13 July 2021

China Inside Out

What lasting inflation?

Free to View
Economics - China

- Chinese universities are likely to produce more than 50m graduates in the next five years, up over 50% on a decade ago
- The scale of the new supply is set to limit wage inflation and quicken the pace of innovation…
- …enabling Chinese companies to improve their price competitiveness for higher-end consumer goods and services

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All eyes are now on the surging producer price index (PPI) and what the impact on the consumer price index (CPI) will be. However, we think the structural forces that are likely to keep inflation low in China in the years ahead are being overlooked. Chief among them is the influx of skilled labour that will not only limit wage inflation but also facilitate innovation and therefore help keep prices low, especially for medium to high-end consumer goods and services. This year more than 9m university students will graduate in China, over 50% more than in 2010. This exceeds the number of university graduates in the US, UK, Germany, Japan, and Korea combined. We expect the number to top 13m by 2025, lifting the cumulative new supply of university graduates over the next five years to more than 50m. Although China's shift towards high value-added industries points to more white-collar job opportunities, this massive supply of skilled labour is likely to keep wage inflation in check over the coming years.

At the same time, industries are set to reap the benefits of this huge supply of skilled labour, which will speed up technology upgrades and lift productivity growth. Chinese firms have already made impressive progress in innovation in recent years, with the number of patent applications surging more than five-fold over the past decade. In terms of the quantity of patents, China has topped the world rankings since 2019, though the quality still lags major developed economies. Chinese firms are also increasing their global market share of complex products ranging from smartphones and PCs to newer technologies like electrical vehicles and drones. We expect these trends to be further strengthened in the coming years as the influx of university graduates help companies adopt advanced technology and innovate. This, in turn, is likely to lift productivity growth and enable Chinese firms to keep the price of medium to high-end consumer goods and services competitive.

Despite a slowdown in globalisation, Chinese companies in the medium and high-tech sectors have increased their global market shares, especially in ASEAN and other Asian economies. As a result, the new supply of skilled labour and the resulting impetus this will give to technology may also have some spill-over effects on anchoring inflation for China's main trading partners in the coming years.

This is an abridged version of a report of the same title published on 6 July 2021. Please contact your HSBC representative or email AskResearch@hsbc.com for more information.

A structural force for low inflation

- The surge in new university graduates will help to keep wage inflation in check…
- …and accelerate technology upgrades and productivity growth
- …allowing Chinese companies to improve their price competitiveness for medium to high-end consumer goods and services

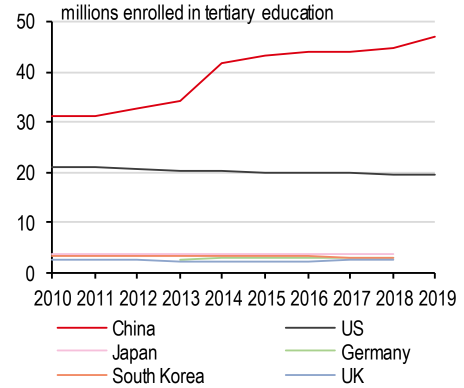
The new supply of skilled labour is set to limit wage inflation…

Over 50m university graduates will enter the labour market over the next five years

Financial markets are focused on the risk of a pass through of surging PPI leading to lasting CPI inflation in China. But we believe that you can't get a complete picture of the inflation outlook without looking at the structural forces that determine trend inflation. Chief among them is the more than 50m university graduates who will enter the labour market in the coming five years. Given its sheer size, this new supply of skilled labour will limit wage inflation. Meanwhile, this will also enable Chinese firms to innovate and boost productivity which, in turn, will be a disinflationary force, especially in terms of the price of medium to high-end consumer goods and services in the years ahead.

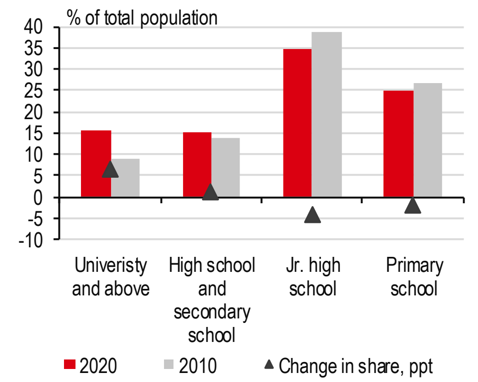
China's infrastructure boom is well known. But what is less appreciated is the government's massive investment in higher education over the past two decades. This investment has already started to bear fruit. The gross enrolment ratio for tertiary education topped over 54% last year, more than double the figure of 24.2% in 2010.

Chart 1. China has the most students in tertiary education; numbers are growing



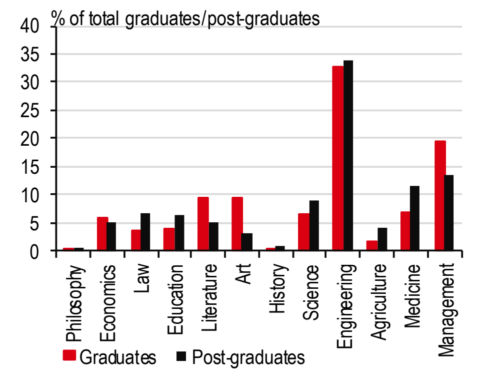
Source: UN, Digest of Education Statistics, HSBC

Chart 2. China's education levels have increased



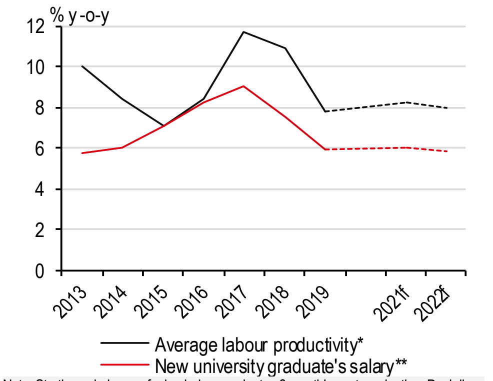
Source: NBS, HSBC

Chart 3. China's university graduates are mainly concentrated in STEM fields



Note: Data is from 2019. University graduates in this chart do not include vocational school graduates. STEM = Science, technology, engineering, and math.
Source: Wind, HSBC

Chart 4. New university graduate's salaries generally grow at a slower pace than average labour productivity growth



Note: Starting salaries are for bachelors graduates 6 month's post-graduation. Dash lines represent forecasts; 2020 data is not shown due to the volatility from the pandemic; *Forecasts for labour productivity are based on nominal GDP/employment, with forecasts for employment based on UN Population projections and HSBC GDP forecasts. 2021 estimates are based on the 2yr CAGR and 2022 based on the 3yr CAGR ; **Forecasts for bachelor's salary are based on the historical average spread with nominal GDP growth.
Source: MyCos, CEIC, HSBC

And there is more to come

This year more than 9m university students will graduate, over 50% more than a decade ago. The number is likely to continue to increase in the coming years. Given the increase, we estimate that over the next five years the total number of new university graduates will top over 50m. To get a sense of the sheer scale of this trend, China's current number of students in tertiary education is greater than the US, Japan, Germany, South Korea, and the UK combined (Chart 1).

The continued surge in the supply of skilled labour should mitigate wage inflation

The continued surge in the supply of skilled labour is likely to mitigate wage inflation. Third-party survey data show that in recent years university graduates' starting salaries have been growing, but at a slower pace than the growth rate of average labour productivity (Chart 4). Since labour productivity in medium and high value-added sectors grows faster than the average, this means that the gap between growth in wages for skilled labour and growth in their productivity is even bigger.

There is also anecdotal evidence that points to intense competition for white collar jobs. Some university graduates unable to find skilled jobs opt for temporary low-skilled jobs or delay entering the job market by enrolling in tertiary education. The growth of those sitting for post graduate exams grew 17% y-o-y in 2020 to over 3.4m people. And while the overall unemployment rate has fallen back to pre-pandemic levels (5.0% in May), the rate for the younger population (aged 16-24) has more than doubled to 13.8% as of May 2021.

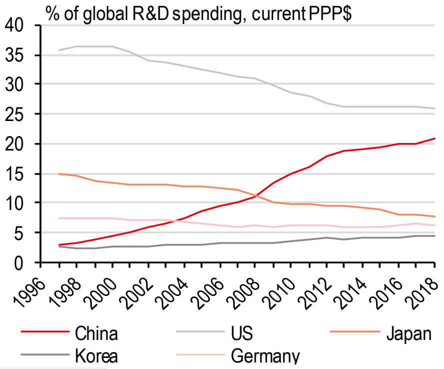
We expect the high-value added industries to expand at a faster pace than Gross Domestic Product (GDP) growth, which will create more job opportunities for skilled labour over the coming years. However, the influx of over 50m university graduates is set to reinforce the labour market pressures in the coming years. In other words, growth in wages for skilled labour is likely to continue to underperform their productivity growth. This will continue to keep wage inflation low in the years ahead.

…and quicken innovation and productivity growth

The new supply of more educated labour also creates favourable human capital conditions

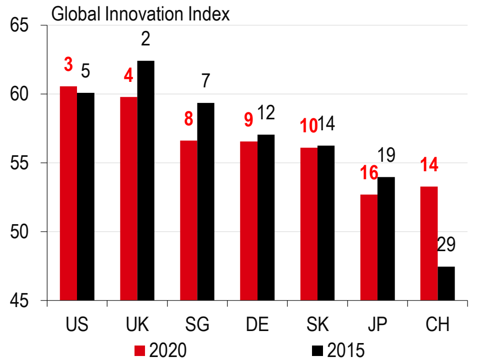
The sheer size of the new supply of more educated labour also creates favourable human capital conditions for Chinese companies to adopt advanced technology and innovate new products. Combined with the government's policy initiatives to support innovation, this is likely to speed up the corporate sector's technology advancement and productivity growth in the coming years. In fact, Chinese companies have already made impressive progress in technology upgrading and innovation in recent years. For one, China's Research & Development (R&D) investment is second only to the US in terms of total spending (Chart 5), while as a percentage of GDP, its R&D intensity is on par with other developed countries at 2.4% of GDP, compared with the OECD average of 2.5%.

Chart 5. China's share of global R&D spending has climbed to the second highest globally



Source: OECD, HSBC

Chart 6. China is the only EM economy in the Top 20 in the Global Innovation Index



Note: Ranking denoted above country bar. Red - 2020 ranking, Black - 2015 ranking. CH: China, US: USA, JP: Japan, DE: Germany, SK: South Korea, SG: Singapore, UK: United Kingdom.
Source: WIPO, HSBC

China's innovation has been most pronounced in the fields of science and engineering

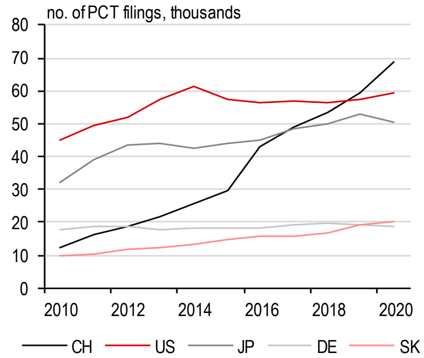
China's innovation has been most pronounced in science and engineering, translating into more advancements in high-end manufacturing products. Moreover, over 80% of innovation expenditure is spent by enterprises. China now tops the global rankings for PCT (patent) filings with the World International Patent Organization (WIPO), beating the US for the top spot since 2019 (Chart 7). China is also the only emerging market economy among the top 20 economies in the Global Innovation Index, reaching a ranking of 14 in 2020 (Chart 6).

Government policies will also incentivise more innovation

We expect Chinese companies to speed up innovation in the coming years thanks to the compounding effect of an ample supply of young talent and government support. In particular, the implementation of the following policy measures in the pipeline should prompt innovation in the years ahead:

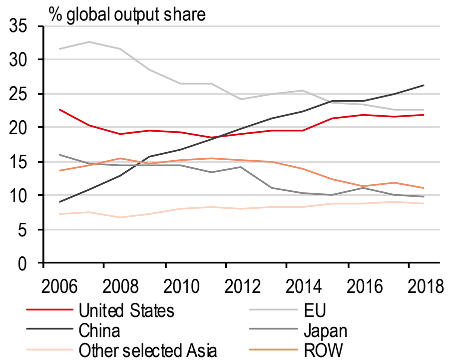
- *R&D tax incentives:* This year, Beijing continued the policy of a 75% deduction for R&D expenses and also raised the deduction to 100% for R&D expenditure by manufacturing firms. Continued implementation of R&D-linked tax breaks will help to incentivise further spending on innovation.
- *Development of advanced infrastructure:* Beijing will prioritise the development of new infrastructure such as 5G, fibre optic networks, data centres, and EV charging stations. This will help provide the foundation for more innovation in cutting edge technologies.
- *National laboratories and research facilities:* China aims to step up investment in basic research by building more national laboratories, prompting further innovation into core technologies, which can spur more applications for high tech fields and development of new commercial products.
- *Encourage more financing channels for innovative enterprises:* Providing a supportive ecosystem for start-ups and entrepreneurs by encouraging angel and VC investments as well as further streamline the IPO process for equity investments for technology firms (i.e. ChiNext, STAR board).

Chart 7. China has topped the global rankings for patent filings since 2019



Note: CH – China, US – USA, JP – Japan, DE – Germany, SK – South Korea, SG – Singapore, UK – United Kingdom.
Source: WIPO, HSBC

Chart 8. China has a growing output share of medium-high R&D intensive products



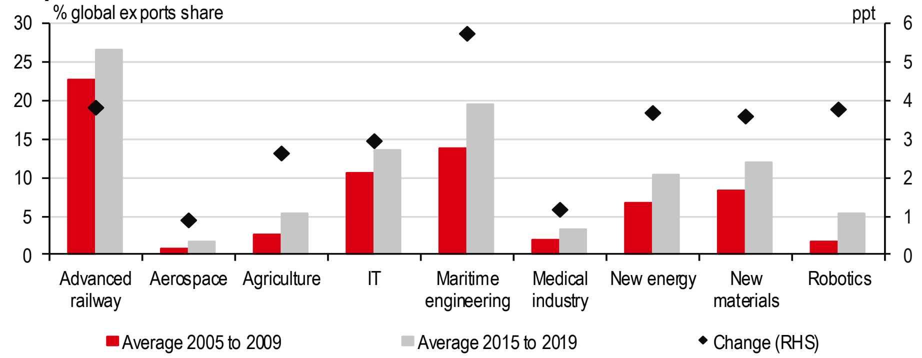
Note: Medium-high R&D intensive industries include weapons and ammunition; motor vehicles; medical and dental instruments; machinery and equipment; chemicals and chemical products; electrical equipment; railroad, military vehicles, and transport; and IT and other information services. Other selected Asia includes India, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam.
Source: NSF, HSBC

Spill-over effects

Deflationary impact is channelled indirectly via trade exports

Restrictions on cross-border labour mobility implies that there is little direct impact of the surge of Chinese university graduates on wage inflation in other countries. However, we believe that trade is a channel through which this structural deflationary force can have a spill-over effect on inflation in major trading partners, particularly as regional trade in Asia expands (charts 9 and 12).

Chart 9. China has made strides in a number of high-tech fields allowing it to capture more exports market share

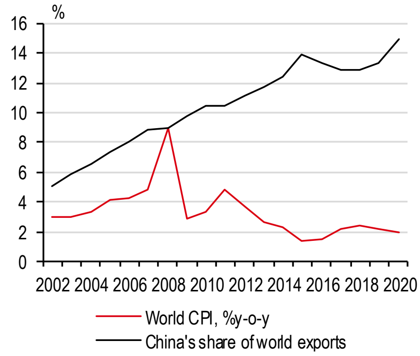


Source: Refinitiv Datastream, HSBC

A replay of the supply shock from migrant workers?

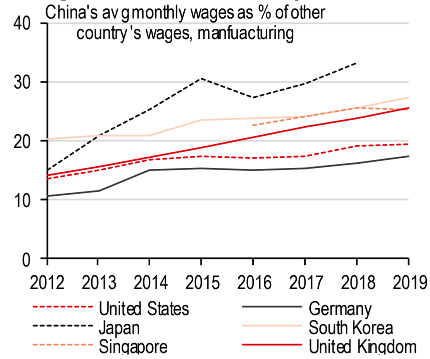
If history is any guide, then China's growing capabilities in middle to high-end manufacturing will bring with it cost efficiencies that can lead to a disinflationary effect on its major trading partners. Following China's inclusion into the WTO in 2001, it brought with it a tremendous amount of relatively cheap labour supply, allowing for its exports to be competitive globally. This led to a rapid increase in China's share of global trade, and meant China was not only exporting a larger quantity of low-end goods, but also offering lower prices for these goods globally. Soon, China became the global de-facto producer for the world's clothing, toys, and shoes.

Chart 10. China's exports share has almost tripled since entry into the WTO



Source: World Bank, ITC, HSBC

Chart 11. China's manufacturing wages are markedly lower than in developed countries



Source: ILO, HSBC

One key factor supporting China's ability to be so competitively priced has been the mass migration of rural farmers into the cities to work in more productive and higher paid factory jobs. The relative wages of China's manufacturing sector are notably less than a third of most developed nations' salaries (Chart 11). And, combined with the removal of tariffs following the inclusion into the WTO, China's exports became among the most competitive.

China's labour cost advantage in low-end manufacturing is diminishing

While the large supply of migrant labour has helped to give Chinese exports a competitive edge, this may not necessarily play out as much in the future. China's cost of labour is increasing and other emerging markets, such as Vietnam, have relatively lower wages, making it more attractive for low-end manufacturing. Manufacturing wages in China are more than 3x the level in Vietnam.

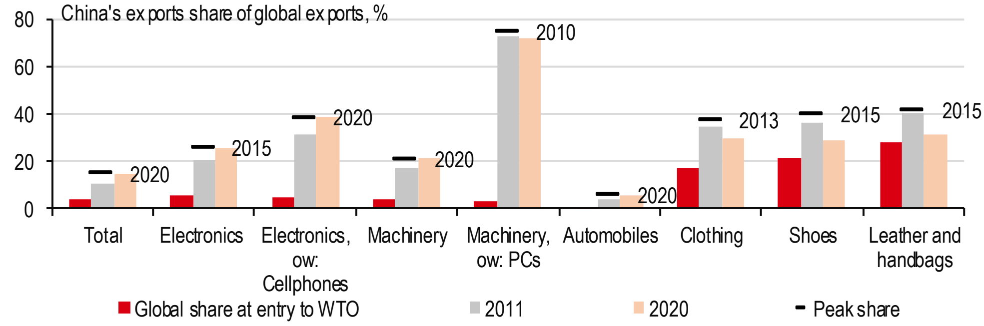
Indeed, if we look to the global exports share of China's goods since its entry into the WTO, we can see it has risen across the board for products (see orange vs. red bars in Chart 12). China's global share of exports for some of the low-end manufactured goods have already reached a peak global share, but for Vietnam these shares have increased.

China is increasing its global exports share in more complex manufactured goods

From migrant workers to scientists and engineers

The story isn't finished though. Because China's low-end labour costs have risen, it may no longer be as competitive in low-end manufacturing. That said, China's labour advantages are likely to shift from low-end manufactured goods to mid- to high-end goods as a steady supply of scientists and engineers enter the workforce in the coming years.

Chart 12. China's global exports shares have grown and are now shifting from low-end manufactured goods to high-end manufactured goods



Note: Peak year denoted next to bar.
Source: ITC, HSBC

High-quality labour for a relatively low price has been a key component in China's technology drive

High-quality labour for a relatively low price has been a key component in China's technology drive. This provides a comparative cost advantage in producing medium to high value-added goods and services in China. As human capital is less readily tradeable vs. goods, this means that from a trade perspective, most of the labour cost advantage would be reflected in the price of exported goods. This is then passed on to global consumers and allows exporters to gain more market share due to competitive pricing. We can already see that the share of China's global exports in high-tech goods has continued to rise, such as China's global share in electronics and machinery. Thus, over the long run, we are likely to see a continued dampening effect from low labour costs play out in medium to high-end manufactured products.

Conclusion

China will have over 50m university graduates in the next five years. This supply of skilled labour will keep overall wage inflation in check in the years ahead. Meanwhile, this batch of new scientists and engineers will provide human capital support for Chinese companies to adopt advanced technology and innovate. Combined with the government's innovation policies, this should speed up technology upgrading and innovation. This in turn will lead to significant efficiency gains and high-quality product development, which can then be passed on in the form of lower prices for consumers, leading to a deflationary impact for medium to high-end manufactured products.

On a cross border basis, the deflationary effect from the influx of skilled labour and technology development are likely to come through indirect channels from the trade exports of medium to high-end manufactured products. We have already seen this play out in the past for low-end products. The increase in migrant workers moving from the countryside to the cities gave Chinese factories competitive labour advantages that allowed them to capture more market share. In turn, China quickly become the world's factory for low-end manufactured products like clothing, shoes, and toys. The shift towards more skilled labour has meant Chinese companies are now capturing more market share in medium to high-end manufactured products like cell phones and computers. Thus, the continued boom in the supply of university graduates is likely to play a deflationary role for more medium to high-end goods and services both domestically and abroad in the coming years.

References and related research reports:

Amiti, Mary, Mi Dai, Robert C. Feenstra, and John Romalis. *How did China's WTO entry affect US prices? Journal of International Economics,* 126 (2020).

Broda, Christian, and David E. Weinstein. *Exporting deflation? Chinese exports and Japanese prices*. In *China's Growing Role in World Trade*, pp. 203-227. University of Chicago Press, 2010.

Francis, Michael. *The effect of China on global prices*. *Bank of Canada Review,* Autumn (2007): 14-26.

Qu Hongbin, Jing Liu and Erin Xin, *China's new five-year plan: All about technology and the domestic market*, 8 March 2021.

Qu Hongbin and Erin Xin, *China's next investment boom: R&D spending is set to surge*, 27 October 2020.

Qu Hongbin and Jingyang Chen, *Fewer workers, more engineers: Why we are bullish on China's potential growth,* 11 October 2019.

Qu Hongbin and Julia Wang, *China innovation: Punching above its weight*, 10 October 2017.

Qu Hongbin and Kelvin Lam, *China's smart move: Climbing the technology ladder*, 11 September 2017.

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