

SPECIAL REPORT

TD Economics



March 2, 2016

STEPPING ON THE GAS WHILE DOWNSHIFTING: CHINA'S COMMODITY DEMAND SET TO RISE

Highlights

- Fears of slowing growth in China and the fizzling out of demand from one of the world's largest consumers has weighed on commodity prices in recent months. In our view, these concerns appear to be overblown, as the long-term outlook for China and its commodity demand is still favourable.
- While there are worries that the transition of the economy away from investment-led growth towards consumption-led growth will dampen commodity demand, the experience from other emerging markets reveals that this evolution tends to be gradual. Indeed, China still has a long way to go in terms of infrastructure development, so significant capital outlays – and commodity consumption – will be required.
- Moreover, despite decelerating in percentage terms, growth in commodity demand in China will be occurring off a larger base. Hence, in volume terms, consumption gains for some commodities, including copper, zinc and oil, are on track to surpass those recorded over the past ten years.
- What's more, even if the Chinese economy endures a harder landing than we are forecasting, the story will not change as much as some expect, with commodity consumption still likely grow over the longer term.

Pessimism has loomed large in commodity markets in recent months. Much of the gloom reflects a host of factors, including intensifying global deflationary fears and U.S. dollar strength. At the root of it, however, are fears of slowing growth in China's economy and the fizzling out of an outsized source of commodity consumption. Commodity demand, supply and prices will always follow the law of the cycle. But, lost in the sea of shorter-term worries is still a favourable long-term story for China and commodity demand.

Part of this story reflects pure arithmetic. Double digit growth rates in China's economy were never going to last. Convergence theory points to a gradual slowdown in economic growth as output per person in an emerging market narrows the gap with advanced economies. The evolutionary path of other emerging markets when they were at a similar stage of development is consistent with slower Chinese real GDP growth in the mid-single digit range over the next decade. However, not only is this pace still rapid relative to other countries, but the growth will be occurring off a larger economic base. As such, China's overall draw on world commodity supply in volume terms is projected to continue to rise over the next decade.

Worries also surround an expected decline in commodity intensity and notably the shift in capital spending, which is highly

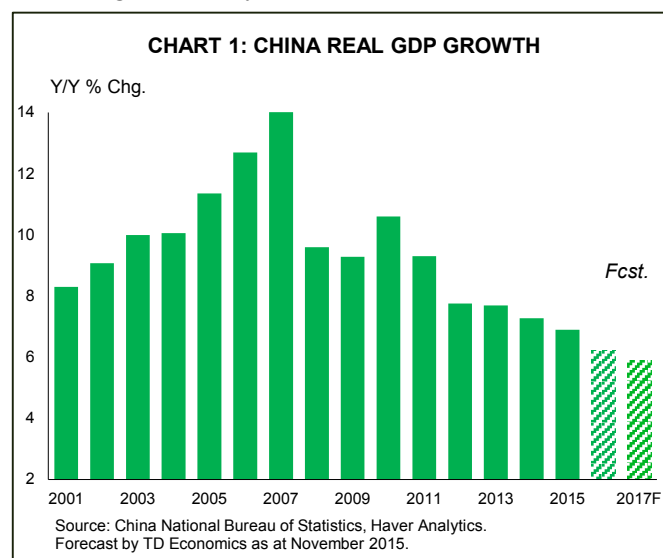
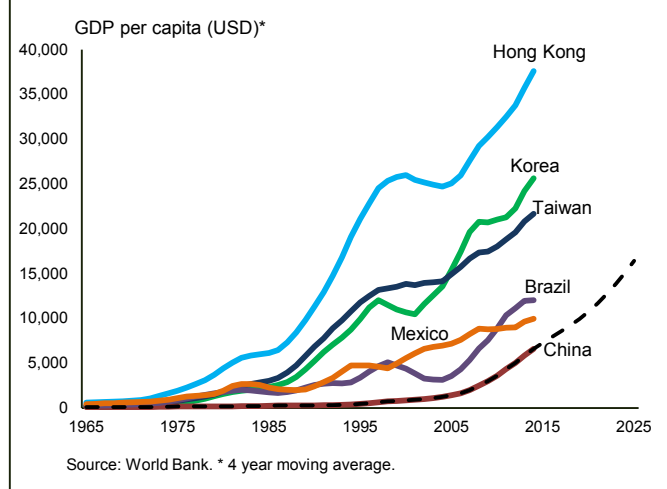


CHART 2: NOMINAL GDP PER CAPITA



commodity intensive, to household spending. However, the experience of other emerging markets reveals that while there can be medium term volatility in growth drivers, the evolution towards consumption-based growth also tends to be gradual. The Chinese economy still has a long way to go in terms of infrastructure development and significant capital outlays will be required.

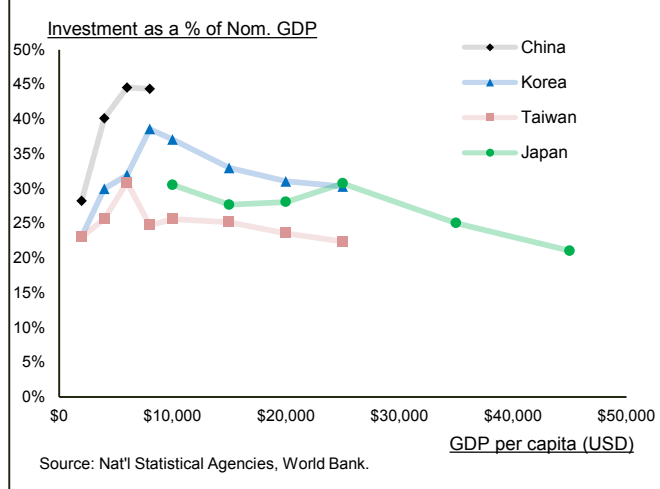
Our calculations show that volume demand for several major commodities is likely to grow by at least the same pace as it did in the past decade. In fact, consumption of copper, zinc and oil demand is each expected to rise by more over the next decade than that recorded over the last ten years. Clearly looking out ten years, there is no shortage of uncertainties to grapple with – the impact of innovation and efforts to address climate change are chief among them. Some market participants have a much more bearish outlook for China, expecting that the economy will endure a hard landing or grow at a much slower pace in the coming years than outlined in our base case forecast. However, even under a more pessimistic scenario, our analysis points to rising demand across the board.

The bottom line is that fears of major changes in underlying longer-term fundamentals surrounding commodity consumption in China appear to be overblown.

Drivers of growth in China to shift as economy slows

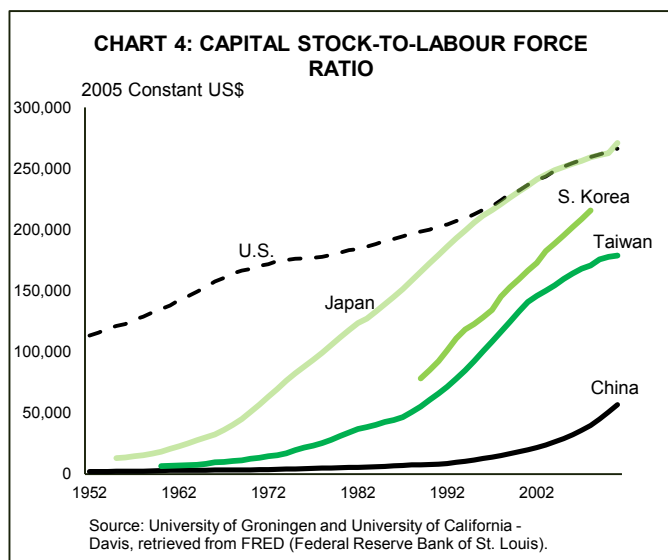
From 1980 to 2014, the Chinese economy grew at an average annual rate of almost 11%, making it the second largest economy after the United States. However, there are stark divergences between some of its coastal provinces, which enjoy levels of development similar to Western countries, and the less developed inland provinces. As

CHART 3: INVESTMENT SHARE THROUGH DEVELOPMENT



such, China's current GDP per capita remains at about US\$7,600 – relatively low compared to its Asian neighbors and the United States (Chart 2). This suggests that there is still much room for further development. China's growth trajectory appears to be following that of its more advanced neighbours, South Korea and Taiwan, which converged more quickly with their developed counterparts than other developing nations. Some countries, such as Thailand and Brazil, have been caught in a middle-income trap. Faster converging countries have tended to invest more heavily in capital stock, but in China's case, one of the prevailing fears is that the economy has over-invested and is over-leveraged. Indeed, since 2009, investment has accounted for about 44% of GDP. Fiscal stimulus measures aimed at offsetting weaker global demand resulting from the Great Recession played a large role in driving investment higher. Looking at cross country comparisons with economies that have been through the development cycle, investment in China has in fact been much higher as a share of nominal GDP than that in comparable countries (Chart 3). However, a good argument can be made that the country was starting from a lower capital stock base, and has been trying to catch up. The capital stock-to-labour force ratio in China ten years ago was below that in Japan and Taiwan, and well below that in the U.S. when these countries were at a similar stage of development. By 2014, it was more in line with Taiwan and closer to South Korea and Japan at comparable times, implying that much of the so-called overinvestment may have been warranted (Chart 4).

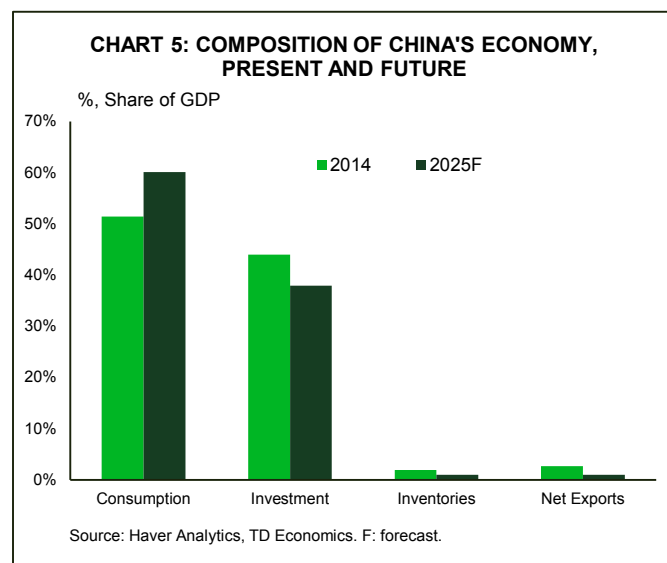
Going forward, our baseline forecast is for China to continue to grow at a decelerating, but still elevated, pace. Extrapolating from the IMF's projections for GDP per



capita through 2020, we project Chinese nominal GDP per capita to grow by roughly 8-9% in U.S. dollar terms beyond 2020, reaching about US\$16,500 in 2025. This would be consistent with a real GDP growth profile in the mid-single digit range. However, the composition of growth will be somewhat different.

Indeed, history shows that the share of investment falls as a country develops. This is almost certain to be the case in China, particularly given the moves by authorities to transition the economy away from investment-led growth to consumption-led growth. Moreover, the fiscal stimulus that underpinned the surge in investment in the years following the financial crisis was likely meant to be temporary, in order to help keep the Chinese economy propped up despite the slowdown outside its borders. Additional fiscal stimulus has been announced in recent months to help the economy endure a soft landing – with more likely forthcoming – but it will unlikely be as intense as that seen following the financial crisis. Going forward, investment will continue to grow for structural reasons as well. The rising population and further development will necessitate additional infrastructure. Moreover, the government's landmark plan to urbanize its population – including the recent reforms to its 'hukou' household registration system – will require additional public services, among other things, available to new urbanites, auguring for additional infrastructure and investment. The reorientation of the economy towards consumption and services will provide a more sustainable economic model which should enable demand driven investment decisions and facilitate liberalization of markets.

Overall, we expect nominal investment to grow at a conservative 7% average pace through 2025 – following an



average pace of 18% over the last ten years – and to account for about 38% of GDP. Meanwhile, we expect consumption to grow at a double-digit pace over the next decade, similar to that of its peers at a similar stage of development, and account for roughly 60% of GDP by 2025 (Chart 5).

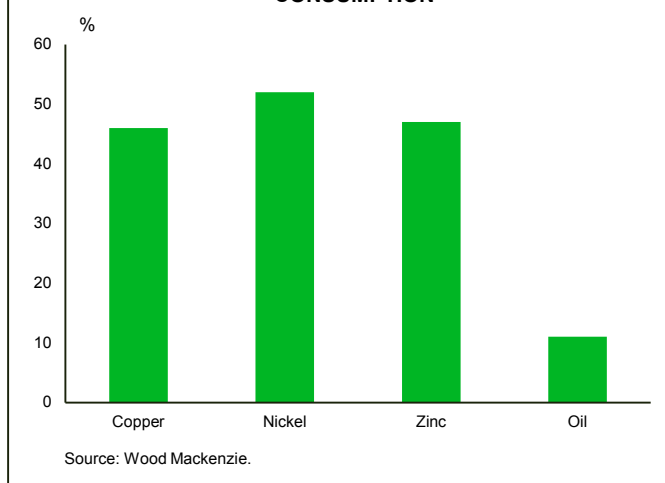
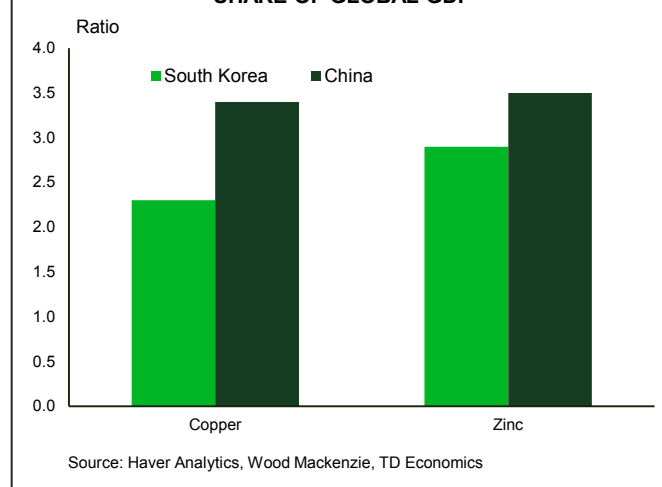
While China's economy will be growing at a slower pace, the underlying transition of the drivers of growth will be good for the economy in the longer run. Moreover, given its size, the country will continue to have a significant influence on the global economy and demand for commodities.

Income growth to drive commodity demand in China

The path of income growth that China follows will be key for future growth of its commodity consumption. While China's population is massive in level terms, at almost 1.4 billion individuals, its growth is slowing. From an average of 1.3% per year in the 1980-90's, population growth has slowed to 0.5% per year, and is slated to decelerate further. China's population is expected to peak in 2030 according to World Bank projections. This suggests that over the longer term, increased commodity consumption in China will come less as a result of population growth, and more as a function of income growth.

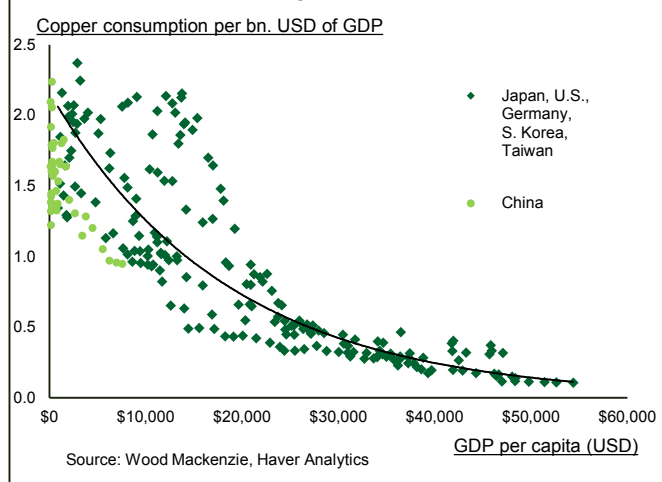
China accounts for a hefty chunk of global demand for several industrial commodities (Chart 6). In this note, we focus on the impact on copper, zinc, nickel, and crude oil. Interestingly, the share of global demand for metals has been much higher than their share of global GDP – less so in the case of oil.

It is worries about the sustainability of this past out-sized commodity consumption in an environment of slower overall Chinese growth that has been front and centre in com-

CHART 6: CHINA'S SHARE OF GLOBAL CONSUMPTION**CHART 7: SHARE OF GLOBAL CONSUMPTION TO SHARE OF GLOBAL GDP**

commodity markets. It is not uncommon for the share of commodity demand to persist above the respective GDP share in economies that are in the developing phase. However, the extent of the difference in the ratio between the share of consumption and the share of GDP in China and other emerging markets is undeniably striking (Chart 7). There are a few factors that could be driving this difference, one of which would be the sheer size of China, with infrastructure required to cover much more area than other countries such as Japan, South Korea and Taiwan. Another reason is the technological advancement that has taken place in recent years. For example, the telecommunications industry has boomed, with the introduction of cell phones, tablets, internet, and other electronic devices, all of which contain a lot of copper. Hence, it makes sense that consumption would be somewhat higher now than when other countries were moving through the industrialization process. Another factor inflating demand figures could be stock building in China. There are no concrete data on this however, so it is hard to determine to what degree the influence has exaggerated its share of consumption. Demand may also be higher due to the use of some metals – particularly copper – as collateral to obtain financing. The downtrend in interest rates in China has helped to wind down this practice, but in turn, has also helped to drive prices lower. Like with stock building, evidence to support this notion is anecdotal, with no hard data to analyze trends or future impacts.

Consumption of industrial metals is driven largely by investment. Our forecast for growth in investment to be about half the rate seen over the last ten years will have implications for industrial commodity consumption, which,

CHART 8: COPPER DEMAND THROUGH THE DEVELOPMENT CYCLE

from past experience, shows that at a certain point, consumption intensity of these commodities declines (Chart 8). In China, we expect the result to be no different, with consumption patterns following a similar path to that of comparable countries. That said, given the size of China's economy, and the fact that investment is still expected to grow, metals consumption is likely to continue to rise.

Plenty of upside for metals demand

Table 1 contains a summary of our forecast for Chinese commodity consumption in 2025. Demand for all commodities analyzed should see a significant increase over the next ten years, even with a moderation in economic and investment growth. Based on trends in other comparable countries, combined with our investment profile in China,

TABLE 1: CHINA'S COMMODITY CONSUMPTION FORECAST
BASE CASE SCENARIO

	2004	2014*	2025F	2004-14 % chg.	2015-25F % chg.	2004-14 Level chg.	2015-25F Level chg.
GDP per capita (US\$)	1498	7593	16500	18	117	6095	8907
Copper (kt)	3565	9836	19911	176	102	6271	10075
Nickel (kt)	173	958	1736	455	81	785	778
Zinc (kt)	2417	6486	12039	168	86	4069	5553
Oil (1,000 b/d)	6481	10279	15500	59	51	3798	5221
Corn (tonnes)	134,336,369	217,262,296	282,232,000	62	30	82,925,927	64,969,704
Soybeans (tonnes)	39,524,924	77,564,422	98,781,200	96	27	38,039,498	21,216,778
Pork (tonnes)	40,260,622	54,729,930	63,502,200	36	16	14,469,308	8,772,270
Beef (tonnes)	5,714,312	7,411,883	11,289,280	30	52	1,697,571	3,877,397

*latest data for ag. commodities is 2013.

Sources: Haver Analytics, Wood Mackenzie, Energy Intelligence, FAO, TD Economics. F: forecast.

industrial metals – which are heavily used in construction, infrastructure, electronics, and auto production – are likely to remain in high demand, with copper topping the growth charts. While the demand intensity for each metal falls as a country develops, the level of consumption still grows, as the country will still need additional infrastructure, housing, vehicles, etc. to support the growing economy. As shown in the table, demand growth over the next ten years is expected to be slower than that seen over the last ten years, but still quite rapid.

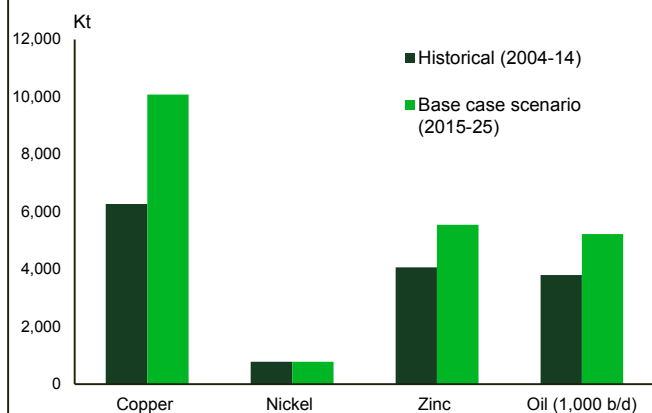
What's more, because consumption is growing off a larger base, the actual increase in volume terms will be significant. In the case of copper and zinc, the volume draw is likely to accelerate from what was recorded over the 2004-14 period, while the rise in nickel volumes will be roughly in line with that seen since 2004 (Chart 9). Hence, China's draw on global supplies will remain significant ten years out.

Convergence of China's oil demand intensity unlikely

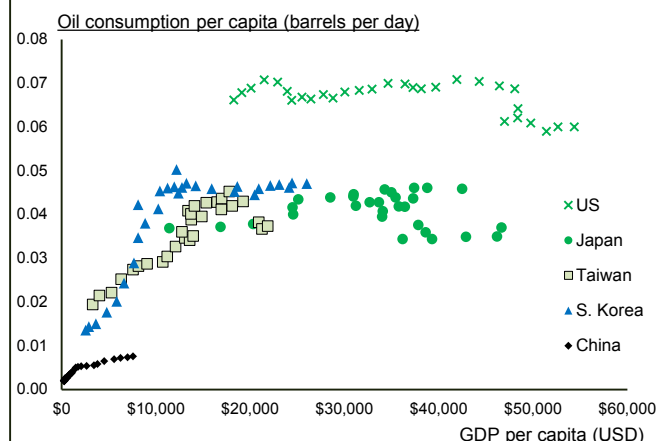
In the case of oil, the opposite trend occurs as a country

develops, with consumption per capita rising until a certain point of development before flattening out. China is currently the world's second largest consumer of oil, following the United States. However, while climbing, consumption of oil on a per capita basis has been well below that of the U.S. and other countries analyzed at a similar stage of development (Chart 10). Part of the reason for this is that energy consumption in China is different, as the country has historically been much more dependent on coal and less on oil than its peers.

While the plunge in oil prices since mid-2014 has been largely a supply side story, weakness in the Chinese economy has been cited as a driver behind the most recent leg down in oil prices, as it has weighed on market sentiment. Actual consumption data, however, shows that oil demand in China was up by 5% in 2015 – the fastest pace of growth in 3 years. Hence, it is more about where demand *may* head going forward that has filtered into market sentiment. Based on our longer-term projection, we do not expect concerns about a sustained drop in Chinese oil demand to materialize.

CHART 9: CHINA'S CONSUMPTION INCREASE PAST VS FUTURE DECADE


Source: Wood Mackenzie, Energy Intelligence, TD Economics.

CHART 10: OIL CONSUMPTION THROUGH DEVELOPMENT


Source: Nat'l Statistical Agencies, World Bank.

Our outlook is based on some cautious assumptions since China's oil consumption intensity is unlikely to converge to that of its peers. To the extent that it is used in industrial production, the outlook for investment will play a role, and on that front, modest growth in demand is likely. But, there are other sources of demand for oil as well, such as the transportation industry. As the country has become richer, air travel has become more prevalent. Auto sales have also shot up, although the number of vehicles per capita is still quite low relative to more developed countries, suggesting there is still plenty of room to grow. Indeed, transportation is one area that could potentially drive demand for oil much higher in the coming years. However, the country has a serious smog issue and authorities are working to improve environmental conditions. In fact, the government has invested heavily in alternative energy, and will likely push these sources of energy in the future. The country is striving to be a leader in the electric vehicle (EV) revolution. In 2015, it likely became the largest market for EVs, with sales nearly tripling during the first ten months of the year. So, even as car ownership rises, oil demand may not see as much of an increase as it would have if EVs were not in the mix.

Accordingly, China's path of oil consumption may not follow the historical experience of other countries too closely. But, demand intensity in China does have further room to rise before it begins to level off, driven in large part by the transportation sector. And, even when it does flatten out, the level of consumption will still rise alongside the economy. We forecast China to add over 5 million barrels per day to the global demand tally by 2025, accounting for roughly 60% of supply growth estimates over the same time frame. At about 15 million barrels per day, China's expected oil consumption ten years from now compares to current U.S. consumption – the world's largest consumer of oil – of 19 million barrels per day.

In sum, concerns that the slowdown in China will have a sustained impact on Chinese oil demand appear to be overdone. The deceleration in economic activity recorded over the last five years has still led to rising demand for the fuel in the country, and that is unlikely to change going forward. Growth in demand may decelerate, but the number of barrels demanded per day will continue to rise alongside the economy.

Higher incomes to lift demand for soft commodities

A key difference between food commodities and industrial commodities – and a benefit for producers – is that people

always need to eat, no matter where in the development cycle or business cycle they are. China's share of global consumption of agricultural commodities is smaller than that of metals – with the exception of pork – but still quite significant. Moreover, it has risen substantially over the past two decades, alongside population and income (Chart 11).

China's population is expected to continue to grow – albeit at a decelerating pace – suggesting that there will be more mouths to feed. What's more, as incomes rise, the demand for higher quality food also rises – particularly meats. Hence, even with China's economy slowing, demand for several agricultural commodities should continue to rise. Tracking consumption per capita of other countries through their development stages suggests that Chinese consumption per capita will continue to increase over the next ten years, before levelling off as the country hits a later stage

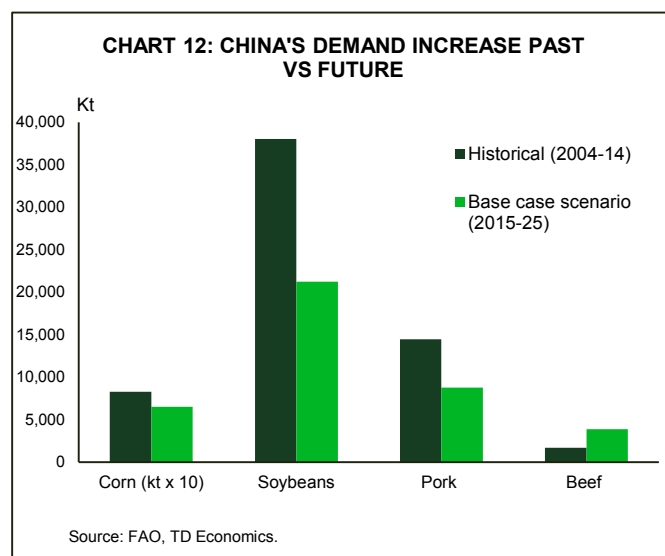
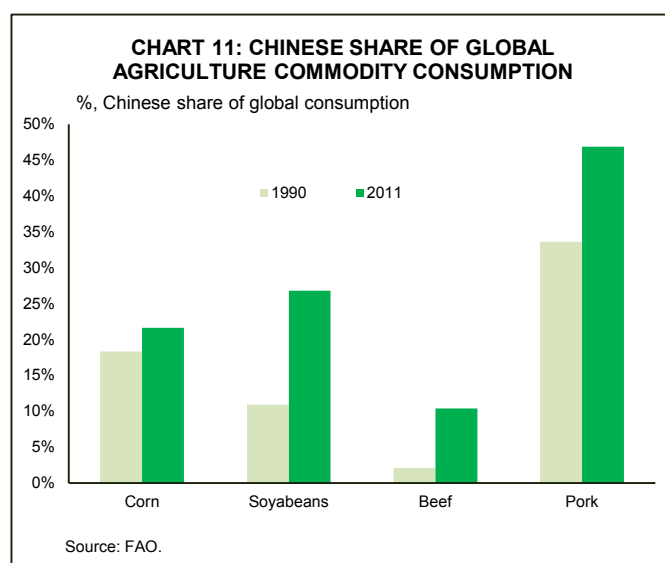


TABLE 2: CHINA'S COMMODITY CONSUMPTION FORECAST
PESSIMISTIC SCENARIO

	2004	2014*	2025F	2004-14 % chg.	2015-25F % chg.	2004-14 Level chg.	2015-25F Level chg.
GDP per capita (US\$)	1498	7593	11000	18	45	6095	3407
Copper (kt)	3565	9836	13886	176	41	6271	4050
Nickel (kt)	173	958	1295	455	35	785	337
Zinc (kt)	2417	6486	8269	168	27	4069	1783
Oil (1,000 b/d)	6481	10279	12700	59	24	3798	2421
Corn (tonnes)	134,336,369	217,262,296	254,008,800	62	17	82,925,927	36,746,504
Soybeans (tonnes)	39,524,924	77,564,422	94,547,720	96	22	38,039,498	16,983,298
Pork (tonnes)	40,260,622	54,729,930	59,974,300	36	10	14,469,308	5,244,370
Beef (tonnes)	5,714,312	7,411,883	9,172,540	30	24	1,697,571	1,760,657

*latest data for ag. commodities is 2013.

Sources: Haver Analytics, Wood Mackenzie, Energy Intelligence, FAO, TD Economics. F: forecast.

of development. Cultural differences will influence which foods are in higher demand in which regions, so we use other Asian countries as a proxy to see what kind of trend demand in China could ultimately follow.

China's corn consumption has thus far been very much in line with that of South Korea and, to a lesser extent, Taiwan. Should this continue, as we expect, demand for corn will rise by about 30% by 2025. Soybean consumption in China lies somewhere in between the other two countries, but follows a similar pattern. Using this as a guide, we suspect that demand for the oilseed could also rise by close to 30% over the next 10 years. The increase in each amounts to roughly 8-9% of current global consumption.

The livestock sector should see robust gains as well, with pork consumption – which has closely matched demand in Taiwan – likely to increase by 16% by 2025, and beef demand – which has been more in line with South Korea's consumption – to jump by over 50% over that time horizon.

Pessimistic scenario still points to growing demand

Certainly, long-term projections are rife with uncertainty. Table 2 considers a less likely, but still plausible scenario where China suffers a harder landing and records considerably slower average growth in the low single digits over the next ten years. Under this scenario, nominal income per capita would rise to US\$11,000 in 2025, or less than half of the increase projected under our base case, as both investment and consumption grow at about half the pace we currently expect. This would certainly have implications for commodity demand. However, even under this scenario, demand would rise across the board, by a sizable, yet smaller amount than what we have previously suggested. Hence, an outright decline in consumption is highly unlikely (Chart 13).

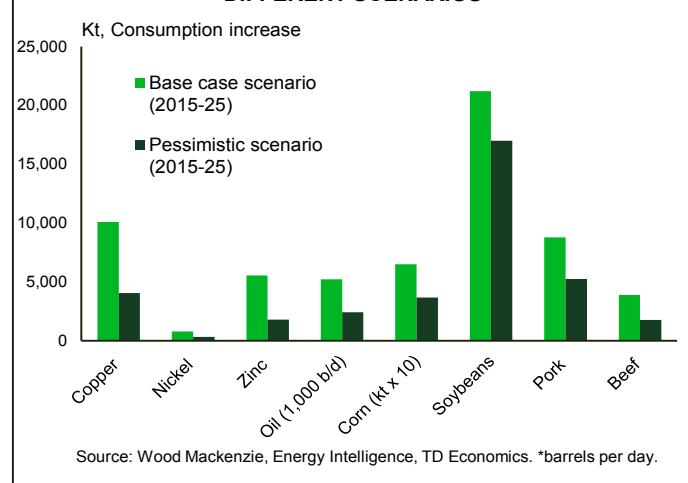
While certainly a risk, we view the probability of such

a scenario unfolding as quite low. Despite the push toward consumption-based growth, investment growth is unlikely to fall to the low-single digit range as a great deal of additional infrastructure will be required to service the rise in population and urbanization, as well as to maintain existing infrastructure. Moreover, if the economy begins to head for a harder landing, Chinese authorities are likely to step in to keep economic activity on track, with investment a tool they would likely turn to.

Chinese demand to support prices over longer term

Despite current pessimism and the invariable cyclical swings in prices, Chinese commodity demand is poised to stay quite robust over the next decade and in some cases even accelerate relative to the past ten years. As such, it will continue to have a considerable influence on commodity prices.

However, when forecasting prices, demand is only part of the equation; the supply side must also be considered. At this point it is hard to determine what will happen on the

CHART 13: CHINA'S DEMAND INCREASE UNDER DIFFERENT SCENARIOS


supply front ten years from now. The recent prolonged price correction has resulted in significant cutbacks in investment within the commodity space, which could potentially lay the seeds for the next upcycle in prices a few years down the road. In the case of agricultural commodities, weather plays a huge role in output, which is nearly impossible to predict over a long time horizon. Moreover, the cyclical nature of commodity markets can lead to periods where prices over

or undershoot the levels that supply and demand factors would suggest.

So while we can make the case that Chinese demand for commodities will remain strong – and suggest that it will be supportive for prices – the overall direction and level of prices will embed a high degree of volatility due to the ebb and flow of supply and demand forces in the market.

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