



End of the commodity super-cycle and implications for Asia

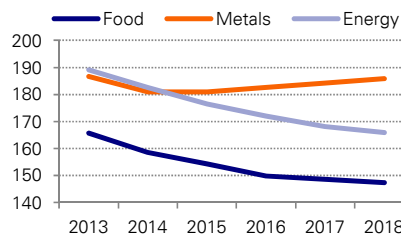
Soft commodity price trend in the rest of decade will have profound impact on growth, inflation, geopolitics, and commodity producer-consumer relationship. In this piece we argue that commodity prices, after enjoying a historical bull-run, are likely to be in subdued territory for years to come. We examine the fundamental, cyclical, and structural factors driving this development, with special focus on the emergence of shale gas/oil as a game changer.

We then delve into the implications of the end of the commodity super-cycle on Asia. Since most Asian economies are net importers of commodities, a benign price outlook would unambiguously lower inflation, raise growth, and improve external balances. Countries heavily invested in the business of exporting commodities, however, will face adverse headwinds.

China, making up for about 25% of global demand for key commodities, has played a key role in commodity price swings in recent years. However, China's domestic structural changes in the coming decade will likely be a negative for the global energy price outlook. An important factor here is the rapid growth of shale production and technology in the US and potentially sizeable shale gas production in China in the next 4-8 years. China, which imports 60% of its oil needs, will become a major beneficiary of the resulting easing in oil prices as well. Our CGE model shows that a 10% reduction in oil prices would push up China's growth potential by 0.3ppts and reduce its long-term CPI inflation by 0.2ppts. We obtain similar results for SE Asia.

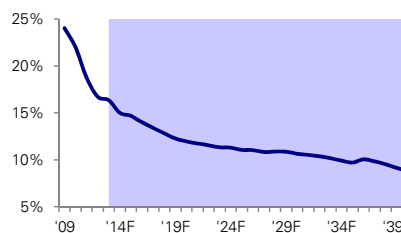
Note that we are not forecasting a commodities "bust." Notwithstanding the various factors flagged in this piece, there are sufficient pockets of demand and supply side uncertainties globally to provide a floor to commodity prices. Still, as the super-cycle ends, there will likely be see a considerable tapering of wealth transfer from commodity producers to importers.

IMF commodity forecasts



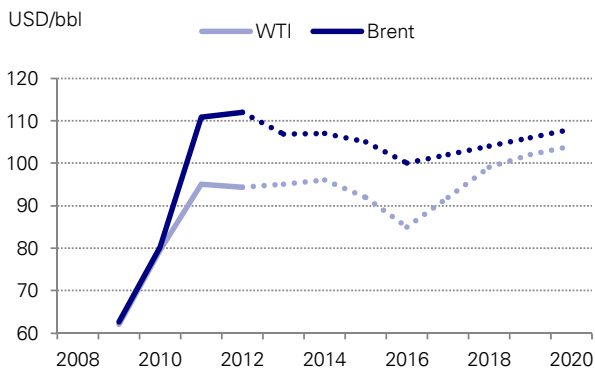
Source: IMF, Deutsche Bank

Net US energy imports/demand



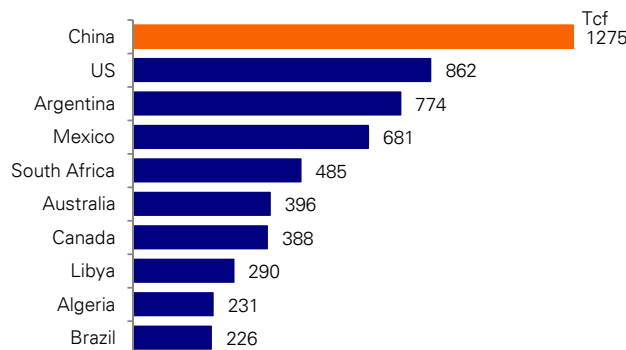
Source: US DOE/EIA, Deutsche Bank

We expect flat or declining nominal oil prices for the rest of the decade



Source: Bloomberg Finance LLP, Deutsche Bank

China's entry into shale gas production would be major positive supply shock



Source: US DOE/EIA, Deutsche Bank



The morning after

Macro implications of the end of the commodity super-cycle on Asia

The All Commodity Price Index of the International Monetary Fund rose by 339% between January 2002 and June 2008, a magnitude not seen since the oil shocks of the 1970s. The index corrected severely with the onset of the 2008/09 global financial crisis, but as crisis-mitigation policies were rolled out globally, and emerging market demand appeared to be growing insatiably, commodity prices rebounded, and by the end of 2010 prices were close to their all-time highs.

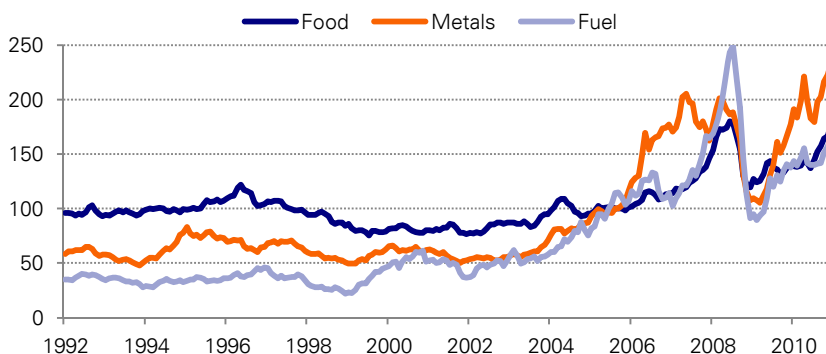
Two spikes in global commodity prices in recent years



Note: All Commodity Price Index, 2005 = 100, includes both Fuel and Non-Fuel Price Indices
Source: International Monetary Fund, Deutsche Bank

The boom in prices was, strikingly, across the board. Breaking down the broad index into food, metals, and fuel reveals remarkably similar patterns of price movement (see chart below). No wonder the term “super-cycle” was used liberally to discuss the phenomenon, and flows surged to commodity funds.

The super-cycle of food, metals, and fuel prices



Note: Food Price Index, 2005 = 100, includes Cereal, Vegetable Oils, Meat, Seafood, Sugar, Bananas, and Oranges Price Indices
Metals Price Index, 2005 = 100, includes Copper, Aluminium, Iron Ore, Tin, Nickel, Zinc, Lead, and Uranium Price Indices
Fuel (Energy) Index, 2005 = 100, includes Crude oil (petroleum), Natural Gas, and Coal Price Indices
Source: International Monetary Fund, Deutsche Bank

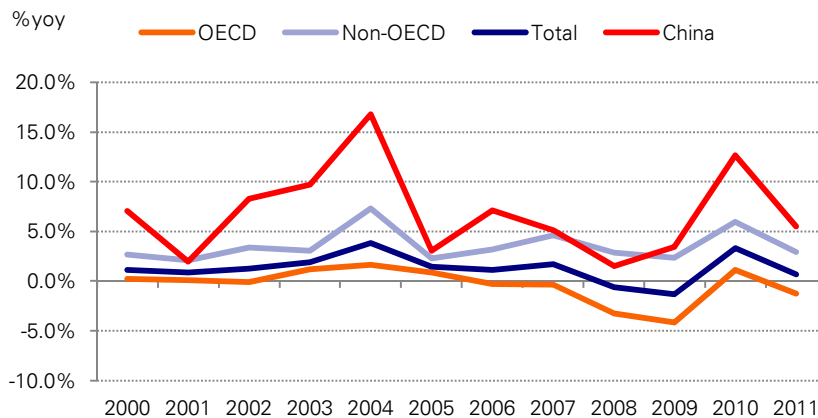


What drove the cycle?

There were good reasons for the price increase. Overall emerging market demand was strong through the past decade, as China led the way with seemingly insatiable demand for food, fuel, and metals. It was tempting to look at China's high-growth track record (with little variation) as a sure-fire indication of robust demand to persist for years to come. Emergence of India, which also saw accelerating economic growth, was seen as another source of persistently sizeable demand.

The chart below illustrates that global oil consumption was robust through the decade. While non-OECD demand was particularly strong, even OECD countries, seen as mature economies with modest growth and declining energy intensity, saw oil consumption rising each successive year. The dynamic was affected only with the onset of the 2008 global crisis, although even then China's demand appeared robust through 2011.

Oil consumption growth through 2011



Source: BP 2012 Annual Energy Report, Deutsche Bank

There were also palpable Malthusian fears, with commodity bulls claiming that oil production had peaked precisely when demand was surging in the emerging economies. As far as food was concerned, arguments were made that the world's farm lands were reaching their full potential, and that climate change was going to create more frequent weather-related volatility and associated crop failures. No major pipeline technology or event was seen to improve supply or lower costs of fuels and food, and hence it followed that rising commodity prices were likely to be the norm.

An additional argument entered the discourse with the onset of the global financial crisis. Unprecedented policy response to mitigate tail risks raised concern that such exceptionally large injections of liquidity was bound to cause high, if not hyper, inflation, with associated surge in commodity prices. Most strikingly, gold price rose sharply as inflation hedging and flight to safety became a popular strategy, and flows to commodity funds surged as "real assets" were considered a safer bet.

Global geopolitics was not helpful either. From production disruption on various parts of the middle-east, international sanctions on Iran, Iraq's slow recovery of production capacity, and fears of an Israel-Iran conflict, there were sustained concerns about oil supply.



What is driving the correction?

There has been a discernible turn in commodity prices since early-2011. Despite some signs of global tail-risk abating and recovery of economic growth, the once-irrepressible rise of commodity prices began to lose its momentum, and the trend has been downward over the past two years.

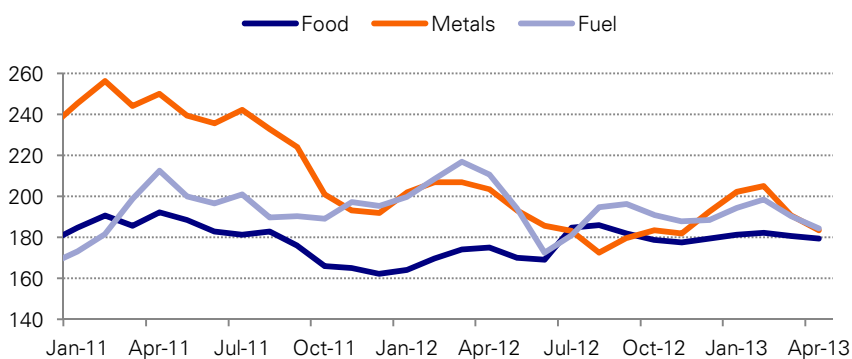
A turn since early-2011



Note: All Commodity Price Index, 2005 = 100, includes both Fuel and Non-Fuel Price Indices
Source: International Monetary Fund, Deutsche Bank

Just like it was the case during the super-cycle, the correction has also been broad-based. Price weakness began with metals in Feb-2011, and was followed by fuel from April-11 onward. Since then, the former has corrected by 28% and the latter by 14%. Food prices have declined by a somewhat more modest 7%, but their rise was the least during the super-cycle. Futures markets suggest no respite to commodities correction for the time being. The evidence seems to be clear—the commodity super-cycle is over.

Correction led by metals, followed by fuel



Note: Food Price Index, 2005 = 100, includes Cereal, Vegetable Oils, Meat, Seafood, Sugar, Bananas, and Oranges Price Indices
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Source: International Monetary Fund, Deutsche Bank

Cyclical factors

Many of the factors and fears that drove the super-cycle have dissipated in the last few years. EM demand is robust but not as insatiable as once thought, especially with China’s appearing to be slowing down, with a strong recovery becoming increasingly elusive. Fear of a global spike in inflation due to



exceptionally loose monetary policy has proven to be unfounded, with expectations remaining muted in both advanced and developing economies. As a result, using commodities as an inflation hedge has lost its attractiveness as a strategy.

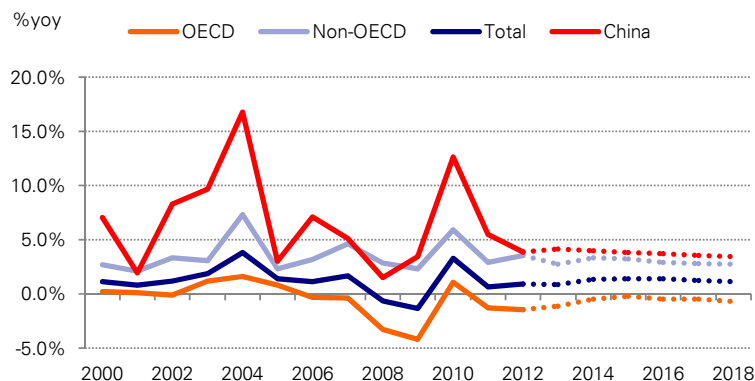
Global policy makers also deserve credit for not making any major errors that would have caused trade related friction, tail events in financial markets, or a loss of faith in the existing system of payments and settlements. As the risks abated, commodities began to lose their attraction as a defensive bet. Finally, while there has been a global cyclical recovery, it has been anything but muted, allowing demand to remain well under check.

Structural factors

While expectations of a rather soft global cyclical recovery has become entrenched, and consequently commodities have been losing steam, we argue in this paper that powerful structural factors are at play that would cause commodity prices to remain lacklustre for many years to come.

Firstly, demand projections are muted beyond the cycle. Below are projections of global oil demand, published in the 2013 Medium-term Market Report of the International Energy Agency (IEA). It shows negative oil demand growth in OECD countries for each of the 5 forecast years. Recall that in the past decade, even as growth and energy intensity declined, OECD demand growth was positive. Now, with an anaemic recovery from the global crisis expected to persist perhaps that rest of the decade, and both environmental regulations and technological advances leading to increased consumption of alternative energy, OECD is seen to be structurally prone to declining oil demand. Even after adding fairly strong non-OECD demand, global oil demand is expected to grow by no more than 1-1.5% a year for the time being.

Global oil demand, past and present



Note: growth calculated over millions of barrels per day

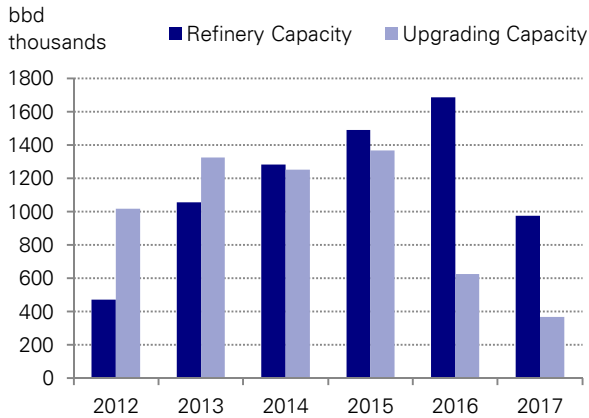
Source: International Energy Agency Medium-term Market Report 2013, Deutsche Bank

Secondly, exploration, extraction, and refinement picked up vigorously as the high prices seen during the energy boom increased the profitability and feasibility of various projects. Consequently, the supply side began to mitigate any shortages there may have been. Among many other areas, dramatic developments have taken place in the global capacity for refining oil. The following chart shows IEA's forecast of new refinery capacity in the pipeline, as well estimates of existing capacity being upgraded in the coming years. The projections point out that between 2013 and 2016 alone, about 7.6mn bbd of capacity will come on stream in the refining industry, a substantially positive supply shock.



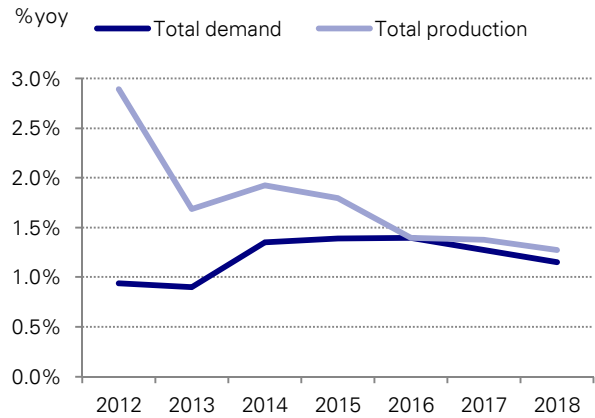
How does the picture look when oil supply and demand are put together? A rather striking conclusion can be drawn with latest available data and projections—**global oil supply is likely to outstrip global demand for the rest of the decade.**

Substantial refining capacity in the pipeline



Sources International Energy Agency Medium-term Market Report 2013, Deutsche Bank

Global oil supply to outpace global oil demand

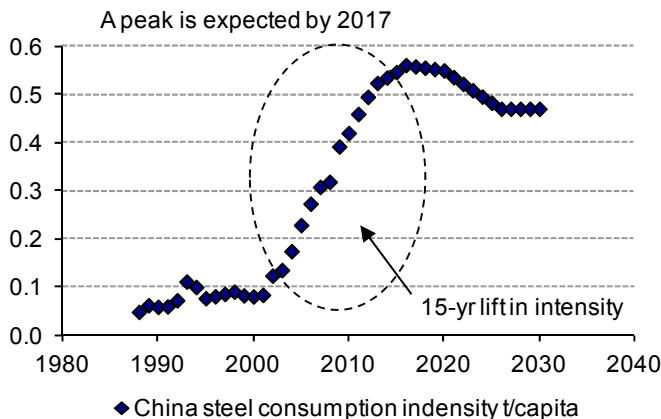


Note: growth calculated over millions of barrels per day. Supply projections were prepared by adding IEW forecasts with the assumption that OPEC supply would rise by 1.5% a year, in line with recent trend (IEA does not forecast OPEC production). Source: International Energy Agency, Medium-term Market Report 2013, Deutsche Bank

Thirdly, decline in commodity intensity has not been isolated to the advanced economies. Even China, the strongest source of commodity demand, has begun to make efforts toward using alternative energy. The country has proposed banning the import of low-grade coal, and announced strategies to boost energy production through solar, wind, bio-fuel, and nuclear means.

Another example is China’s steel consumption intensity. Once a source of seemingly insatiable demand for iron ore, China’s demand has begun to wane, and will likely remain so as we believe the economy’s steel consumption intensity is beginning to peak, just as it had been for Japan when it went through a 15-year cycle of industrialization.

China’s steel consumption intensity has begun to peak



Source: Deutsche Bank, UN, USGS, IISI



Shale shock¹

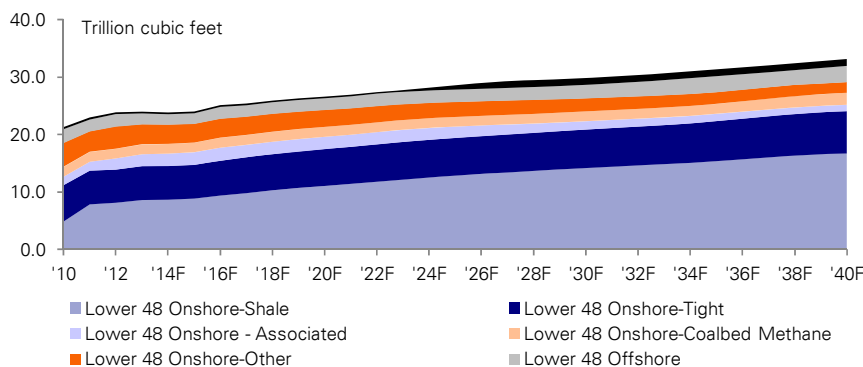
A game changer

The fourth factor driving the commodity correction is so disruptive that it warrants its own section. From an obscure technology a decade ago to presently seen as a profound change agent in gas/oil production, shale technology has had a dramatic impact on the commodity industry. Shale has already fundamentally transformed the US energy landscape, and more changes are in store as the US begins exporting natural gas to the rest of the world and China begins to harvest its own shale natural gas/oil. Energy security, global geopolitics, and patterns of trade could be profoundly altered in the coming years as shale technology matures, environmental concerns are contained, and a hard ceiling is imposed on energy costs.

Shale refers to fine-grained sedimentary rock formations that can contain high quantities of petroleum and natural gas. Exploiting shale resources requires a combination of horizontal drilling and hydraulic fracking (fracking is a technique that involves pumping water, chemicals, and sand to open up cracks in the shale rock), allowing the gas or oil trapped inside to flow. Initially, natural gas has been the focus of shale development, but oil can be extracted using the same method.

Knowledge of the existence of shale oil and natural gas is not new, but extraction has been costly, both in absolute and relative terms, until recently. Advances in horizontal drilling and hydraulic fracking, as well as steep gains in US natural gas prices in the past decade made shale extraction feasible. Over the past 5 years, shale’s rise as source of energy production in the US has been dramatic. The US Department of Energy (DOE) projects that shale will continue to dominate US natural gas supply over the long-term, contributing over 50% of total US production by 2040, up from less than 10% in 2007.

US natural gas production by type – shale dominates



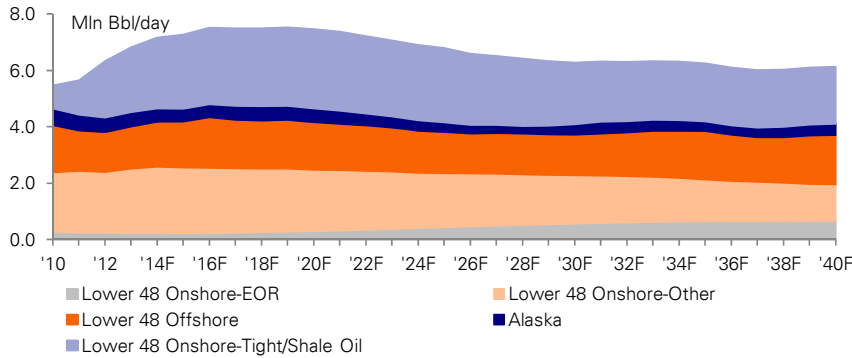
Lower 48 refer to continental US. Associated refers to natural gas commonly found associated with oil/petroleum deposits. Coalbed methane refers to a form of natural gas as extracted from coal beds. Tight and shale are combined as both are unconventional sources of oil that typically involve horizontal drilling and fracking in the extraction process. The key difference is that tight resources are in reservoirs, typically sandstone. Source: US DOE/EIA, Deutsche Bank

¹ This section draws heavily from “Shale shock,” *Asia Economics Special*, by Taimur Baig and Soozhana Choi, March 2013, Deutsche Bank Global Markets Research.



Shale oil production growth in the US began to take centre stage from last year with North Dakota in the lead, thanks to the prolific Bakken shale. DOE estimates that US total oil production in 2012 rose by 800,000bbl/day, or 14%yoy, to the highest level since 1997. North Dakota alone contributed to one-third of total US oil supply growth, with its oil output exceeding Malaysia's. If production growth rates remain robust, North Dakota's output would soon exceed that of Indonesia. DOE projects shale oil will be a leading contributor to domestic US oil supply over the long term, contributing nearly 40% of total US oil supply at its peak in 2026, up from just 15% in 2010.

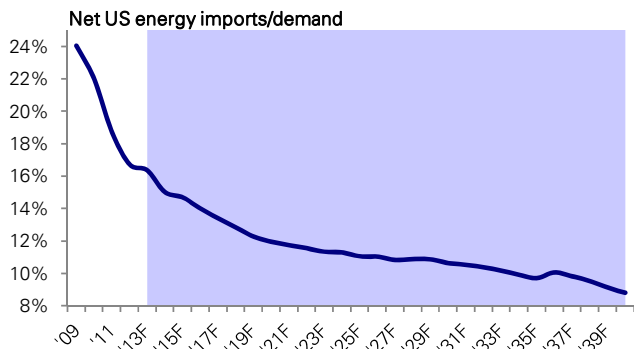
US oil production by type – shale dominates



Lower 48 refer to continental US. Tight and shale are combined as both are unconventional sources of oil that typically involve horizontal drilling and fracking in the extraction process. The key difference is that tight resources are in reservoirs, typically sandstone. EOR refers to Enhanced Oil Recovery, which refers to techniques for boosting the amount of crude oil produced from an oil field, which can include natural gas injection or miscible flooding with the most common miscible used being carbon dioxide.
Source: US DOE/EIA, Deutsche Bank

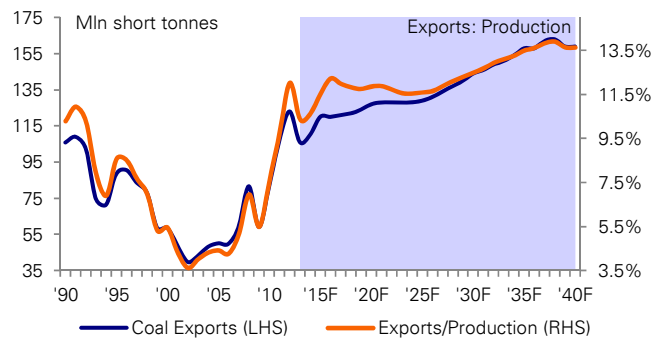
As a consequence of rapid gains in shale oil and natural gas production, US dependence on imported energy sources is firmly on a downtrend. Looking ahead, by 2040, the US is projected to import only 9% of its total energy needs, down from 25% in 2009. With natural gas pricing falling below coal, utilities with the capability and capacity have been switching to burning more natural gas at the expense of coal. In 1990, coal plants supplied 50% of U.S. electricity generation on average, but by 2012 that share had fallen to 32%, with natural gas becoming a key supply source. Exports became the only outlet available in the face of record coal displacement, leading US coal exports to surge.

US dependence on imported energy in decline



Source: DOE/EIA, Deutsche Bank

US coal exports on the rise due to the impact of shale natural gas



Source: DOE/EIA, Deutsche Bank

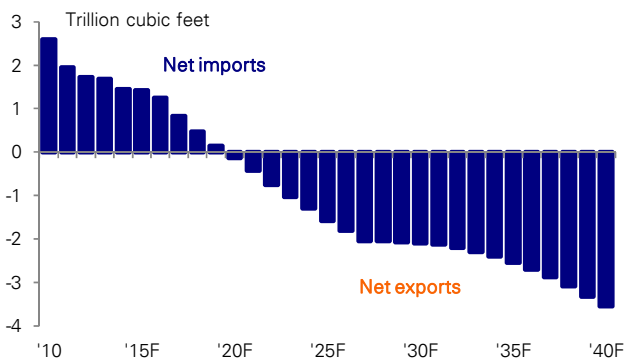


While global coal markets have been contending with rising exports from the US, the global natural gas market also will be faced with the US entering the liquefied natural gas (LNG) club. The US natural gas surplus has prompted industry to convert LNG import terminals into export terminals; the US is poised to become an LNG exporter from 2016.

LNG exports and declining pipeline imports (as US demand is increasingly met by domestic supply rather than piped/seaborne imports) means the US will become a net natural gas exporter from 2020. Note however that US LNG exports aren't expected to be sizable relative to the overall global LNG market and opposition to US energy exports remains a point of contention.

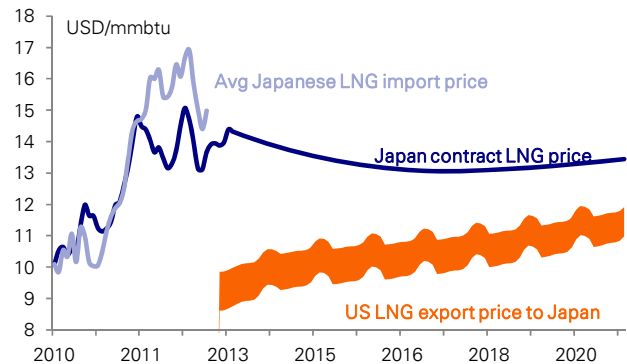
That said, the incentive for Asia, the world's largest LNG consuming region, to import from the US, is undeniable from a price perspective. So far, only US consumers have benefited from low natural gas prices due to the regionalized nature of the global natural gas market. Natural gas prices in Europe and Asia are linked to crude oil prices, while US prices follow their own domestic natural gas dynamics. Presently, the US LNG export price to Japan is about 40% cheaper than what Japan is paying as the charts below underscore.

US to become a net LNG exporter



Source: DOE, EIA, Deutsche Bank

The incentive for Asia to buy US LNG



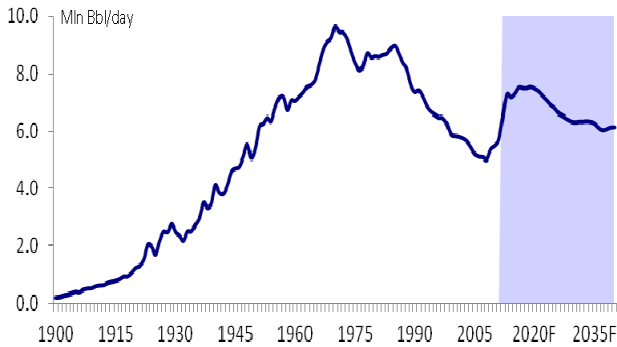
Source: Bloomberg Finance LLP, Deutsche Bank

Though the shale phenomenon began with natural gas, since last year, its impact on the oil market has grabbed the spotlight as shale oil growth far exceeded expectations. US total oil supply growth last year of about 800,000 bbl/day was the largest ever recorded as far back as DOE data goes to 1900, thanks to shale oil, and a similar jump is expected in 2013. The IEA estimates US oil supply growth will contribute about 70% to non-OPEC supply growth over the next three years.

Clearly, the future is one of gradual decline in US oil import dependence. Increasing use of plentiful domestically produced oil combined with rising US refined product exports are seen as key to declining oil import dependence. US crude oil imports fell recently to a 15-year low while net refined product exports are at record levels. Since 2011, the US has been a net refined products exporter.

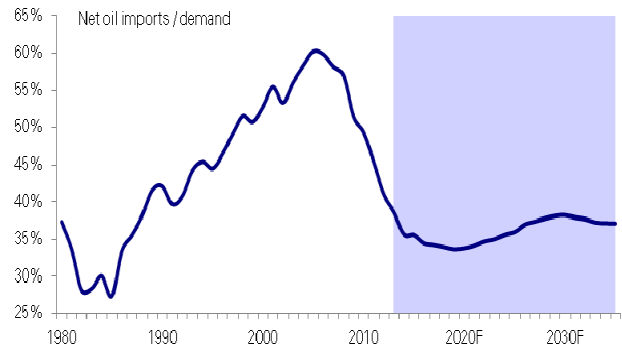


Dramatic reversal in US oil production trend



Source: Bloomberg Finance LLP, Deutsche Bank

US oil import dependence in decline



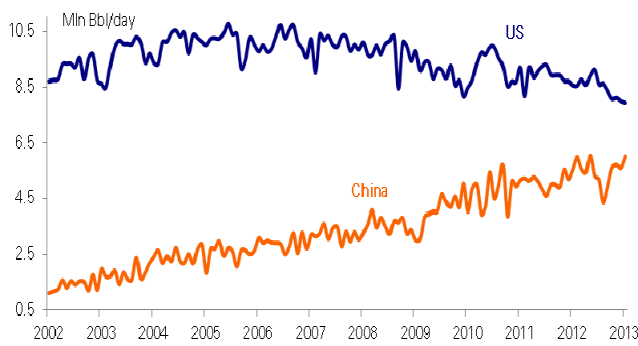
Source: DOE, EIA, Deutsche Bank

China, shale, and the outlook for energy consumption

Although its consumption growth has slowed, China's energy needs are considerable. Crude oil imports averaged 5.5mn bbl/day in 2012, up nearly 70% since 2007. Indeed, China started this year by importing 6mn bbl/day, which was about 2mn bbl/day less than what the US imported in January. The US-China crude oil import gap has narrowed dramatically in recent years.

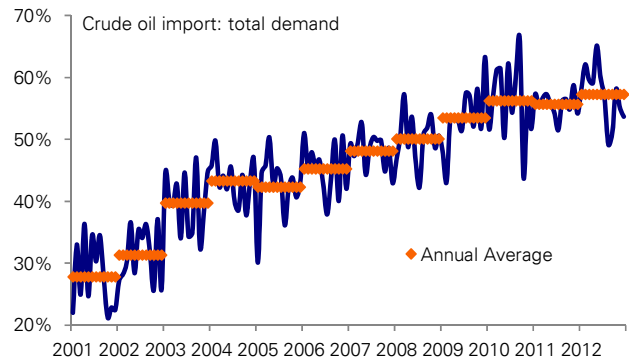
As Beijing observes its oil import dependence rising every year, energy security has taken greater priority for policymakers. In 2001, crude oil imports represented just under 30% of total oil demand. That's grown to about 60% in 2012. From a demand perspective, China has pursued measures, including energy conservation/efficiency, aimed at curbing consumption growth rates. From a supply perspective, China is pursuing a policy of diversifying its primary energy mix and its crude oil import sources.

US vs. China crude oil import trends



Source: DOE, EIA, C1, Reuters, Bloomberg Finance LP, Deutsche Bank

China's oil import dependence is rising



Source: C1, Reuters, Bloomberg Finance LP, Deutsche Bank

China is also looking at increasing its own domestic hydrocarbon resources, notably shale given the extent of its potential resources. **Although the US is the world's largest producer of shale resources, it is China that is estimated to hold the largest technically recoverable reserves.** Indeed, China's technically



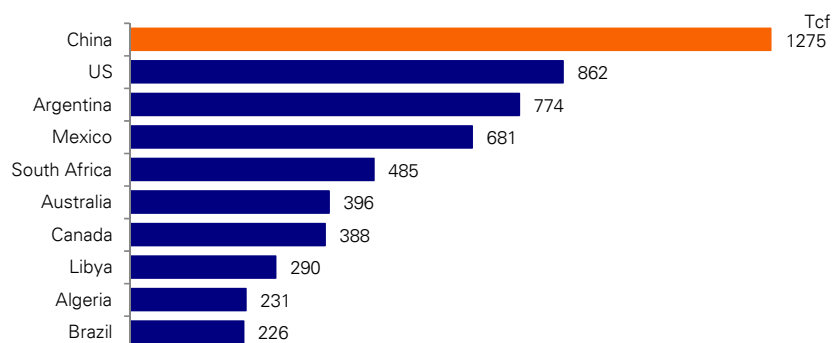
recoverable reserves of shale natural gas could well be 50% greater than that of the US.

Given technical challenges unique to China's shale geology and water constraints, most expect that China will fail to meet its target of 6.5bn cubic meters (bcm) of shale/year by 2015 (this has been set by NDRC in the 12- Five Year Plan). Many experts predict that China's shale boom is more likely to materialize not this decade but from the next. BP predicted that outside of North America, China will be the most successful in developing shale natural gas, which is estimated to account for about 20% of total Chinese natural gas production by 2030. Still, BP asserts that even with shale natural gas development, China's natural gas/LNG import needs will remain strong given expectations for rapid demand growth.

China's domestic estimates, conducted by NDRC, are much more optimistic, essentially looking at 20-40% shale output in total gas production by 2020. This optimism comes from the abundant reserves as well as smooth experiment. As of now, more than 100 wells have been drilled in Sichuan, Chongqing and other areas, yielding a daily production of more than 0.6mn cubic meters. Several sweet points have been found, among which many wells yielding more than 20,000 cubic meters per day. Local industry experts estimate that by 2015, Shell, PetroChina and Sinopec could each contribute 1bcm, 1.5bcm and 3bcm of production, making the national 6.5 bcm target achievable. This is confirmed by PetroChina management that Chinese companies are aiming at 1.5bcm by 2015, 20bcm by 2020, and 50bcm by 2030. Beyond that, as the scale of production and use of new technology will likely to reduce the cost of extraction and production, together with natural gas price reform and production subsidy, we believe the incentives for gas and oil companies will become stronger.

China's track record shows that it places very high weight to energy security, so one should expect substantial resources being devoted in the coming years to overcome key constraints like water, expertise, and pipelines. Large state-owned Chinese energy companies are investing in the US with expectations of picking up shale-related skills and expertise, and they are setting up joint ventures with major global energy companies for the same reason. Social and environmental frictions are likely but the authorities have demonstrated in the past that they are capable on overcoming them.

Top 10 holders of shale natural gas reserves



Note: Technically recoverable reserves refers to reserves that are producible using current recovery technology without reference to economic profitability. From the "World Shale Natural Gas Resources: An Initial Assessment of 14 Regions Outside the United States" published April 5, 2011 by the EIA.
Source: DOE, EIA, Deutsche Bank



The potential for China's shale development to exceed expectations in terms of timing and production volumes cannot be discounted. A combination of supportive policy measures – a key one being the reform of natural gas pricing – and technological advances could prompt a shale revolution in China that would once again send experts redrawing the landscape for the global energy balance. The Chinese government, together with the private sector, will invest heavily in R&D, exploration, production, pipelines and infrastructure. China has held in June 2011 and October 2012 two rounds of shale gas block auctions, in which the exploration right of 23 blocks have been handed over to successful bidders, with a total shale gas reserve of 20+ tcm. In the second round bidding especially, both non-state owned Chinese entities and Sino-foreign joint ventures were encouraged to participate in the bidding. The third round of auction is expected to start in H2 this year, which will likely include more resource-rich blocks in Northern part of China.

This shows the government's determination to open up the shale gas business to a wider group of players. In addition, the Ministry of Finance announced last November a special project fund to subsidize companies conducting shale gas exploitation.

Given the favorable policies and bright outlook, enterprises are in action. In order to learn from the already available experience in US and Europe, domestic oil giants have resorted to international collaboration: The joint exploitation on of 3500sqkm Sichuan Fushun-Yongchuan shale block by PetroChina with Shell has been approved by government, marking the first commercialized shale project in China. According to Shell China, the company plans to help cut the cost of each well from the current USD12mn to USD4mn in the short-term. Shell has also promoted an investment of at least USD1bn each year into this project for its great potential, as the company has stated that it believes 2013-14 is crucial timing to intensively exploit the resources in China. PetroChina has also agreed with ConocoPhillips to conduct joint research and investment in Sichuan shale gas blocks. The ambitious production target that PetroChina has set reinforced the confidence from state level: the company plans to drill 122 wells in coming 3 years and realize annual production of 1.5bn, 20bn and 50bn by 2015, 2020 and 2030 respectively. Another major player Sinopec has chosen Total from France as its partner in this field.

Pure domestic players have also manifested their local expertise: China Shenhua, for instance, plans to invest RMB50bn in Guizhou in the years up to 2020, with technical support and equipment supply from Honghua, the largest exporter of oil-drilling equipment in China. Guizhou Wujiang Hydropower Development is to invest RMB12bn(USD1.9bn) in developing three to five local shale gas exploration zones within the next five years, aiming at large-scale production of 600mcm annual output in five years time.

As for national transportation network, West-East, Sichuan-East, Shaanxi-Beijing and coastal pipelines will be established in the next few years. 18% of urban population (250mn people) will have access to household gas by then. Compressed natural gas (CNG) programs to replace petrol or diesel will be expanded to more cities (already available in Beijing and some western provinces) and more subsidies will also go to the transportation sector to encourage buses and taxis to run on gas.

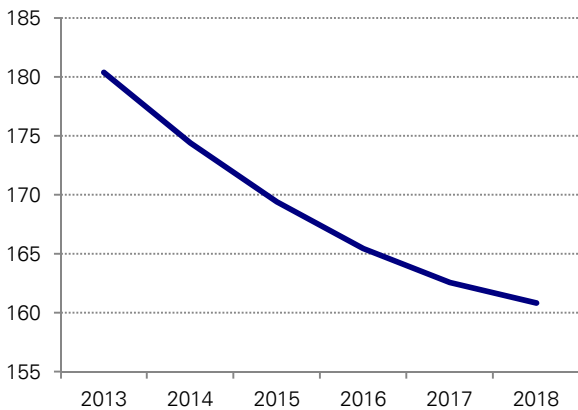


Projections

Flat of declining prices

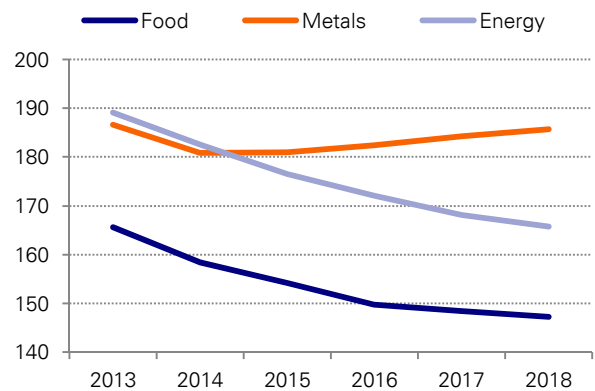
The preceding discussion should make it amply clear that powerful demand and supply side developments, cyclical and structural, are driving down commodity prices. Official price projections are now beginning to incorporate these developments. The latest report on commodity price trends from the International Monetary Fund, for instance, sees about an 11% decline in the All Commodity Price Index between now and 2018. The decline is expected to be most pronounced for energy, followed by food and metals.

A trend decline in the coming years...



Note: All Commodity Price Index, 2005 = 100, includes both Fuel and Non-Fuel Price Indices
Source: International Monetary Fund, Deutsche Bank

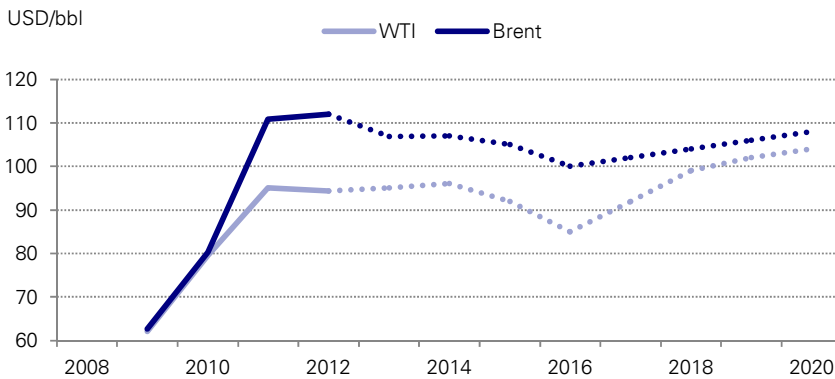
...especially for food and energy prices



Note: Food Price Index, 2005 = 100, includes Cereal, Vegetable Oils, Meat, Seafood, Sugar, Bananas, and Oranges Price Indices Metals Price Index, 2005 = 100, includes Copper, Aluminium, Iron Ore, Tin, Nickel, Zinc, Lead, and Uranium Price Indices. Fuel (Energy) Index, 2005 = 100, includes Crude oil (petroleum), Natural Gas, and Coal Price Indices
Source: International Monetary Fund, Deutsche Bank

Deutsche Bank's commodity team recently revised its medium term crude oil price forecasts for similar reasons. The in-house projections are attempting to capture ongoing upside risk to US oil supply growth alongside the impact of our bullish USD view.

We expect crude oil prices to be flat in nominal and declining in real terms



Source: EIA, Deutsche Bank



Multifaceted implications

Asia's big winners (and some losers)

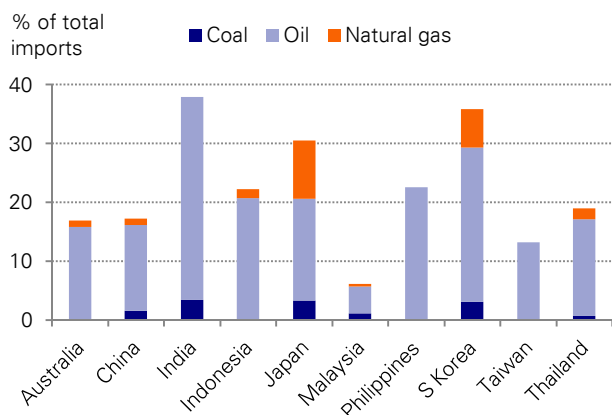
Most Asian economies are importers of energy, with Australia, Malaysia, and Indonesia three notable exceptions, but all are likely to be profoundly impacted by shale related developments. For a country like India, which spends nearly 40% of its total import bill on coal and oil, and runs a large current account deficit, energy price stability or decline would bring significant dividends in terms of external stability and domestic disinflationary dynamic. For Japan, lower energy pricing, combined with access to cheaper LNG imports from the US, could provide a significant boost for an economy that was left increasingly exposed to energy costs following the Fukushima disaster (as imported power fuel has been used to offset the loss of nuclear power).

Australia could soon be the next big player in the shale complex. The Arckaringa Basin surrounding Coober Pedy is estimated to contain billions of barrels of oil, with the upper end of estimates (230bn barrels) amounting to several times the total stock of oil in the country. Even if the estimates prove to be half right, Australia would switch from being an oil importer to oil exporter.

The LNG industry players in Australia and Indonesia, having invested heavily in recent years with Asia's seemingly insatiable demand in mind, are looking at the shale developments nervously, however. If global natural gas prices correct with US exports, that would be a negative for the LNG industry, not just in Australia and Indonesia, but to the massive producers in the middle-east.

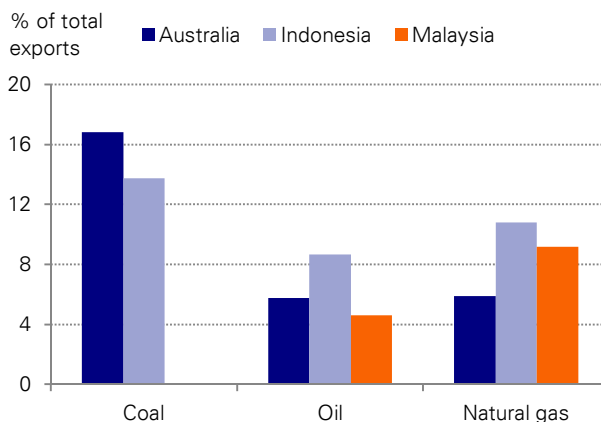
Australia and Indonesia have thrived in recent years on the back of soaring coal exports, with coal making up about an average of 15% and 14% of total exports, respectively. Over the long term, a meaningful shift away from coal to cleaner-burning natural gas driven by environmental as well as energy diversification imperatives, notably in China, could have significant ramifications for the global coal market and key exporting countries that have depended on China's rising coal appetite.

Asia will benefit substantially from weaker energy prices



Source: CEIC, Deutsche Bank

Uncertain time for key exporters



Source: CEIC, Deutsche Bank



Simulation results

Another way of estimating the impact of lower commodity prices is through the application of Deutsche Bank's computable general equilibrium (DBCGE) model. The DBCGE is a standard static CGE model, using data from Global Trade Analysis Project (GTAP) database. The DBCGE model involves a large number of equations describing micro and macroeconomic relationships between various aspects of the economy, and has been applied in the past years to analyses of the economic impact of external shocks as well as China's exchange rate, fiscal, and pension reforms. In this report, we introduce a series of commodity price shocks (e.g., a 5% decline in oil price and 20% drop in gas price, or a 10% drop in oil price and a 25% drop in gas price) to the model, and simulate the impact of these shocks to the Chinese and South-East Asian economies at both the aggregate and sector levels.

The following two tables summarize the simulation results of the macroeconomic impact of the shocks to energy prices. Under Scenario 1 (a 5% drop in the world oil price and 20% decline in the world gas price), both China's and ASEAN's real annual GDP growth is boosted by about 0.15ppts, compared with the baseline (assuming no shocks). Given the same shock, China's CPI inflation falls by 0.1ppts, and SE Asia's CPI inflation by 0.2ppts, compared with the baseline. A 10% drop in the world oil price and a 25% drop in gas price cause than China's and ASEAN's GDP growth to be boosted by 0.3ppts, and their CPI inflation declines by 0.2ppts and 0.4ppts respectively.

Impact on China

(ppt change from baseline)

	scenario 1	scenario 2
world oil price	-5%	-10%
world gas price	-20%	-25%
(% change)	scenario 1	scenario 2
CPI	-0.11	-0.21
C.I.F. local currency value of imports	-0.30	-0.60
Nominal GDP from expenditure side	0.14	0.27
Real GDP from expenditure side	0.15	0.29
Aggregate real investment expenditure	0.31	0.61
Real household consumption	0.13	0.26

Source: Deutsche Bank

Impact on SE Asia

(ppt change from baseline)

	scenario 1	scenario 2
world oil price	-5%	-10%
world gas price	-20%	-25%
(% change)	scenario 1	scenario 2
CPI	-0.21	-0.40
C.I.F. local currency value of imports	-0.50	-0.99
Nominal GDP from expenditure side	-0.13	-0.07
Real GDP from expenditure side	0.14	0.29
Aggregate real investment expenditure	0.42	0.76
Real household consumption	0.10	0.25

Source: Deutsche Bank

The model also simulates the impact on 57 industrial sectors' output, profit margin, employment, etc. It is shown in the following tables that the profit margin oil and gas mining oil and gas would be worse off due to the price decline (however their volume would rise), while the downstream industries such as transport, petroleum processing and gas distribution industries would benefit. Of course energy pricing policies, patterns of domestic consumption, and market conditions would play additional roles in determining profitability on top of the simulated price developments. **But it is clear from the model estimates that the price declines in the two scenarios act as sizable stimulus injections to the economies of China and SE Asia, boosting spending and profitability, as well as reducing inflation.**



Impact on Chinese industries' pre-tax margin (ppt change from baseline)

	scenario 1	Scenario 2
world oil price	-5%	-10%
world gas price	-20%	-25%
Gas mining	-3.93	-4.44
Oil mining	-2.06	-4.30
Electricity	0.08	0.15
Ferrous metals	0.06	0.11
Marine transport	0.26	0.52
Chemical, rubber, plastic products	0.05	0.10
Air transport	0.18	0.36
Gas processing and distribution	0.25	0.43
Petroleum processing	0.10	0.21

Source: Deutsche Bank

Impact on SE Asian industries' pre-tax margin (ppt change from baseline)

	Scenario 1	Scenario 2
world oil price	-5%	-10%
world gas price	-20%	-25%
Gas mining	-5.85	-7.73
Oil mining	-1.13	-2.57
Electricity	0.12	0.23
Ferrous metals	0.15	0.27
Marine transport	0.16	0.30
Chemical, rubber, plastic products	0.20	0.35
Air transport	0.24	0.47
Gas processing and distribution	0.38	0.69
Petroleum processing	0.42	0.72

Source: Deutsche Bank

Geopolitics

In conclusion, we consider some geopolitical implications. The fact that one of the key discussion items between Japan and the US during PM Abe's inaugural visit to Washington in February was about clearing regulations to allow natural gas exports from the US to Japan illustrates the importance of shale developments. Given the cost savings involved, Japan's eagerness is understandable, and would clearly further solidify Japan-US cooperation.

Beyond the issue of natural gas production, a lacklustre price outlook for oil has a range of implications. If the US oil production surplus, for instance, ultimately leads to the Brent benchmark falling precipitously with WTI to a level below the fiscal and budgetary level for key oil producers in the Middle East, the economic strain could ultimately lead to potentially widespread social unrest in that region.

Large scale spending on social programs in the Middle East has increased the breakeven oil price for many countries in recent years. According to our EM research team, the average GCC breakeven price last year is estimated to be around USD80/bbl (Brent basis), a 60% increase since 2008. This rising trend is likely to remain in place. And while USD80/bbl is the fiscal/budgetary breakeven, indications are that OPEC members are more comfortable with prices at around USD100-110/bbl. Similarly, the relationship between European energy importing economies and Russia could be altered fundamentally if price weakness continues in the oil and gas sector. Russia's pricing power would be weakened, with adverse budgetary implications.

We have already pointed out that major Asian commodity producers like Australia, Indonesia, and Malaysia could see their investment, exports, and growth prospects dampened. Consequent fiscal stress and overall economic weakness could have adverse implication for the political incumbents in these economies. The end of the commodity super-cycle would warrant a wide range of economic and political changes, in our view.



Appendix 1

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