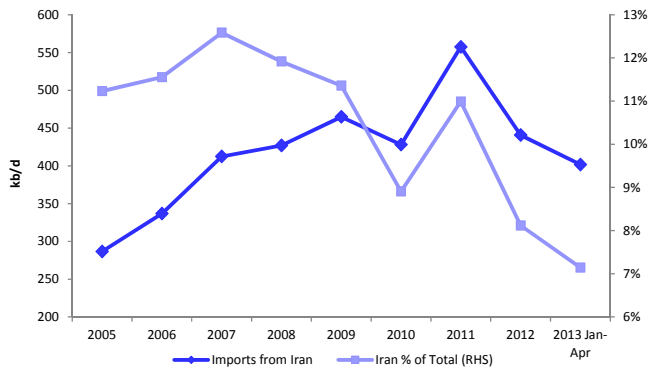
We expect China's next-door neighbor, Russia, to remain as a key source of oil supply in the years to come. This is clear from Xi Jinping's decision to visit Moscow on his first trip abroad as China's President. Currently Russia is the #3 supplier, behind Saudi Arabia and Angola, and these three countries account for nearly half of China's total crude imports.

China is also the largest importer of Iranian oil. While China is currently exempt from US sanctions, the White House will have to review the exception by June 4 when the current 180-day period ends, to determine if China has significantly reduced Iranian oil imports. Key legislators have argued that "significant reductions" should be successive cuts of ~18% in each 180-day period, leading to a combined 45% reduction over three consecutive periods. The Obama Administration highlights that China's Iranian imports have fallen by 21% yoy in 2012, and so far in 2013, China's daily Iranian imports are 9% below 2012 levels, which would lead to a 28% cumulative reduction over three periods. Iranian oil as a percentage of China's total imports has also fallen from 11% in 2011 to 7% YTD.

If the White House decides to take away China's sanctions exception, we expect China to switch away from Iran to alternative sources such as Saudi, Angola, Russia, Oman and Iraq. While these alternative sources stand to gain, China's total oil import demand is unlikely to be reduced by the sanctions decision.

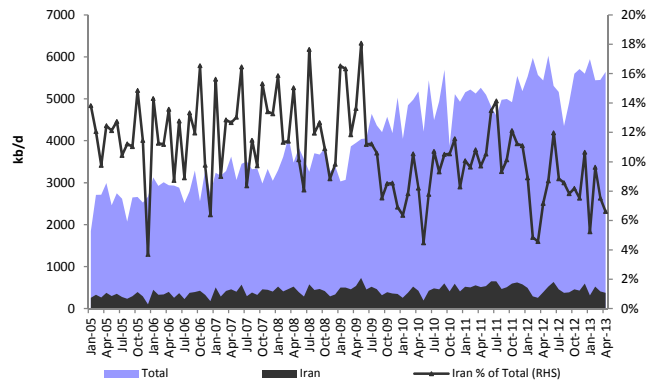


Figure 28: China's Oil Imports from Iran (annual)



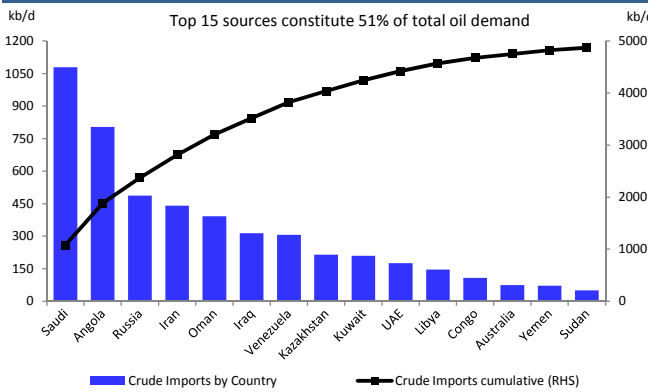
Source: CEIC, Bloomberg Finance LP, Deutsche Bank

Figure 29: China's Oil Imports from Iran (monthly)



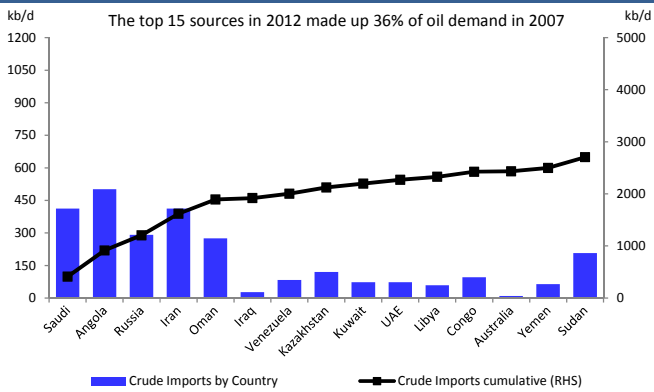
Source: CEIC, Bloomberg Finance LP, Deutsche Bank

Figure 30: Top 15 sources of China's crude imports supply half of China's total oil demand in 2012



Source: Bloomberg Finance LP, CEIC, Deutsche Bank

Figure 31: Five years ago, oil demand was 20% lower and import dependence was also 15% lower



Source: Bloomberg Finance LP, CEIC, Deutsche Bank



Buying more barrels of oil (security) on Wall Street

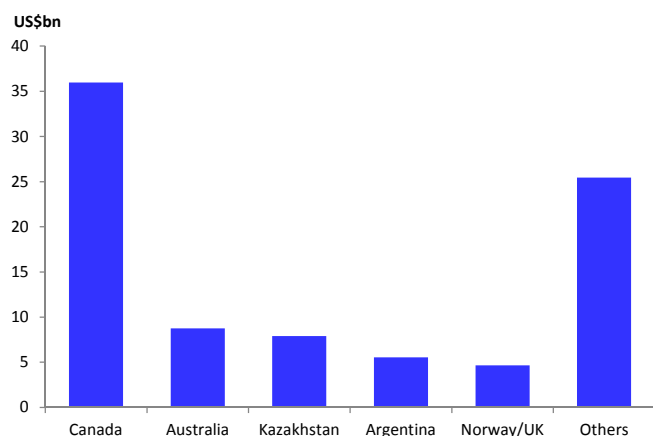
Since the 10th Five-Year Plan (2001-05), the government has been encouraging Chinese companies to “go global” and invest overseas. Alongside renminbi (RMB) internationalisation, the government is prioritising the expansion of overseas investment in the 12th Five-Year Plan (2011-15). The Ministry of Commerce expects 2011-15 cumulative ODI (outbound direct investment) to match the nation’s FDI.

China’s oil companies, supported by the nation’s vast foreign exchange reserves, have been spending aggressively. At times a significant premium is paid to scoop up producing assets and exploration acreage abroad, from stakes in oil sands and LNG projects to entire companies. Of the 200mtpa (4.0mboe/d) of total oil and gas production expected by PetroChina by YE15, 50% will come from overseas projects (vs. 10% currently). While overseas production counts as foreign oil and fails to alleviate pressure from the 61% foreign dependence limitation, it reduces the Chinese refining system’s reliance on foreign feedstock suppliers.

In 2012, China’s national oil companies (NOCs) announced a massive \$26.4bn of oil and gas acquisitions according to our data presented below.

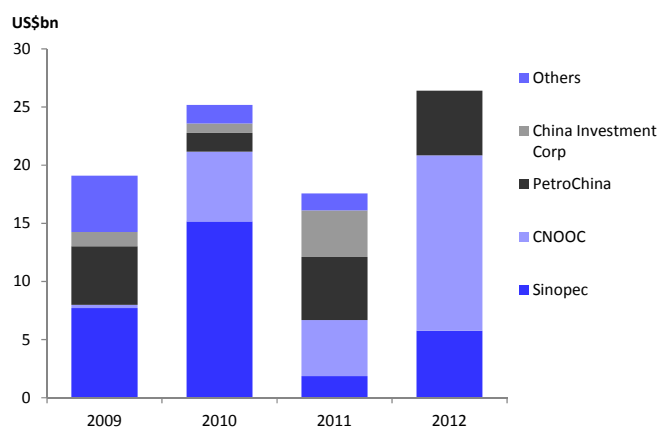
The scale and number of deals struck by the Chinese state-owned enterprises have prompted some host governments to scrutinize takeovers more closely, notably in the case of CNOOC’s attempted takeover of Unocal in 2005, whereby a premium price offered by the Chinese was blocked in Washington under the terms of CFIUS (Committee on Foreign Investments in the United States).

Figure 32: Country breakdown of acquired assets



Source: Deutsche Bank, Wood Mackenzie, Reuters, Company data

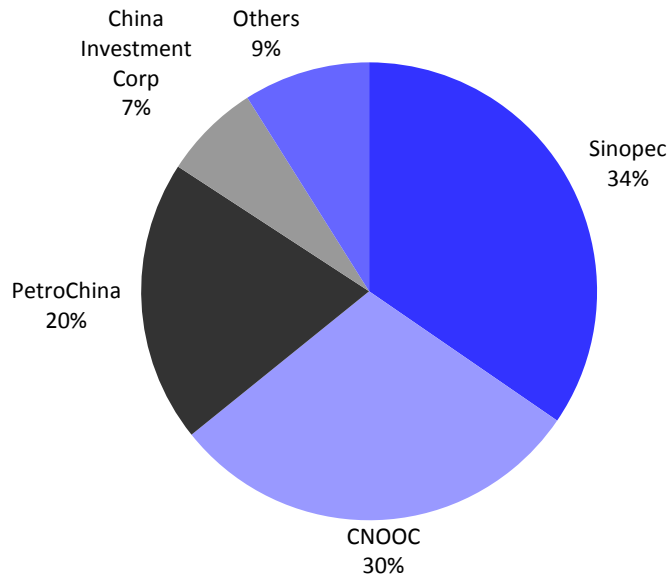
Figure 33: Purchaser breakdown



Source: Deutsche Bank, Wood Mackenzie, Reuters, Company data

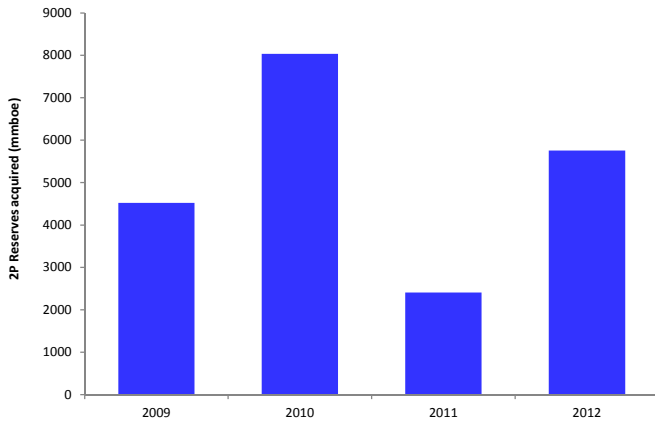


Figure 34: Purchaser breakdown, 2009-2012



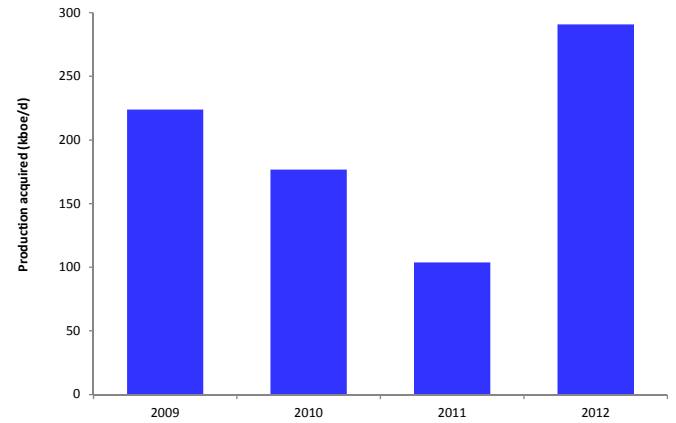
Source: Deutsche Bank, Wood Mackenzie, Reuters, Company data

Figure 35: Estimated 2P Reserves acquired per year



Source: Deutsche Bank, Wood Mackenzie, Reuters, Company data

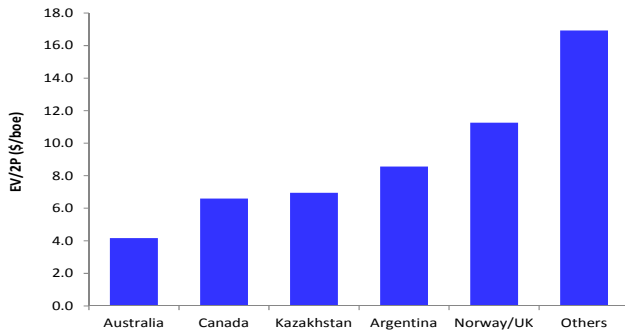
Figure 36: Estimated production acquired per year



Source: Deutsche Bank, Wood Mackenzie, Reuters, Company data

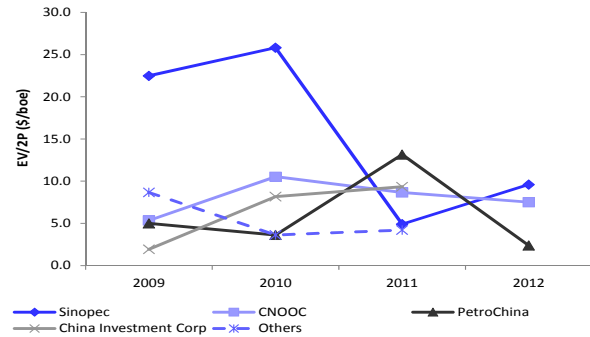


Figure 37: M&A EV/2P by country (simple avg)



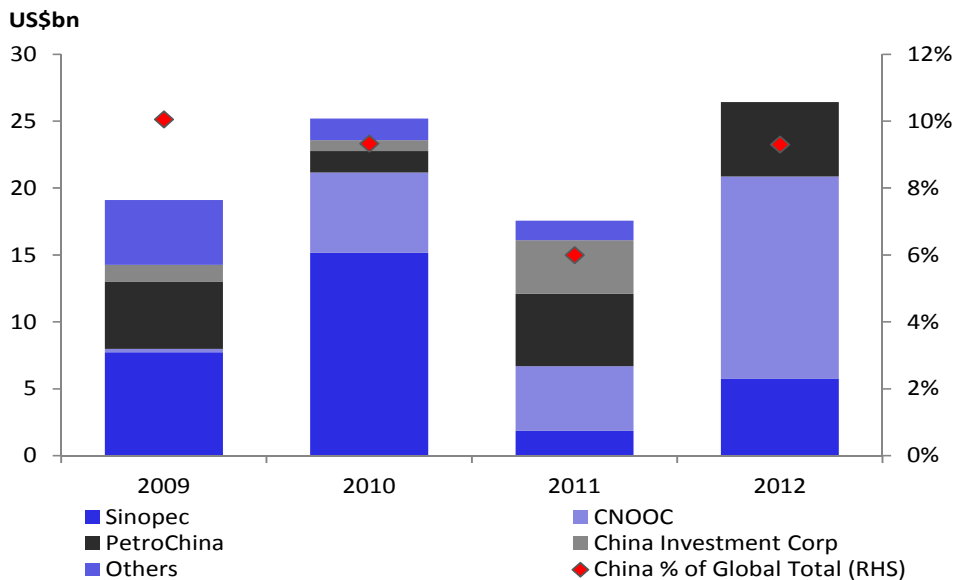
Source: Deutsche Bank, Wood Mackenzie, Reuters, Company data

Figure 38: M&A EV/2P by company (simple avg)



Source: Deutsche Bank, Wood Mackenzie, Reuters, Company data

Figure 39: China's oil & gas acquisitions – substantial % of global total



Source: Deutsche Bank, Wood Mackenzie, Reuters, Company data

Very importantly, after a major buying spree illustrated in Figure 32, favoured acquisition target Canada became concerned about resource nationalism, especially after CNOOC's \$15.1bn takeover of Nexen in Dec 2012.

Although Canadian Prime Minister Stephen Harper's government approved the CNOOC takeover as representing a "net benefit" to Canada, new rules were established to limit investment by state-owned companies, as deals involving state-owned enterprises reviewed under the Investment Canada Act rose from virtually nil in 2008 to ~20% in 2011. Harper said: "To be blunt, Canadians have not spent years reducing ownership of sectors of the economy by our own governments only to see them bought and controlled by foreign governments instead."

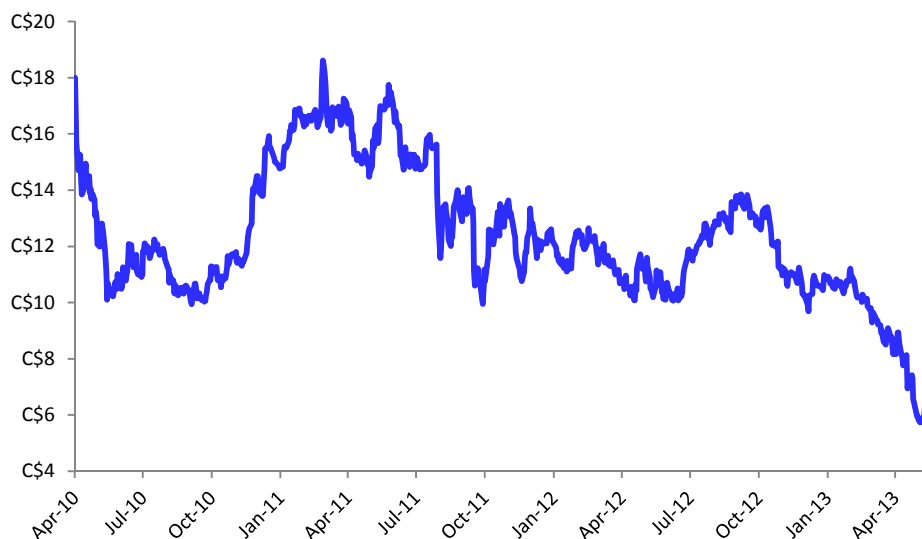


According to the new rules:

- State-controlled investors are essentially barred from new takeovers of Canadian oil sand assets. Such deals deemed by Ottawa to be of “net benefit” is to be granted on “an exceptional basis only”
- Over the next five years, the federal government will keep the threshold at which it reviews takeovers by foreign state-owned enterprises at \$330m, while raising the threshold to \$1bn for foreign private-sector purchasers.
- Ottawa would take into account the likely degree of control exerted by the state-owned enterprise on the Canadian business and that Canadian industry, and by the foreign government in question on the state-owned enterprise making the acquisition. This essentially draws a distinction between the Statoil’s of the world (largely seen as independent operators) and SOEs such as CNOOC, Sinopec and PetroChina.

These newly erected barriers have been very negative for asset and equity markets for oil in Canada, as the key buyer at the margin has now been blocked. The most recent examples are ConocoPhillips’ plan to “pause” the marketing process of its Canadian oil sands (including Surmont) and failed discussions between Marathon Oil and a prospective purchaser on its 20% interest in the Athabasca Oil Sands Project (AOSP). Although COP declined to draw a link between the new rules and its decision, the pool of potential buyers has definitely shrunk.

Figure 40: Example: Athabasca Oil Corp (ATH.TO) stock price – suffering as China is blocked; representative of Canadian oil sands valuations



Source: Bloomberg Finance LP

Figure 41: Key M&A by Chinese NOCs since 2009

Buyers	Sellers	Deal Date	Primary Country	Asset(s)	EV (US\$M)	Reported 1P (mmboe)	Reported 2P (mmboe)	DB Est. 2P (mmboe)	Total 3P Resource n (mmboe)	Productio n (kboe/d)	EV/1P (US\$/boe)	EV/2P reported (US\$/boe)	EV/2P DB (US\$/boe)	EV/3P (\$/boe)	EV/flowing boe (US\$/boe)
Sinopec	Total	Apr-09	Canada	Northern Lights 10% (total 50%)	NA			100	143		NA	NA	NA	NA	
PetroChina & KazMunaiGas	Central Asia Petroleum	Apr-09	Kazakhstan	Mangistaumunaigaz Fields 100%	6600			850	1043	110			7.8	6.3	60,000
Xinjiang Guanghui Oil	RifKamp	Apr-09	Kazakhstan	Sarybulak 49%	44			3	5	0			14.7	9.0	
CNOOC & Sinopec	Talisman	May-09	Trinidad & T	Talisman Trinidad	323	32		44	63	5	10.0		7.3	5.2	71,400
Sinopec	Addax Petroleum	Jun-09	Africa, Mid East	100% equity	7560	214	537	201	1292	90	35.3	14.1	37.6	5.9	84,000
Sinochem	Emerald Energy	Aug-09	Syria, Colombia, Peru	100% equity	878	28		57	93	8	31.3		15.5	9.5	104,524
PetroChina	Athabasca Oil Sands	Aug-09	Canada	MacKay River oil sands project 60%	1736		171	780	5000			10.2	2.2	0.3	
China Investment Corp	KazMunaiGas E&P	Sep-09	Kazakhstan	11% stake	939		1800	1800				0.5	0.5		
China Investment Corp	Nobel Oil	Oct-09	Russia	N. Kostyukskoye 45%, S. Oshskoye 45%	300	68		90		7	4.4		3.3		42,674
RusEnergy Investment	Suntarneftegaz	Nov-09	Russia	Unspecified 51%	300	353		500			0.8		0.6		
CNOOC	Statoil	Nov-09	USA	GoM - Tucker 20%, Logan 10%, Cobra 10%, Krakatoa 10%	100			30	50	0			3.3	2.0	
Sinochem	Undisclosed (M&A)	Nov-09	Kazakhstan	Unspecified 100%	320		66	66		4		4.8	4.8		80,000
PetroChina & Shell	Arrow Energy	Mar-10	Australia	100% equity	3200		615	881	965			5.2	3.6	3.3	
CNOOC	Bridas	Mar-10	Argentina	50% stake in Bridas	3100	318		375	399	47	9.7		8.3	7.8	66,372
Sinopec	ConocoPhillips	Apr-10	Canada	Syncrude - New Terms 9%, Syncrude 9%	4650	248	502	502	1071	29	18.8	9.3	9.3	4.3	160,345
CNOOC	Devon Energy	Apr-10	China	Block 15/34, 25%	515	16		20	25	11	32.2		25.8	20.6	49,048
China Investment Corp	Penn West Energy	May-10	Canada	Peace River Slave Lake 45%	817			100		3			8.2		302,593
Sinopec	Houston American Energy Corp, Hupecol	Aug-10	Colombia	Cabiona 100%, Dorotea 100%, Leona A 100%	281	8	11	4	14		33.5	25.3	73.0	20.3	
Sinopec	Mittal Investments (Sarl)	Aug-10	Kazakhstan	Caspian Investment Resources 50% stake	NA			109	114	33	NA	NA	NA	NA	
Sinopec	Repsol YPF	Oct-10	Brazil	Repsol Brasil 40%	7100			222	335	5			32.0	21.2	1,365,385
CNOOC	Chesapeake Energy	Oct-10	USA	Cretaceous Eagle Ford Shale Gas 33%	2160	25		330	1333	4	86.4		6.5	1.6	568,421
CNOOC	BG	Oct-10	Australia	QCLNG 5%	NA			89	89		NA	NA	NA	NA	
Sinopec	Chevron	Dec-10	Indonesia	Ganal PSC 18%, Makassar PSC 18%, Rapak PSC 18%	680		114	114	180	2		5.9	6.0	3.8	313,846
CNOOC	Exoma Energy	Dec-10	Australia	50% in five coal-seam exploration gas blks in Queensland	51			5000	8333				0.01	0.01	

Source: Deutsche Bank, Wood Mackenzie, Company data, Reuters, Bloomberg Finance LP



Figure 41: Key M&A by Chinese NOCs since 2009 (Cont'd)

Buyers	Sellers	Deal Date	Primary Country	Asset(s)	EV (US\$M)	Reported 1P (mboe)	Reported 2P (mboe)	DB Est. 2P (mboe)	Total 3P Resource n (mboe)	Production (kboe/d)	EV/1P (US\$/boe)	EV/2P reported (US\$/boe)	EV/2P DB (US\$/boe)	EV/3P (\$/boe)	EV/flowing boe (US\$/boe)
Sinopec	Occidental	Dec-10	Argentina	Argentine unit	2450	187	393	277	322	44	13.1	6.2	8.9	7.6	55,682
CNOOC	China National Coal	Dec-10	China	Unspecified 50%	181	8		15			21.7		12.1		
Sinopec	Enbridge	Jan-11	Canada	N. Gateway pipeline	100						NA	NA	NA	NA	
CNOOC	Chesapeake Energy	Jan-11	USA	DJU Niobrara Hz SHO (Denver-Julesburg) 100%	1267			100	1670				12.6	0.8	
PetroChina	Encana Corporation	Feb-11	Canada	Cutbank Ridge 50%	5423	167		412	1059	43	32.6		13.2	5.1	126,706
Sinopec	ConocoPhillips, Origin Energy	Feb-11	Australia	APLNG 15% stake	1765			359	461	8			4.9	3.8	220,625
CNOOC & Total	Tullow Oil	Mar-11	Uganda	Block 1 67%, Block 2 67%, Kingfisher 67%	2933			696	696				4.2	4.2	
CNOOC	Northern Cross (Yukon)	Jun-11	Canada	Northern Cross - Eagle Plain exploration 60%	NA						NA	NA	NA	NA	
CNOOC	OPTI	Jul-11	Canada	Cottonwood 35%, Leismer 35%, Long Lake 35%	2076	195	729	440	1540	10	10.6	2.8	4.7	1.3	207,600
China Investment Corp	GDF Suez	Aug-11	Norway	GDP Suez E&P division 30%	3150	0	245	227	383	43		12.9	13.9	8.2	73,256
China Investment Corp	GDF Suez	Aug-11	Trinidad & T	ALNG Train I 10%	852			177	0	0				4.8	
PetroChina	Athabasca Oil Sands Corp	Jan-12	Canada	MacKay River oil sands project 40% (total 100%)	672		114	520				5.9	1.3		
PetroChina	RDS	Feb-12	Canada	Groundbirch shale gas 20%	1050			171					6.2		
Sinopec (Addax)	Talisman	Jul-12	UK/Norway	North Sea 49%	1500	113	224	174	215	47	13.3	6.7	8.6	7.0	31,832
Sinopec	ConocoPhillips, Origin Energy	Jul-12	Australia	APLNG 10% additional stake (total 25%)	2100			239	307	5			8.8	6.8	393,750
CNOOC	Nexen	Dec-12	Canada	100% equity	15100	842	1925	2012	7156	198	17.9	7.8	7.5	2.1	76,340
Sinopec	Daylight Energy	Dec-12	Canada	100% equity	2160	96	174	175	226	41	22.5	12.4	12.3	9.6	53,276
PetroChina (Phoenix Duvernay Gas)	Encana Corporation	Dec-12	Canada	49.9% in ECA's 445k acres Duvernay shale	2202			2000	4491				1.1	0.5	
PetroChina	BHP Billion	Dec-12	Australia	8.33% in East Browse LNG JV, 20% in West Browse	1630			464	482				3.5	3.4	
		2009			19100										
		2010			25185										
		2011			17566										
		2012			26414										
		2009-12			88265										

Source: Deutsche Bank, Wood Mackenzie, Company data, Reuters, Bloomberg Finance LP





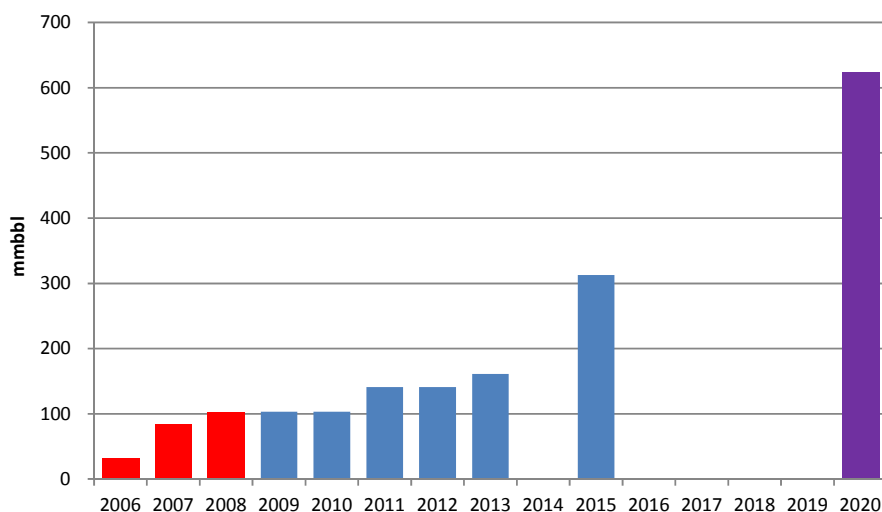
Strategic & commercial stockpiling

The next clear oil policy step to mitigate import dependence risks has been to stock oil. This has been a very important marginal driver of global demand strength, as the inventory is being built, and then retained. So the inventory build in China becomes oil removed from the market.

The strategic petroleum reserves program targeting 90 days of crude net import cover by 2020 was formalized in the 10th Five-Year Plan (2001-05) by the National People's Congress. Construction and oil procurement was overseen by the National Oil Reserve Center (NORC), set up in 2007 under the auspices of the National Energy Administration (NEA), and major NOCs serve as contractors for the operations of strategic oil reserves.

CNPC/PetroChina is the operator for 42% of the SPR capacity under Phases 1 and 2 (310mmbbl), and Sinopec is the operator for 38%. Sinochem and CNOOC each operates one site, making up the remaining 20% of Phases 1 & 2. The State Council headed by the Premier holds the authority to order releases from the SPR and the recommendation may originate from the NEA. The NDRC, NEA and Ministry of Finance would then coordinate the implementation of the order.

Figure 42: China strategic crude reserves capacity



Source: IEA (calculated based on news reports), C1

As we discussed in our April 2011 report ("China's SPR Phenomenon"), construction of Phase I, which includes four SPR sites totaling 103mmbbl of crude capacity, was completed between 3Q06 and 4Q08. The four sites were all filled between 2H08 and April 2009 at an attractive average cost of \$58/bbl.



Based on DB Head of commodities research Soozhana Choi's analysis and a recent report from investment bank China International Capital Corp (CICC), we believe Phase II capacity may be expanded to 210mmbbl from the original 169mmbbl, and completion may be delayed from 2013 to 2015 as China expects the US unconventional oil boom to bring about a structural global supply surplus and also lacks the technical know-how to construct large-scale underground storage facilities. CNPC/PetroChina reported in Jan 2012 that construction of Lanzhou and Dushanzi (each 18.9mmbbl, see Figure 43) was completed, and filling began in 1H12. CICC believes that no new SPR projects have since been completed or started oil injection. Tianjin (20.1mmbbl) will likely be completed this year, and the remaining 152mmbbl will be constructed in 2014-15.



China stopped disclosing crude inventory levels in late 2009 when China OGP (Oil, Gas and Petrochemicals) – an industry newsletter issued by the official Xinhua news agency – switched to reporting month-on-month inventory movements in percentage terms. We are able to derive the combined strategic and commercial crude inventory movements based on refinery throughput – (domestic oil production + net imports). Our calculations imply that crude built at 200kb/d (73mmbbl) in 2011, then at a rampant pace averaging 630kb/d (114mmbbl) in 1H12. Occasionally the two trends diverge – China OGP reported a 2.2% crude build in March this year but we calculated a draw – but these are the best data available.

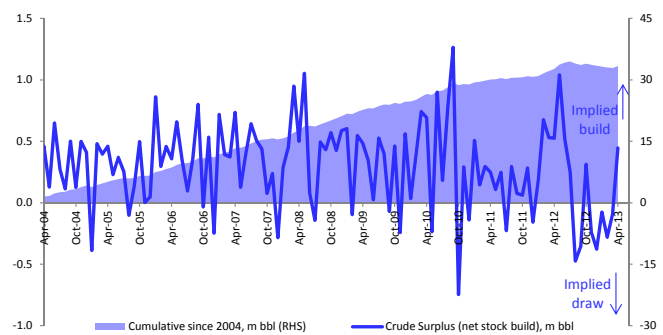


Figure 44: China OGP reported inventory movements

Crude Inventory			
	MoM	Brent	Dubai
Sep-12	+0.6%	113.38	110.96
Oct-12	-3.5%	111.97	108.68
Nov-12	-1%	109.71	107.10
Dec-12	-3.6%	109.64	105.67
Jan-13	-1%	112.93	107.54
Feb-13	-3%	116.46	111.22
Mar-13	+2.2%	109.24	105.48
Apr-13	?	102.88	101.66

Source: China OGP, Bloomberg Finance LP

Figure 45: Calculated crude inventory movements



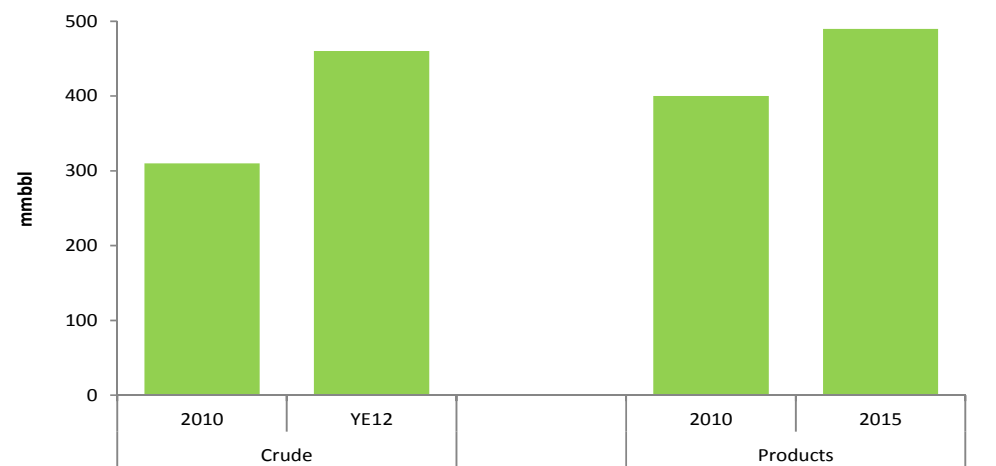
Source: Deutsche Bank, Bloomberg Finance LP

Phase III capacity may be expanded to 310mmbbl from 190mmbbl, bringing total SPR capacity to 620mmbbl, but still 90 days of net import cover according to CICC, which would imply 6.9mb/d of crude net imports in 2020, i.e. at least 11.3mb/d of total crude demand that year, assuming the 61% foreign oil dependence cap remains in place.

By YE13, China's crude SPR will provide 29 days of net import cover, 1/3 of the 90-day goal by 2020. **On average, the upcoming SPR crude build continues to be globally significant as it represents 210kb/d of incremental crude demand at the margin in 2014-2015 and 170kb/d in 2016-2020.**

In addition to the strategic storage capacity, China's commercial crude storage capacity is estimated at 460mmbbl and the commercial product storage capacity is expected to reach close to 500mmbbl by 2015.

Figure 46: China's commercial storage capacity



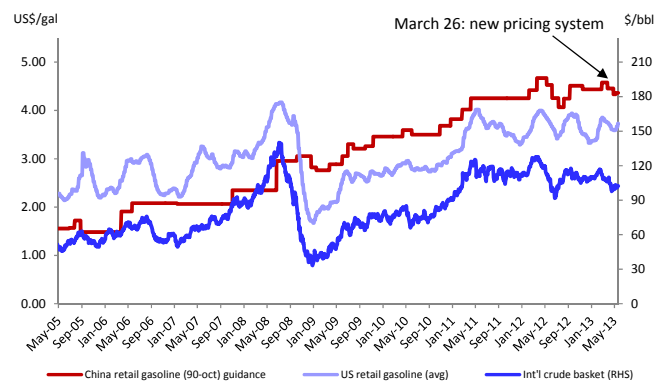
Source: IEA according to China International Capital Corporation(CICC) Research



Product pricing

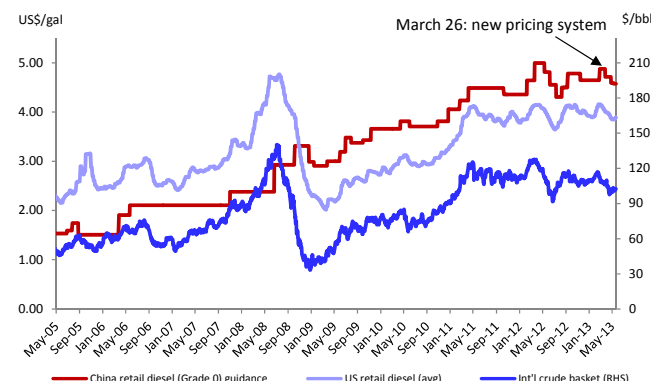
It has not been well appreciated that for key periods, particularly in oil price up-cycles, Chinese domestic oil product prices have been subsidised. That is because upward moves in crude prices globally have not been reflected in Chinese controlled product prices, but rather a loss has been forced on refiners.

Figure 47: Retail Gasoline Price vs. Crude Prices



Source: Bloomberg Finance LP, Deutsche Bank
 Assumes CNY/USD unchanged between China's retail price guidance changes

Figure 48: Retail Diesel Price vs. Crude Prices



Source: Bloomberg Finance LP, Deutsche Bank
 Assumes CNY/USD unchanged between China's retail price guidance changes

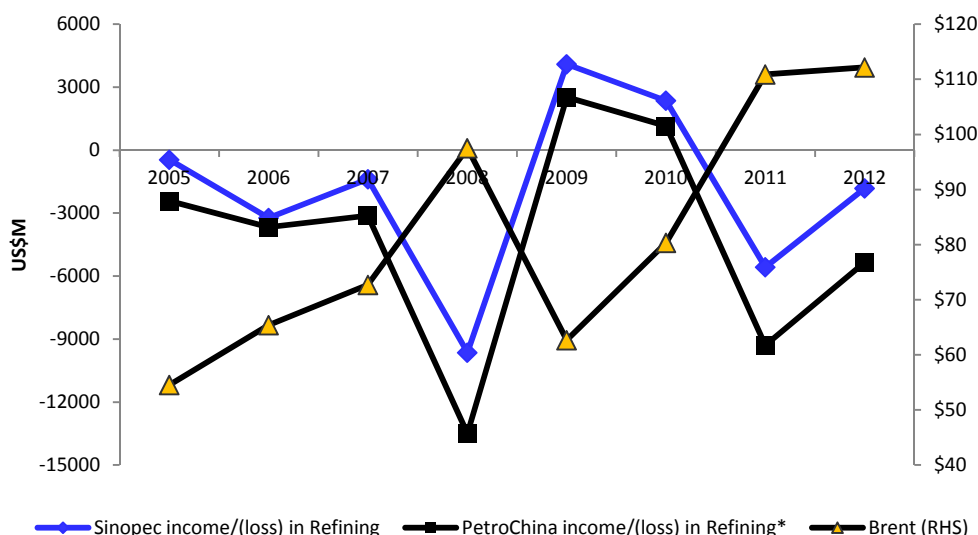
Gasoline and diesel prices continue to be controlled by the NDRC, the nation's top economic planner, which sets the maximum allowable levels charged by retailers. However the new policy introduced on March 26 this year, if properly implemented, promises more frequent adjustments which track feedstock prices more closely and should help reverse the string of losses suffered by refiners in recent years.

The government's first price adjustment policy introduced in 2002 was never seriously implemented and the refiners continued to see losses year after year. The next iteration introduced in 2009 promised a 4% return over all-in costs by stipulating that:

- When the average of international crude prices (Brent, Dubai and Indonesian Cinta) is below \$80/bbl, gasoline and diesel prices are computed on the basis of "normal profit margin".
- When the average of the three international crudes is in the \$80-\$130/bbl range, the maximum retail gasoline and diesel prices are adjusted by the NDRC if the crudes' moving average has fluctuated more than 4% within 22 consecutive business days. This represents a partial pass-through for the refiners, whose profitability is allowed to fall to zero.
- When the average crude price exceeds \$130/bbl, the government puts a freeze on product prices to hold inflationary pressures down and simply writes a check to the refiners to compensate them for their losses as they continue to run to ensure domestic supply stability and in turn, social stability. (See our April 2011 note, "China's SPR Phenomenon" for more.) As shown above, the 22-day reference period consistently cause misalignments between product prices and crude feedstock prices, and this policy fell apart in 2011 when refiners once again suffered losses, as well as in 2012.



Figure 49: China's top two refiners suffered losses in 6 out of past 8 years



Source: Company filings, Bloomberg Finance LP
 *PetroChina: Operating income/(loss) available was for Refining in 2011-12, Refining & Chemicals in 2007-10 and Refining & Marketing in 2005-06

The latest policy changes the Brent-Dubai-Cinta price index to one which reflects China's mix of crude imports, but the NDRC has not disclosed the mix. It more than halves the crude oil moving average reference period from 22 to 10 consecutive business days. And it gives the NDRC the right, but not the obligation, to adjust gasoline and diesel prices every 10 business days in line with the new crude price index.

Under the new policy, product prices were kept unchanged after the NDRC's April 10 review because the adjustment signaled was too minor to be implemented. With a roll-over to the following appraisal on April 25, the NDRC cut retail gasoline by 395 yuan/ton (12c/gal) and diesel by 400 yuan/ton (13c/gal). The latest adjustment on May 10 was an increase by 95 yuan/ton for both gasoline and diesel (2-3/gal).

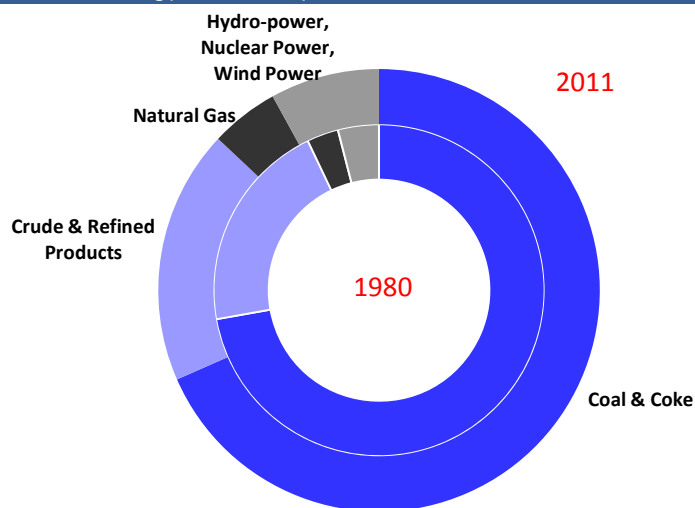
The net impact of the pricing system change is expected to be easier cost pass-through, better refining profitability, hence higher refining run rates, higher crude import demand and lower net product imports (especially of diesel).



Environmental protection

China suffers from chronic air pollution as a function of high coal dependence and booming economic growth.

Figure 50: Chinese energy demand by source, 1980 vs. 2011



Source: NBS

Out of the “key targets” laid out in the 12th Five-Year Plan for Energy Development summary table (Figure 17), three out of the five “binding” targets are related to ecological & environmental protection:

- CO2 emissions per unit of GDP: 17% reduction from 2010 to 2015
 - This is China’s first carbon intensity reduction target, a follow-up on promises made at 2009 UN-sponsored climate talks in Copenhagen, Denmark
- Sulfur dioxide emission from coal-fired power generation: 12.4% reduction from 2010 (2.9 gram/kWh) to 2015 (1.5 gram/kWh)
- Nitrogen oxide emission from coal-fired power generation: 15.1% reduction from 2010 (3.4 gram/kWh) to 2015 (1.5 gram/kWh)

Also within the text of the Energy Development Plan is the target 30%+ reduction in PM2.5, i.e. fine particulate matter consisting of small, airborne particles with a diameter of 2.5 micrometers or less which can penetrate deep into the lungs, exacerbate lung and heart disease and contribute to premature mortality. This is not a binding target in the 2011-15 Five-Year Plan, but it is the Ministry of Environmental Protection’s intention to set binding targets for PM2.5 reduction for all provinces in the 13th Five-Year Plan (2016-20).

In mid-January this year, PM2.5 surged to nearly 1,000 in Beijing, i.e. 40 times higher than the WHO standard of 25. According to Beijing authorities, research shows 60% of the city’s PM2.5 originating from coal burning, vehicle emissions and industrial production, while 23% comes from dust and 17% from solvents.



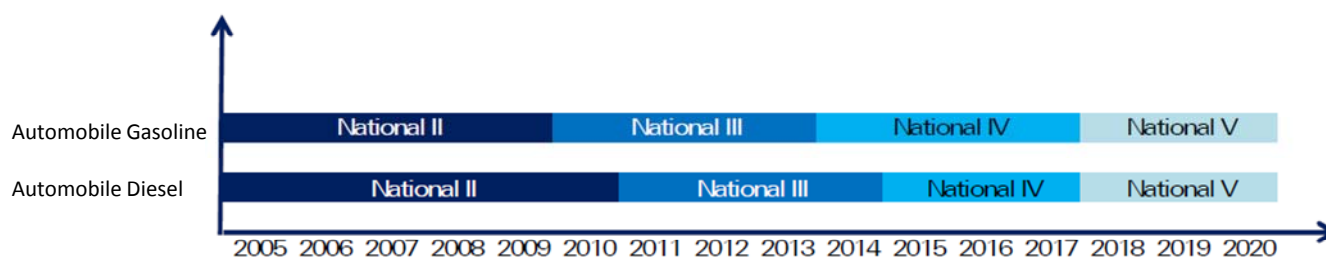
To lower the national urban average PM2.5 from 75 to 35 targeted by 2030, DB's China economist Jun Ma proposed six key changes:

- Reduce annual average coal consumption growth by half (to 2% CAGR) for 2013-17 and cut coal consumption after 2017 by 22% through 2030;
- Reduce coal-related emissions by ~70% in the coming 18 years via clean coal technologies;
- Reduce emissions per car by 80%+ by enforcing high standards for gasoline and diesel and car emission and improving fuel efficiency by 20%;
- Increase the annual growth rate of clean energies (natgas, nuclear, hydro, wind and solar) by another 4ppts for 2012-20 vs current forecast;
- Reduce the 2030 target for passenger vehicles to 250 million (from the current expectation of 400 million);
- Increase the length of railways and subways by 60% and four-fold respectively from 2013-20, and by 60% and 230% respectively from 2020-30.

Vehicle emissions control is important because PM emissions are directly related to fuel sulfur content. During combustion, sulfur in fuel converts into direct PM emissions and SO₂ emissions that can lead to secondary particle formation, regardless of car emission control. Currently most of China enforces the National III standard, which allows sulfur content of up to 150ppm (parts per million) in gasoline and diesel. Certain developed regions, including Shanghai, Guangdong, Jiangsu and Zhejiang have moved to the National IV standard, which caps sulfur content at 50ppm. This year Beijing alone, due to the gravity of the local pollution, has adopted the National V standard, which is equivalent to Euro V and the EPA's Tier 3 gasoline standard (proposed for nationwide adoption in the US by 2017, with exceptions) in terms of maximum sulfur content of 10ppm. National V is to be adopted nationally in China by 2017.

This, along with improvements to conventional internal combustion engines (turbo-charging, direct injection, 8/9 speed transmissions, variable valve lift, start-stop systems, etc.), should have a substantially positive effect on vehicle emissions (particularly as annual vehicle sales represent ~20% of overall vehicles in operation, compared to 6% in the US). After that, hybrid vehicles are expected to take substantial share in the 2020 time-frame, followed by electric vehicles (expected later than in the US), and contribute positively to vehicle emissions control.

Figure 51: Timetable for implementing National V standard for gasoline & diesel



Source: China's Standardization Administration



DB does not expect the refiners' capex requirements to meet the National V standard by year-end 2017 to be restrictively high. After all China's refiners have been investing to meet rising fuel standards since 2000. Refiners are also able to better pass-through the cost increases to the consumer under the new product pricing policy announced in March and no longer have to cut refining run rates as often in the attempt to minimize their refining losses.

On balance, we expect the net impact of environmental measures on refiners and the product balance to be minimal. The key will be economic growth.



Outlook: GDP Growth

GDP growth

In his first press conference as Premier, Li Keqiang cited “economic growth” at least a dozen times, while referencing environmental protection just once, so economic growth remains front-and-center on the new leadership’s agenda. Every March, the Premier announces a GDP growth target for the year at the National People’s Congress meeting, and this year Li announced a 7.5% target, unchanged from 2012 but 50bps below the annual 8% target in place since 2005. These targets have consistently been higher than the “expected” CAGR target laid out in the Five-Year Plans – the 2006-10 Plan “expected” 7.5% growth per year and the 2011-15 Plan “expects” 7.0%.

To add to the confusion, statistics reported by provincial level governments almost never match up with national statistics. In fact Li Keqiang himself admitted to this phenomenon: according to a US State Department memo released by WikiLeaks, he told America’s ambassador in 2007 that Liaoning province, where he used to be the party chief, reported “man-made” GDP numbers which were unreliable. Instead he preferred to understand the economy via cargo volume on the province’s railways, electricity consumption, and bank loans. *The Economist* even created a “Keqiang index”, a hybrid of these three indicators, which confirms the economic strength implied by official GDP figures but reveals much more volatility.

Figure 52: *The Economist’s* Keqiang index

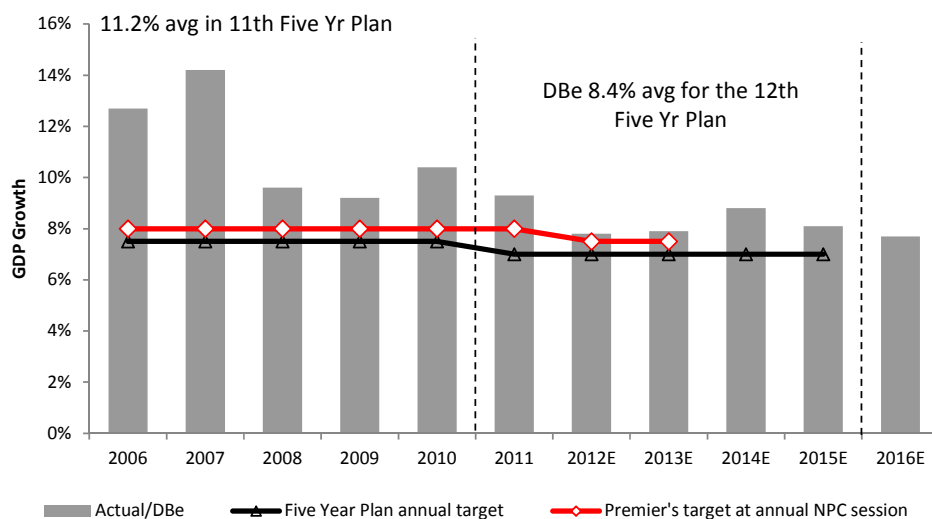


Source: © *The Economist Newspaper Limited, London* (Dec. 9th 2010)

Nonetheless, the global economy still attaches great importance to the headline GDP growth numbers, for what they’re worth. Following the recent shock of “only” 7.7% Q1 GDP growth reported by China’s National Bureau of Statistics – 20-30bps below our 7.9% forecast and consensus of 8.0% – the XLE fell by 4% and the S&P 500 declined by 2%. DB China economist Jun Ma, however, believes the broad trend of growth recovery in 2H13 and 1H14 will remain intact and that FY13 and FY14 growth will average 7.9% (vs. Premier Li’s 7.5% target) and 8.8%, implying a 2011-15 GDP CAGR of 8.4%.



Figure 53: GDP expected to be above official target, as was historically the case



Source: Deutsche Bank estimates, CEIC, World Bank

1H this year is impacted by the new leadership's anti-corruption campaign, which in January-April reduced revenue from catering and luxury products (vehicle sales, watches and gift card sales at department stores). But history shows that China tends to spend the saved funds in other categories within the budget year, and the impact of the bird flu is not likely to be long lasting. As China moves past the policy vacuum after this year's March National People's Congress, DB expects the economy to rebound to average 8.4% annual growth in 2011-15, a positive for global oil demand.

Figure 54: DB's 8.4% GDP CAGR forecast (2011-15) is supported by the Five-Year Plan energy targets

	Unit	2010	2015	CAGR	
Five Year Plan					
GDP	Trillion yuan	39.8	55.8	7.0% "forecast"	
Energy consumption per unit of GDP	TCE/1,000 yuan	0.081	0.068	-16% "binding"	
Primary energy consumption	Billion TCE	3.25	4.0	4.3% "forecast"	4.0bn TCE - stipulated limit
DBe GDP growth					
GDP	Trillion yuan	39.8	59.5	8.4% DBe	
Energy consumption per unit of GDP	TCE/1,000 yuan	0.081	0.068	-16% "binding"	
Primary energy consumption	Billion TCE	3.25	4.05	4.5%	No meaningful breach, supports DBe's GDP est.

Source: Deutsche Bank, Gov.cn

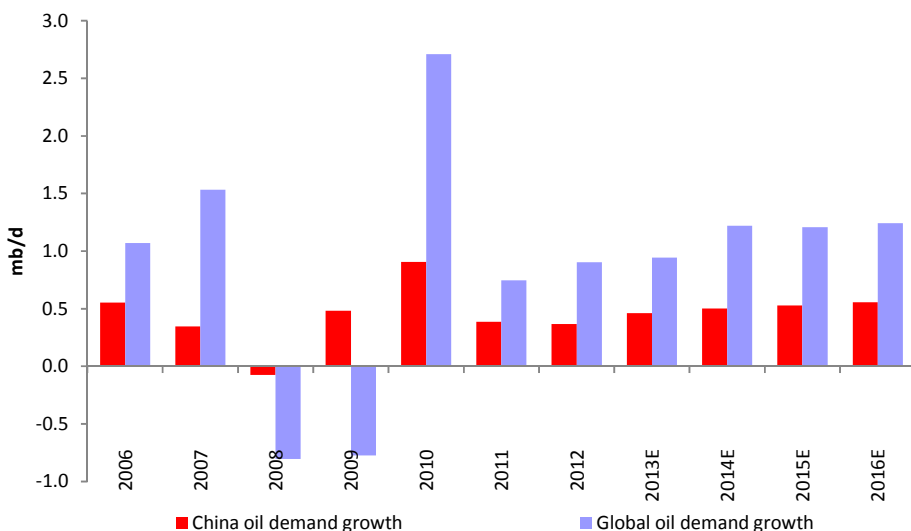


Outlook: Oil demand growth

Total oil demand

For the past decade, China has on average represented 40% of annual global oil demand growth, with consumption barely falling in the 2008 crisis year and growing in 2009 even as global consumption contracted, driven in part by the opportune SPR build at an attractive average cost of \$58/bbl. We expect this pace of growth to continue, and China's oil demand growth at the margin will continue to underpin an oil market that the Saudis can control – with their stated \$100/bbl target.

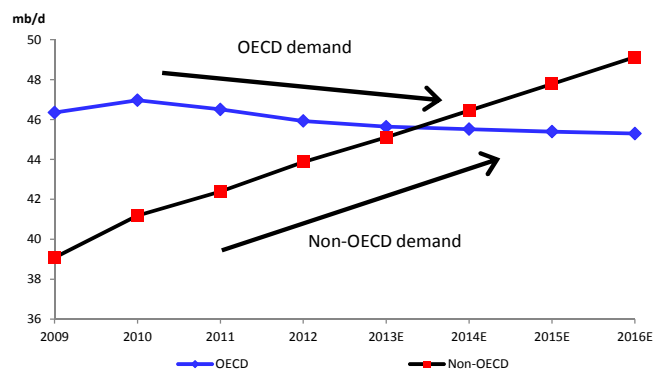
Figure 55: China is ~40% of annual global oil demand growth



Source: IEA, Deutsche Bank

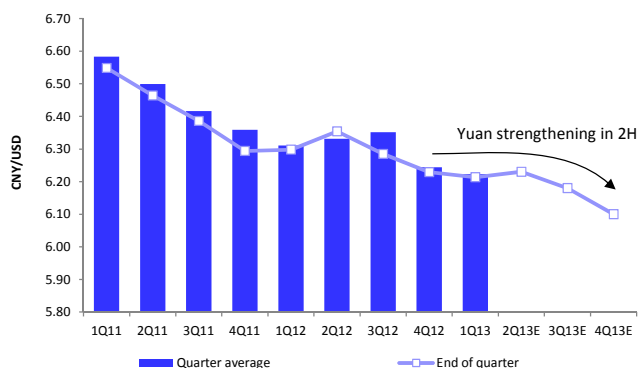
China's demand growth has been the single biggest factor in the move of Non-OECD consumption to over-take OECD. Imports, in particular, will be helped by a strengthening of the Chinese yuan against the US\$ expected by DB in 2H 2013.

Figure 56: Non-OECD oil demand over-taking OECD



Source: IEA, Deutsche Bank

Figure 57: CNY/USD

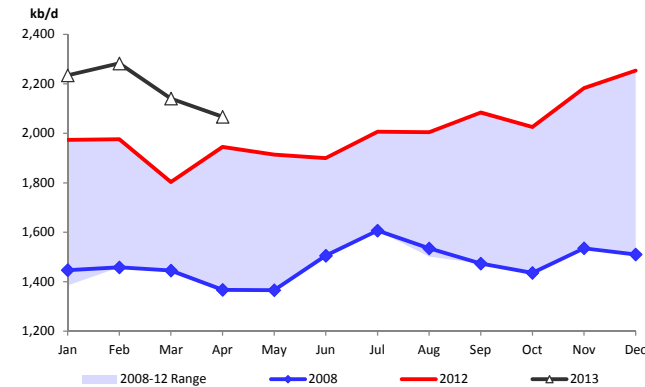


Source: Deutsche Bank



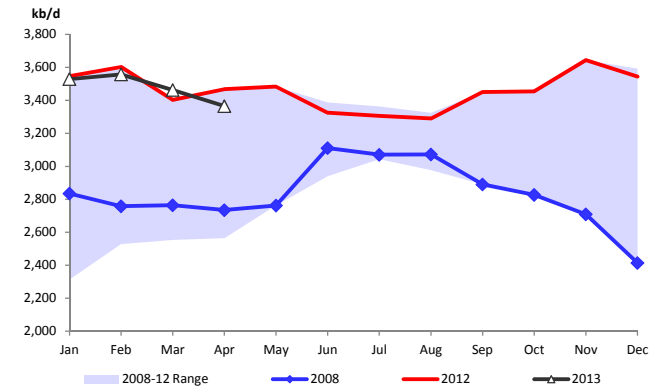
Gasoline & diesel demand

Figure 58: China Gasoline Apparent Demand (monthly)



Source: CEIC

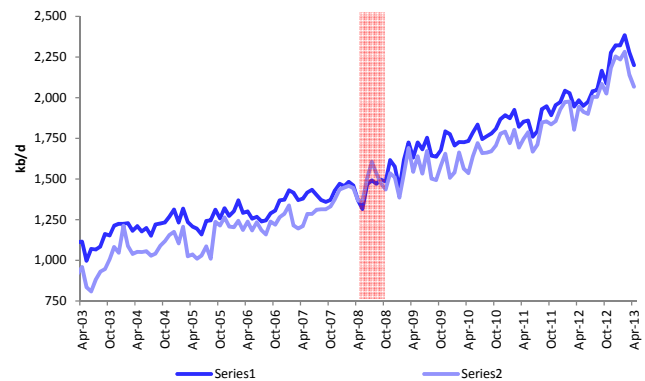
Figure 59: China Diesel Apparent Demand (monthly)



Source: CEIC

From the products perspective, apparent demand (domestic + export) for gasoline reached 2.2mb/d in 1Q13, exceeding the five-year high, while apparent demand for diesel of 3.5mb/d in 1Q13 is at five-year high.

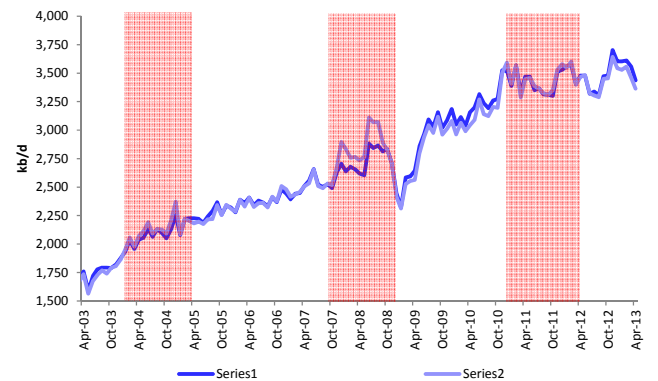
Figure 60: Gasoline Production vs Apparent Demand



Source: Bloomberg Finance LP, CEIC, Deutsche Bank

Assuming 1 ton gasoline = 8.5 bbl

Figure 61: Diesel Production vs Apparent Demand



Source: Bloomberg Finance LP, CEIC, Deutsche Bank

Assuming 1 ton diesel = 7.46 bbl

In China, transportation accounts for 60% of gasoline consumption (1.2mb/d) and diesel consumption (2.1mb/d), or 35%-40% of total oil demand. While passenger vehicle fleet growth (including multipurpose and sport-utility vehicles) – the key driver behind gasoline demand growth – is slowing, the absolute growth in vehicle parc remains significant.

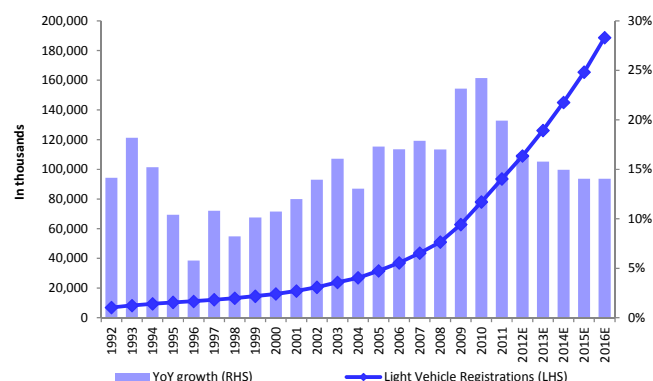
In 2009-10 following the financial crisis, when the central government halved the sales tax on cars with small engines (≤ 1.6 liters) to 7.5% and subsidized vehicle trade-ins in rural areas to handed out incentives and tax breaks to encourage car ownership, new passenger vehicle and light truck registrations nearly doubled from 50,996 in 2008 to 93,563 in 2011, and gasoline demand saw double-digit annual growth (except in the crisis year of 2009).



However, seeing the rapidly intensifying air pollution and traffic congestion and rising foreign oil dependence, the government has taken a 180 degree turn. The traditional auto industry no longer enjoys generous incentives and tax breaks and the new-energy auto industry, one of the seven Strategic Emerging Industries in the 2011-15 Five-Year Plan, has become the new favorite. In addition, a quota on new vehicle registrations, granted via a license-plate lottery and/or auction (the latter favoring the wealthy) is now enforced by four municipality/city governments to curb new car purchases – Shanghai (a long-standing system since 1994), Beijing (since Jan 2011), Guiyang in the southwestern province of Guizhou (since August 2011), and Guangzhou (since Aug 2012). In Shanghai, license plates have recently been auctioned for as much as 90,000 yuan (\$14,300), equivalent to the cost of a car. While registering a new vehicle outside these cities is an option, it would prevent the car owner from driving within the cities during business hours.

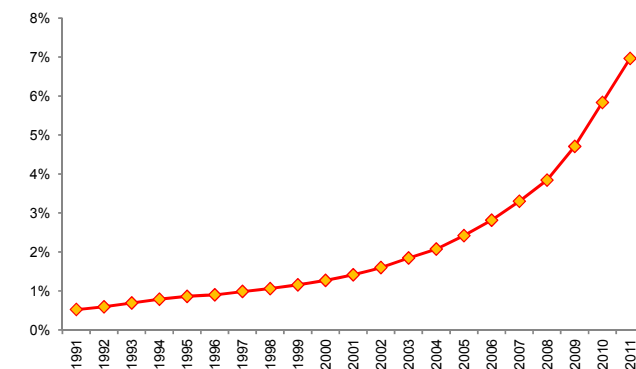
With the above policies in place, DB's China auto analyst Vincent Ha expects growth in new light vehicle registrations (including passenger vehicles and light trucks) to moderate from 17%+ per year since 2005 to a 14%-16.5% CAGR through 2016. Nonetheless this still represents 80 million new vehicles added on the road from 2013 through 2016.

Figure 62: China Light Vehicle Registration



Source: CEIC, Deutsche Bank

Figure 63: China Light Vehicle Ownership Penetration



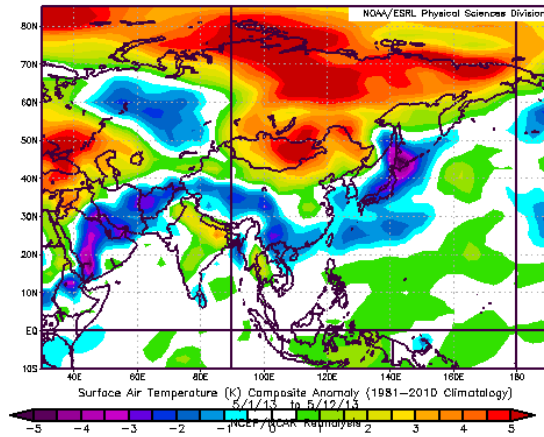
Source: CEIC

A seasonal driver of diesel demand in China is electricity consumption, of which 17% is met through hydro-power generation. Demand for diesel to run power generators, primarily at factories, spikes during periods of drought and the NDRC would generally instruct Sinopec and PetroChina to raise imports and run their refineries at higher rates. This is reflected in the months of diesel net imports in 2003-04, 2008 and 2010-11 (China's worst in 60 years), sometimes extending through the end of the drought because of diesel cargoes locked in through long-term deals. The 2008 water shortage was aggravated by the government's decision to divert massive amounts of water to land-locked Beijing from Shanxi and Hebei provinces during the Summer Olympics of 2008. The 2010-11 power shortage was compounded by local governments' decisions to limit power supplies at the end of 2010 in an effort to meet energy saving targets laid out in the 11th Five-Year Plan (2006-10).



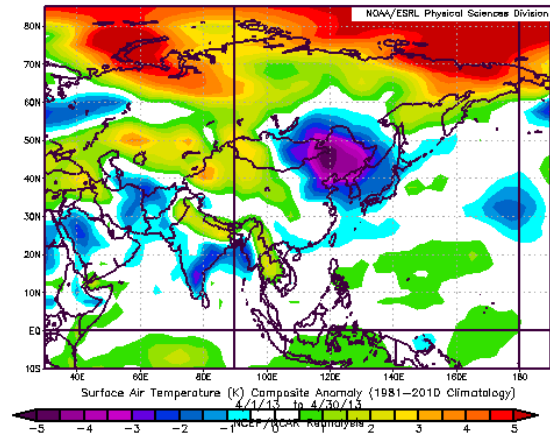
As we enter summer, diesel demand as a substitute fuel for power generation will likely decline as precipitation rises and hydro-power becomes more reliable. In particular southern China looks slightly wetter than normal this year, while northern China is currently drier than normal. Air-conditioning, however, may create demand for diesel-fired power, as it takes up 30%-40% of peak summer load in some warmer cities and China overall is looking warmer than normal through July.

Figure 64: May 1-12 Actual Temperature Anomalies



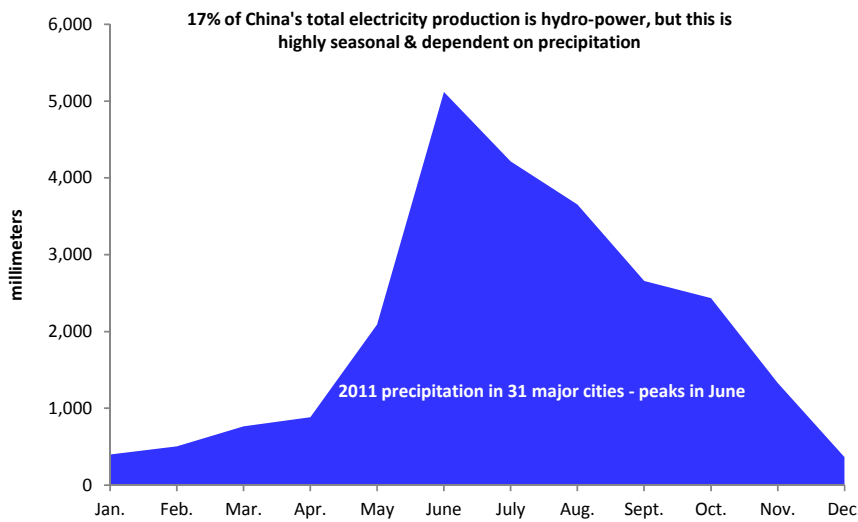
Source: NOAA ESRL

Figure 65: April 1-30 Actual Temperature Anomalies



Source: NOAA ESRL

Figure 66: Seasonality of precipitation in China



Source: NBS

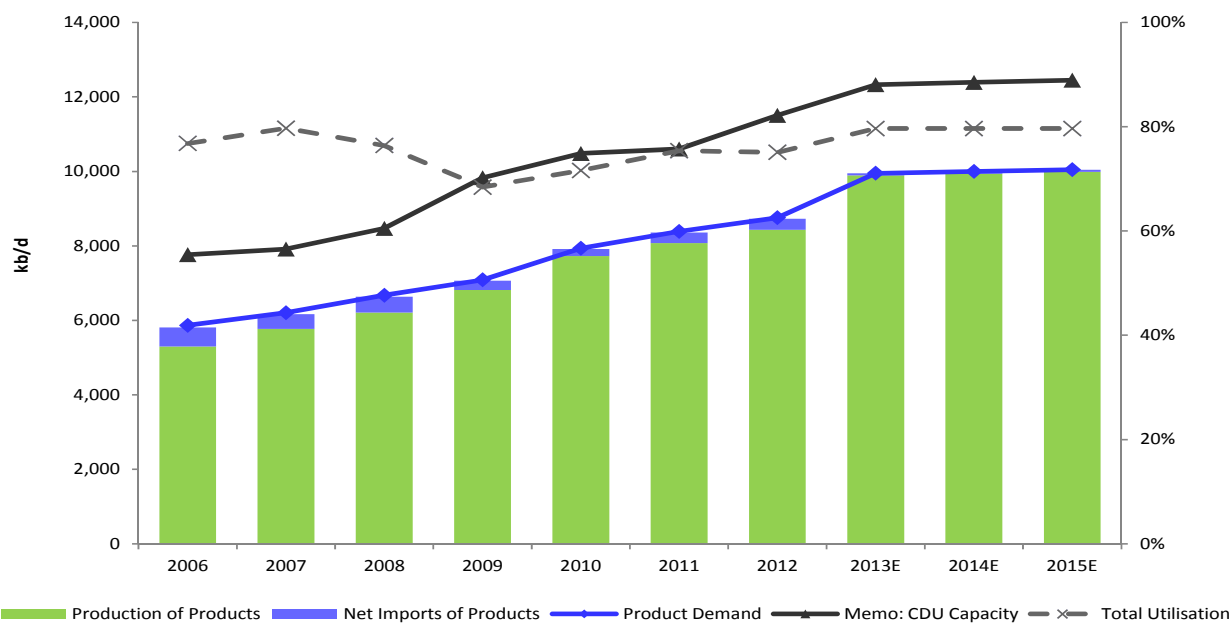


Outlook: Refining

China's refining balance

China is a net importer of products, primarily of fuel oil (~280kb/d), LPG (~65kb/d) and naphtha (~70kb/d), and occasionally of diesel. If 2mb/d of CDU capacity is added according to the Five-Year Plan and simple-configuration "teapot" refineries which are major fuel oil importers (due to crude import quotas) are shut or absorbed by the major NOCs, China may no longer be product short within a few years' time. This would be in line with government scrutiny on foreign oil dependence and overall fossil fuel demand growth.

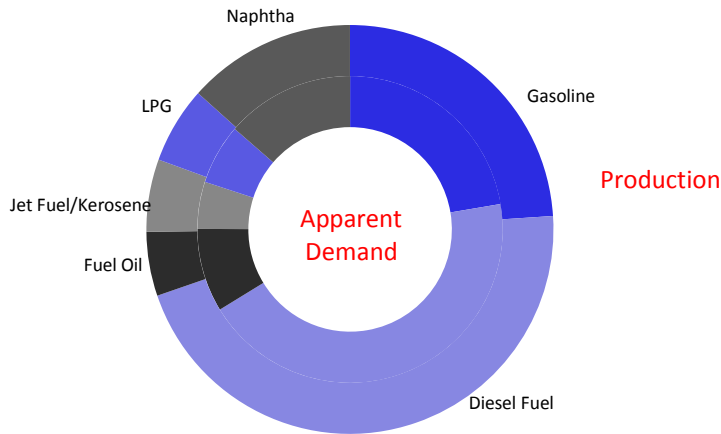
Figure 67: China's refining balance



Source: Deutsche Bank, Company data



Figure 68: China Demand vs Refinery Production Mix, FY12

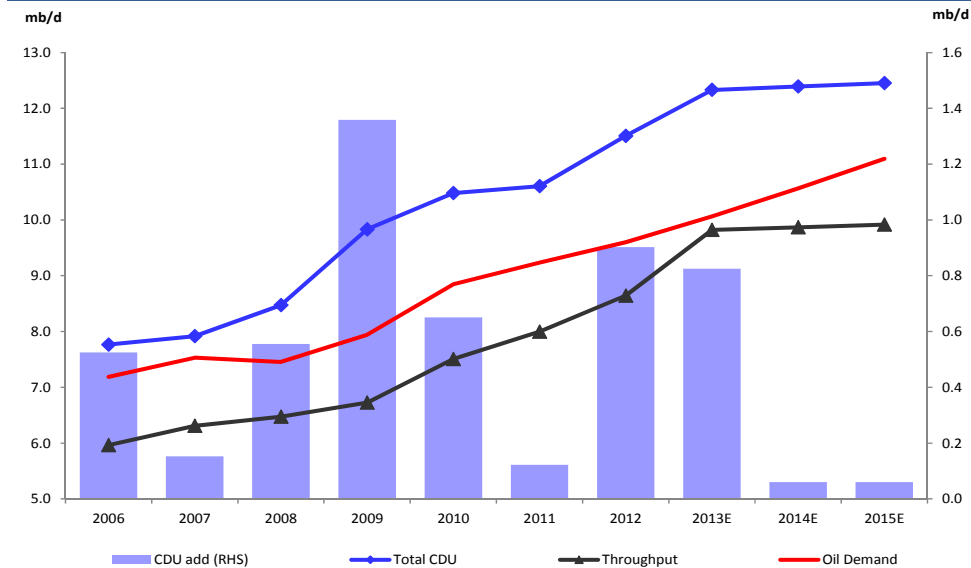


Source: CEIC, Bloomberg Finance LP, Deutsche Bank

Refining capacity add

Under the Five-Year Plan, China plans to expand total CDU capacity by 2mb/d (net) to 12.5mb/d (620mtpa) in 2015. A total of 900kb/d (45%) was added in 2012, including the 241kb/d Quanzhou refinery of Dalian West Pacific Petrochemical (WEPEC) – the first Sino-foreign equity JV dedicated to refining (PetroChina, Sinochem, Total SA). In 2013, the CNPC Research Institute of Economics & Technology estimates that crude refining capacity will expand by another 800kb/d (39.5m tons) to reach 12.3mb/d (614m tons), of which 500kb/d was commissioned in 1Q13. This implies that net CDU add in 2014 and 2015 will be minimal, and associated working crude inventory build at refineries will slow rather significantly.

Figure 69: China CDU Capacity Add



Source: Deutsche Bank

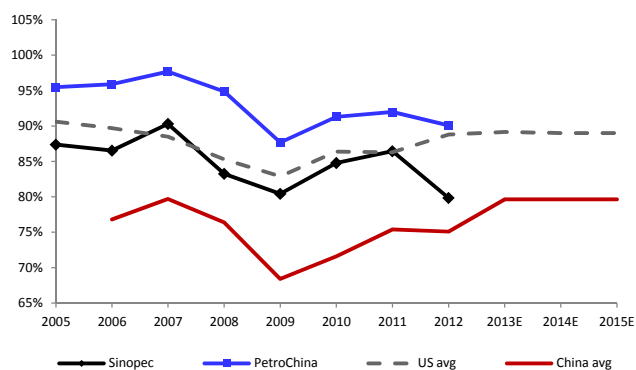


Refining capacity consolidation

In accordance with 2011 NDRC guidelines, China's refining sector has also seen shutdowns of smaller and older plants, expansions and upgrades at larger refineries, and a secular feedstock shift away from fuel oil to crude oil – a bullish development for crude. The small refineries with fairly basic configuration are nicknamed “teapot refineries” and there is anywhere between 40-160mtpa (800-3,200kb/d) of undocumented “teapot” refining capacity in China.

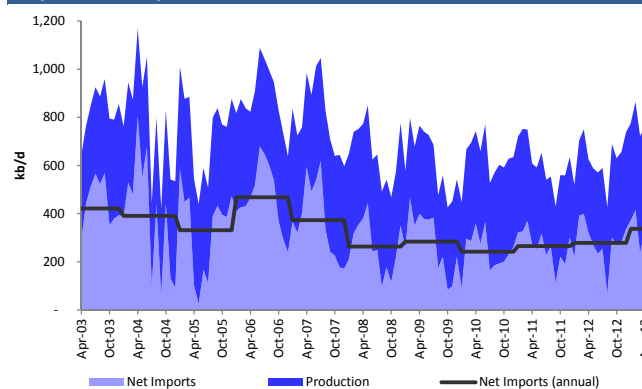
To promote economies of scale and reduce emissions, “teapot refineries” smaller than 2mtpa (40kb/d) – a threshold too low to impact any of Sinopec/PetroChina's plants – are to be eliminated by YE13. As a result, dozens of independently owned “teapot refineries” have been shut and others have expanded their capacity or consolidated with the larger companies to avoid closure. The NDRC also imposed new minimum size restrictions on the construction of new CDUs, cat crackers and hydrocrackers.

Figure 70: Refining Utilization



Source: Deutsche Bank estimates, Company filings

Figure 71: China Fuel Oil Demand (~44% satisfied by net imports) – expected to decline



Source: CEIC, Deutsche Bank

We expect China's overall refining utilization to rise from 75% to closer to 80% in the next few years, as the “teapot refineries” which run at ~40% utilization shut down and the recently announced product pricing reforms help the surviving refiners avert losses. A 4.5% increase in utilization in a 12.3mb/d system translates into ~550kb/d of additional crude demand. With domestic oil production flat or in decline, this represents a similar-sized increment to China crude imports.

Gasoline & diesel net exports

Gasoline yield at China's refineries averages 29%, diesel yield 41%, and other products (fuel oil, kerosene, LP, naphtha and asphalt) 30%.

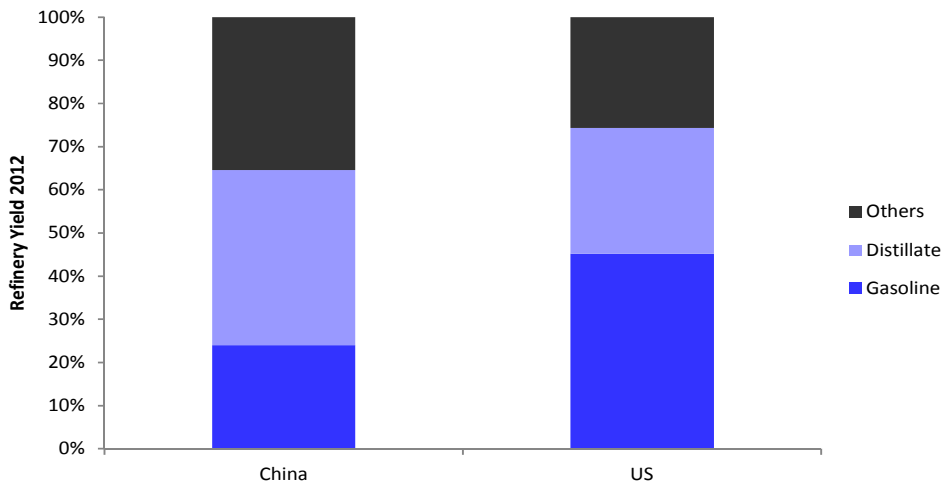
China is naturally long gasoline and is consistently a net exporter, except for the four-month period leading up to the 2008 Beijing Olympics. It is also increasingly net-exporting kerosene/jet fuel.



Despite a high refinery diesel yield, China is in the market for net diesel imports 20% of the time since 2009, down vs. the ten-year average frequency of 40% and likely declining further as suggested by nine consecutive months of net exports ending with a near three-year high in March. China is naturally short fuel oil (“teapot refinery” feedstock) and has been a net importer every single month in the past decade. It is also short LPG, naphtha and asphalt.

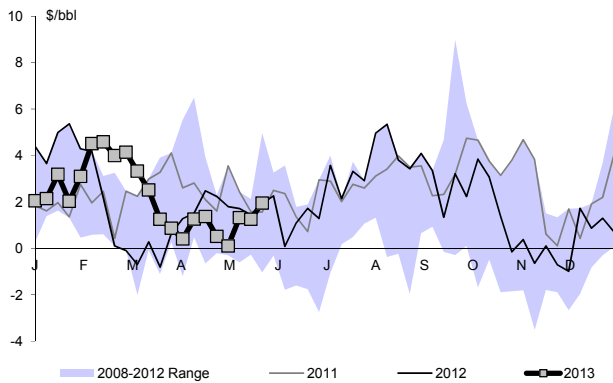
The net impact on markets is negative if China reduces net imports of diesel and fuel oil and does not become more short LPG, naphtha or asphalt. A self-sufficient product market in China would be bearish and Asian refining margins will see a secular decline.

Figure 72: Product Yields – China vs. US



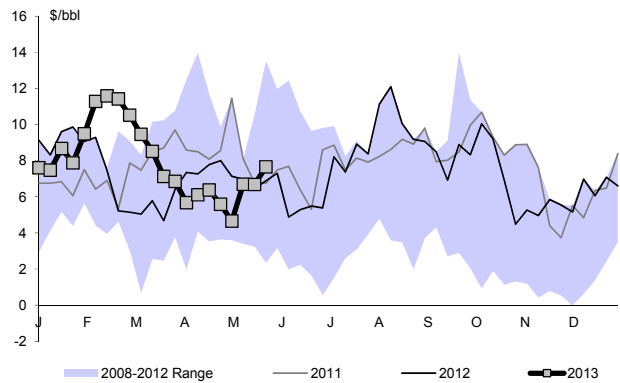
Source: Deutsche Bank

Figure 73: Singapore Simple Margin



Source: Deutsche Bank, Bloomberg Finance LP

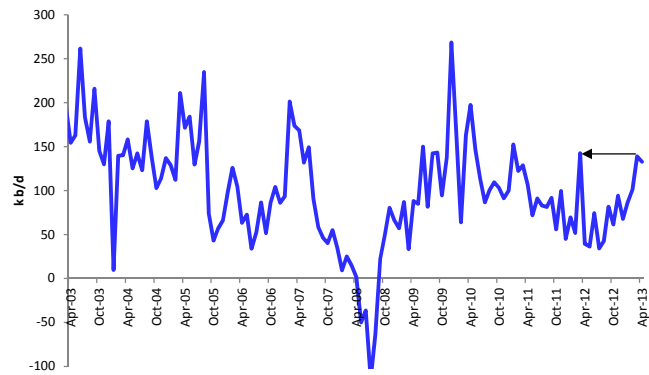
Figure 74: Singapore Complex Margin



Source: Deutsche Bank, Bloomberg Finance LP

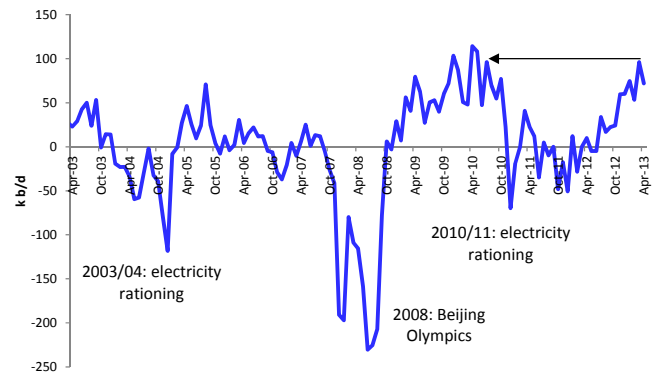


Figure 75: China Gasoline Net Exports since 2003



Source: Bloomberg Finance LP, CEIC, Deutsche Bank Assuming 1 ton gasoline = 8.5 bbl

Figure 76: China Diesel Net Exports since 2003



Source: Bloomberg Finance LP, CEIC, Deutsche Bank Assuming 1 ton diesel = 7.46 bbl

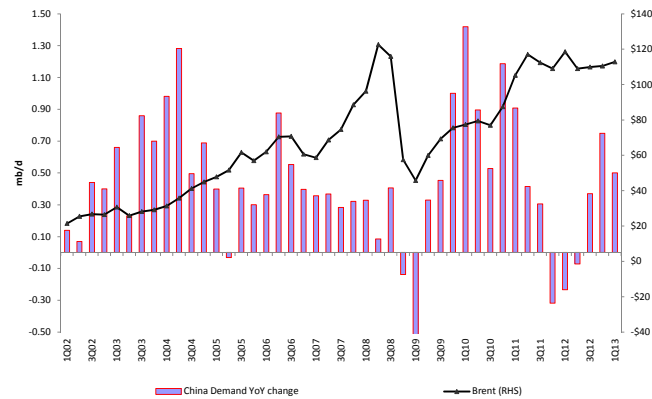


Outlook: China and Global Oil

China as the world's oil price setter

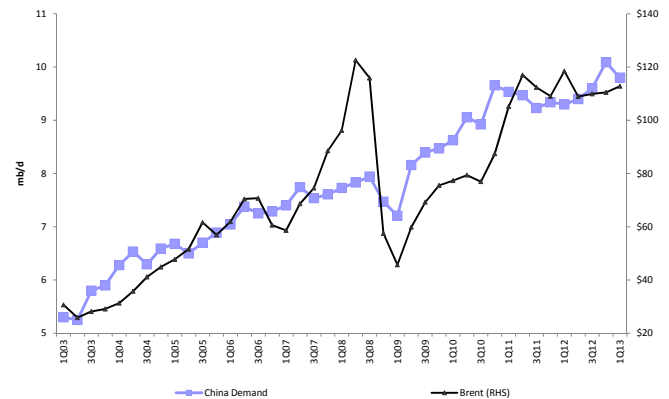
Overall, China has been the single biggest demand driver of the re-pricing of oil over the past decade. The pro-cyclical nature of Chinese demand growth is clear – it is a price driver. At elevated \$100+ Brent prices, demand has tempered, but still remains the key driver at the margin of global demand increases.

Figure 77: Incremental Chinese Oil Demand vs Brent



Source: Deutsche Bank, Bloomberg Finance LP

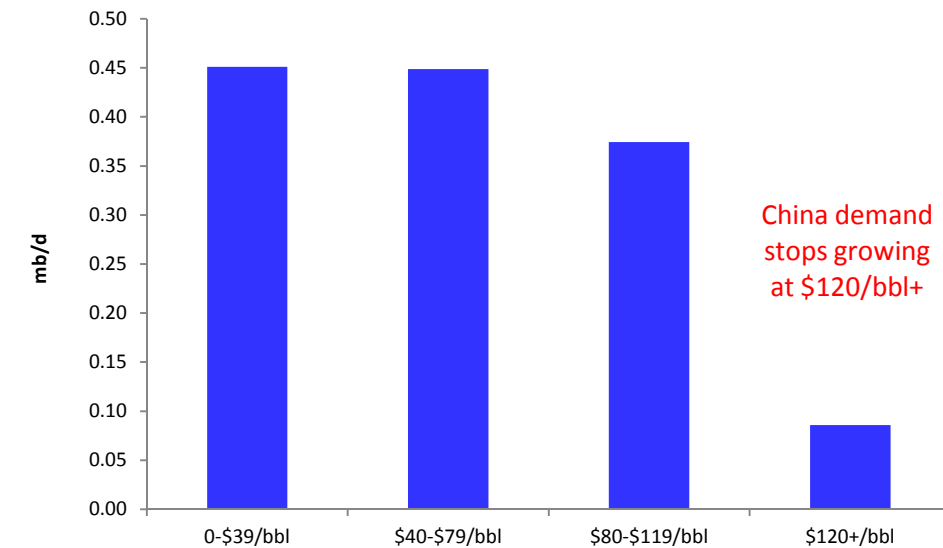
Figure 78: Total Chinese demand vs Brent



Source: Deutsche Bank, Bloomberg Finance LP

We have clearly found the peak price at which China can no longer sustain demand growth, and it is essentially, and logically, the price at which the global economy slows as a function of high prices, at around \$120+/bbl Brent. That can be considered the peak oil price going forward, in real terms.

Figure 79: Incremental Chinese Quarterly YoY Oil Demand vs Brent price range

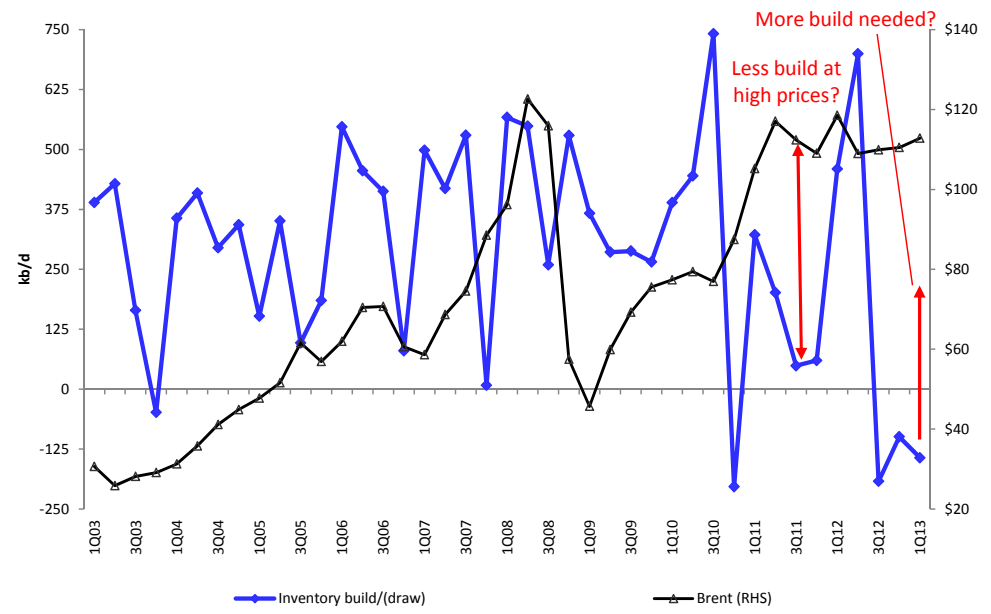


Source: Deutsche Bank, IEA



There is no clear correlation between Chinese inventory build and prices, but recent implied inventory draws do imply a stronger outlook for Chinese demand in the balance of 2013 through 2016 as strategic stocks continue to be built.

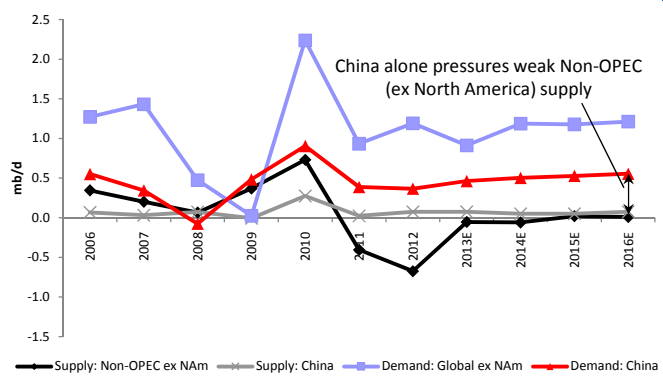
Figure 80: Inventory Build / Draw vs Brent



Source: Deutsche Bank, Bloomberg Finance LP

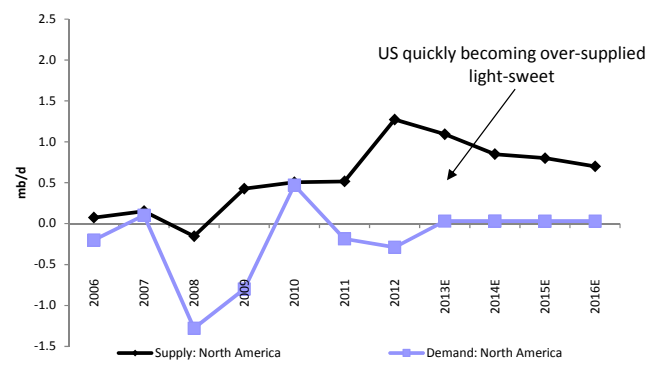
When seen in global terms, and stripped of the impact of North America where the crude export ban de-links US market dynamics from global, assuming that Saudi can offset substituted imports, the importance of China is very clear. Non-OPEC supply growth is so weak ex-North America, that any global demand growth essentially pressures the market and empowers the Saudis. The equation then becomes as simple as knowing what oil price Saudi Arabia is targeting, and the simple answer there becomes, \$100/bbl Brent.

Figure 81: Oil Supply & Demand yoy growth – China & Non-OPEC ex-North America



Source: Deutsche Bank, IEA

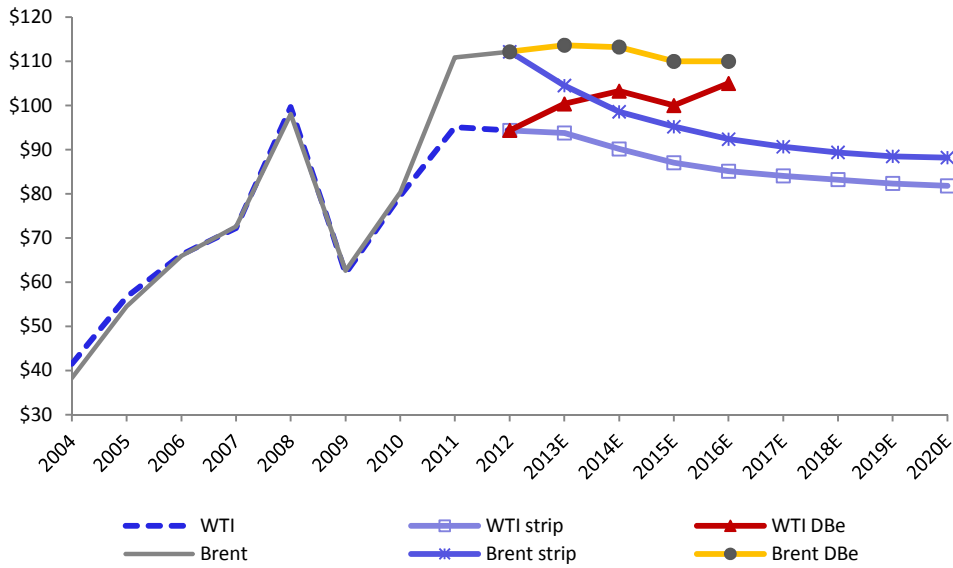
Figure 82: Oil Supply & Demand yoy growth – North America will simply pressure its own prices (WTI)



Source: Deutsche Bank, IEA



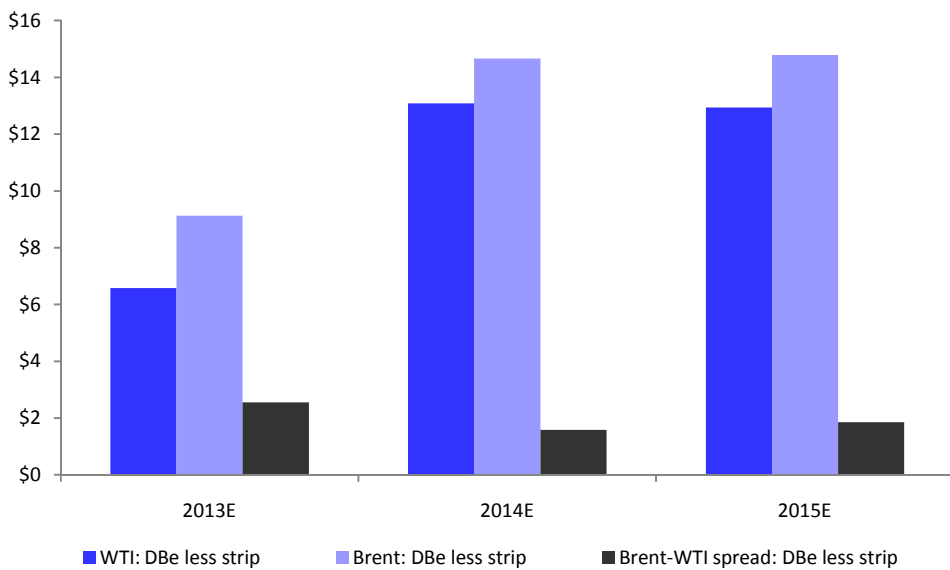
Figure 83: Brent & WTI – actual, futures strip & DB forecast



Source: Deutsche Bank, Bloomberg Finance LP

The oil market is discounting that we are in a peak oil environment, and that demand efficiency and a stronger US\$ will offset geopolitical risk and inflation, leading to steady downward pressure on nominal prices. Although we agree that the market has peaked and that we have seen the all-time peak oil price in real terms, we tend to be more bullish on prices through 2016, based on a “long plateau” market concept, where emerging market demand growth led by China and the Middle East, offset efficiency gains and economic weakness in the OECD. In short, it is a mildly more bullish outlook for prices than the market discounts. But as we have said, for big oil companies, the writing is on the wall. Shrink and liquidate over the coming five years, before it is too late.

Figure 84: DB forecast vs futures – Brent & WTI



Source: Deutsche Bank, Bloomberg Finance LP

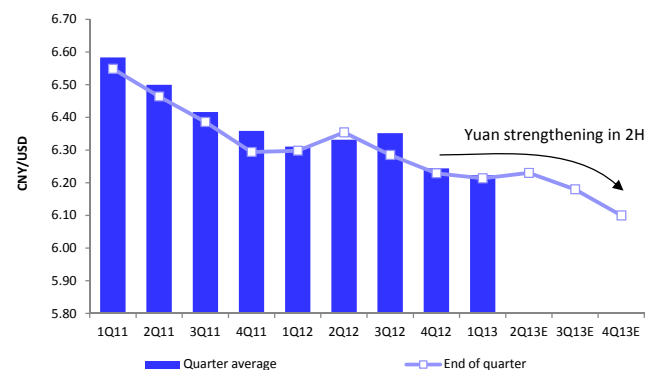


Figure 85: DB Price Deck

\$/bbl	2010	2011	1Q12	2Q12	3Q12	4Q12	2012	1Q13	2Q13E	3Q13E	4Q13E	2013E	2014E	2015E
Commodity Prices														
WTI	79.57	95.07	102.86	94.24	92.22	88.15	94.37	94.44	97.00	105.00	105.00	100.36	103.25	100.00
Brent	80.30	110.91	118.53	110.18	109.48	110.48	112.17	112.64	112.00	115.00	115.00	113.66	113.25	110.00
Henry Hub Natgas (\$/mmbtu)	4.39	4.03	2.46	2.27	2.90	3.40	2.76	3.48	3.70	3.80	4.00	3.75	4.25	4.50
UK NBP (\$/mmbtu)	6.60	9.05	9.29	9.10	8.99	10.48	9.47	10.63						
LLS	82.89	112.20	119.38	108.46	109.41	109.49	111.89	113.92	112.00	113.00	112.00	112.73	109.25	105.00
WCS	64.79	78.33	75.94	73.65	76.51	61.17	71.82	67.05	79.00	85.00	80.00	77.76	84.00	84.00
Maya	70.56	98.52	108.81	99.16	97.47	93.05	99.62	102.76	101.00	102.00	99.00	101.19	96.25	93.00
WTS	77.50	92.99	99.25	88.11	88.83	78.51	88.67	88.02	93.00	101.00	101.00	95.76	100.25	97.00
Syncrude	78.31	103.82	94.50	91.76	96.64	87.49	92.60	96.96						
ANS	78.95	109.58	118.06	109.59	108.72	106.43	110.70	110.47	107.00	112.00	111.00	110.12	109.25	106.00
Mars	78.07	107.58	115.21	104.31	104.29	103.70	106.88	109.17						
Midland	79.18	94.58	100.00	88.81	91.01	80.44	90.07	90.91	97.00	105.00	105.00	99.48	103.25	100.00
Clearbrook	81.50	97.55	90.72	86.87	90.87	85.08	88.39	92.45	97.00	100.00	100.00	97.36	98.25	95.00
US Refining Margins														
Gulf Coast	8.34	23.35	25.09	25.89	32.00	27.09	27.52	28.69	19.00	17.50	13.00	19.55	15.81	16.25
Gulf Coast Complex	12.35	13.58	13.76	15.99	21.77	15.81	16.83	15.65	15.00	17.00	14.00	15.41	17.50	18.00
East Coast 2-1-1	9.01	9.40	10.45	12.63	16.44	13.09	13.15	13.28	9.50	11.00	10.00	10.95	10.00	10.50
Midcontinent 3-2-1	9.37	25.09	22.06	28.32	36.38	28.35	28.78	28.07	21.00	19.50	13.50	20.52	17.00	17.50
Midcontinent 6-3-2-1	6.58	21.54	19.82	24.55	31.51	25.87	25.44	24.51	17.00	16.00	11.00	17.13	14.00	14.13
West Coast 5-3-2	14.50	15.19	16.70	17.30	20.50	16.90	17.85	16.62	17.60	14.40	9.60	14.56	15.00	15.00
PNW 5-3-1-1	14.43	17.88	16.40	18.53	22.79	19.56	19.32	18.29	18.60	15.40	10.60	15.72	15.50	15.50
Chicago 6-3-2-1	3.02	3.77	0.33	9.11	13.17	4.24	6.71	3.99						
Chicago 4-3-1	8.87	24.04	19.75	28.28	34.93	25.70	27.17							
Crude Spreads														
WTI-Maya	9.01	(3.45)	(5.95)	(4.92)	(5.25)	(4.90)	(5.25)	(8.32)	(4.00)	3.00	6.00	(0.83)	7.00	7.00
WTI-WCS	14.79	16.74	26.92	20.60	15.71	26.99	22.55	27.39	18.00	20.00	25.00	22.60	19.25	16.00
WTI-WTS	2.08	2.08	3.61	6.13	3.39	9.64	5.69	6.42	4.00	4.00	4.00	4.61	3.00	3.00
LLS-WTI	3.31	17.13	16.52	14.22	17.19	21.34	17.32	19.48	15.00	8.00	7.00	12.37	6.00	5.00
Brent-WTI	0.72	15.84	15.67	15.94	17.26	22.33	17.80	18.20	15.00	10.00	10.00	13.30	10.00	10.00
WTI-Syncrude	1.26	(8.75)	8.36	2.48	(4.42)	0.66	1.77	(2.52)						
WTI-ANS	0.62	(14.51)	(15.20)	(15.35)	(16.50)	(18.28)	(16.33)	(16.03)	(10.00)	(7.00)	(6.00)	(9.76)	(6.00)	(6.00)
LLS-Mars	4.82	4.62	4.17	4.15	5.12	5.79	4.81	4.75						
LLS-Maya	12.33	13.68	10.57	9.30	11.94	16.44	12.06	11.16	11.00	11.00	13.00	11.54	13.00	12.00
Midland-WTI	(0.39)	(0.50)	(2.86)	(5.43)	(1.21)	(7.71)	(4.30)	(3.53)	-	-	-	(0.88)	-	-
Clearbrook-WTI	1.93	2.48	(12.14)	(7.37)	(1.35)	(3.07)	(5.98)	(1.99)	-	(5.00)	(5.00)	(3.00)	(5.00)	(6.50)
LLS-Brent	2.59	1.29	0.85	(1.72)	(0.07)	(0.99)	(0.48)	1.28	-	(2.00)	(3.00)	(0.93)	(4.00)	(5.00)
WTI Midland-Brent	(1.12)	(16.34)	(18.53)	(21.37)	(18.47)	(30.04)	(22.10)	(21.73)	(15.00)	(10.00)	(10.00)	(14.18)	(10.00)	(10.00)
Clearbrook-Brent	1.21	(13.36)	(27.81)	(23.31)	(18.61)	(25.40)	(23.78)	(20.19)	(15.00)	(15.00)	(15.00)	(16.30)	(15.00)	(15.00)

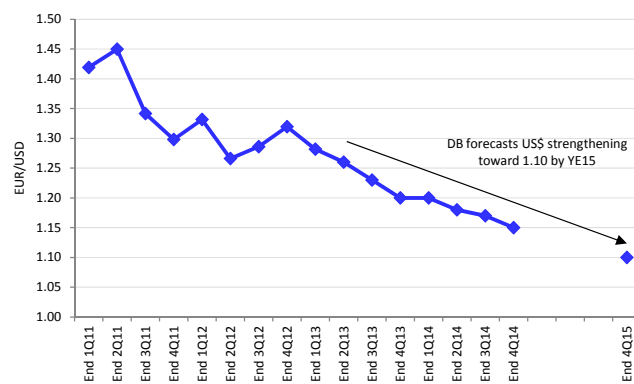
Source: Deutsche Bank estimates, Bloomberg Finance LP

Figure 86: CNY/USD



Source: Deutsche Bank FX

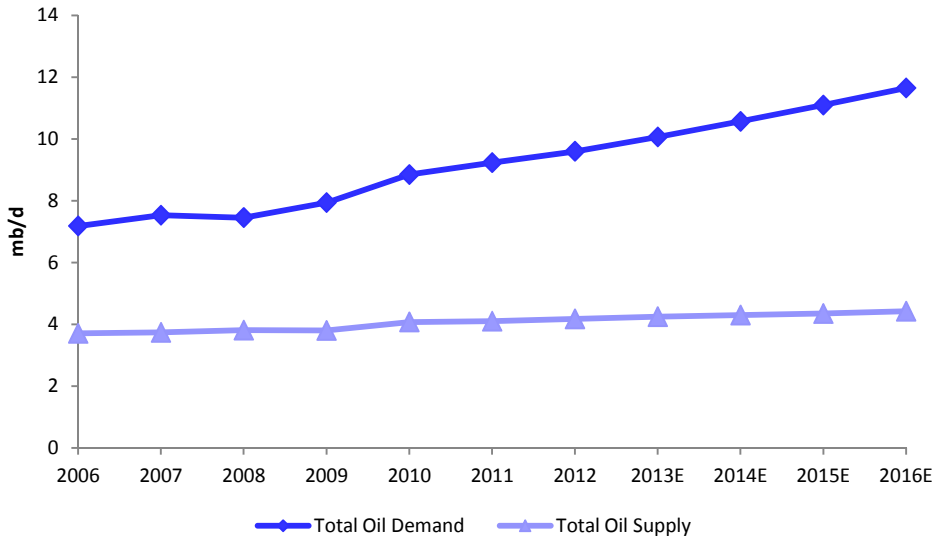
Figure 87: USD/EUR



Source: Deutsche Bank FX



Figure 88: China's total oil demand-supply balance



Source: Deutsche Bank, IEA



Valuation and Risks

DB has BUYs on Sinopec (0386.HK), China Oilfield Services (2883.HK), China BlueChemical (mineral fertilisers and chemical products, 3983.HK), Sinofert (fertilizers, 0297.HK) and Yingde Gases (industrial gas, 2168.HK), while PetroChina (0857.HK) and CNOOC (0883.HK) are HOLD-rated.

Sinopec: DB analyst David Hurd highlights the asset injections from the parent company (Sinopec Group) into SNP Corp are slated for 3Q13, not DB's originally estimated 2014-15, and the transformation of SNP's E&P into a larger business will drive valuations higher. These assets include Colombia, Kazakhstan, Russia. He believes the new product pricing policy is a positive and expects "lots more juice" in their 2013 Sinopec refining estimates. Above all, what he likes most about the company's earnings profile is that the growth is not dependent on higher oil prices.

Risks to Sinopec's BUY include materially higher than anticipated oil prices which would risk the refining turnaround he anticipates for 2013-14; materially lower than anticipated oil prices that would risk the E&P estimates; and softer than anticipated global GDP growth (2013-14) which would jeopardize his hope for stable to slightly better chemical profits for 2013-15.

China Oilfield Services: Upgraded on May 5 on better growth prospects. CNOOC is ramping up its production in off-shore China 2014-16e. COSL should be a beneficiary; drilling day rates 1Q13 were surprisingly strong across the world.



Figure 89: Valuation Comparison – North American and European Integrateds and E&Ps

Ticker	Company	Rec	Share Price	Price Target	NAV/Share	Market Cap (US\$bn)	Price/Earnings Ratio (x)			EVD/DCF			EV/EBITDA			EV/1P Reserves \$/boe
							2012	2013E	2014E	2012	2013E	2014E	2012	2013E	2014E	
Super Majors																
BP.L	BP	Buy	GBP 476.40	520.0	773	135.82	7.8	8.0	6.6	5.8	5.3	4.5	4.3	5.5	4.8	8.8
CVX.N	Chevron	Buy	\$ 125.45	140.0	148	241.53	8.3	10.0	9.6	5.2	6.2	6.0	3.9	5.1	5.0	21.3
XOM.N	ExxonMobil	Hold	\$ 91.53	96.0	76	404.01	10.0	10.9	10.5	7.0	7.4	7.0	6.2	8.2	7.9	16.7
RDSa.L	Royal Dutch Shell a	Hold	GBP 2216.50	2475.0	4553	209.27	8.6	7.8	7.3	5.7	5.0	4.6	4.8	4.6	4.3	17.0
RDSb.L	Royal Dutch Shell b	Hold	GBP 2287.00	2475.0	4553	215.93	8.7	8.0	7.6	5.9	5.2	4.7	4.9	4.7	4.4	17.5
TOTF.PA	Total SA	Buy	EUR 39.48	44.0	59	115.85	7.1	7.2	6.4	4.4	4.4	3.8	2.9	3.1	2.8	12.8
Average							8.4	8.6	8.0	5.7	5.6	5.1	4.5	5.2	4.9	15.7
North American Mid-Majors																
COP.N	ConocoPhillips	Hold	\$ 62.53	62.0	84	77.33	8.9	11.7	10.9	6.1	5.3	5.3	3.9	4.5	4.4	10.3
HES.N	Hess Corporation	Buy	\$ 67.48	80.0	92	22.99	11.9	10.3	9.5	4.3	4.7	4.8	3.5	3.3	3.4	16.3
MRO.N	Marathon Oil	Buy	\$ 35.15	40.0	41	25.03	11.6	11.5	10.6	6.6	5.4	4.9	3.2	3.3	3.0	15.2
MUR.N	Murphy Oil	Hold	\$ 61.58	68.0	95	11.81	10.9	10.1	7.1	3.9	4.1	3.4	3.9	3.7	3.0	23.5
OXY.N	Occidental Petroleum	Buy	\$ 90.78	112.0	102	73.10	13.5	12.7	12.3	6.8	6.4	6.0	6.5	5.4	5.1	23.8
SU.TO	Suncor Energy	Hold	C\$ 31.95	36.0	38	46.62	11.1	9.5	8.1	6.1	5.3	4.7	5.0	4.4	4.0	25.9
CNQ.TO	Canadian Natural Resources	Hold	C\$ 31.10	32.0	45	32.82	22.4	16.2	10.1	6.7	5.9	4.5	6.2	5.2	4.1	10.6
Average							12.9	11.7	9.8	5.8	5.3	4.8	4.6	4.3	3.8	17.9
North American E&P																
APAN	Apache Corporation	Hold	\$ 81.66	90.0	100	33.32	6.3	9.7	7.2	5.7	4.4	3.8	4.0	3.7	3.1	15.7
APC.N	Anadarko Petroleum	Buy	\$ 89.34	101.0	127	44.94	21.4	19.4	NA	5.8	6.3	5.0	6.1	6.0	4.4	21.6
CHK.N	Chesapeake Energy	Hold	\$ 21.67	20.0	28	16.43	33.2	13.4	9.6	4.0	3.8	3.6	7.7	6.3	5.6	12.1
CIE.N	Cobalt International Energy	Buy	\$ 26.47	40.0	41	10.76	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CLR.N	Continental Resources	Buy	\$ 83.46	105.0	105	15.41	22.8	15.4	10.8	10.1	7.7	5.7	8.8	7.5	5.6	25.5
CXO.N	Concho Resources	Buy	\$ 80.52	120.0	120	8.40	25.0	22.2	15.0	9.5	8.5	6.6	8.6	7.9	6.2	27.8
DVN.N	Devon Energy	Hold	\$ 57.84	66.0	77	23.54	7.3	14.9	4.9	7.4	6.4	2.7	10.6	9.1	2.5	10.1
ECA.TO	Encana Corporation	Sell	C\$ 20.28	17.0	23	14.47	15.5	23.4	NA	5.8	9.1	NA	8.8	8.4	NA	6.6
EOG.N	EOG Resources	Buy	\$ 130.83	155.0	163	35.62	19.0	18.9	13.6	6.4	6.2	5.0	7.4	6.0	4.6	22.6
NBL.N	Noble Energy	Buy	\$ 117.38	124.0	128	21.25	18.4	14.8	11.4	6.3	7.3	6.0	6.5	6.6	5.4	18.0
PXD.N	Pioneer Natural Resources	Hold	\$ 141.20	125.0	125	19.19	27.6	28.9	19.6	8.6	10.6	7.7	13.3	9.9	7.3	20.4
RRC.N	Range Resources	Hold	\$ 77.07	83.0	83	12.41	68.4	49.0	29.6	18.8	15.7	10.9	20.2	18.0	10.4	14.6
SWN.N	Southwestern Energy	Hold	\$ 38.08	38.0	38	13.36	-15.9	19.1	16.0	7.7	7.8	6.5	NM	7.5	6.5	12.4
TLM.TO	Talisman Energy	Hold	\$ 12.02	14.0	16	12.39	12.4	59.5	NA	6.5	7.5	NA	4.6	6.1	NA	19.6
Average							15.9	17.1	12.2	7.0	6.9	5.5	6.8	6.9	5.3	17.4
European Mid-majors																
BGL	BG Group	Buy	GBP 1194.00	1400.0	NA	61.70	15.8	13.3	10.2	9.5	8.8	7.1	6.9	6.6	5.4	23.7
ENI.MI	Eni	Buy	EUR 17.75	22.0	NA	83.17	7.9	9.5	8.7	4.9	4.4	3.8	2.7	2.7	2.4	15.9
REP.MC	Repsol	Hold	EUR 17.73	17.0	NA	29.41	13.2	9.4	10.2	6.0	5.0	4.9	4.7	4.5	4.2	37.9
STL.OL	Statoil	Hold	NOK 132.30	160.0	NA	72.18	8.1	8.2	8.2	4.1	3.8	3.7	1.9	2.0	2.0	15.7
Average							11.3	10.1	9.3	6.1	5.5	4.9	4.0	4.0	3.5	23.3

Ticker	Company	Discounted Oil Price \$/bbl	ROCE			Price/Cash Flow from Operations (x)			Free Cash Flow Yield			Net Debt/Total Cap. Employed (%)		Dividend Yield	Total Cash Yield	
			2012	2013E	2014E	2012	2013E	2014E	2012	2013E	2014E	2013E	2014E			
Super Majors																
BP.L	BP	80.65	9%	8%	9%	6.6	5.2	4.1	5%	16%	7%	9%	9%	4.9%	8.6%	
CVX.N	Chevron	75.07	17%	15%	15%	5.4	6.2	5.8	5%	2%	2%	-1%	4%	3.1%	5.2%	
XOM.N	ExxonMobil	80.76	22%	21%	19%	7.1	7.4	7.0	7%	5%	6%	6%	6%	2.7%	6.9%	
RDSa.L	Royal Dutch Shell a	82.40	11%	11%	11%	4.9	4.8	4.3	7%	6%	8%	8%	6%	5.2%	5.2%	
RDSb.L	Royal Dutch Shell b	82.40	11%	11%	11%	5.1	5.0	4.4	7%	6%	8%	8%	6%	5.1%	5.1%	
TOTF.PA	Total SA	94.97	11%	11%	11%	3.9	4.1	3.5	4%	1%	6%	10%	8%	6.1%	6.1%	
Average		82.71	13%	13%	13%	5.5	5.4	4.8	6%	6%	6%	6%	7%	4.5%	6.2%	
North American Mid-Majors																
COP.N	ConocoPhillips	88.78	10%	10%	10%	5.0	4.7	4.5	2%	13%	1%	15%	18%	4.2%	4.2%	
HES.N	Hess Corporation	104.03	8%	9%	9%	3.2	4.4	4.4	-7%	24%	0%	8%	10%	1.0%	5.4%	
MRO.N	Marathon Oil	82.37	8%	9%	9%	5.2	4.5	4.1	-7%	4%	4%	22%	19%	2.1%	2.1%	
MUR.N	Murphy Oil	101.27	11%	9%	11%	3.5	3.4	2.9	-6%	-2%	4%	17%	14%	2.3%	7.3%	
OXY.N	Occidental Petroleum	83.84	12%	11%	11%	6.3	5.9	5.5	-2%	2%	4%	10%	10%	2.7%	2.7%	
SU.TO	Suncor Energy	89.14	11%	11%	10%	5.6	4.8	4.3	4%	5%	6%	13%	11%	2.3%	5.2%	
CNQ.TO	Canadian Natural Resources	95.80	7%	7%	10%	5.7	4.9	3.7	0%	0%	5%	27%	24%	1.6%	2.3%	
Average		92.18	10%	9%	10%	4.9	4.7	4.2	-2%	7%	3%	16%	15%	2.3%	4.2%	
North American E&P																
APAN	Apache Corporation	99.55	15%	8%	10%	4.3	3.3	2.9	-13%	4%	3%	23%	20%	1.0%	1.0%	
APC.N	Anadarko Petroleum	119.39	5%	7%	NA	4.6	5.4	NA	4%	3%	NA	27%	NA	0.4%	0.4%	
CHK.N	Chesapeake Energy	93.84	2%	5%	6%	2.0	2.0	1.7	16%	24%	6%	45%	49%	1.6%	1.6%	
CIE.N	Cobalt International Energy	NA	-7%	-3%	-4%	NA	NA	NA	-5%	-9%	-9%	22%	45%	0.0%	0.0%	
CLR.N	Continental Resources	150.65	15%	12%	14%	8.5	6.3	4.4	-16%	-7%	-6%	53%	50%	0.0%	0.0%	
CXO.N	Concho Resources	NA	7%	5%	7%	7.9	6.6	4.6	-11%	-7%	-10%	49%	51%	0.0%	0.0%	
DVN.N	Devon Energy	91.88	5%	6%	16%	6.1	4.7	2.7	-17%	-6%	11%	27%	2%	1.4%	1.4%	
ECA.TO	Encana Corporation	177.31	6%	6%	NA	4.9	7.0	NA	22%	-1%	NA	52%	NA	3.9%	3.9%	
EOG.N	EOG Resources	112.33	9%	10%	13%	5.6	5.5	4.5	-3%	0%	4%	26%	19%	0.6%	0.6%	
NBL.N	Noble Energy	173.17	9%	12%	13%	5.8	6.5	5.2	2%	-5%	0%	26%	24%	0.7%	0.8%	
PXD.N	Pioneer Natural Resources	130.99	7%	7%	9%	7.1	9.9	7.3	-10%	-4%	3%	25%	18%	0.0%	-6.9%	
RRC.N	Range Resources	173.22	0%	2%	7%	16.5	14.1	9.4	-9%	0%	-1%	56%	53%	0.2%	8.8%	
SWN.N	Southwestern Energy	NA	13%	13%	14%	6.8	7.0	5.9	-2%	-1%	0%	30%	24%	0.0%	0.0%	
TLM.TO	Talisman Energy	148.00	1%	0%	NA	4.6	5.4	NA	11%	-4%	NA	33%	NA	2.2%	2.2%	
Average		6%	7%	10%	6.4	6.3	4.9	-3%	1%	0%	42%	39%	0.7%	0.9%		
European Mid-Majors																
BGL	BG Group	115.88	9%	9%	10%	8.3	7.7	6.0	1%	1%	-1%	23%	23%	1.5%	1.5%	
ENI.MI	Eni	76.83	10%	9%	10%	3.7	3.6	3.3	10%	14%	9%	15%	12%	6.2%	6.2%	
REP.MC	Repsol	100.00	5%	6%	6%	3.2	4.2	3.7	17%	6%	19%	28%	19%	5.6%	1.1%	
STL.OL	Statoil	133.82	16%	13%	12%	3.7	3.4	3.1	7%	4%	6%	11%	15%	5.2%	5.2%	
Average		106.63	10%	9%	10%	4.7	4.7	4.0	9%	6%	8%	19%	17%	4.7%	3.5%	

Source: Deutsche Bank, FactSet



Appendix 1

Important Disclosures

Additional information available upon request

Disclosure checklist

Company	Ticker	Recent price*	Disclosure
ExxonMobil	XOM.N	91.53 (USD) 24 May 13	7,8,14,15
Chevron	CVX.N	125.45 (USD) 24 May 13	1,7,8,14,15

*Prices are sourced from local exchanges via Reuters, Bloomberg and other vendors. Data is sourced from Deutsche Bank and subject companies

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Historical recommendations and target price: ExxonMobil (XOM.N)

(as of 5/24/2013)



Previous Recommendations

- Strong Buy
- Buy
- Market Perform
- Underperform
- Not Rated
- Suspended Rating

Current Recommendations

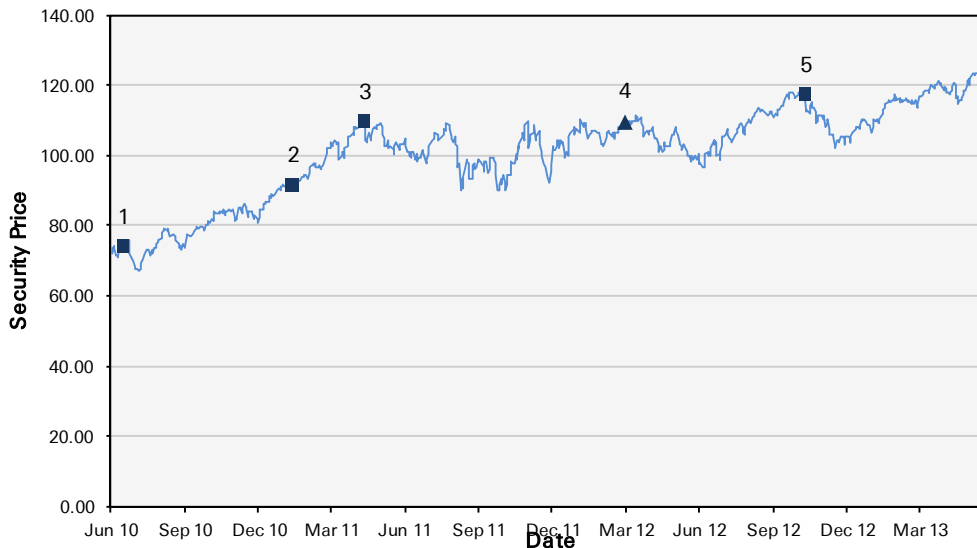
- Buy
- Hold
- Sell
- Not Rated
- Suspended Rating

*New Recommendation Structure as of September 9,2002

1.	09/02/2010:	Buy, Target Price Change USD70.00	5.	04/18/2012:	Upgrade to Buy, Target Price Change USD100.00
2.	09/13/2010:	Downgrade to Hold, Target Price Change USD65.00	6.	07/16/2012:	Downgrade to Hold, Target Price Change USD94.00
3.	01/12/2011:	Hold, Target Price Change USD85.00	7.	10/10/2012:	Hold, Target Price Change USD96.00
4.	02/01/2011:	Hold, Target Price Change USD90.00			

Historical recommendations and target price: Chevron (CVX.N)

(as of 5/24/2013)



Previous Recommendations

- Strong Buy
- Buy
- Market Perform
- Underperform
- Not Rated
- Suspended Rating

Current Recommendations

- Buy
- Hold
- Sell
- Not Rated
- Suspended Rating

*New Recommendation Structure as of September 9,2002

1.	06/15/2010:	Hold, Target Price Change USD80.00	4.	02/28/2012:	Upgrade to Buy, Target Price Change USD130.00
2.	01/12/2011:	Hold, Target Price Change USD105.00	5.	10/10/2012:	Buy, Target Price Change USD140.00
3.	04/11/2011:	Hold, Target Price Change USD115.00			



Equity rating key

Equity rating dispersion and banking relationships

Buy: Based on a current 12- month view of total share-holder return (TSR = percentage change in share price from current price to projected target price plus pro-jected dividend yield) , we recommend that investors buy the stock.

Sell: Based on a current 12-month view of total share-holder return, we recommend that investors sell the stock

Hold: We take a neutral view on the stock 12-months out and, based on this time horizon, do not recommend either a Buy or Sell.

Notes:

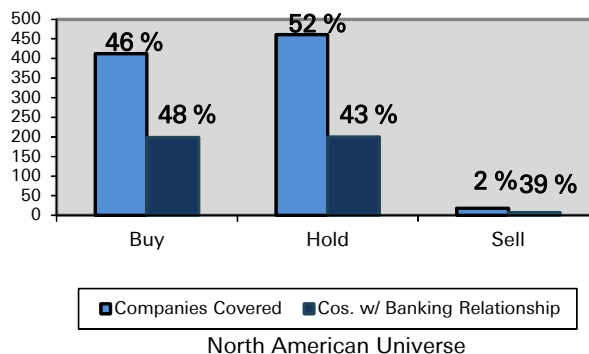
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Buy: Expected total return (including dividends) of 10% or more over a 12-month period

Hold: Expected total return (including dividends) between -10% and 10% over a 12-month period

Sell: Expected total return (including dividends) of -10% or worse over a 12-month period





Regulatory Disclosures

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