

CHINA ECONOMIC UPDATE MARCH 2017



Rise of the machines: could automation help sustain China's long term growth momentum?

NAB Group Economics

China faces growing demographic pressures, as the country's working age population continues to decline. These challenges mean that China needs to rapidly increase labour productivity in order to continue its economic development. Greater investment in education is part of the solution; however firms are also likely to increase automation – a growing global trend.

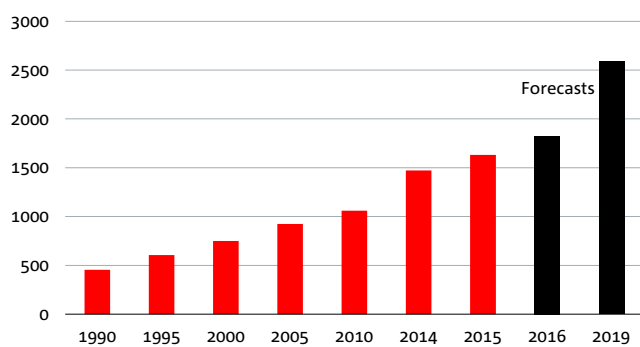
ROBOTICS IS CHANGING THE FACE OF GLOBAL MANUFACTURING

The past two decades have seen a massive increase in the adoption of robotics and automation in manufacturing processes around the world – particularly in advanced economies, where technology has been utilised to offset their labour cost disadvantages relative to emerging economies. According to the International Federation of Robotics, the total global stock of industrial robots was around 1.63 million units in 2015, having recorded average growth of 5.9% a year over the previous decade.

GROWING AUTOMATION

Global stock of industrial robots rising

World operational stock of industrial robots ('000)



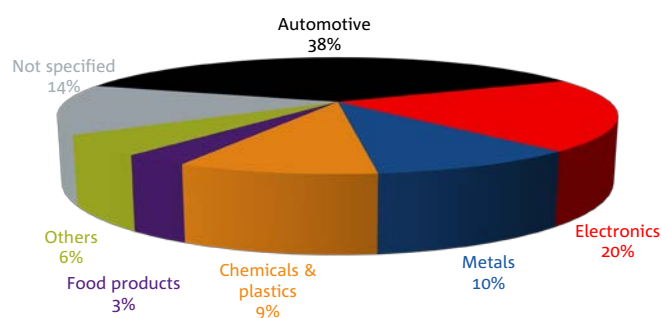
Source: IFR, NAB Economics

The use of industrial robots is concentrated in three major industries – automotive, electronics and metals – accounting for almost 70% of the total global stock in 2015 – with almost two-fifths of the total being in the automotive sector alone.

HEAVY INDUSTRY DOMINATES

But use of robotics is gradually changing

World operational stock of industrial robots, by industry (%)



Source: IFR, NAB Economics

That said, the falling cost and increasing sophistication of these technologies means that they are expanding into other parts of the manufacturing sector – including consumer goods. Footwear manufacturer Adidas recently opened an automated plant in Germany that can produce shoes with minimal human input. Textiles, clothing and footwear manufacturing has traditionally been a very labour intensive process, and in recent years has been dominated by low cost producers in East and South Asia.

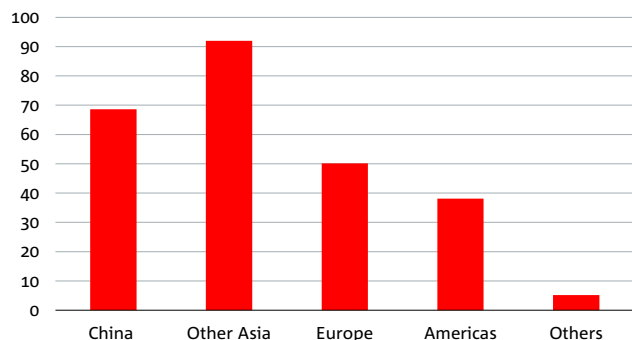
ASIA THE FASTEST GROWING REGION FOR ROBOTICS, LED BY CHINA

Asia has rapidly become the most important market for robot manufacturers, with the region (including Oceania) accounting for around half the total installed capacity globally and the largest share of industrial robot sales in 2015, at over 160 000 units (IFR). China has been the largest individual market since 2013, with sales in 2015 totalling over 68000 units, followed by South Korea and Japan.

CHINA THE LARGEST MARKET...

Rapid growth in robot purchases

Sales of industrial robots in 2015 ('000)



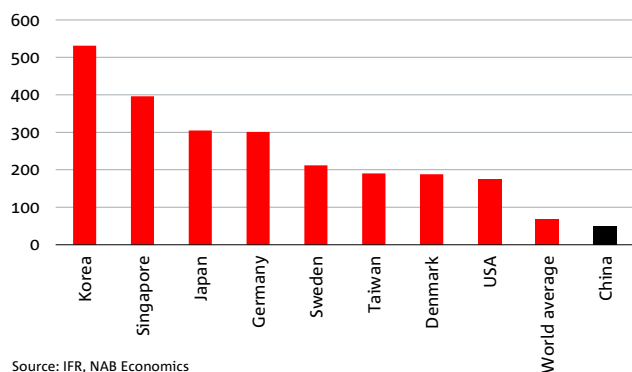
Source: IFR, NAB Economics

That said, these two markets are far more mature when it comes to robotics. The density of industrial robots – as measured by the number of units installed per 10 000 manufacturing employees – in these economies is comparatively high – being the largest (Korea) and third largest worldwide (Japan). These economies both produce high value added manufactured products, but also face their own demographic declines that place constraints on their labour markets. In contrast, China’s industrial robot density lags well behind – with just 49 units per 10000 workers, China is below the global average (69 units) and outside the top 20 economies.

...BUT LOW INDUSTRIAL ROBOT DENSITY

Growth potential for below average China

Number of robots per 10000 employees in manufacturing (units)



Source: IFR, NAB Economics

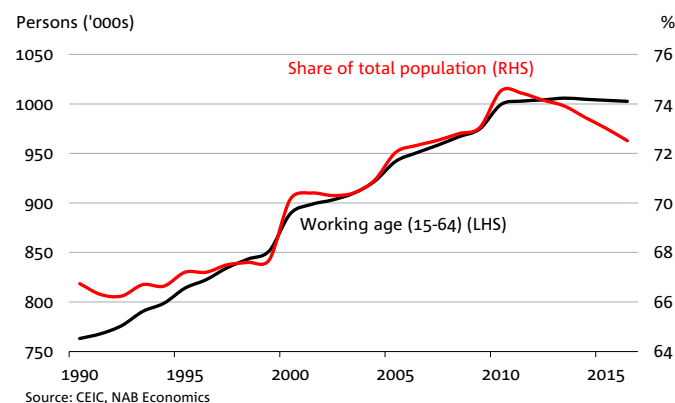
This low level of density suggests that China has considerable growth potential over the next few years. The International Federation of Robots forecasts that China will account for 40% of global industrial robot sales by 2019.

IS AUTOMATION THE ANSWER TO CHINA’S DEMOGRAPHIC DECLINE?

China’s working aged population (those aged 15 to 64) peaked in 2013 and has declined modestly each year since. Declining birth rates from the start of the 1970s, exacerbated by the introduction of the One Child Policy in 1979, have shifted the age profile of the Chinese population – with a falling number of workers supporting a growing retired cohort. This trend is set to continue – in 1990, there were 12 workers for every retired resident. By 2016, this rate fell to 6.7 workers per retiree and the 2015 UN Population Prospects projects that the rate will fall to 4 by 2020.

THE DEMOGRAPHIC DECLINE

China’s working population has peaked



Source: CEIC, NAB Economics

Continuing to sustain economic growth, while China experiences demographic decline, will require a substantial improvement in productivity. Large scale investment in robotics and automation could be part of this solution. The Chinese government’s ‘Made in China 2025’ plan set a robot density target of 150 units per 10000 by 2020 – which would represent a massive increase in the country’s overall stock, but still leave it lagging behind many advanced economies. Local governments in China are ramping up incentives for firms to invest, but despite the potential benefits, such moves are not without risks.

CHINESE AUTHORITIES WILL NEED TO MANAGE THE RISKS

One of the main challenges in encouraging investment in robotics would be to avoid the process derailing critical reform to the State Owned Enterprise sector. Misdirected investment could prop up underperforming SOEs at the expense of more efficient, but less politically connected, firms.

There are also significant distribution effects to consider. While the pool of manufacturing workers will gradually decline over the next few decades, labour demand will shift with increased automation.

In particular, more advanced manufacturing will require higher skilled labour – putting older and generally less well educated migrant workers at greater risk of unemployment.

Finally, there are regional effects that could impact the broader economy. Much of the investment would likely occur in the Pearl River Delta region in Guangdong province, commonly referred to as ‘the factory to the world’, given the existing manufacturing and transport infrastructure. However, this risks increasing the disparity between higher and lower wealth regions, particularly in underperforming rustbelt provinces like Liaoning, Jilin and Heilongjiang. Recent political trends in the United States and Europe highlight the dangers of overlooking inequality.

CONCLUSIONS

China’s demographic decline is the country’s key long term economic challenge. If successfully implemented, the expanded use of robotics and automation may offset the negative impact of the declining size of China’s workforce, but authorities will need to ensure that the opportunities are not wasted by derailing other essential reforms.

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