

## China's rebalancing and oil consumption patterns

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China has constituted the most significant source of the incremental growth in global oil demand over the last decade, adding around 5 million b/d between 2000 and 2012. This is expected to continue well into the future: the International Energy Agency (IEA) estimates that China will account for more than 40 per cent of the increase in oil demand to 2035. A big part of that growth story has related to diesel, which has assumed a growing importance in the energy production and consumption of the world's fastest growing emerging market economies. Fuelled by trade and investment, China's growth has strongly supported diesel demand over the last decade. The dominant position of diesel in commercial freight traffic, be it by truck or rail, has made it the fastest-growing demand component. In China, the government mandate requiring all trucks to be fuelled by diesel by 2010 simply accelerated the already rising momentum of diesel demand growth. Further, diesel demand received an extra boost from power problems that led to greater use of diesel as a back-up fuel. In 2004, 2008, and 2010, power shortages during the winter months together with periods of government power rationing (to achieve environmental targets) contributed to buoyant diesel demand. The heavy industrial and mining sectors – such as coal, ship building, steel, and cement – that rely heavily on diesel, boomed throughout the 2000s. It is thus hardly a surprise that diesel was the backbone of Chinese oil demand growth, to the extent that Chinese oil demand growth was synonymous with diesel demand growth.

### Chinese diesel and gasoline demand dynamics

Given the importance of China in global commodity markets, questions abound as to how the nation's development path and economic rebalancing will impact its future commodity demand. However, the objective of the rebalancing is ultimately to transfer more power to consumers, which does not necessarily imply lower commodity demand across the board. In fact, any sector that is more geared towards consumer demand rather than investment will benefit, and this is already evident in China's changing oil consumption patterns. Gasoline and jet fuel – petroleum products more geared towards consumers – have been performing robustly, in comparison to diesel and petrochemical feedstock, which are more leveraged to investment demand.

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Indeed, in a notable reversal of trends, diesel demand growth has slowed to 3.5 per cent so far this decade, after having averaged 8.7 per cent in the last decade. The downswing from the peak rates is even greater, with double-digit growth having been seen in 2004 (0.4 million b/d or 23.4 per cent), 2008 (0.3 million b/d or 12 per cent), and 2010 (0.36 million b/d or 13.2 per cent). This tapered off to flat-to-negative demand growth in 2012 (40 thousand b/d or 1.2 per cent). In comparison, gasoline demand growth has increased steadily over the past few years, picking up pace in recent months. In the last decade, Chinese gasoline demand has increased on

average by 7.4 per cent per year. The momentum has continued into this decade, averaging 10.6 per cent so far. In 2013, gasoline demand was up by nearly 10 per cent, while diesel demand has been lacklustre, up by a mere 0.6 per cent year on year. The market for gasoline used to be half the size of that for diesel in China; it has now become two-thirds its size, with the gap between gasoline and diesel demand rapidly narrowing.

Although diesel demand growth is unlikely to turn negative in the coming years, a longer-term rebalancing away from investment-oriented growth implies far lower growth rates in mining and heavy industries. Such a rebalancing and tighter credit conditions are likely to taper the rates of growth in overall diesel demand. Gasoline demand, on the other hand, has been supported primarily by consumers, with the transportation sector accounting for nearly 50 per cent of total gasoline consumption by 2010. The increasing ownership of private cars and buses is the primary reason for the rising gasoline consumption in the transport sector. While rapid economic development and urbanization over the last three decades have resulted in an average GDP growth rate of 8–10 per cent, the number of passenger cars in China has risen by an average of 25 per cent since 2003, with over one million cars sold each month from early 2009 through 2010. Total numbers of passenger vehicles grew from 12.19 million cars in 1997 to over 100 million cars in 2012, an average annual growth rate of over 15 per cent.

Despite the impressive growth in vehicle numbers, gasoline consumption growth has been far less dynamic than that of diesel in the



past decade. Usage of gasoline has been less diverse when compared to diesel, and gasoline most definitely did not benefit from exposure to heavy industries or swing use in power generation. Other constraints on gasoline demand include poor road infrastructure, congestion, and the simple lack of driven miles, despite car ownership. The final factor reflects a trend of cars being bought for gains in social status rather than as a means of transportation. There tends to be a lag, particularly in emerging markets, between the rise of auto sales and the picking up of gasoline consumption, but this is usually restricted to two to three months at most. In China, while that was broadly the case through to 2009, the correlation then broke down for about three years.

In 2009, the government halved the sales tax to 7.5 per cent on cars with engines smaller than 1.6 litres, subsidized vehicle trade-ins in rural areas, and introduced tax breaks to encourage car ownership. This resulted in an 83 per cent increase in total auto sales comprising new passenger vehicles and light trucks. Indeed, in 2009 auto sales increased year on year by 49 per cent and in 2010 by another 36 per cent. However, although auto sales soared, gasoline demand failed to follow, with 2009 demand growth at 7.1 per cent and that for 2010 at 5.8 per cent. Between 2008 and 2011, gasoline demand increased from 1.47 million b/d to 1.78 million b/d, an increase of 21 per cent – far below the 83 per cent increase in auto sales.

#### **Gasoline demand picks up with a lag**

Interestingly, gasoline demand started to pick up just when the Chinese government began to roll back incentives for buying new cars owing to rapid increases in air pollution; indeed four municipalities/cities began to enforce a quota on new vehicle

registration. A main reason for the increase in gasoline demand has been improved road conditions, as a result of which miles driven are on the rise. But equally, despite a hit to household income from the correction in the property market and tightening credit, income levels on the whole have continued to increase. This is evident in the pick-up in growth rates of luxury car sales, particularly of SUVs, in China in recent months. These luxury cars tend to have larger and less efficient engines, meaning they consume more gasoline – so much so that they have mostly offset the various green measures that the government has implemented during the time period, including the reduced incentives to purchase cars and penetration of natural gas vehicles (NGVs) into the bus and taxi fleet.

#### **‘THE INCREASING OWNERSHIP OF PRIVATE CARS AND BUSES IS THE PRIMARY REASON FOR THE RISING GASOLINE CONSUMPTION IN THE TRANSPORT SECTOR.’**

Rather like its penchant for luxury fashion brands, China’s tremendous appetite for premium cars has increased luxury auto sales at an impressive rate of 36 per cent per year in the last decade, faster than the 26 per cent annual growth in the overall Chinese passenger vehicle market during the same period. Sales of premium cars in China reached 1.25 million vehicles in 2012, making it the second biggest luxury market in the world, after the USA. The premium car market in China represented 9 per cent of all passenger car sales in 2012, a higher proportion than in Japan (4 per cent) and South Korea (6 per cent). Although some government incentives remain in place for trade-ins of cars that do not meet the specified emission standards or for new cars with engine smaller than 1.6 litres, Chinese consumers are clearly veering towards

larger luxury brands, which is in turn boosting gasoline demand.

A McKinsey consumer research survey recently showed that 80 per cent of Chinese premium car owners have an annual disposable household income of more than \$32,000. The report notes that this affluent segment of society is set to grow at a compound annual rate of 16 per cent between now and 2020, offering underlying support for the premium car market. By 2020, the survey forecasts that there will be 23 million affluent urban households in China – 7 per cent of the population.

The results of this survey have two important implications for the future of gasoline. As the government attempts to rebalance towards consumption and unlock the true potential of the Chinese consumer, which has been suppressed thus far, both the auto sector and hence gasoline demand can continue to find a significant scope for growth. Historically in other countries, vehicle ownership has grown relatively slowly at the lowest levels of per capita income, about twice as fast at middle-income levels (from \$3,000 to \$10,000 per capita), and about the same rate at higher income levels, before reaching saturation. Clearly, as incomes increase, the potential for gasoline demand to continue to rise strongly is highly plausible, despite improved public transportation systems and increasing density of cities.

Second, not only is the auto sector likely to keep growing as incomes rise, but the luxury car sector may continue to outpace overall auto-sector growth. If realized, this is likely to offset a wide range of green transport policies that the Chinese government is currently undertaking to reduce the environmental impact of rising car sales. In this regard, although the number of natural gas vehicles (NGVs) has started to grow rapidly, a trend that is expected to continue, these vehicles

(almost 1.5 million by the end of 2012) are concentrated in certain areas such as taxi fleets and buses. A widespread substitution of NGVs for purchases of new gasoline-powered vehicles is unlikely, as they remain costly, offer limited model choices, and have further problems related to the lack of fuelling stations. For buses and taxis, however, higher mileage and more predictable routes have made the switch to natural gas cost effective. Of course, further penetration of NGVs into the taxi and bus fleet will temper gasoline growth rates in the future, as will increasing congestion, but the overall impact on

gasoline will also be determined by the rate of increase of the numbers of (less efficient) luxury cars in the auto market. Thus, gasoline demand growth is expected to continue strongly from now through to 2020.

The changing demand dynamics in China will also have a big impact on global products' trade flows for the rest of this decade. China's refining capacity has risen sharply in recent years and is mainly biased towards hydrocracking. Accompanied with the slowdown in domestic diesel demand, this has already turned China into a net

exporter of diesel. In contrast, China is expected to be net short gasoline by 2015, as gasoline demand outpaces existing refining capacity, particularly as the economic rebalancing takes effect and the demand for private transport continues to rise. In fact, the wider Asian region is already short gasoline as a result of rising income and growth trends in countries such as Indonesia, Malaysia, and Vietnam. Thus, Asia will continue to rely on growing gasoline imports from Europe, which may provide some limited relief for European refineries.