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HSBC Global Research

Multi-Asset
China

February 2022
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China in the Year of the Tiger

Prosperity, opportunity, sustainability

After a real estate crunch, policy crackdowns and supply chain disruptions…

…we explain why we are more optimistic about 2022 and…

…provide a one-stop shop for our macro and equity views on China

Play video

Disclosures & Disclaimer: This report must be read with the disclosures and the analyst certifications in the Disclosure appendix, and with the Disclaimer, which forms part of it.

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Work in progress, from 2021 to 2022

Change of growth model

Property investment: annual growth rate to halve to 3-4% in the next five years

Green and higher-end manufacturing to rise

- China's great transition: from construction to capex and consumption. **Page 11**
- Real estate tightening: property high-yield bonds – Survival of the fittest. **Page 75**
- Green investment: ESG and climate policy. **Page 29**
- Higher-end manufacturing: Smart manufacturing to fuel capex. **Page 69**

Common prosperity

Middle class: <30% of population

When this ratio hits 50%, private consumption to contribute about 60% of GDP

- The road to common prosperity: reduce inequality and revive competition. **Page 13**
- Common prosperity and tax reforms. **Page 71**
- Richer households: China's rising wealth. **Page 51**
- Tech: Internet – A new playbook. **Page 41**

Reducing risk/deleveraging

Property and related sectors: 25% of GDP

LGFVs with outstanding bonds: Total assets >RMB100trn

- Decoupling: A closer look at technology imports. **Page 61**
- Demographics: How worrying is slowing population growth? **Page 63**
- High leverage: China's rising debt – how big is the risk? **Page 65**

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Greater focus this year

Easing to support growth

Green investment: RMB200trn over 2022-2060

Higher-end manufacturing: 60% of all manufacturing by 2030

- China in 2022 – Five macro themes. **Page 9**
- A switch-up in investment. **Page 49**
- Time for a tech and green stimulus package. **Page 67**
- Stepping up target easing. **Page 47**

Tiger macro outlook

USD/RMB: 6.40 at end-Q1, 6.55 at end-Q4

9-16% index upside for A shares in 2022e

- Credit: China Onshore Insights – 2022 outlook. **Page 17**
- FX: RMB overstretching. **Page 19**
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Investment compass

Sustainability, manufacturing, consumption

- Green: ESG Integrated – Utilities. **Page 31**
- Green: Electric vehicles – Taking it up a notch. **Page 39**
- Manufacturing: Automation – Gear up for growth. **Page 33**
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- Consumption: Consumer – Silver dollars, the she-economy, Gen-Z style. **Page 37**
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Welcome Tiger, good riddance Ox

We expect Beijing to introduce more targeted easing measures – support for green investments, small businesses and manufacturers, and tax incentives and subsidies to promote innovation and technological upgrading. This all bodes well for equities in 2022.

Few China investors will be sad to see the back of the Year of the Ox. It will be remembered for widespread disruption on several fronts – the lingering pandemic, abrupt policy changes, and the tanking property market. As we showcase our latest views on China at the start of the Year of the Tiger, we see reasons for optimism.

After a rough year and a rocky start in January, we forecast upside of between 9% and 17% for mainland China and Hong Kong stock indices in 2022, propelled by pro-growth policies, improving earnings, low valuations and ample liquidity. Underpinned by a rebounding economy and a backdrop of monetary easing in China as the US Fed tightens, this should be good news for chastened equity investors who learned an important lesson last year – it is unwise to stray too far from Beijing's latest policy directives.

On the macro front:

- Our economists forecast 5.6% GDP growth in 2022e.
- HSBC's FX team thinks the RMB is overstretched and sees the USD-RMB heading to 6.55 by end-2022.
- Our fixed income analysts remain overweight China government bonds in 2022. The policy divergence between China and US has widened, with the People's Bank of China delivering the first interest rate cut in two years.
- On the credit front, the focus is on identifying the survivors in the offshore high-yield property sector after a year of record bond defaults and the biggest correction in a decade. What worries us most going into 2022 are bonds issued by local government financing vehicles (LGFVs). Given their size and complexity, we cannot stress enough that fixing LGFV debt is the problem that China cannot afford to get wrong.

Beyond our headline forecasts, we also flag the long-term trends investors need to follow (see page 4). This report has two sections. At the front we highlight what we see as the major reports of the year. The second section highlights the depth and breadth of our China coverage. The total of 62 two-page summaries cover economics, FX, rates, credit, and ESG, as well as thematic reports by our A- and H-share equity analysts.

A happy Year of the Tiger from all of us at HSBC Global Research and HSBC Qianhai Securities.

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Key data and forecasts

We see China's economy rebounding to 5.6% in 2022e …

	Q1 2022e	Q2 2022e	Q3 2022e	Q4 2022e	2022e	Q1 2023e	Q2 2023e
GDP, % y-o-y	4.4	5.2	6.2	6.2	5.6	6.3	5.9
GDP, % q-o-q	1.1	2.6	1.5	1.2	n/a	1.3	1.6
CPI, % y-o-y	1.6	1.9	2.4	2.3	2.0	2.3	2.3

Source: CEIC, HSBC forecasts

… with the RMB staying relatively range-bound …

	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021
USD-RMB	6.40	6.40	6.45	6.50	6.55

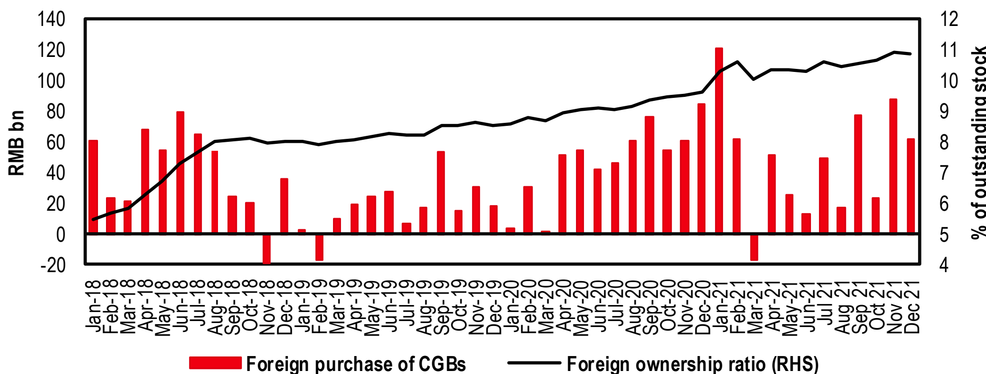
Source: HSBC

… and the major stock indexes rising between 9.2% and 17%

	SHCOMP	CSI 300	SZCOMP	Hang Seng
HSBC end-2022 target	4,000	5,600	17,500	28,030
HSBC target implied 12-month forward PE (x)	12.9	15.1	23.7	11.4
Index upside	**9.2%**	**10.08%**	**15.6%**	**17%**

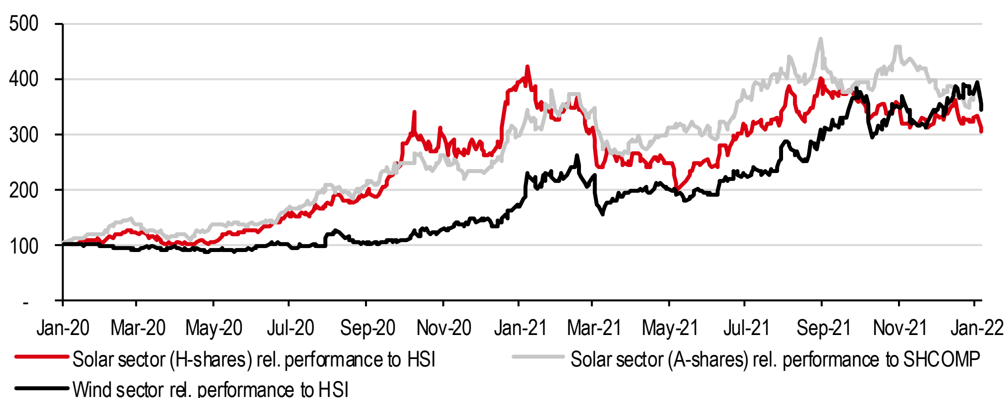
Source: Bloomberg, Wind, HSBC Qianhai Securities estimates

Steady rise in foreign holdings of China government bonds



Source: CEIC, HSBC

ESG: Wind and solar sector share price performance relative to equity indices



Source: Refinitiv Datastream, HSBC estimates

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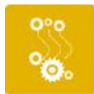
HSBC's key investment themes

ENERGY TRANSITION

Power producers like China Resources Power and China Power International used to be "unloved" by investors due to their coal exposure. They are now benefiting from investment plans which are increasingly geared to renewable energy – their share prices are up more than 100% in the last 18 months. **See page 30**.



AUTOMATION

China's industrial robot density is still only around one-fifth of leading countries such as Singapore and South Korea. Sales of key automation products are expected to rise by 20% y-o-y in 2021e. China accounted for around 44% of global new robotics installation in 2020. **See page 32**.

FUTURE CONSUMER

New generation, new mind-set. Young people have a different set of consumer needs and wants. They want convenience and ready-to-cook dishes and use fresh food e-commerce to save time and money. They like electric vehicles, too. In many sectors, we see Generation Z – those born between 1995 and 2010 – as the most important consumer group over the next decade. **See page 36**.

FUTURE TRANSPORT

Cars manufacturers are moving to the next level of autonomous driving. Cameras are the most commonly used sensors and we forecast the average number of cameras per car to increase from 1.7 today to 5.3 in 2030e. We see lenses and image sensor makers as the key beneficiaries and forecast the addressable market size in China for these devices to increase from over USD2bn in 2020 to over USD11bn in 2030e. **See page 38**.

DEMOGRAPHICS

Population growth has slowed to a record low and the labour force is shrinking. But a smarter workforce is replacing retirees. In 2020, there were over 218m people who had a university or higher level of education, a 73% increase from 2010. China's current number of students in tertiary education is greater than those in the US, Japan, Germany, South Korea, and the UK combined. **See page 54**.

FUTURE CITIES

China continues to expand the national high-speed rail (HSR) network. We expect HSR passenger traffic to grow at a CAGR of 10-11% over 2020-25e, with the share of railway passenger transport rising from 64% in 2019 to 80% by 2025e. **See page 146**.

DIGITAL FINANCE

China's e-CNY is leading the global push for central bank digital currencies. The number of individuals with digital CNY accounts has risen to 140m – 10% of the population – with 10m corporate accounts created. **See page 86**.

DISRUPTIVE TECHNOLOGY

Even before COVID-19 emerged, Chinese consumers were starting to purchase medical drugs from telemedicine platforms. That trend is now accelerating. Our analysis finds that the online pharmaceutical market will grow from RMB125bn in 2019 to RMB1trn in 2030e. That means the online penetration will jump from 5% to 24%. **See page 148.**

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Our major China reports

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Economics: China in 2022 – five macro themes

- Beijing will likely step up monetary and fiscal easing, fine-tune property lending, and slow the pace of regulations
- Growth in both higher-end manufacturing and green investments is set to quicken; property investment to bottom
- We expect GDP growth to recover gradually into H2 2022, but core inflation will likely stay muted

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China's slowing economy in recent months has prompted Beijing to step up policy easing to shore up growth. How and when will these measures kick in and help drive a recovery? As a guide to 2022, we highlight five key macro themes:

More easing. We expect the PBoC to cut the reserve ratio for banks and increase relending (banks given funds to lend to customers) to boost cash available for higher-end manufacturing, green projects and SMEs. The central government is also set to increase spending on technology and allow local governments to borrow more to bolster investments in new infrastructure like 5G. Meanwhile, Beijing will also likely slow the pace of regulations to mitigate the negative impact on growth.

Manufacturing investment is set to quicken. Despite softer global demand, investment in mid to high-end manufacturing is set to gain momentum next year thanks to improving profitability and high capacity utilisation rates. Indeed, manufacturing capex spending has already picked up, reaching a two-year CAGR of over 6% since August, higher than 2019's growth of 3.1%. More generous tax incentives and other policy support for technology upgrading should also add fuel to the upturn in manufacturing investment, which will likely grow by double digits.

Green investments. After rolling out detailed plans for de-carbonising the economy, Beijing is ready to jumpstart green investments next year. Given the massive amount of spending needed to achieve its longer-term climate goals, there is ample room for front-loading of projects and lifting growth in green investments to above 30% p.a. in the coming years.

Property investment to bottom out gradually. Beijing has already started, and will likely continue, to fine-tune its property lending policies. Combined with anticipated easing in general financial conditions as well as local administrative measures, this should help put a floor on the property downturn next year.

Core inflation to stay muted. We expect core CPI to stay below 1.5% next year considering the absence of supply-chain bottlenecks and a modest recovery in GDP growth.

Main risks. More-than-expected cases of COVID-19 at home, especially in light of new variants like Omicron, may hinder the consumption recovery. Geopolitical tensions could also weigh on business sentiment.

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Policy easing to shore up growth

The key message from Beijing in recent months has been clear: supporting growth is now the key priority. But why is there this new determination to prop up the economy? Because officials worry about the rising threat to the stability of the labour markets amid headwinds stemming from the "triple pressures": demand contraction, supply shocks and weakening expectations. We expect more easing measures on four fronts into 2022: Monetary, fiscal, property lending and regulations (*China Central Economic Work Conference*, 11 December).

Proactive fiscal policies to do the heavy lifting
Fiscal measures will take the lead in supporting the economic recovery, especially as Beijing has vowed to front-load policy stimulus. While the official budget deficit next year is expected to remain in line with this year's, at 3.2% of GDP, the broadly defined fiscal deficit is likely to increase by at least 1.0ppt to 7.3% of GDP (up from 6.3% of GDP in 2021e). These fiscal measures will likely include the following:

- Rollout of tax cuts and fee reductions, particularly for hard hit firms (SMEs) and areas of focus like manufacturing, innovation and green investments.
- Direct funding support and loan guarantees for new growth drivers like industrial upgrading, technology innovation and green development.
- RMB1trn in sovereign green bond issuance for green projects like electrification and green technology development.
- Speedier project approvals for new infrastructure projects like 5G, digitalisation and EV charging stations.
- Quota issuance of special local government bonds[1] is likely to see a modest increase to RMB4.0trn (vs. the average amount of about RMB3.7trn in 2020 and 2021), with front-loading of part of the quota (an expected RMB2.2trn) prior to the National People's Congress in March 2022.

While infrastructure investment has been a relative underperformer – it has only risen about 0.4% year-to-November – we see fiscal support likely accelerating infrastructure investment, given increased special local government bond issuance in H2 2021 and an expected pick-up in 2022.

Moreover, if the global commodity price rally comes to an end and more focus is put on ensuring sufficient production domestically, the construction industry could benefit. Alongside some policy adjustments around the property sector, a ramp-up in public housing development, as well as increased acceleration in infrastructure project approvals (particularly new infrastructure like 5G) could help bring infrastructure investment growth up to 5% y-o-y in 2022 and above the pre-pandemic level of 3.8% in 2019.

That said, Beijing will still be keeping an eye on local government debt risk. That means, local governments will find it difficult to add leverage via implicit debt, while at the same time the cooling land market will continue to weigh on their balance sheets. Higher performing regions like first-tier cities may fare better in light of stronger economic activity, and thus government revenues, but we expect that Beijing will increase transfer payments to local governments in 2022 amid the continued headwinds.

For the full report, see *China in 2022 – Five key macro themes*, 16 December 2021.

[1] Special local government bonds have certain restrictions on their use compared with general local government bonds. They can only be repaid by revenues from their projects as opposed to fiscal reserves. They are typically used to finance infrastructure projects.

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Economics: China's great transition

- China's decades-long boom in real estate and infrastructure, a major source of economic growth, is coming to an end
- To pick up the slack, investment is already rotating to higher-end manufacturing and green projects
- The middle class is also set to expand, making consumption a bigger growth driver in the coming years

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China's recent measures to cool the housing market have been much tougher than previous attempts. Hence, it's not very surprising to see highly leveraged property developers such as Evergrande struggling with heavy debt loads. But the more important question is why Beijing is now more determined than ever to tame the rampant property market? We believe it's because policymakers know that after a more than two-decade long housing boom, the country can no longer rely on the real estate sector to drive the economy forward. By looking at a range of key measures, it soon becomes apparent that the housing market is reaching its limits:

- Property investment has surged by an average 18.2% per year since 1997, 1.6 times nominal GDP growth in the same period, and lifting property investment's share of fixed asset investment and nominal GDP to a record high of 25% and 10% respectively. That's higher than the ratio in Japan during its 1980s property boom.
- Home ownership has surged from 47% in the mid-1990s to over 80% in recent years, much higher than developed economies such as the US, Japan and South Korea. About 40% of households now own at least two apartments.
- Residential living space per person has doubled since 2000 to around 40 square metres, higher than many developed economies in Asia and Europe.

All this doesn't necessarily mean property investment is going to collapse, especially with millions of villagers still moving to towns and cities each year, and a need to renovate the stock of old houses. Rather, it implies that property investment is likely to slow substantially in the years ahead. And it's not alone as investment in infrastructure may also slow after being on a tear over the past decade. Doubtlessly, there is still a need for more investment in 5G networks and other IT infrastructure facilities, but the days of making massive investments to ease crucial bottlenecks in manufacturing or transport are behind us. Combined, investment for property and infrastructure make up 22% of the economy, and the slowdown will lower demand for commodities and building materials in the years ahead.

However, the focus of this report is exploring what new engines of growth can pick up the slack. With so much more capital being freed up, this can all be reallocated into other areas.

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Over the last four quarters growth, as bank lending to the real estate sector has slowed, growth in credit to the manufacturing sector has accelerated. This credit reallocation has reinforced the rotation in investment away from construction to spending on manufacturing, especially in the medium and high-tech sectors. We expect this rotation to gain momentum for these reasons:

- China's manufacturing sector is climbing up the global value chain while some 9-10m college graduates per year (more than the US, German, Japan, Korea and ASEAN combined) provide support for expanding further into higher technology manufacturing.
- China's ranking in the global innovation index has been rising, and is now the only emerging market in the top 15, a move which will likely drive industrial upgrading.
- China's 14th Five-year Plan (FYP) outlined concrete steps towards developing technology, which if implemented well could also add fuel to industrial upgrading.

As a result of all this, we expect the medium to high-tech sectors to account for over 60% of total manufacturing by 2030 (vs. around 45% in 2020). Such a shift would partially offset the slowdown in real estate and infrastructure investment. More importantly, reallocating capital from real estate to more productive manufacturing sectors will likely fuel productivity growth and therefore keep the potential growth rate above 6% in the years ahead. As the experiences of Japan and South Korea show, moving up the global value chain is a proven pathway for China (as a middle income economy) to graduate into a high income one.

More credit is being gradually channelled into green and low-carbon projects

Along with faster growth in loans to the manufacturing sector, more credit is also being gradually channelled into green and low-carbon projects. About USD65bn of green bonds have been issued so far this year, already some four times the amount in full-year 2020. The State Council has published new guidelines to ensure carbon emissions peak by 2030, especially for the energy and industrial sectors which account for the bulk. But it will come at a cost as the International Energy Agency (IEA) estimates China needs to invest more than RMB200trn (equivalent to 200% of GDP in 2020) in the next 40 years to achieve carbon neutrality. Some estimates from a government think tank put the number as high as RMB500trn. Still, funding should not be an issue as China's high level of savings (one of the highest in the world) could be channelled into such projects. The key challenge though is accelerating financial reforms to open up more channels to reallocate the funds to green projects. Based on the IEA estimate, total green investment needs to top RMB5trn a year, i.e. c5% of 2020 GDP, beating the one-off post-Global Financial Crisis stimulus of RMB4trn. This will help to not only offset the slower growth in construction investment, but also develop green technology and make economic growth more sustainable.

All of these initiatives will create more high-skilled jobs

All of these initiatives will create more high-skilled jobs. Combined with Beijing's policy support for small and medium-size enterprises, this should provide opportunities for the 9-10m college graduates and around 5m vocational school graduates per year in the coming years. This will enable this cohort to transition into middle-class consumers, driving growth in consumer spending, especially for new products and services. This, in turn, should create demand for medium to high-tech manufacturing businesses in China, creating a positive feedback loop between the rise of the middle class and medium to high-tech manufacturing business. Moreover, we expect Beijing's common prosperity initiative (see *China regulation: The roadmap to common prosperity starts in Zhejiang*, 16 August 2021) to also drive growth in the middle class as it will accelerate *hukou* (household registration) reforms to give 286m migrant workers equal opportunities. By giving this cohort equal access to social welfare in the coming 10-15 years, we estimate that this will likely raise their propensity to consume and therefore lift annual GDP growth by 0.6% in the coming years.

For the full report, see *China's great transition – From construction to capex and consumption*, 9 November 2021.

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Economics: The road to common prosperity

- We put Beijing's regulatory clampdown into a global context
- We also look at the pilot scheme that China has launched in Zhejiang province to promote common prosperity
- Based on this model, Beijing is set to pass structural reforms to support entrepreneurs and SMEs and boost social welfare

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Regulatory tightening. Three policy red lines for property developers, an antitrust drive against tech companies, new rules for after-school tutoring … the market wants to know the rationale for the clampdown and what the next target will be. This report explains the logic behind the campaign – to reduce inequality and revive competition – puts the issue into a global context, discusses the concept of common prosperity, and looks at the pilot scheme launched in China's coastal province of Zhejiang.

Widening inequality, worsening competitive environment. Aside from China, these two problems have plagued many other economies for years, with COVID-19 only exacerbating the situation. Advocates for policies and actions to combat inequality and anti-competitive behaviour are on the rise globally.

Structural reforms needed ... Zhejiang the model. Common prosperity has become a buzzword in official speeches and documents, but the concept remains vague to many. We think the development targets for Zhejiang, the first common prosperity demonstration zone, illustrate how China plans to achieve inclusive growth that matches levels in developed countries and improves upward social mobility. We think this initiative sheds light on Beijing's broader policy goals of structural reform, which are at times muffled by the noise from recent short-term regulatory tightening. They include the following:

- *Strengthening SMEs and entrepreneurship.* SMEs and entrepreneurship are key growth engines. Beijing plans to bolster support for the c40m SMEs through tax reductions, improved funding conditions, and the antitrust policies that should help create a level playing field.
- *Increasing upward social mobility*. Income and wealth inequality impede social mobility. The 14th Five-year Plan devotes two chapters to plans to promote social mobility, including policies covering education, health, family, income distribution, and regional imbalances.
- *Improving the social safety net.* China plans to overhaul its social safety net programme and build a tiered social assistance system in two years. It aims to provide medical, housing, education and employment help for the elderly, children, the disabled, and those living on the edge of poverty.

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Regulatory tightening

Escalating property curbs, antitrust drive on Big Tech, ban on private tutoring
Government efforts to reduce the level of economic risks have attracted headlines as China got back on its feet after H2 2020. Regulatory tightening measures have been rolled out one after another, starting with the property sector, moving on to an antitrust drive against Big Tech firms and then the after-school tutoring business. The list may grow as the de-risking strategy broadens (see *China Economic Spotlight: Mitigating the risks of de-risking*, 20 July 2021).[2]

What to expect next?

Concerns behind regulatory crackdown: widening inequality and weakening competition …

The campaign, which appears to target seemingly unrelated sectors, actually has a common goal – to revitalise the economy by reducing inequality and promoting business competition. Property market curbs and the overhaul of after-school tutoring are aimed at reducing the level of inequality, while tighter regulation of internet companies is designed to promote competition.

… two big hurdles to common prosperity

Clearly, growing inequality and deteriorating levels of competition are Beijing's major concerns right now. After four decades of reforms and opening up, China has lifted nearly 800m people out of poverty and the next stage of development is to pursue the goal of common prosperity. The government wants to enhance the skills of the poorer members of society and improve their capacity for self-development, so a thriving economy generates opportunities for individuals to climb up the social ladder. According to the 14th Five-year Plan, common prosperity will result in the people sharing the fruits of China's prosperity.

The Zhejiang demonstration zone

Zhejiang to be developed into the first demonstration zone for common prosperity

In May 2021, China issued guidelines for building the eastern coast province of Zhejiang into a demonstration zone for common prosperity. In July, Zhejiang province released a detailed plan, with the main idea being the formation of an "olive-shaped" social structure with the middle income households being the largest group. Table 1 lists key development goals set by both the central and provincial authorities for the Zhejiang demonstration zone.

Highlights of the pilot scheme include: (1) "prosperity" as a key word – per capita GDP is targeted at the level of moderately developed countries by 2025 and that of developed countries by 2035, and (2) the "olive-shaped" social structure reflects the view that common prosperity depends on a growing middle income group and a narrowing income gap. The Zhejiang government has announced 52 tasks and goals relating to income, employment, housing, education and public health, implying a comprehensive mix of policies are in the pipeline.

It is no coincidence that Zhejiang has been chosen as the demonstration zone. It is a wealthy province located in the Yangtze River Delta region. In 2020, Zhejiang's GDP per capita reached USD14,600, trailing only Beijing, Shanghai, Jiangsu, Fujian, and Tianjin among 31 provincial-level regions. Zhejiang has an urban-rural income ratio of 1.96:1, vs. the national average of 2.56:1, one of the lowest in China. It is also known as a centre of entrepreneurship which has cultivated successful traditional merchants as well as the new generation of tech start-ups, which have facilitated the digitalisation and upgrading of the local economy.

For the full report, see *China regulation – The roadmap to common prosperity starts in Zhejiang*, 16 August 2021.

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[2] On 11 August, the Central Committee of the Communist Party of China and State Council jointly issued an "Implementation Outline for Building a Government Ruled by Law: 2021-2025". Reassuringly, it stated that future regulation will involve consultations beforehand and assessment afterwards, with any major changes to regulations going through legislative procedures.

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Economics: Greater Bay Area – picking up pace

- New development plans for Hengqin and Qianhai focus on developing technology and high value-added services …
- … while Connect programmes solidify the GBA as a cross-border financial hub, supporting capital account liberalisation …
- … and Hong Kong's plan for its Northern Metropolis area on the border should deepen integration with Shenzhen

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The Greater Bay Area has seen a flurry of recent policy plans aimed at further integrating and developing this already fast-growing region. Next steps will focus on strengthening synergies across the major cities and allow for each to leverage their unique advantages. Hong Kong is an international financial centre, Shenzhen an innovation and technology hub, and Guangzhou a manufacturing hub and trade window to mainland China. Such moves will also allow for these economies to open up further and to increase innovation.

Hengqin and Qianhai

Recent plans to develop Hengqin (near Macau) and Qianhai (in Shenzhen) emphasise the importance of building up capabilities in high value-added services like finance as well boosting innovation. Diversifying growth drivers and moving more towards technology, medicine, and tourism in Hengqin will help to support longer-term growth there. Meanwhile, continuing to open up services and deepening international coordination, such as through reductions in the negative list (which points out areas which face explicit business or investment restrictions) or aligning commercial business regulations to be more in line with international standards, will help to boost technology and financial services in Qianhai.

Hong Kong's Northern Metropolis

Hong Kong's planned development of its Northern Metropolis will help to not only address long term housing supply issues for the city, but also increase the integration between the key offshore financing hub and the innovation centre that is Shenzhen.

The Connect programmes

Mainland China is redoubling its efforts on further capital account liberalisation with the launch of Wealth Connect and Southbound Bond Connect, adding to its repertoire of tools to help manage the transition towards opening up capital flows. The Connect programmes also open up the doors for more diversification for both domestic and foreign investors.

On the whole, increased connectivity through physical infrastructure, coordination in policies and regulations, increase in ease of flows of people will help to deepen integration in the GBA in the coming years. Meanwhile, continued opening up and reforms, such as strengthening commercial legal regulations and IP protections, will help attract more foreign investment and lift innovation and high value-added services capabilities.

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Summary of Greater Bay Area statistics

City/Region	Population (m)	Area (km²)	GDP* (USDbn)	GDP per capita* (USD)	Output per km²* (USDm)	Deposits# (% share)**	Retail Sales (% share)**	Utilised FDI (% share)***	R&D (% of GDP)†	Top 100 universities‡
Guangzhou	18.7	7,249	342	22,351	47	3.1	2.3	5.1	2.9	-
Shenzhen	17.6	1,997	390	29,009	195	4.6	2.2	6.1	4.9	-
Zhuhai	2.4	1,732	50	24,581	29	0.4	0.2	1.8	-	-
Dongguan	10.5	2,460	137	16,219	56	0.8	0.9	0.9	-	-
Zhongshan	4.4	1,784	45	13,381	25	0.3	0.4	0.3	-	-
Foshan	9.5	3,798	156	19,078	41	0.9	0.9	1.1	-	-
Huizhou	6.0	11,347	60	12,394	5	0.3	0.5	0.7	-	-
Jiangmen	4.8	9,505	46	9,839	5	3.1	0.3	0.6	-	-
Zhaoqing	4.1	14,891	33	7,776	2	4.6	0.3	0.7	-	-
Hong Kong	7.5	1,050	363	48,273	346	3.0	1.1	-	0.9	4
Macao	0.7	33	55	81,156	1676	0.3	0.2	-	0.2	-
GBA	**86.2**	**55,853**	**1,677**	**23,072**	**30**	**14.1**	**9.3**	**-**	**-**	**4**

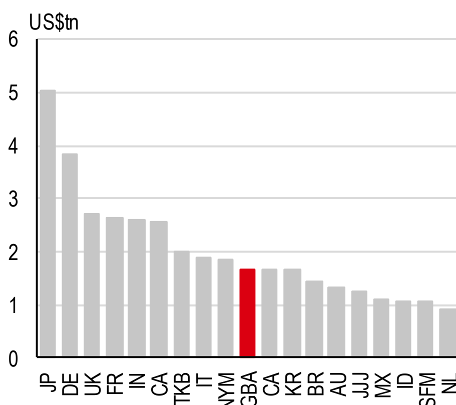
Note: Data is latest available unless specified
*Data is from 2019 to omit the COVID-19 shock
#Refers to all deposits, not just household savings
**Percent of national share including Hong Kong and Macau
***Percent of national share
†R&D spending is for 2019 except for Macao which is for 2018
‡QS University Ranking 2021
Source: CEIC, NBS, HSBC Research

Summary of Connect programmes

	Stock Connect	Bond Connect	Wealth Connect
Northbound	RMB52bn (daily quota) No annual quota Launched SH-HK in 2014 Launched SZ-HK in 2016	No quota Launched in 2017	RMB150bn (annual quota, aggregate) RMB1m (individual annual quota) Launched in 2021
Southbound	RMB42bn (daily quota) No annual quota Launched SH-HK in 2014 Launched SZ-HK in 2016	RMB20bn (daily quota) RMB500bn (annual quota) Launched in 2021	RMB150bn (annual quota, aggregate) RMB1m (individual annual quota) Launched in 2021

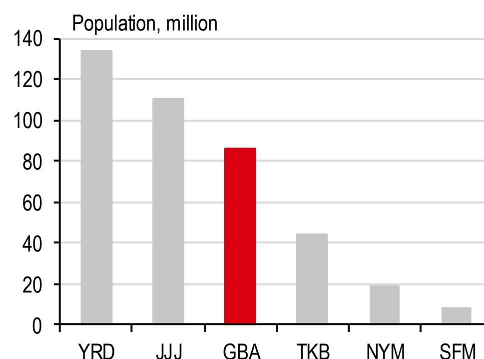
Source: HKEX, HK Bond Connect, Gov.hk, HSBC

The economic size of GBA is larger than that of some developed economies



Note: Data is last available; Country codes are based ISO codes
Key: YRD = Yangtze River Delta, JJJ = Jing-jin-ji, GBA = Greater Bay Area, NYM = New York Metropolitan area, SFM = San Francisco Metropolitan Area, TKB = Tokyo Bay Area
Source: CEIC, BEA, HKTDC

One of the largest city clusters in the world, by population size



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Source: CEIC, BEA, HKTDC

For the full report, see *China's Greater Bay Area – Picking up the pace of integration*, 20 October 2021.

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Credit: China Onshore Insights – 2022 outlook

- Tail risks for local government funding vehicles to rise, but the default rate should be very low; the same applies to local SOEs
- Central SOEs stand to benefit even more from deleveraging; foreign investors should focus on this sector
- The outlook for privately owned enterprises remains grim, in our view, but rapidly declining maturity will help

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Rising LGFV tail risks. Looking into 2022, what worries us most are bonds issued by local government financing vehicles (LGFVs). Given their size and complexity, we cannot stress enough that fixing LGFV debt is the problem that China cannot afford to get wrong. For investors, diversification and tail-risk management are key. We recommend filtering out LGFV names that (1) are least favoured by the market or (2) have fiscally weak local governments. We believe the LGFV credit market is a prime candidate for the next "stress test" by regulators that will allow LGFVs to default for the first time; this would create opportunities for investors.

Central SOEs set to benefit. As key pillars of the real economy, industrial SOEs are back on the right side of the long-term policy equation now that property and infrastructure have been replaced by high-end manufacturing and technology as the new economic growth engines. For foreign investors exploring the onshore RMB corporate bond market, we believe central SOEs are an attractive place to start in terms of relative valuation to dollar bonds, better liquidity, and low default rate. We also see them as a relative safe-haven should local SOEs and LGFVs run into trouble next year. Local SOEs are more problematic. The Yongcheng Coal default in 2020 shows how hard it is to meet the policy goal of weaning them off government support.

Grim outlook for POEs. Privately owned enterprises (POEs) have gone through four consecutive years of elevated default rates and net redemptions in the RMB bond market. And the pain being suffered by POE property developers is likely to continue for several months. Although we have been following China's deleveraging story for years, we underestimated how harsh the funding environment would be for POEs this year. On the positive side, the maturity of POE bonds will decline sharply in 2022e and the default rate is starting to fall. We believe that those developers which manage to survive will emerge stronger. Still, given the damage already done, market confidence in POEs will probably remain weak in 2022 and start to recover only in 2023, which might help primary issuance turn positive again.

2021 and the year ahead

This year will be remembered for the intense pressure POE property developers have been under in both the onshore and offshore credit markets. We expect their problems to continue in the next few months, overshadowing all other factors when it comes to market sentiment. Even the events surrounding China Huarong AMC between April and August 2021 pale in comparison.

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Beijing has been "stress testing" the riskiest areas of China's financial system since 2018

For context, we think investors should see the travails of these developers as part of the bigger policy picture – what Beijing is trying to achieve through deleveraging the economy. Beijing has been "stress testing" the riskiest and most highly leveraged areas of China's financial system since 2018:

- 2018: Shadow banking
- 2019: Regional banks
- 2020: Local SOEs (excluding LGFVs)[3]
- 2021: POE property developers

After analysing these stress tests and the subsequent consequences, we increasingly realise that deleveraging does not necessarily have to be about reducing the absolute amount of debt, which is very difficult to achieve when the pace of economic growth is slowing down. Instead, pragmatic policy efforts have focused on two goals: (1) while existing debt can't be eliminated, it can be refinanced; and (2) stopping new debt from growing too quickly, particularly in sectors that are already highly leveraged.

We believe this also represents the thinking of top policymakers

We believe the best way to deliver the first goal is to show that access to refinancing is still possible for prudent companies even after large, overstretched corporates have failed. The most effective way to meet the second goal is to let the default rate of highly leveraged sectors rise, which will slow lending to these sectors. We believe this also represents the thinking of top policymakers.

We draw several other conclusions from previous stress tests. First, none of the four sectors listed above was completely wiped out. Even shadow banking, which was hit very hard in 2018, is still a key supplement to China's banking sector, though much diminished in terms of size and leverage. Second, while the market's risk appetite shrinks for a considerable period of time after the stress test, at least a few quarters or even longer, it eventually stabilises. Lastly, looking at the big picture, the resilience of China's financial system has actually improved as more highly leveraged sectors show that stress and defaults do not cause contagion. For investors, while this means occasional painful short-term volatility, it comes with the promise of long-term stability.

The key question now is what to expect in 2022? We think policymakers will look for potential triggers and risks before deciding which part of the financial system is the best candidate for the next stress test. In terms of the big picture, we think the aim of showing that different sectors can come under extreme pressure without causing systemic risk is still in place. In this report, we discuss what worries us the most and the least from the perspective of LGFVs, SOEs and POEs. We stress that, when the next shoe does drop, it should create rather than eliminate opportunities for investors.

For the full report, see *China Onshore Insights – What worries us most about 2022*, 22 November 2021.

[3] For ease of presentation, "local SOEs" or "SOEs" in this report exclude LGFVs

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FX: RMB overstretching

- The RMB may stay strong in the near-term
- But the RMB's valuation is stretched and its yield advantage is rapidly narrowing
- We expect a turning point sometime around mid-2022, when the Fed hikes rates and China's trade surplus falls

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We acknowledge that the RMB may stay strong in the near term, because of China's still-large trade surplus (alongside corporates' historical tendency to increase their FX conversion ratio in the first quarter of the year), optimism that China's regulatory crackdown is taking a breather and a potential pick-up of bond inflows related to World Government Bond Index (WGBI) inclusion.

However, assuming that there will not be a dramatic shift in US-China relations, we doubt that USD-RMB and the DXY index can keep diverging from each other. Our productivity-adjusted REER valuation method suggests that the RMB is already slightly overvalued. We believe China has been subtly leaning against the RMB's outperformance, via the fixings for instance.

It is difficult to be precise about the timing of the turning point for USD-RMB, but we forecast USD-RMB to rise modestly in 2H22 due to the following considerations:

- **Normalising trade surplus**: China's abnormally large trade surplus is partly because COVID-19 created strong global demand for certain types of goods and caused production disruptions elsewhere. This situation should correct when the pandemic is under control in more parts of the world. The trade surplus is also likely to narrow when global growth momentum (exports) slows more than domestic demand (imports).
- **Border re-opening**: China's border controls are restricting outbound tourism and outward direct investment. China has indicated that there will be no foreign spectators at the 2022 Winter Olympics (4-20 February 2022) in Beijing, but it is unclear how long it will continue to keep borders tightly closed thereafter when more parts of the world are opening up.
- **The Fed's rate hikes:** While the RMB may not be affected much by the Fed ending its bond purchases and draining USD liquidity, given its large current account surplus, we do not believe it can be completely immune to the Fed's rate hikes, as that would directly affect residents' FX hedging and portfolio investment decisions. Both the 2-year and 10-year China-US yield differentials have already fallen below their respective 10-year historical averages (around 200bp and 135bp respectively). Historically, RMB depreciation episodes have coincided with times when China's yield advantage was persistently below a historical average. Now that the infrastructure for Southbound Bond Connect and Wealth Connect has been set up, residents' outflows can readily accelerate when market conditions turn conducive.

We forecast USD-RMB to rise from 6.40 in Q1 2022 to 6.55 by end-2022.

For the full report, see *Currency Outlook: In the Dollar, we trust*, 12 November 2021.

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The RMB may stay strong in the near term but its valuation is stretched and its yield advantage is rapidly narrowing. We expect a turning point sometime around mid-2022, when the US Fed hikes rates and China's trade surplus falls.

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Rates: Onshore China – Off to a roaring start

- The policy divergence between China and US has widened, with the PBoC delivering the first interest rate cut in two years
- We expect liquidity conditions to improve further
- Seasonally low bond supply helps to keep the bond rally going

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The People's Bank of China (PBoC) has delivered a combination of interest rate cuts for the first time since March 2020. The central bank's decision to lower the 7-day reverse repo rate and the 1-year MLF rate by 10bp at the same time, rather than in stages, underscores its strong intention to anchor investor expectations for liquidity provisions in the money market system and support growth. There has since been further associated easing via the Loan Prime Rate and 14-day reverse repo ahead of the Lunar New Year.

We expect China government bond yields to fall further in the coming weeks, led by two main drivers. First, to enforce the new level of the reverse repo rate and ensure the credibility of the interest rate corridor, liquidity conditions are likely to improve and funding rates should fall. Second, with the earlier-than-expected interest rate cut, investors could move on to price in further rate reduction expectations for the coming months.

Funding conditions to improve further as interbank rate corridor shifts lower

The PBoC adheres closely to the interbank rate corridor when managing liquidity conditions, with a preference to anchor the moving average of the 7-day banks-only interbank repo rate (DR007) close to its 7-day reverse repo rate. In fact, ever since the central bank shifted to a more dovish policy bias by lowering banks' required reserve ratio in July 2021, it has kept the monthly average of DR007 at a discount to its 7-day reverse repo rate.

Now that the 7-day reverse repo rate has been reduced to 2.10%, we expect the monthly average of DR007 to be around 2.05%-2.08%. This is slightly lower than the average of 2.09% seen in the first half of January 2022. Despite the Lunar New Year holiday period (31 January – 6 February), interbank liquidity demand is likely to be moderate, as we assume most residents remained in their places of residence rather than back in their hometowns.

The growing monetary policy divergence between China and the US

The monetary policy divergence between China and the US has widened notably. A common client question is about whether the PBoC can ease when the US Federal Reserve is embarking on a tightening path. The PBoC has always stated that it determines monetary policy settings based on domestic growth and price considerations and the policy decision today is consistent in this regard. HSBC economists expect two more rounds of 50bp broad-based RRR reductions this year.

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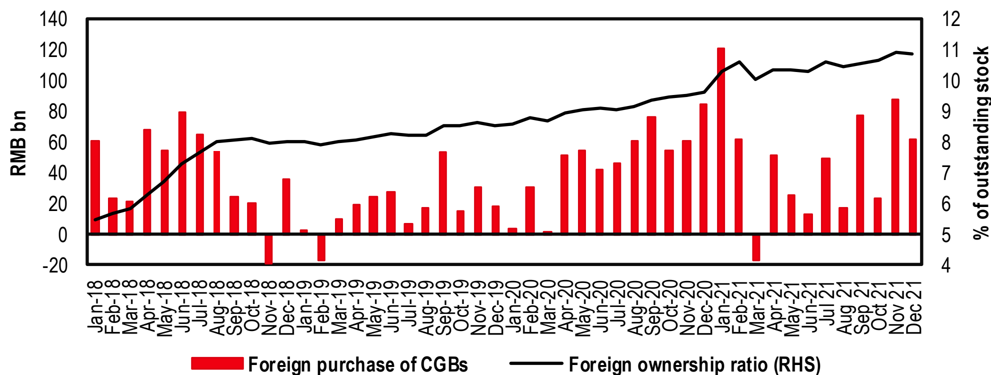
Foreign investors well-positioned for this policy divergence

Foreign investors have been well-positioned for this policy divergence. Data for full year 2021 shows that foreign investors bought RMB576bn of China government bonds, after having already bought RMB571bn in 2020. The foreign ownership ratio for China government bonds touched 10.9% in December 2021, up from 9.7% in December 2020. EPFR positioning data also shows that the weight of China government bonds in EM local currency bond funds has risen to 11.4% in November 2021, from 7.3% a year ago. Some investors are concerned about the potential reversal of such foreign flows. We think it is too early for a reversal as China's growth path still looks highly challenging, particularly for Q1 2022. However, given high levels of foreign ownership, we expect foreign inflows into China bonds this year to moderate from the levels seen in the past few years.

Seasonally low bond supply helps to keep the bond rally going

For 2022, we expect net central government bond (CGB) issuance of RMB3trn and net local government bond (LGB) issuance of RMB4.55trn. To stabilise economic growth, the local governments have been given a RMB1.46trn project bond issuance quota for use in Q1 and, assuming ordinary LGB issuance amounts to RMB300bn during the period, monthly net local government bond issuance should average RMB600bn from January to March. Despite this, we assess overall bond supply pressure to be low in Q1 as net CGB issuance is likely to be low, kicking off only in late March, after the National People's Congress approves the fiscal budget.

Steady rise in foreign holdings of China government bonds



Source: CEIC, HSBC

For the full report, see *China Rates – Off to a roaring start*, 17 January 2022.

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Multi-asset: The launch of Southbound Bond Connect

- Southbound Bond Connect launched on 24 September 2021
- Eligible onshore institutional investors can invest in Hong Kong's bond market, subject to a daily and annual quota
- We discuss the rates, credit, currency and economics implications

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The People's Bank of China (PBoC) and the Hong Kong Monetary Authority (HKMA) jointly announced the launch of the Southbound Bond Connect, a further push to liberalise capital flows. This scheme allows eligible mainland China institutional investors to invest in Hong Kong's bond market, worth over HKD2trn.

Eligible investors include the 41 open market operation primary dealers as well as registered investors under the qualified domestic institutional investor (QDII) and renminbi QDII (RQDII) schemes. As of end-August 2021, there were 173 QDII investors with USD150bn of investment quota. There is less clarity over the number of RQDII investors, but we view the RQDII scheme as much smaller than the QDII scheme. To manage the magnitude of the cross-border flows, the PBoC has set a daily quota of RMB20bn and an annual quota of RMB500bn for the Southbound Bond Connect.

Due to current constraints of the trading link between the HKMA's Central Moneymarket Unit (CMU) and mainland China's Cross-Border Interbank Payment System (CIPS), only HKD and CNY bonds can be traded in the initial phase of the scheme. Plans are underway to upgrade the trading link to eventually allow investments in bonds denominated in all currencies.

Our key multi-asset takeaways are:

Rates: Onshore investors are unlikely to find CNH CGBs more attractive than onshore equivalents but could see value in FX-hedged front-end GBHKs.

Credit: The Southbound Bond Connect will encourage more credit issuance in Hong Kong; onshore investors are likely to find yield pick-up opportunities in high-yield Asian dollar bonds as well as diversification value in bonds issued by non-mainland China issuers in Dim Sum Bonds.

FX: Limited impact directionally but the linkage between onshore and offshore FX curves will strengthen; such RMB-denominated trade and investment settlement and clearance activities have significantly boosted cross-border usage of the RMB and the RMB's role as an investment currency is accelerating.

Economics: Opening up two-way flows shows Beijing's determination to speed up its capital account liberalisation.

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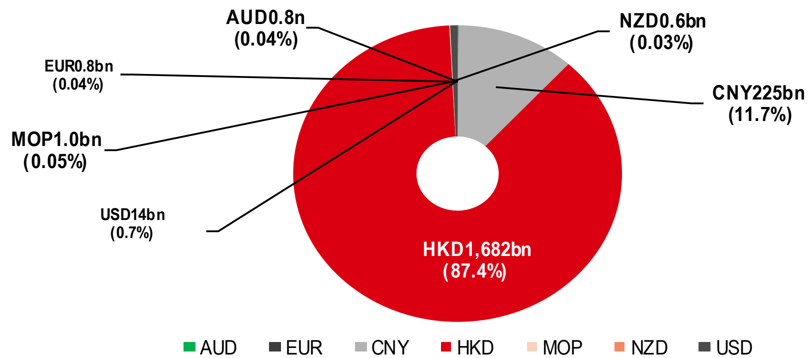
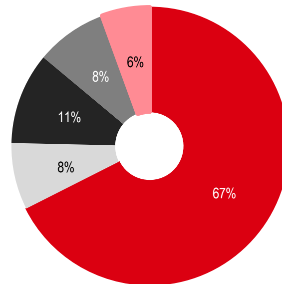
Outstanding bonds at the Central Moneymarket Unit



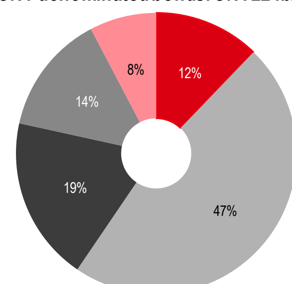
Source: CMU, HSBC

Exchange Fund Bills: 67% of HKD-denominated bonds



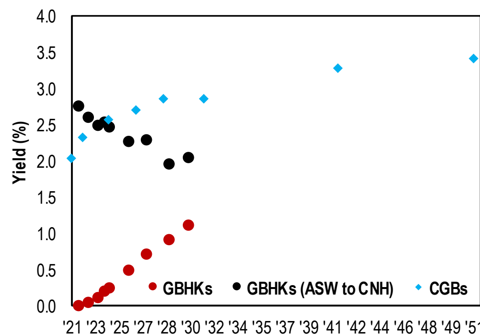
Source: CMU, Bloomberg, HSBC

Tenor distribution of CNY-denominated bonds on CMU



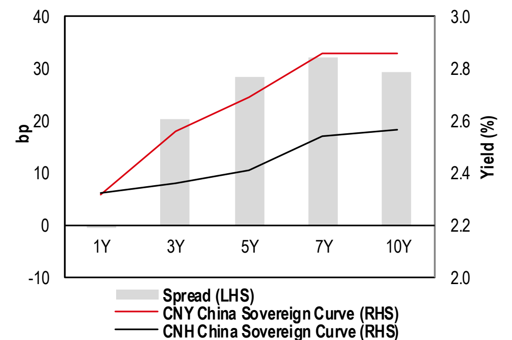
Source: CMU, Bloomberg, HSBC

Short-dated GBHKs still attractive when asset swapped to CNH



Source: Bloomberg, HSBC

Comparing the onshore and offshore government bond curves



Source: CMU, Bloomberg

For the full report, see *Southbound Bond Connect – China opens up further*, 16 September 2021.

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Equity Strategy: Upgrade China to overweight

- That China is struggling with growth is well known. But valuations are low and we expect targeted easing
- We expect more targeted easing measures
- The run-up to the 20th Party Congress in October is also under way

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The baby and the bathwater. Investors are too bearish about China stocks – we think the baby is being thrown out with the bathwater. Yes, China is struggling with growth and a stronger USD is not good news for China's stock markets. But that's now well-known and is priced in. Even good, blue chip stocks are now trading at attractive valuations.

A new focus in 2022e. China is now beginning the run towards the 20th National Party Congress in late 2022. In the past, this has meant a focus on growth and markets have responded positively to this.

Earnings revert to the mean. Consensus is forecasting 12.5% sales growth in China in 2022e, down from 18.4% in 2021e. Based on the past decade, this is about average.

Portfolio exposure is very low. Mutual funds are significantly underweight China, both globally and regionally. This is particularly so in IT, as reflected in the weightings in retailing and media, which are IT-dominated sectors.

Valuations are very low, too. On a PE basis, China is not expensive. It is trading at a 12-month forward PE of 12.9x, down from as high as 17x at the beginning of the year. China has never been this cheap versus India – FTSE India is now trading at a premium of 95% to China, a record high.

Earnings

The market is worried that Chinese earnings in 2021e and 2022e will face downgrades on the back of pricing pressure. After all, raw material prices have risen considerably. While true, not all sectors are intensive users of metals or other commodities. For example, Internet, banks and insurance companies don't rely on iron or copper to run their businesses. Investors can skew their portfolios to mitigate this particular risk.

In addition, industries have consolidated, which suggests that the survivors have much more pricing power. This is in particularly the case for shipping and airlines, but also for heavy duty trucks and selected technology companies.

Margins in China are forecast to rise, although this could be an optimistic assumption because of the risk of earnings forecasts being downgraded.

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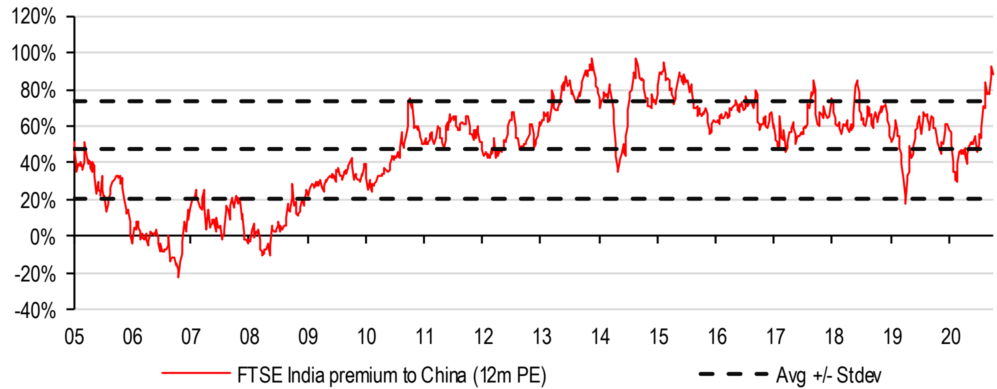
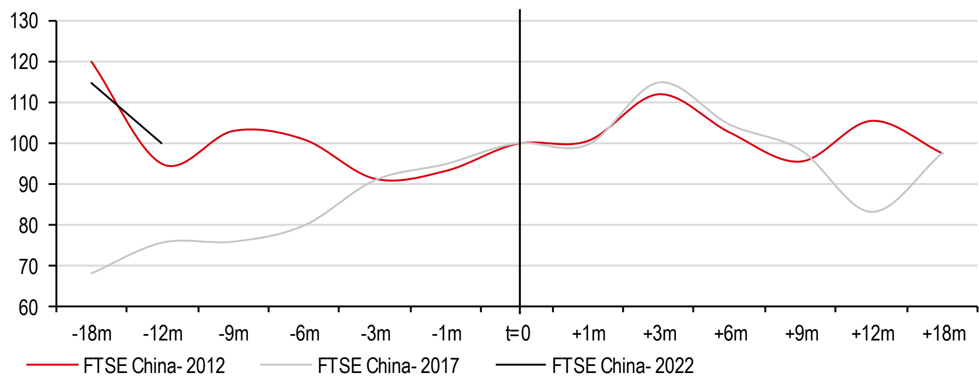
FTSE India is now trading at a record premium to China



Source: FTSE Russell, FactSet, HSBC

Chinese equities tend to rise three months (-3m) prior to a National Party Congress

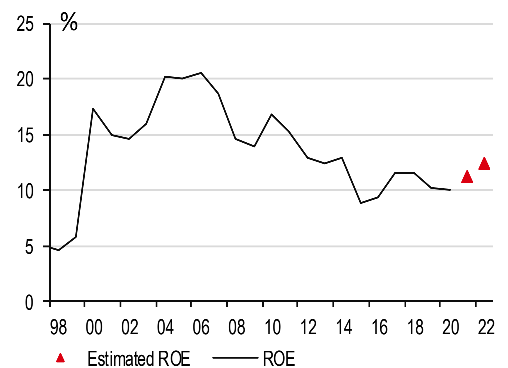


Source: FTSE Russell, FactSet, HSBC

ROEs in Asia expected to rise through 2022e …

Source: Bloomberg, HSBC estimates

… with China's expected to be 12.4% in 2022e



Source: Bloomberg, HSBC estimates

For the full report, see *The Flying Dutchman – Upgrade China to overweight*, 26 October 2021.

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By 2030
we think nearly 60% of
the passenger cars
on the road in China will be
electric powered,
up from 17% in 2021.

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ESG and climate policy

- China should solidify its 30/60 climate pledge in the coming years as relevant policies in relevant sectors trickle through the system
- The trading price and volumes in the national ETS could go up as the coverage is reviewed and carbon derivatives are considered
- We think discussions over methane, biodiversity, air pollution and corporate governance will grow alongside climate actions

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Green priorities and political planning. In 2022, China should steadily release policies favourable to its “30/60” strategy (peak emissions by 2030 and carbon neutrality by 2060). Two main events to look out for:

1) The National People’s Congress meeting in March, where a trickle of green economic policies may be laid out with a view to bringing in climate and the environment as a growth driver for the economy.

2) The 20th Party Congress in October/November when President Xi is widely expected to be installed as president for a third term (or perhaps even longer). Setting out a transformative change in China’s economic and social development – in a green and more “sustainable” direction – could form part of Xi’s legacy, hence it will become a growing priority for planners in China.

Methane. China emphasised methane reduction as a significant part in its “30/60” target in its 14th Five-year Plan and the Working Guidance on Carbon Peak and Neutrality by the State Council. As stated in the China-US joint declaration on climate action, China commits to control and reduce methane emissions and develop a national methane emissions reduction plan. We think the action plan should be released in 2022, with potential regulations and/or initiatives likely to be imposed on the biggest methane emitters in China – energy and waste management.

China’s methane emissions reduction action plan is expected to be released soon

ETS enhancements. There are potential revisions to China’s national emissions trading scheme (ETS) which launched last year. We expect more announcements on the extension of coverage and participants (including non-emitting industries and financial institutions). The ETS only covers the power sector at the moment, but the Shanghai Environment Energy Exchange has indicated a plan to expand the coverage to non-ferrous metals and building materials sectors in 2022. Discussions over auctions (vs free allocation) and the potential resumption of the Chinese Certified Emissions Reduction registry will also continue this year.

Non-ferrous metals and building materials are likely to be included in the national ETS in 2022

Carbon derivatives. The “Guiding Opinions on Promoting Industrial Green Development”, released in November 2021, mentioned the development of a carbon futures market on the Guangzhou Futures Exchange. Carbon derivatives could potentially provide more liquidity and stabilise the volatility of China’s carbon markets. There is no official timeframe but we anticipate progress to be made in this area in 2022.

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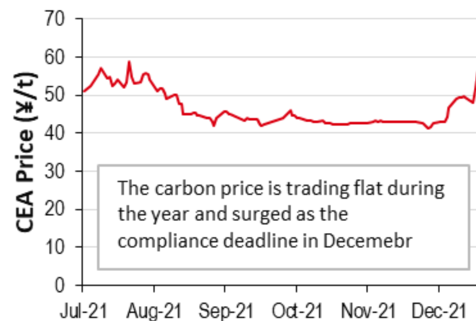
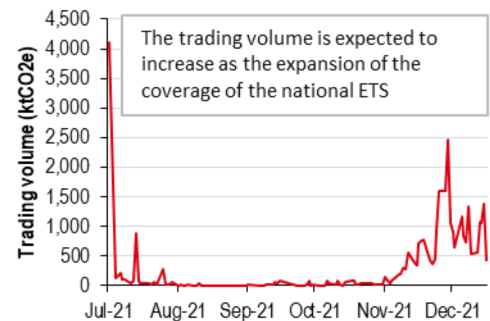
China's emission allowance price



Source: Refinitiv, HSBC

China's national ETS trading volume



Source: Refinitiv, Shanghai Environment and Energy Exchange, HSBC

China is hosting Biodiversity COP15 in April 2022

Biodiversity. As the host of the upcoming UN Biodiversity Conference (COP15), **biodiversity conservation and restoration** are expected to be high on China's agenda in 2022. According to the *Opinions on Further Strengthening Biodiversity Conservation* issued by the State Council, China will develop a 10-year national biodiversity conservation strategic plan and require provincial governments to include biodiversity in their development plans. We believe private companies and investors will not be required to develop biodiversity targets and plans over the short term however. The anticipated jump in awareness means investors and companies may prepare for potential regulations which might affect longer-term profitability and/or business models.

4-20 February

The Winter Olympics – air pollution curbs likely to begin in the weeks prior

Factories near Beijing might face mandatory shutdowns in early 2022

Air pollution. We think air pollution could re-emerge as a focus in China in 2022, especially as corporates might face potential mandatory shutdowns in early 2022 to curb pollution levels for the Beijing Winter Olympics (4-20 February 2022). When China hosted the Summer Olympics in 2008 and the Asia-Pacific Economic Cooperation forum in 2014, many factories nearby were forced to close for 'blue skies'. In October 2021, the Ministry of Ecology and Environment released an *Action Plan for Air Pollution Management in winter 2021/22* (1 October 2021 to 31 March 2022). The regulator extended the pollution target coverage from Beijing-Tianjin-Hebei region (28 cities) to Henan and Shanxi regions (64 cities), which are the major steel and aluminium manufacturing hubs.

China is improving its corporate governance practices

Corporate governance. Investors should also be aware of corporate governance developments in China this year. In late 2021, the Shanghai Stock Exchange and Shenzhen Stock Exchange proposed updates to their respective listing rules. The proposals include a new "corporate governance" section which clarifies disclosure and other requirements as well as asks companies to "develop and disclosure social responsibility report and relevant documents based on the regulations".

For the full report, see *The climate in 2022*, 4 January 2022, and *ESG in 2022*, 5 January 2022.

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ESG Integrated: Utilities – From “unloved” to winners

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- Asia utilities, such as mainland China power producers, are at the forefront of ESG and have been rewarded by investors
- We believe the greatest possible upside from here is focusing on underappreciated transition efforts
- It’s not just about environmental efforts, as we find social and governance factors are increasingly impacting valuations

If you care about ESG, start here: ESG matters more to Asia’s utilities, especially China’s power producers, than to most other sectors. It is not hard to see why. Power and gas distribution in the region is responsible for 60% of global primary energy consumption and 40% of global carbon emissions. However, the really exciting part is how investors are rewarding companies leading the journey towards net carbon emissions. For instance, Asia’s renewable energy stocks, which include many focused on China, have surged over 200% against their respective indices in the past two years. We don’t believe the rally is over as we see more possible upside as governments’ emission policies become more specific and stronger.

Leading the energy transition: One of the biggest shifts in ESG investing relates to mainland China’s power producers. They used to be perceived as “unloved” due to their coal exposure but are now benefiting from investment plans, which are increasingly geared to renewables. Their share prices have risen more than 100% over the last 18 months compared with the HSI’s 3% decline over the same period.

It’s also about “S” and “G”: Undoubtedly, utilities are far more transparent now about non-financial data, such as safety standards and ethics, and unsurprisingly prioritise environmental ambitions. However, what can easily be missed is that those that have demonstrated efforts in managing social and governance factors have enjoyed a share price outperformance of over 10% against peers.

Our message in utilities ESG investment. We believe renewable companies, especially pure plays, will be most favoured over the long term. As clearer targets and policies towards carbon neutrality are unveiled in the coming decades, the declining cost of renewable energy and advancements in technology, including energy storage, mean we expect strong investment appetite for renewables. Still, risks in the equipment manufacturing supply chain could arise from volatility in the demand-supply balance, in our view.

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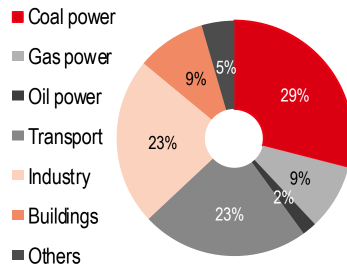
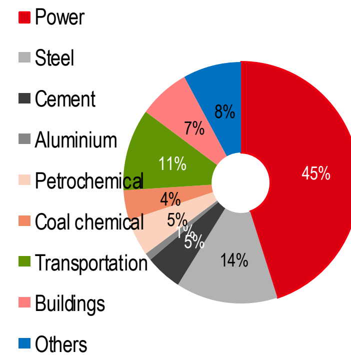
Global emissions by sector



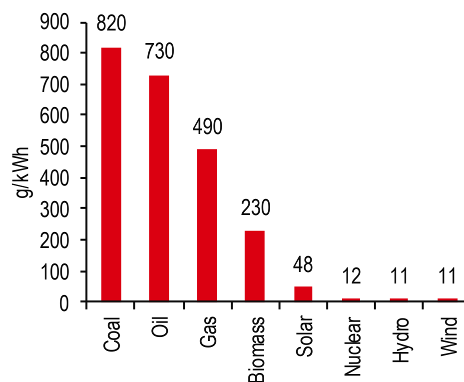
Source: IEA. Note: As at 2020.

Mainland China emissions by sector



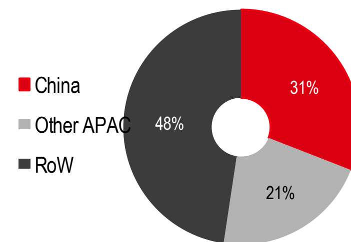
Source:Taipanfgang.com. Note: As at 2020.

CO_2 emissions by power source



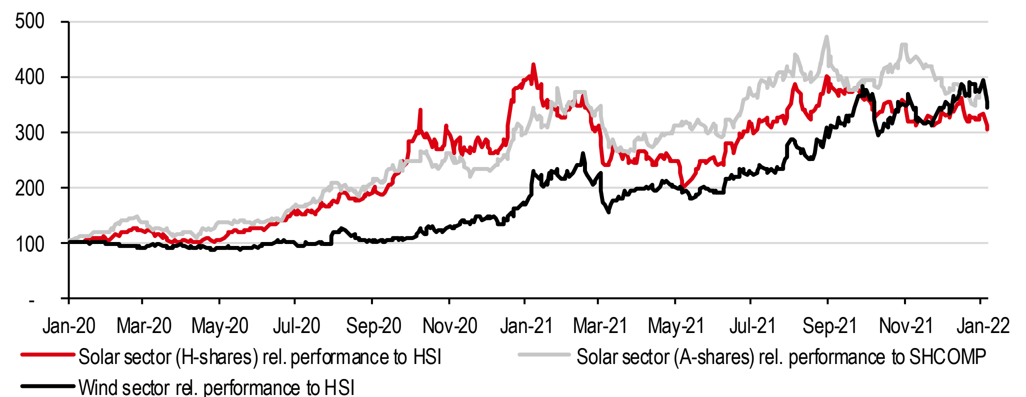
Source: IPCC, IEA, World Energy Council, IAEA, Nuclear Energy Agency

Mainland China and other Asia Pacific economies account for more than 50% of global carbon emissions



Source: BP Statistical Review. Note: As at 2020.

Wind and solar sector share price performance relative to equity indices



Source: Refinitiv Datastream, HSBC estimates

For the full report, see *Asia Utilities – ESG Integrated: From "unloved" to winners*, 12 January 2022.

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Automation: Gear up for growth

- We turn more bullish on China's automation sector and see industrial robots and customised automation solutions as the top growth areas
- Domestic leaders are catching up with international players with their market share at home set to rise to 50% in 2025e from 30% now …
- … and have caught up with their global peers in terms of R&D and ROE, but overseas exposure remains low

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We cover three major topics. First, we are turning even more bullish on China's automation sector. Second, the idea that robots are taking over factory floors is a fairly well-known theme so we throw the debate forward by looking at whether China's automation leaders can dominate at home, as well as compete on the global stage? Third, given many of these stocks have had a great run and are well owned, we look closely at how to play this theme.

1. Doubling our forecasts: We now see China's automation sector growing 20% in 2021e from 10% previously, and a further 10% in 2022e from 5% before. The pandemic and China's push for smart manufacturing has been a tailwind for some time, but what's changed has been robust order momentum. We see two sectors outperforming the market: industrial robot sales and customised automation solutions.
2. Can China's leaders dominate at home and then go global? We see a strong case for China's domestic robot makers to increase their market share at home from c30% in 2020 to c50% in 2025e, and even start to challenge overseas players abroad too. The advantages of China's automation leaders are that they have lower costs, are faster to react to changing market conditions locally, and can produce customised offerings. As a case study, we look to the domestic excavator market where the share of local leaders rose from c30% to c70% over the past decade on similar drivers.
3. How to invest? We have a differentiated view. The automation market trades at a discount as it is widely seen as a cyclical industry. However, we believe it is becoming more secular given labour shortages are leading to rising demand from an increasing number of industries while manufacturing facilities are being upgraded. That drives our forecast for higher valuation multiples.

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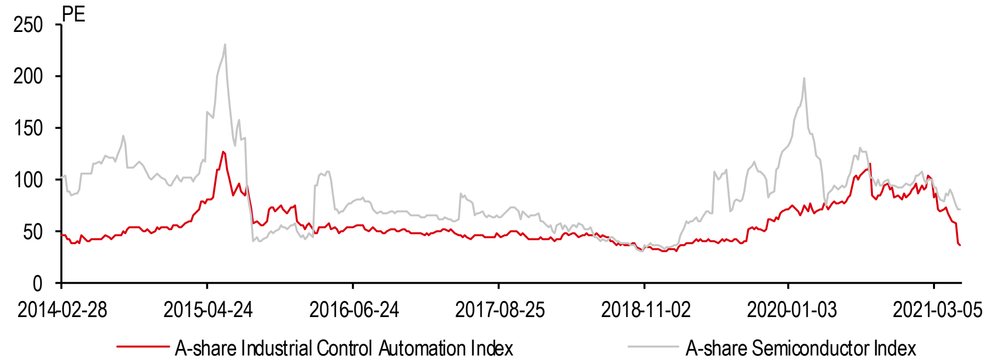
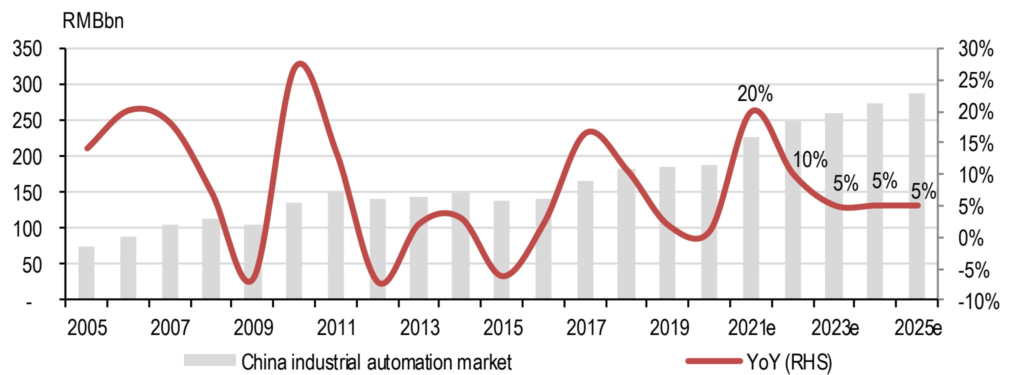
China's automation sector trades at a discount to other growth sectors like semiconductors …



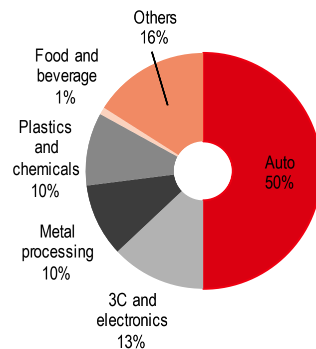
Source: Bloomberg, Wind, HSBC Qianhai Securities

… but we see that changing as the automation industry becomes less cyclical



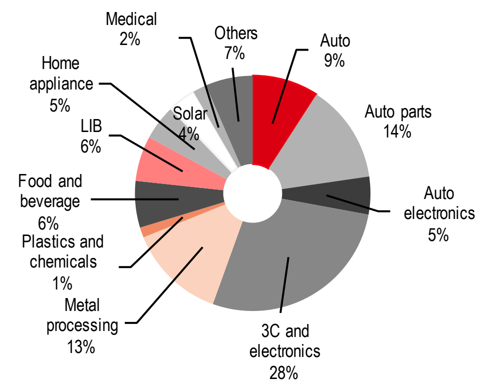
Source: MIR, Bloomberg, HSBC Qianhai Securities estimates

Sales of China's industrial robots in 2010 were mostly to heavy industries …



Source: MIR, Bloomberg, HSBC Qianhai Securities

… but by 2020 sales have become far more diverse



Source: MIR, Bloomberg, HSBC Qianhai Securities

For the full report, see *Spotlight – China Automation: Gear up for growth*, 2 July 2021.

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Demographic changes as the country ages create opportunities in consumer markets – the she-economy, silver dollars, and Generation Z.

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Consumer: Silver dollars, the she-economy, Gen-Z style

- Demographic changes are shaking up China's consumer market
- We highlight the opportunities created by the latest trends …
- … and introduce a "3S" investment framework: silver dollars, the she-economy, and style differentiation by Generation Z

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China's latest national census makes interesting reading for investors who keep a keen eye on the country's consumer market. While it confirms trends that are well understood – China is ageing as population growth slows – the data also reveal growth opportunities in a number of areas as the structure of the population changes. This report introduces a "3S" investment framework – silver dollars, she-economy, and style differentiation by Generation Z – that supports our view that premiumisation will only accelerate as more consumers spend more money on higher quality products.

Silver dollars

China's growing elderly population generally has money to spend and plenty of time to spend it. Having saved for their retirement, we think they will **travel** further and more often. This health conscious group is also eating and drinking better quality food and drink, so demand for **dairy products** that offer additional nutrition is rising. The elderly also need **professional care services** as young people now have less time to look after their parents.

She-economy

Many women in China work, giving them an independent source of income and, in turn, boosting discretionary spending. **Cosmetics, along with beauty products and treatments,** are driving the she-economy. What's more, traditionally male-focused industries are now developing products to cater to the emerging needs of female customers; for example, the **beer industry** is developing drinks that appeal to the female palate. Although the overall birth rate is falling, the market for mothers and babies is actually growing because parents are willing to pay a premium for better quality products, such as **infant milk formula**.

Style differentiation by Generation Z

New generation, new mind-set. Young people have a different set of consumer needs and wants. They want convenience and **ready-to-cook dishes** and use **fresh food e-commerce** to save time and money. They want to try new things and **livestreaming and social e-commerce** are high on the agenda. They like **electric vehicles**, too and, as more of them live alone, the latest high-tech **home appliances** are needed. They also favour domestic brands, which is good news for the sales of **cosmetics** and **sports clothes**. In many sectors, we see Generation Z – those born over 1995-2010 – as the most important consumer group over the next decade.

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New realities and fresh opportunities

China is ageing as population growth slows and the birth rate falls

HSBC Global Research has done extensive research into the demographic changes taking place across Asia. We now narrow the focus to look at what the latest national census data can tell us about China's sprawling consumer market. Some important trends – China is ageing as population growth slows and the birth rate falls – are well flagged and are broadly interpreted as being negative for the economy. This report drills down further to assess the opportunities that these changes in the structure of China's population are creating.

Let's start with the increase in live expectancy due to higher living standards and better health care. This means that the number of elderly people who pack an increasingly "powerful punch" in important parts of the consumer market is on the rise. The result? The growth of the "silver dollar" economy, the first element of our "3S" investment framework.

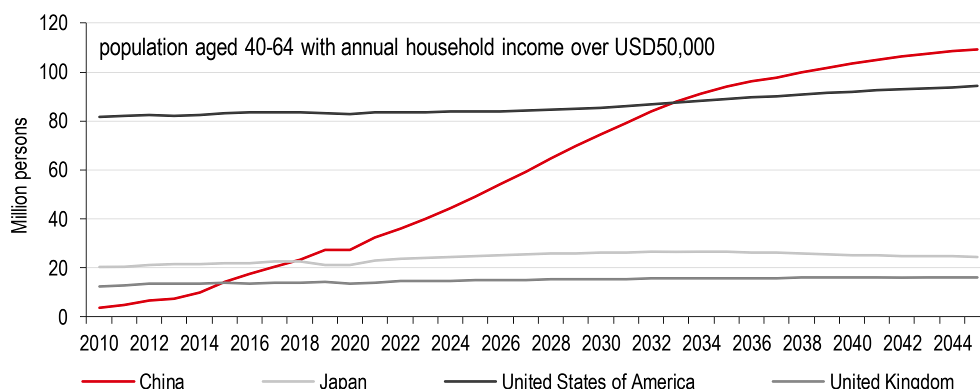
However, the accumulation of wealth is a process that takes place over time, linking the ageing trend to another powerful demographic force – China's wealthy "empty nesters" aged between 40 and 64. These are generally dual income households where the expensive burden of child-raising either no longer exists or is about to be eased. For both spouses, it is time to spend more on themselves, with the emphasis on the better things in life.

The number of empty nesters with an annual household income over USD50,000 nearly doubled in 2015-20

To us, one statistic based on HSBC research stands out – the number of empty nesters in China with an annual household income over USD50,000 nearly doubled in 2015-20. By 2033 this group will likely grow to over 83m, surpassing the number in the US. In our view, few groups of customers anywhere in the world can flex as much "muscle" as China's empty nesters. And remember, more members of this group move on to join the silver dollar cohort every year.

To the free-spending elderly and middle class we can add two other important demographic forces to the new consumer mix: women and young people. China has one of the highest female labour participation rates in the world (according to the World Bank), allowing more women to become more economically independent. This has significant implications for consumer spending: the "she-economy", the second part of our framework. At the same time, Generation Z – those born in 1995-2010 – are also starting to make their mark. They tend to be well educated, tech savvy and have a strong desire to differentiate themselves.

The number of wealthy empty nesters in China to surpass the number in the US in 2033e



Source: Global Demographics, HSBC Qianhai Securities

This is our latest report on the demographics theme. If you want to subscribe to any of our nine big themes, click [here](#).

For the full report, see *China Consumer – Silver dollars, the she-economy, Gen-Z style*, 15 September 2021.

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Electric Vehicles: Taking it up a notch

- Demand for EVs continues to surprise on the upside …
- … with strong buying in the mass market where they offer value …
- … and in the premium market too on better content offerings

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We believe more drivers in China will increasingly switch to buying electric vehicles as their quality increases and due to the improving ownership costs. Generation Z will likely be the biggest car buying group for the coming decade as they are particularly open to owning an EV (see *China Autos: China Electric Vehicle: Popularity of EVs continues to drive industry growth*, 9 July 2021). And from the supply side, we believe EVs are the way forward for most original equipment manufacturers (OEMs) and remain the focus of R&D investment and capex. As a result, our 2025e and 2030e EV penetration estimates are 31% and 59%, up from 17% in August 2021.

Still, we don't rule out the shift to EVs happening even faster. EV conversion and adoption are increasing rapidly, there are more young adults inclined to buy EVs, and the cost of EVs is becoming more attractive. China is likely to reach so-called cost parity (where an EV costs the same as a similar petrol-powered car) ahead of other markets, given its globally competitive battery value chain and market scale. In our updated bull case scenario, our EV passenger car penetration estimates for 2025e and 2030e increase to 42% and 89%.

Potential medium- to long-term catalysts

- Continuous m-o-m growth momentum in the coming months on strong consumer conversion and adoption
- Supportive government policies such as more charging facilities and fewer restrictions on daily usage

Potential industry risks

- Uncertainty on the subsidy cap at 2m units per annum. If there are no subsidies on cars above 2m units, then there might mean be a negative impact on EV new car sales.
- Potential prolonged auto chips shortage that disrupts sales volumes. Despite the easing auto chip supply in September and EVs getting relatively priority by OEMs' chip allocations as opposed to conventional petrol-powered cars, we believe a potentially prolonged auto chip shortage disruption may pressure EV sales volumes in China.

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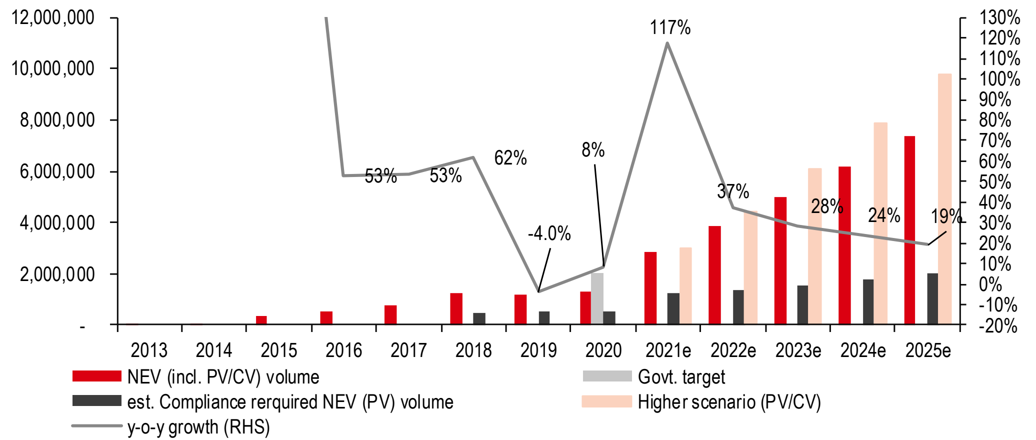
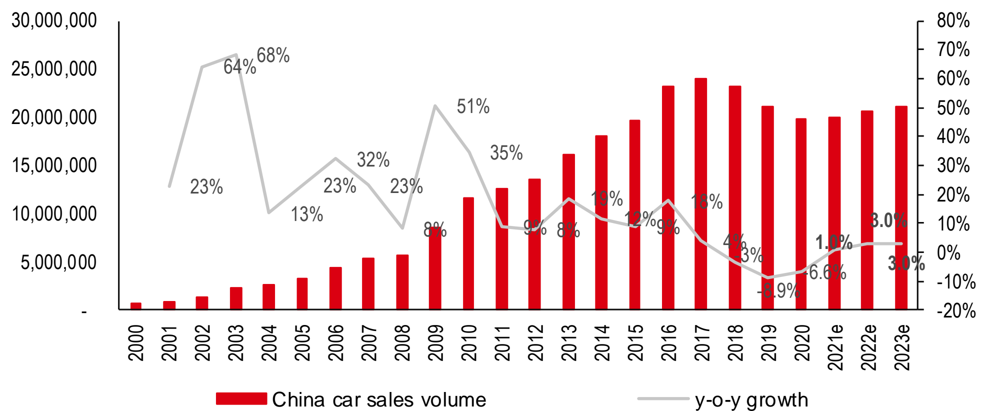
Our NEV sales estimates



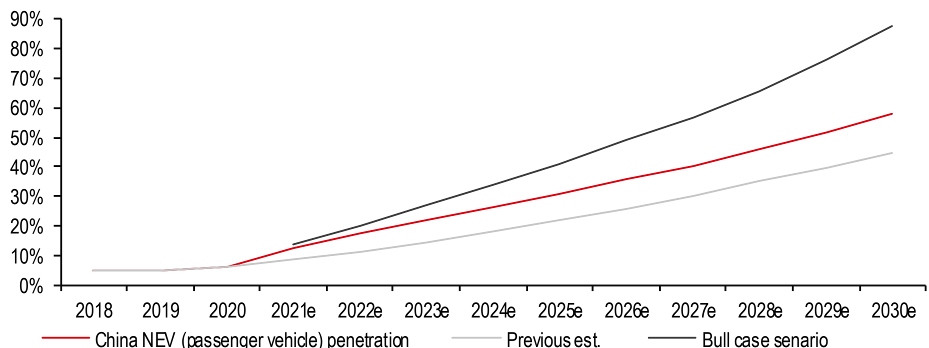
Source: IHS, HSBC Qianhai Securities estimates

Our overall market volume growth estimates for 2021-23e: +1%, +3% and +3%



Source: IHS, HSBC Qianhai Securities estimates

Our 2025e and 2030e EV penetration estimates



Source: CPCA, HSBC Qianhai Securities estimates

For the full report, see *China Electric Vehicles – Take it up a notch*, 24 September 2021.

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Internet: A new playbook

- A fresh look at China Internet amid the regulatory crackdown
- E-commerce and online games offer the best risk-reward
- We incorporate ESG factors and a regulatory risk premium

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Regulations and their repercussions …

To understand the changed landscape for China Internet, we first examine key regulatory areas – from the anti-monopoly drive to the increasing protection of minors – and detail how we factor all of this in to our coverage.

The main earnings impact from the new Internet landscape – higher costs and lower revenue

Regulations will likely dent earnings through higher costs and lower revenue. On costs: increased investment will be needed to monitor content and secure data, and wages will also rise. On revenue: there will be a lower take-rate due to efforts to better support smaller merchants and small- and medium-size enterprises (SMEs); there is also likely to be less revenue from advertising, subscriptions and minors, and Internet company will have to share more revenue with content creators.

Still, some may benefit. The dominance by leading companies is easing, helping smaller and new platforms. Meanwhile, the increased emphasis on data security may lead to higher growth in the cloud business. Video and online music platforms will likely also enjoy reduced content costs with lower artist fees and a ban on exclusivity agreements.

Risks and impact of different regulatory aspects

	e-commerce/food delivery	Social/online ads	Online game	Video	Live streaming	Online music	FinTech
Anti-monopoly	Flat to lower take-rate			Higher revenue sharing with content creators			PBoC will start investigation
Data security	Higher cost due to more hiring, purchases of software and upgrading technology Higher demand for security PaaS and SaaS Future listing overseas could get harder						
Social fairness	Higher rider costs Higher investment in agriculture						Lower take-rate for SME merchants
Content censorship		Higher cost related to content auditing and technology to filter information Weaker subscription and advertising revenue					
User & minor protection	Lower advertising revenue	Lower advertising revenue	Less revenue contribution from minors	Less revenue contribution from minors	Less revenue contribution from minors	Lower advertising revenue	Lower revenue from student loans
Positive impact				Lower content cost		Lower content cost	

Note: The darker the colour, the higher the sub-sector risk.
Source: HSBC

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… and three other key variables

1) Where could regulations go next?

We have yet to see regulations targeting short video platforms despite this type of content becoming popular and taking up about a third of time spent on the Internet by users (versus a fifth for instant messaging). More protection of minors and further content censorship could also be areas where we may see more regulatory attention. We have factored in higher content auditing costs for short video platforms to partly account for this risk.

2) Economic slowdown

Retail spending is slowing down, exacerbated by concerns about unemployment, slowing wage growth and uncertainty around the property market. As a result, we factor in slower online transactions, including spending on retail, services and entertainment, into our numbers.

3) A potential tax rate hike to 25%

For years, China's Internet industry has enjoyed tax breaks. We believe this will start to change, however, as we see the government already revising up requirements for certain tax incentives. The 15% tax rate for companies provides some buffer for our covered stocks. That said, we do see a potential tax hike to 25% in the longer term, as the Chinese government shifts its support more towards innovative industries such as integrated circuits (IC) and artificial intelligence (AI).

Finding the winners

We rank the sub-sectors; e-commerce, online game and short video come out on top

Having taken into account regulatory and non-regulatory changes into our models, we next identify which sub-sectors will likely outperform. We use three key metrics – revenue growth, margins and balance sheet liquidity – and score the sub-sectors on a scale of 1 to 5, with 5 being the best score. After that we apply a discount to factor in potential regulatory risks. e-commerce ranks first, followed by online game and social video platforms (including short and mid videos). Live streaming and long video platforms score among the lowest.

Scorecard for China Internet sector

		E-commerce /Food delivery	Online games	Social video platforms	Online music	Social / Online ads	Long video	Live streaming
Topline	User growth potential	2	1	3	1	1	1	1
	ARPU growth	2	2	3	2	2	2	1
	Overseas	3	4	3	1	1	1	2
Margin	OP leverage	3	2	3	1	2	3	1
	Competition	1	3	2	2	2	3	1
Liquidity	Liquidity	4	4	4	4	4	1	4
	Potential regulatory discount	10%	20%	30%	10%	20%	15%	20%
	Total score given regulation uncertainty	13.5	12.8	12.6	9.9	9.6	9.4	8.0

Note: Social video platforms include short video player, Kuaishou and mid video player Bili. Source: HSBC

Incorporating ESG into both our financials and valuations

Where ESG issues are quantifiable and weigh on company financials – such as minimum wage requirements, social insurance and green bonds – we factor them into our financial models.

For qualitative ESG factors – like greenhouse gas emissions (E), job creation (S) and board member diversity (G) – we include them in our evaluation framework, which drives our evaluation approach and changes to terminal growth rates.

For the full report, see *Spotlight – China Internet: A new playbook*, 19 October 2021.

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Virtual Reality: Hitting its stride

- Virtual reality is finally taking off after years of false starts as headsets improve, prices fall and more content becomes available
- We're more bullish than the market on sales as we expect social networking via the metaverse to beat expectations …
- … and detail the technologies and opportunities all across the supply chain including the displays, lenses, optics and cameras

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The tech industry hopes virtual reality (VR) will become the next category killer after the PC and smartphone. Just take a look at Facebook changing its name to Meta. Of course, we've been here before, but this time we really do see signs that sales are finally taking off. Headsets are getting better, prices are falling and there's an increasing amount of content available along with other innovations. The result is we believe the industry is set to be the next multibillion-dollar market in the next two to three years.

Why now? Facebook's latest virtual reality headset, the Oculus Quest 2, has been a blockbuster. We expect sales to hit 8m in 2021e, creating a critical mass and triggering more interest in the industry, not just from consumers but content creators too. The cost is just USD299 vs USD400-800 for competitors. Others are also reportedly planning new launches, including Apple and an update to Sony's PlayStation VR headset. While previous VR headsets had a poor user experience and a lacking ecosystem, many of these problems are now solved or significantly improved.

How are we different? Like everyone, we expect more successful game launches to attract more players. But we also see new pillars of growth including fitness apps as well as social networking, aka the metaverse. We forecast VR shipments to grow from 5.6m in 2020 to 50m in 2025e, much higher than IDC's latest estimates of 28.6m by 2025e published in June 2021. And while we believe augmented reality (AR) is still a few years behind VR, in the long run, we believe lower-cost smartphones or PC-tethered AR devices will be the mainstream AR for the consumer market and will boost demand. We foresee the total VR market size growing exponentially to about cUSD45bn in 2030e, representing a CAGR of c30% in 2021-30e.

Where are the opportunities? In this report, we identify four major areas where we see opportunities for major supply chain players: (1) displays, whose resolutions are improving as well as their speed, providing a vivid immersive experience for users; (2) Fresnel lenses (named after a French physicist) which reduce the weight, thickness and cost of a VR device – though the manufacturing process is still in flux; (3) waveguide optics, which guide optical waves from the display panel to human eyes; and (4) cameras, where we believe the number per device will rise as more functions like eye tracking are introduced.

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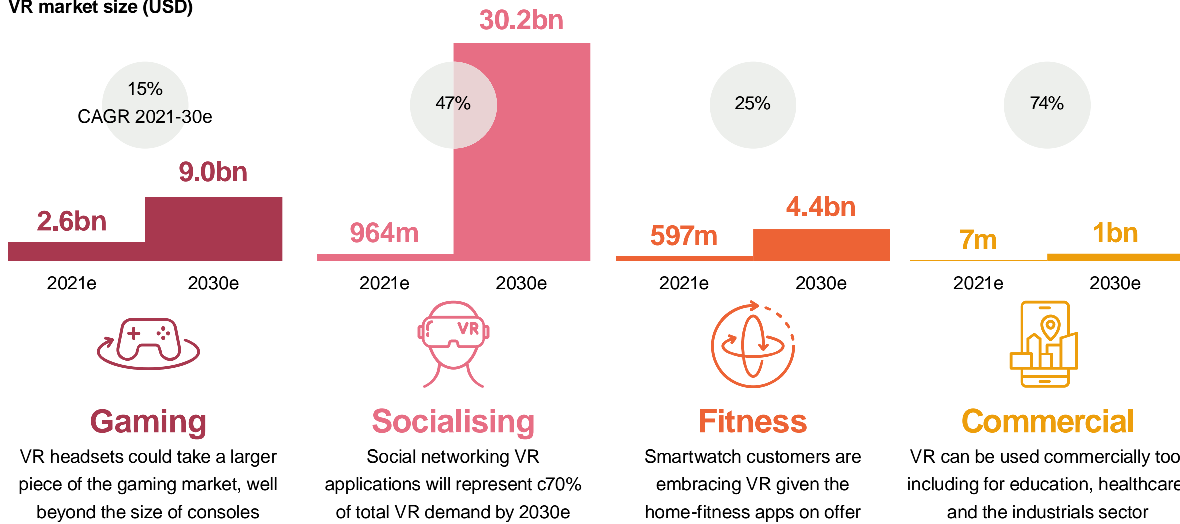
Turning a multibillion-dollar market into reality

VR is expanding its footprint from gaming to the office, fitness and social networking

China is rolling out policies and guidelines to encourage technology innovation and target the huge opportunities in virtual reality applications, hardware and software. We forecast the total VR market size to grow exponentially to cUSD45bn in 2030e

VR market size (USD)



Gaming
VR headsets could take a larger piece of the gaming market, well beyond the size of consoles

Socialising
Social networking VR applications will represent c70% of total VR demand by 2030e

Fitness
Smartwatch customers are embracing VR given the home-fitness apps on offer

Commercial
VR can be used commercially too, including for education, healthcare, and the industrials sector

Breaking down the VR headset: component supply chain and opportunities

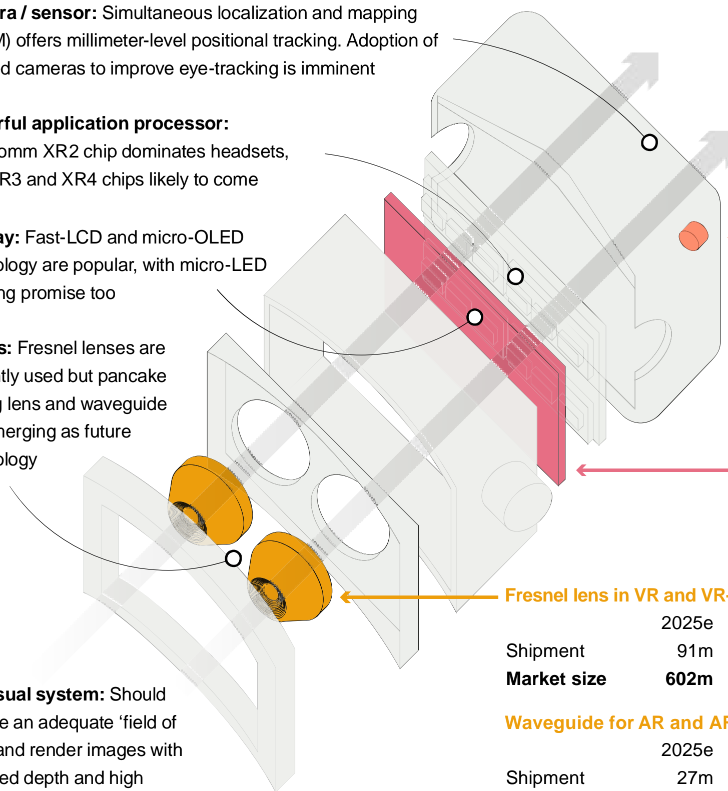
Critical technology components

Camera / sensor: Simultaneous localization and mapping (SLAM) offers millimeter-level positional tracking. Adoption of infrared cameras to improve eye-tracking is imminent

Powerful application processor: Qualcomm XR2 chip dominates headsets, with XR3 and XR4 chips likely to come

Display: Fast-LCD and micro-OLED technology are popular, with micro-LED showing promise too

Optics: Fresnel lenses are currently used but pancake folding lens and waveguide are emerging as future technology



VR visual system: Should provide an adequate 'field of view' and render images with matched depth and high resolution

Shipment (units) and market size forecast (USD)

Eye-tracking infrared camera

Shipment	2025e	2030e
VR	165m	705m
AR	9m	83m
Market size		
VR	**509m**	**1.7bn**
AR	**77m**	**380m**

SLAM camera

Shipment	2025e	2030e
VR	201m	1.0bn
AR	20m	99m
Market size		
VR	**480m**	**2.1bn**
AR	**102m**	**361m**

Fast-LCD for VR and VR-type MR

	2025e	2030e
Shipment	41m	137m
Market size	**1.9bn**	**6.1bn**

Fresnel lens in VR and VR-type MR

	2025e	2030e
Shipment	91m	321m
Market size	**602m**	**1.9bn**

Micro-OLED for VR, AR and MR

	2025e	2030e
Shipment	21m	61m
Market size	**2.0bn**	**5.2bn**

Waveguide for AR and AR-type MR

	2025e	2030e
Shipment	27m	68m
Market size	**3.7bn**	**7.1bn**

Note: Fast-LCD display technology has a faster response time, a higher resolution and a cheaper cost. Micro-OLED is a type of microdisplay. MR is mixed reality
Source: Company data, HSBC Qianhai Securities estimates

For the full report, see *Spotlight – Virtual Reality, Hitting its stride*, 4 November 2021.

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Our China coverage: Depth, breadth, and big ideas – Macro

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Economics: Stepping up targeted easing

- Monetary and fiscal policy to be selectively eased to shore up growth
- Our full-year forecasts for 2022 and 2023 remain unchanged at 5.6% and 5.8%, respectively
- Beijing is likely to boost public spending on technology, green and new infrastructure

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A slowing property sector, continued uncertainty from COVID-19, and electricity shortages are putting pressure on the economy. We expect GDP growth to slow to 3.6% y-o-y in Q4 (vs our previous projection of 4.6%, which will drag down full-year GDP for 2021 to 8.0% from our previous forecast of 8.3%). This sharper-than-expected slowdown is raising labour market pressure and prompting Beijing to take more decisive action in easing both monetary and fiscal policies selectively to shore up growth.

Following the latest cut in the required reserve ratio (RRR), we expect the central bank to take more steps towards increasing credit support to higher end manufacturing, green projects and other targeted sectors. Meanwhile, Beijing is also likely to boost public spending on technology, green and new infrastructure, and offer more generous tax incentives for corporates to upgrade their technologies. This should help offset the growth headwinds and engineer a modest recovery in GDP growth starting from Q2 2022 (see China in 2022, 16 December 2021). Our full-year forecasts for 2022 and 2023 remain unchanged at 5.6% and 5.8%, respectively.

Policymakers have begun to fine-tune their property policy to allow housing demand for accommodation (not the demand for investment) to still be met and to prevent a hard landing. However, their purpose is not to engineer a strong rebound in the property sector to support economic growth. Instead, they will likely increase policy support to technology development and industrial upgrading. Incentives for machinery upgrading, funding support for new technologies, tax breaks for R&D spending, and relending facilities for manufacturing firms are some of the measures we expect to be rolled out. This should add fuel to the ongoing upturn in capex in medium- and high-end manufacturing, which will likely rise by double-digit growth in the next five years, making it a more important growth driver in the coming years.

Green investment is likely to be another driver of the recovery. The People's Bank of China's (PBoC) recent decision to launch a new green relending tool, plus other concrete plans for green financing, will likely kick start a new wave of green investment in China. We expect Beijing will roll out sovereign green bonds amounting to RMB1trn, relending facilities at preferential rates or loan guarantees for green investments, tax breaks for green investment, and incentives to promote electrification and energy efficient processes. Investment in renewable energy, grid system upgrading, and green technology is likely to surge by over 30% pa in coming years.

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Policy issues

Beijing focused on de-risking and de-leveraging in 2021, where multiple sectors experienced regulatory tightening. Going into 2022, regulations will likely continue, albeit in a more gradual and transparent manner. With mounting downward pressure on economic growth, we expect both monetary and fiscal policies to err on the loosening side, with fiscal policy to take the lead.

While the official budget deficit may stay at around 3.2% of GDP, we expect faster project approvals and more directives for funding to flow towards new infrastructure like 5G stations and EV infrastructure, as well as a likely step-up in the issuance quota to RMB4trn in special local government bonds with front-loading of RMB2.2trn. Meanwhile, we expect up to RMB1trn of green sovereign bond issuance in 2022 (see *China easing*, 17 November). More funding support for manufacturing investment and core technologies, as well as tax breaks for R&D spending and green investment, are also likely to be rolled out.

We expect a modest pickup in total social financing growth Monetary easing will likely focus on quantity as opposed to price tools: We expect no change in the one-year LPR at 3.85%, which is roughly in line with the natural LPR rate estimated by the PBoC and BIS. We expect two broad-based RRR cuts totalling 100bp to help provide liquidity support in 2022. Moreover, the central bank will increasingly rely on green and SME relending facilities to guide credit towards targeted sectors, such as higher end manufacturing, green projects and SMEs. While the US Fed is expected to start hiking next year, the PBoC will not be constrained by this, particularly given the outlook of muted CPI inflation. In all, we expect a modest pickup in total social financing growth from an expected 10.3% at end-2021 to 11.3% in 2022. The looser monetary conditions may reverse the trend of a falling macro-leverage ratio, yet the distribution of financing will be adjusted to facilitate more long-term quality and inclusive development while mitigating macro-financial risk.

Risks

Risks to our forecasts are balanced. Downside risks are led by the management of defaulting property developers and spill-over effects, including the impact on local government balance sheets resulting from reduced land sale revenues. That said, should Beijing lend swifter policy support, such as stepping up green investment and subsidising manufacturing upgrading investment, capex spending in these two areas may improve more strongly than expected.

Key forecasts

	4Q 20	1Q 21	2Q 21	3Q 21	4Q 21f	1Q 22f	2Q 22f	3Q 22f	4Q 22f	1Q 23f	2Q 23f
GDP (% y-o-y)	6.5	18.3	7.9	4.9	3.6	4.4	5.2	6.2	6.2	6.3	5.9
GDP sa (% q-o-q)	3.2	0.2	1.2	0.2	0.7	1.1	2.6	1.5	1.2	1.3	1.6
Industrial production* (% y-o-y)	7.1	24.5	9.0	4.9	3.3	3.6	4.9	5.9	6.1	5.8	5.4
CPI, (% q-o-q saar)	-1.8	2.6	2.1	0.4	1.4	1.0	1.8	1.9	2.2	2.3	1.7
CPI, average (% y-o-y)	0.1	0.0	1.1	0.8	1.8	1.6	1.9	2.4	2.3	2.3	2.3
PPI, average (% y-o-y)	-1.3	2.1	8.2	9.7	12.9	8.1	3.9	1.0	0.4	1.3	1.7
Exports, value (% y-o-y)	16.6	48.8	30.7	24.4	21.4	4.7	4.0	2.3	1.3	4.8	5.0
Imports, value (% y-o-y)	5.7	29.4	44.0	25.9	24.8	8.2	5.6	4.4	2.0	3.1	4.8
Trade balance (% GDP)	4.6	2.8	3.1	4.0	4.5	2.2	2.7	3.5	4.2	2.4	2.7
International reserves (USDbn)	3,216.5	3,170.0	3,214.0	3,200.6	3,258.9	3,404.6	3,327.5	3,327.5	3,353.4	3,404.6	3,327.5
Policy rate, end-quarter (%)**	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85	3.85
10yr lending rate, end-quarter (%)	3.14	3.19	3.09	2.87	2.70	2.60	2.60	2.80	3.00	3.10	3.20
RMB/USD, end-quarter	6.52	6.57	6.46	6.49	6.40	6.40	6.45	6.50	6.55	6.55	6.55
RMB/EUR, end-quarter	7.96	7.69	7.69	7.52	7.36	7.30	7.29	7.35	7.40	7.40	7.40

*Industrial production is the output of companies with annual sales over RMB20m. **Policy rate refers to one-year Loan Prime Rate (LPR)
Source: CEIC, HSBC forecasts. Note: n/a – not applicable/available, 1Q 2023 and 2Q 2023 FX numbers are assumptions and not forecasts.

For the full report, see *Asian Economics – Ready for the next round*, 17 December 2021.

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Economics: A switch-up in investment

- Property investment has slowed sharply; policy fine-tuning is aimed at cushioning the slowdown, not propping up the housing market
- Credit is moving away from the property sector to higher end manufacturing, fuelling a pick-up in capex
- Combined with green investment, this rotation will not only pick up the slack in the economy but also support productivity growth

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While much of 2021 was consumed by property sector woes in China and the impact on the wider economy, as we head in 2022 Beijing has started to fine tune its property lending policies to cushion the slowdown. Regulators are now urging banks to clear up the backlog of mortgage loan applications and resume lending to healthy developers. The government also appears to be preparing to encourage state-owned enterprises to buy projects from distressed developers. This kind of policy fine-tuning has helped stabilise the overall financing conditions for the sector. October and November data suggest that the amount of new mortgages and developer loans has started to recover sequentially. Net bond issuance by real estate developers saw a rebound in both sequential and year-on-year growth in November.

But this does not mean that the property sector is out of the woods yet:

- The overarching policy stance has remained hawkish for the sector with strict financing curbs in place such as the "Three Red Lines" policy;
- Developers will face high offshore debt repayments in 2022 of around RMB356bn, with nearly RMB100bn in both Q1 and Q2; and
- The roll-out of property tax trials in more cities may put another dampener on property sales, which has been the largest funding source for developers. HSBC equity analysts expect a 5% contraction in property sales in both volumes and value in 2022.

Under these circumstances we expect property investment to trough in Q1, and the rebound to be gradual. On an annual basis, tight financing conditions together with a 5% contraction in property sales are likely to result in a contraction in floor space starts. Meanwhile, lacklustre land transactions imply property investment will be weak. That's because land transactions serve as a good leading indicator for land purchases under property fixed asset investment (FAI) since developers purchase land first and then make payments to the government in the following months. Considering the leading indicator has been contracting on a y-o-y basis for about half a year now, we expect land purchases to fall under property FAI in the coming months.

Having said that, Beijing's priority to deliver pre-sold/under construction apartments will likely support floor plan construction in 2022. We believe regulators will encourage healthy developers to take over and complete unfinished construction from their distressed peers. We

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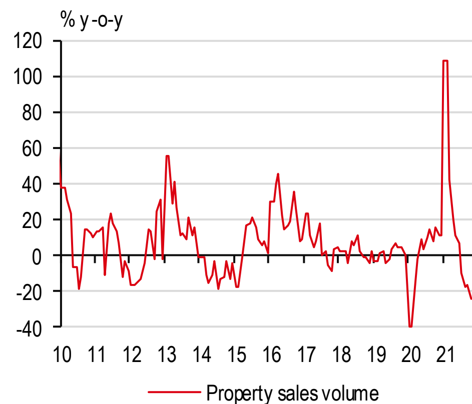
thus expect investment in property construction to maintain low single-digit growth in 2022. Taking all these factors into consideration, we expect 0-2% growth in property investment in 2022, down substantially from c5.0% growth in 2021.

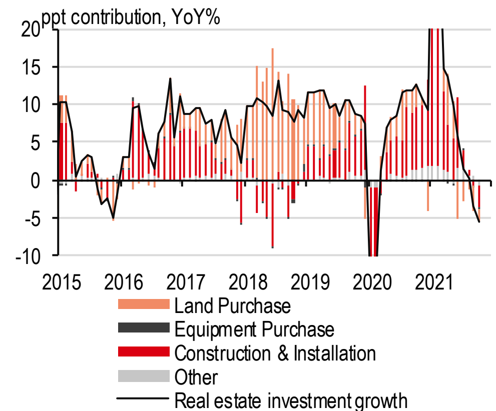
An upside risk may come from Beijing's pledge on building affordable properties to allow for actual housing demand to be met. China's recent communication suggests that it is likely to shift the focus from shantytown renovation to constructing public rental housing. Should authorities seek to quicken the pace of affordable housing, which would put a floor on property investment, it may rely on a more generous fiscal or monetary policy tools such as Pledged Supplementary Lending facilities (see *Where will the money come from? Funding China's shanty town renovation projects*, 11 July 2018).

Property sales have plunged …



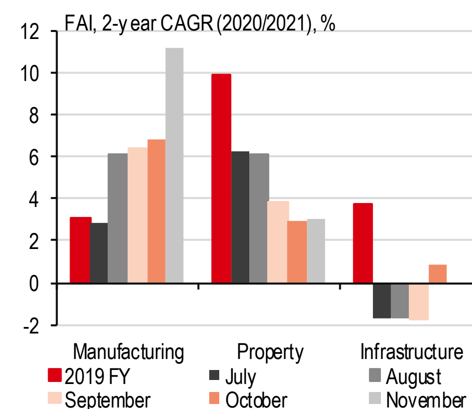
Source: CEIC, HSBC

… and so has property investment



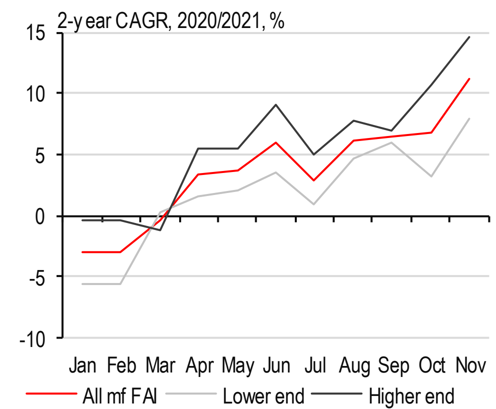
Source: CEIC, HSBC

An ongoing rotation in investment drivers



Source: CEIC, HSBC

Middle and high-end manufacturing investment is leading the recovery



Source: CEIC, HSBC

For the full report, see *Asian Economics – Ready for the next round (page 23)*, 17 December 2021.

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Economics: The rising wealth of China

- The total wealth of Chinese households will likely grow more than 50% in the next five years …
- … driven by the rising numbers of high-net-worth individuals and the expansion of the middle class to 500m+
- The public sector's net assets should also continue to grow, reducing the risk from local government debt

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Deng Xiaoping once said that "To get rich is glorious", setting China on a new path. Well, the country's millionaires are on the march. China is now home to more than 2m high-net-worth individuals (HNWIs), those with the equivalent of at least RMB10m (USD1.55m) in investable assets. We think the number of HNWIs will rise to 5m by 2025. The middle class is expanding rapidly too, and the urban home ownership rate is the highest in the world, a remarkable 96%.[4] We estimate that total household wealth will grow by more than 50% in the next five years, putting China on a very sound financial footing.

This report examines the structure of the three components of the country's wealth[5] – the asset portfolios of households, the government, and the external sector – and how they are changing. We find that:

- China's household wealth is set to grow by around 8.5% annually in the next five years, with household investable assets topping RMB300trn in 2025, equivalent to 300% of China's GDP in 2020.
- HNWIs have investable assets of around RMB70trn (USD10.8trn) – that's approaching the combined market cap of the Shanghai and Shenzhen stock exchanges at the end of 2020 (RMB79trn). Based on our conservative forecasts, this number will increase by 60% to RMB111trn by 2025.
- The middle class already numbers 340m people – bigger than the population of the US – and is on track to grow over 45% by 2025 to more than 500m. A USD20 increase in daily spending by the newly made middle class would increase consumption by cUSD1.1trn per

[4] People's Bank of China, "The 2019 survey of household assets and liabilities of urban residents in China," *China Finance*, Vol. 9, 2020.
[5] Throughout this report we use the terms wealth and total assets interchangeably. For net wealth, we refer to total assets minus total liabilities, or net assets.

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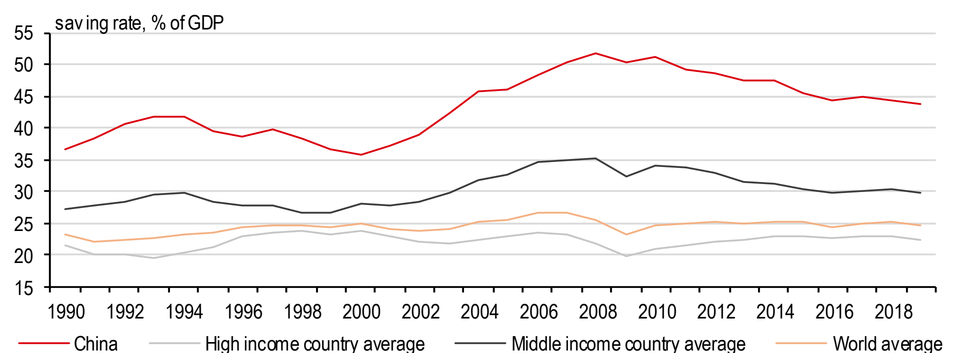
year, surpassing all but seven countries in terms of total middle class expenditure in 2020 (Kharas and Dooley, 2020).[6]

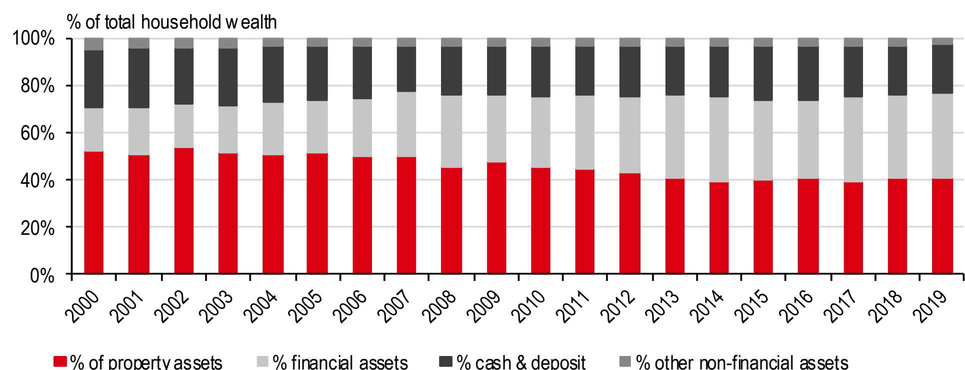
- An expanding middle class will underpin medium to long-term economic growth, and stronger consumer spending boosts domestic demand, business confidence, and capital expenditure. A rising middle class will also increase imports of goods and services, and attract foreign companies to invest in China. It's not an exaggeration to say that the middle class can be the backbone of China's dual circulation strategy and help the country avoid the "middle income trap".
- HNWIs and the middle class will invest more in financial assets, creating opportunities for asset managers and financial services. These two groups will also boost high-end consumption.
- On the downside, the wealth gap is widening. The top 1% households now own 30% of China's wealth, setting policymakers the difficult task of the reducing income inequality.
- Despite worries about high debt levels, the government's balance sheet is improving as assets rise faster than liabilities.
- Foreign flows both to and from China will continue to accelerate as Beijing pushes ahead with liberalising the capital account.

China has the highest saving rate among major economies in the world



Source: World Bank, HSBC

Property still leads, but the allocation to financial assets has risen



Note: Financial assets refers to financial holdings that are non-cash or deposits
Source: CASS, HSBC

For the full report, see *The rising wealth of China – Millionaires and the middle class lead the way*, 21 May 2021.

[6] In 2011 purchasing power parity terms, the top ten countries by total middle class expenditure in 2020 were: China, the US, India, Japan, Russia, Germany, Indonesia, UK, Brazil, and France.

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Economics: Demographics – three won't make a crowd

- Beijing's shift to a three-child policy …
- … is unlikely to alter China's population challenges …
- … but other factors can help potential growth to hold up

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The relaxing of China's policies over family sizes – to allow couples to have three children rather than two (compared with just one up to 2016) – has gathered plenty of attention since it was announced on 31 May.

But amongst demographers, the move brings little excitement, for two reasons. First, evidence both from within China and overseas suggests that the relaxation of such policies will have little impact on families opting to have more children. Birth rates have been falling for the past five years as a result of a combination of socio-economic factors that are meaning smaller families – getting married later, having a first child later and the rising cost of raising a family – both for housing and otherwise. The pandemic and the drop in incomes and rise in house prices will likely have made the last challenge far greater, as we outlined in *Population and the pandemic*, 6 January 2021.

Second, even if this policy relaxation was to be effective at raising the fertility rate, China's shrinking working-age population is already 'baked in' for the next 15-20 years. The only question is how much the working-age population falls beyond that point. The size of the population aged 16-64 looks set to drop by more than 100m by the time we get to 2040. What happens to birth rates will determine whether the potential workforce drops by another 100m by 2050 or not.

And so, it seems likely that China's demographic struggles won't reverse with this policy change. But it's not all bad news. As outlined in *China Economic Spotlight, Slowing population: How worrying is it?*, 12 May 2021, urbanisation and improving human capital can offset this trend and improve the productivity of the population – to help keep potential growth rates around 6.5%.

There is also a second demographic tailwind that could support Chinese growth, too. High savings rates as well as other policies in the past – such as the opening of the housing market in the late 1990s, and big improvements in education and productivity – means China is well placed to reap the benefits of wealth accumulation as the population ages (see: *The rising wealth of China: Millionaires and the middle class lead the way*, 21 May 2021). If this wealth is put to work in the economy, or passed on to younger generations, the overall demographic drag may not be as severe as we may initially fear.

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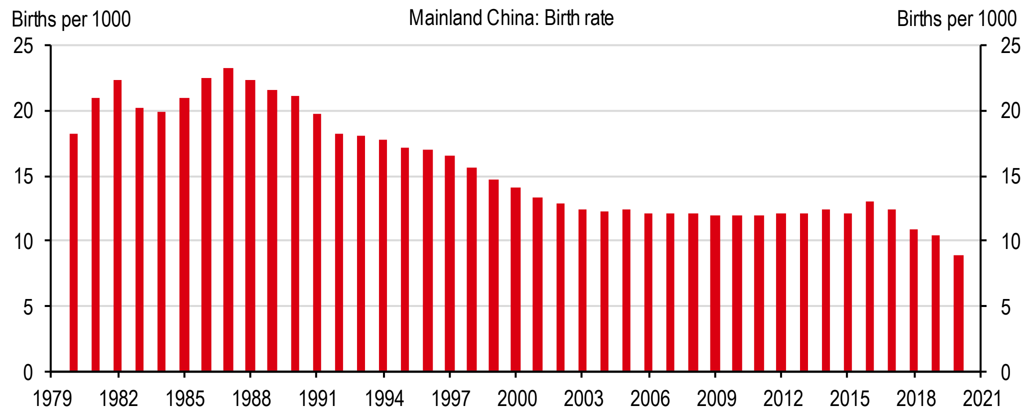
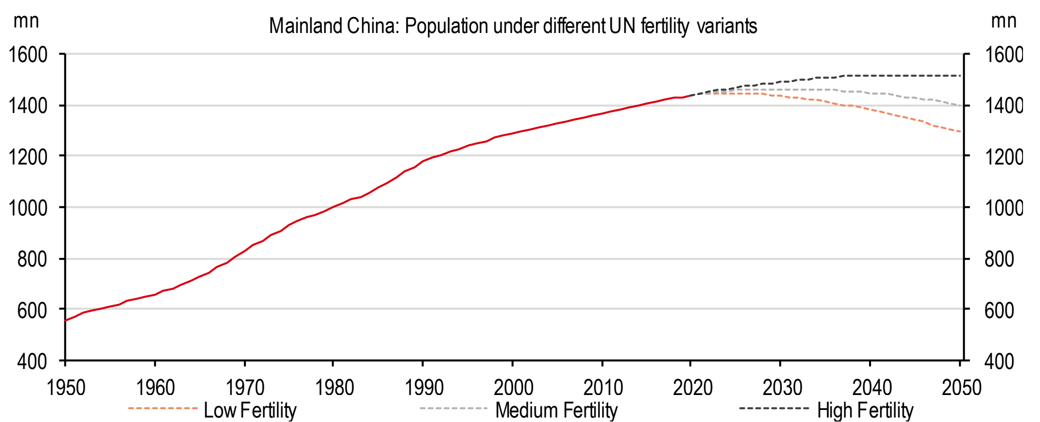
China's birth rate has been low this century but has dropped further in recent years



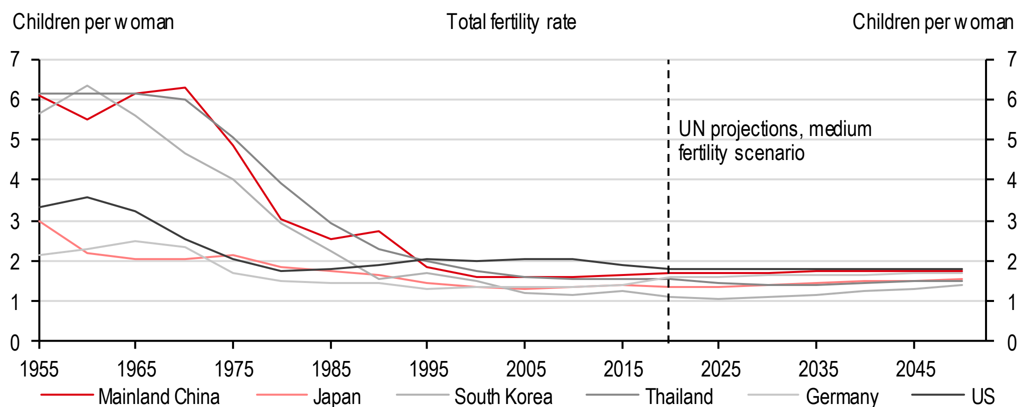
Source: China Statistical Yearbook

The UN's estimates show that fertility rate assumptions are key for population forecasts



Source: UN Population Division

China's fertility rate is likely to stay below 2.1 for the foreseeable future



Source: UN Population Division

For the full report, see *China Economic Spotlight – Slowing population: How worrying is it?* 12 May 2021.

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Economics: Climbing the ladder of scientific research

- Our first in a series on innovation in China which explores how China is becoming a scientific research leader in engineering
- But it still trails behind developed countries in the natural science, medical science and life science fields
- Boosting R&D funding and expanding international collaboration are key to narrowing the science gap

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China's decades-long strategy of investing heavily into research and development as well as higher education is showing results. The country now leads the world in terms of the quantity of scientific research paper publications and patent filings. Each year, there are more than 4m STEM (science, technology, engineering and math) students graduating from Chinese universities, which is more than the US, Germany, Japan, Korea and UK combined. In particular, China has become a global leader in fundamental research in engineering, topping the global university academic rankings in more than half of all 22 engineering fields.

But there are still substantial gaps in scientific research. For instance, in the natural science, life science and medical science fields, China's global share in the top university rankings leads other emerging economies but lags far behind Europe and the US. China generally holds 10% or less of the global top 100 university rankings within each field versus a roughly 40% to 50% share for Europe and 30% to 40% share for the US. Since scientific research is the foundation for technological advancement, closing the science gap is essential for China to further strengthen its technology and innovation capacity in the years ahead.

The 14th Five-year Plan pledged to take a two-pronged approach to boost the country's scientific research capacity: doubling its effort to strengthen indigenous scientific research and increasing international collaboration. Key policy initiatives include boosting funding support for basic research, expanding national laboratories, improving the quality of STEM PhD and post-doctoral programmes and offering more competitive salaries for scientists. And although China-US scientific collaboration faces new challenges, Beijing is taking steps to make more trade and investment deals with other developed countries and regions such as the EU, Japan and Korea. This should help deepen international research collaboration. Further opening up and reforms, such as Free Trade Zones, and strengthened intellectual property rights enforcement, can also incentivise more corporations to invest and boost their R&D activity in China.

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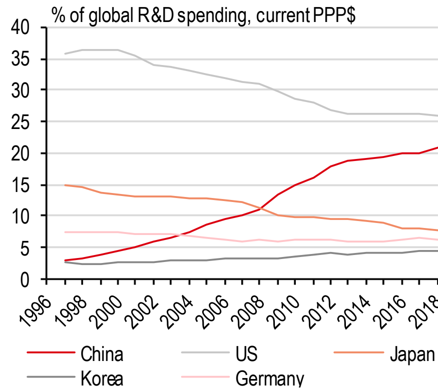
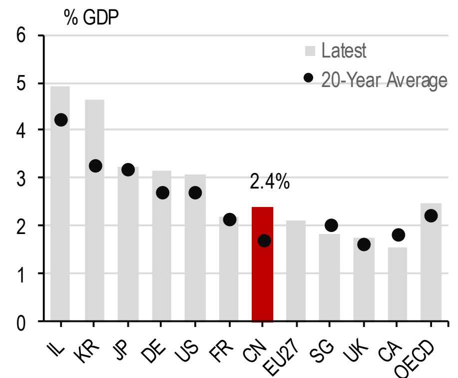
China accounts for over 1/5 of global R&D, ranking second after the US



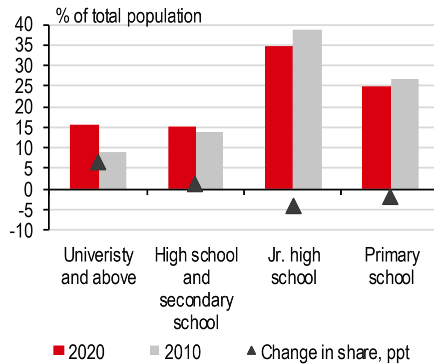
Source: OECD, HSBC

China's R&D spending is on par with developed countries



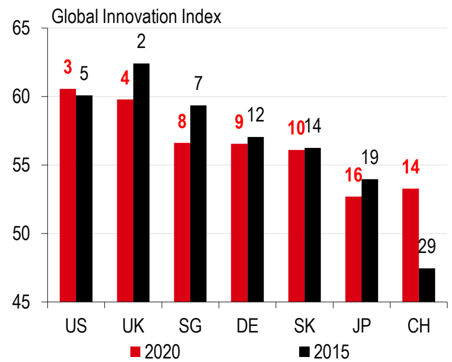
Source: OECD, CEIC, HSBC. Note: Data from 2019, except for Mainland China, which is from 2020. IL – Israel, KR – Korea, JP – Japan, DE – Germany, US – USA, FR – France, CN – Mainland China, EU27 – EU, SG – Singapore, UK – United Kingdom, CA – Canada, OECD – OECD.

China's overall education levels have increased



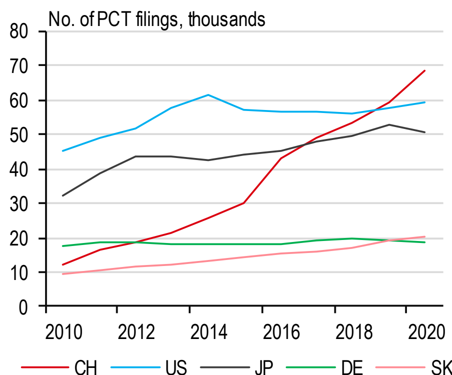
Source: NBS, HSBC.

China is the only EM economy in the top 20 of the Global Innovation Index



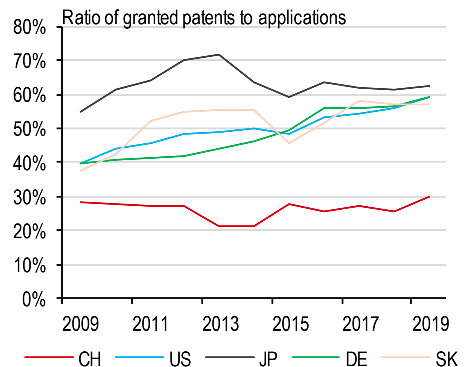
Note: Ranking denoted above country bar. Red – 2020 ranking, Black – 2015 ranking. CH – China, US – USA, JP – Japan, DE – Germany, SK – South Korea, SG – Singapore, UK – United Kingdom. Source: WIPO, HSBC

China has topped the global rankings for patent filings since 2019 …



Note: PCT = The International Patent System
Source: WIPO, HSBC; CH- China, US – United States, JP – Japan, DE – Germany, SK – South Korea

… but the quality of applications still lags behind developed economies



Source: WIPO, HSBC; CH- China, US – United States, JP – Japan, DE – Germany, SK – South Korea

For the full report, see *Innovation in China 2025 – Part I: Climbing the ladder of scientific research*, 22 July 2021.

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Economics: Why technology diffusion is so important

- China's average productivity in manufacturing and services is still less than a third of that of developed economies …
- … while the productivity gap between technology leaders and other firms is also significant
- Spreading access to technology more evenly will be crucial to lifting productivity growth in the coming years

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Spread the knowledge. Innovation is not just about the discovery and development of new technologies. It is also about promoting the diffusion of technological improvements among producers within a country and across international borders. Indeed, for an economy whose technology still lags behind global leaders in a number of areas, adopting existing technologies can play a major role in lifting its levels of productivity.

Mind the productivity gap. Despite impressive progress in recent years, China's average labour productivity is still less that than a third of that of developed economies for the industrial sector and less than a fifth for the services sector. More importantly, this gap exists in the majority of sectors, including medium- and low-tech sectors such as kitchen appliances and the retail industry, so there is still significant potential for lifting productivity through increasing cross-border diffusion of technology in both manufacturing and services. We estimate that if China could halve the current gap with the average labour productivity of high-income economies it would more than double total GDP.

Leaders and laggards. Within China, there are also notable technology gaps between industry leaders and laggards. In fields like information and communication technology (ICT), financial services, and the industrial sector, the labour productivity of the largest companies is above the industry average. Meanwhile, smaller firms lag behind, due in part to their lack of access to resources and credit. Spreading access to technology to more producers should boost overall productivity.

What to expect. As innovation is a policy priority, we expect the authorities to step up efforts to foster the diffusion of technology. At the cross-border level, this is likely to come through more trade and investment deals, continued opening up through reducing restrictions and tariffs, and incentives to upgrade machinery and equipment. At the domestic level, it will involve both direct and indirect measures, including: (1) building up ICT infrastructure to speed up the adoption of newer technologies like digitalisation; (2) the development of industry associations to increase the spread of ideas; (3) promoting lifelong learning to allow the workforce to tap into new technologies and techniques; (4) fiscal support through tax cuts or direct subsidies for innovation; and (5) reforms to level the playing field for the private sector, in particular small and medium enterprises (SMEs), to allow a fairer allocation of resources and credit to the more productive and innovative firms.

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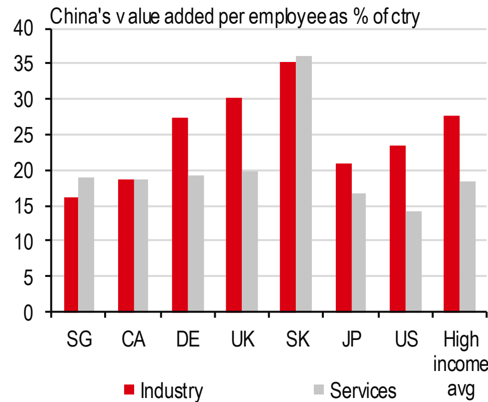
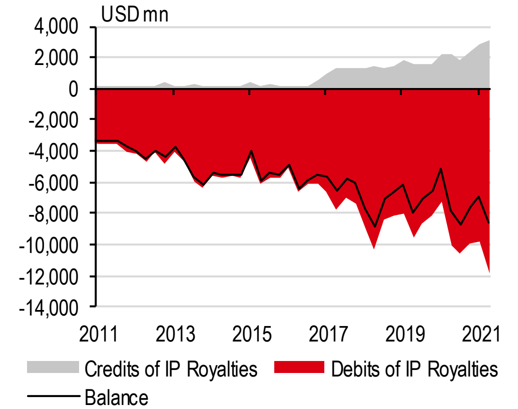
Plenty of room for China to play catch up in productivity …



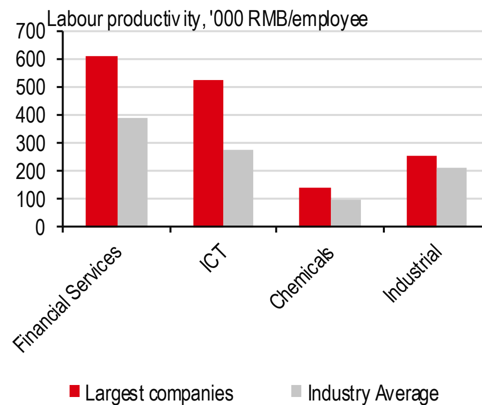
Note: SG – Singapore, CA – Canada, DE – Germany, UK – United Kingdom, SK – South Korea, JP – Japan, US – United States
Source: World Bank, HSBC

… and China will continue to be a net importer of licences and patents



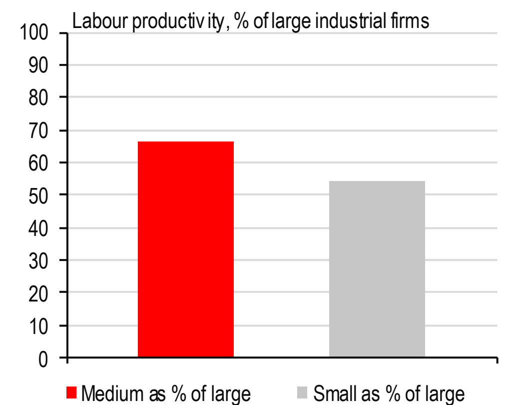
Source: CEIC, HSBC

China's labour productivity of leading firms is above the industry average



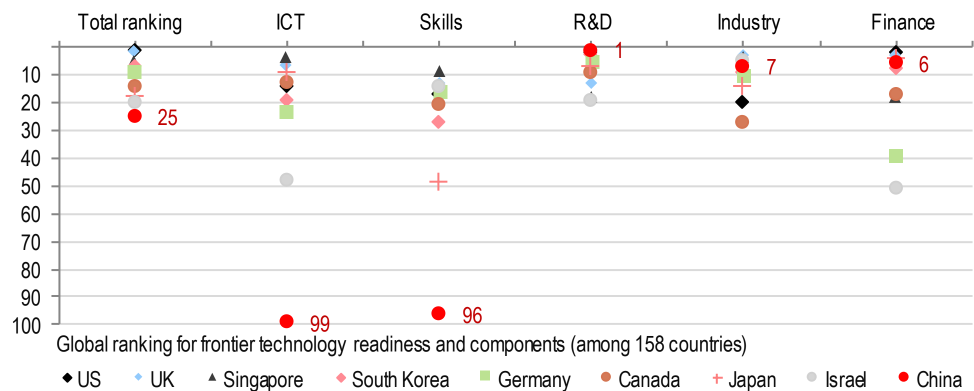
Source: Fortune 500, HSBC

SMEs still lag behind larger firms in terms of productivity



Note: Among industrial enterprises
Source: CEIC, HSBC

The Frontier Technology Readiness Index shows China has strengths in R&D, industry, and finance, but is lacking in the areas of ICT and skills



Note: China's ranking for the component is labelled. Source: UNCTAD, HSBC

For the full report, see *Innovation in China 2025 – Part II: Why technology diffusion is so important*, 18 August 2021.

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China aims to achieve peak emissions by 2030 and carbon neutrality by 2060. Huge investments are being made in the green economy.

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Economics: A closer look at technology imports

- Upgrading its technology is key for China to increase its productivity and raise its growth potential …
- … so Beijing is raising its R&D spending and strengthening external economic ties to boost its tech independence
- We look at which Chinese sectors are most reliant on international tech to assess their sensitivity to policy shifts

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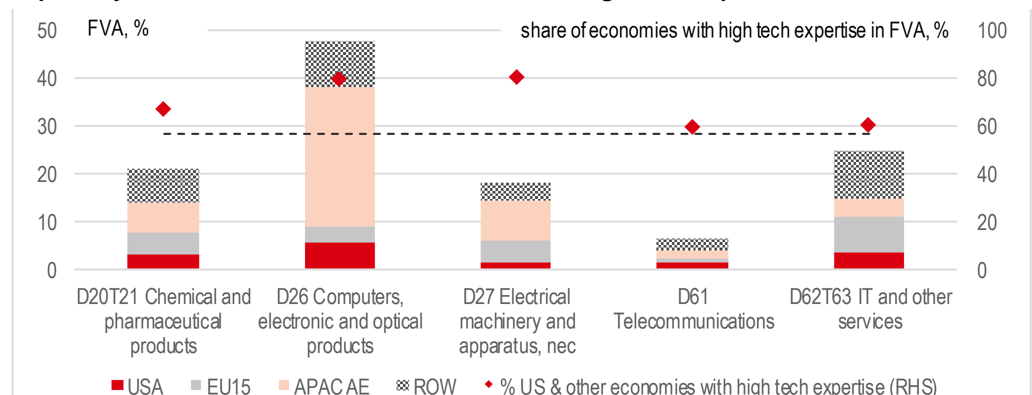
Two-pronged tech strategy. With the international tech sector caught up in the broader trade tensions, China is redoubling its efforts in science and technology innovation using a two-pronged strategy. The aim is to boost its growth and self-reliance in technology, as stated in the 14th Five-year Plan.

For the domestic prong, China plans to boosts its so-called basic research – a category of research where it is weakest. This is also known as fundamental research, as further applied research can be developed from it – by increasing government spending, including the establishment of national laboratories and innovation centres. Beijing is also encouraging enterprises to make breakthroughs in core technologies by granting tax incentives and broadening funding channels.

For the international prong, after closing a major trade deal (RCEP) last year with neighbouring economies, Beijing aims to speed up negotiations on regional trade and investment pacts to open more channels for cross-border technology sharing.

Computers, electronics and optical products have the highest foreign value added, especially from the US and other economies with high-tech expertise



Note: The dotted line represents the average share of economies with high-tech expertise in the total foreign value added.
Source: OECD TiVA (2015), HSBC

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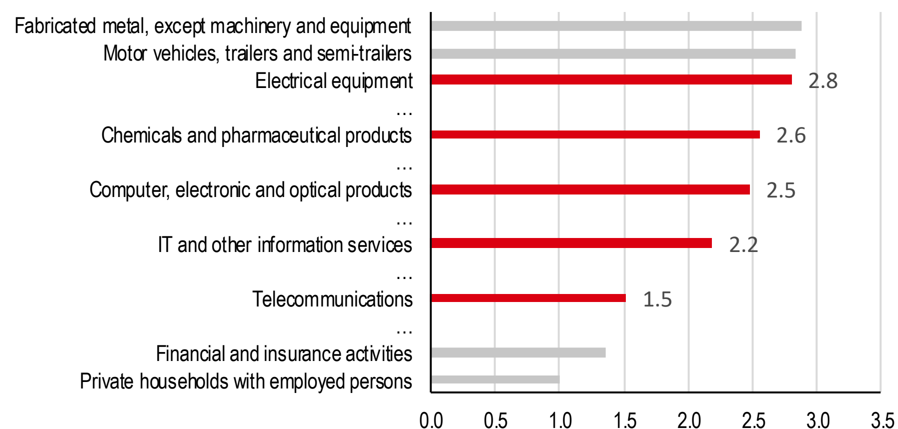
Five sectors. Against this backdrop, we zoom in on which of China's industrial sectors have the closest connections with the US and other economies with tech expertise.

We identify five sectors (see Table 2) in China that are most exposed to the foreign policy shifts and find they constitute 11% of China's gross output. Most of them have a higher share of value added from overseas versus the average sector, meaning they are more reliant on overseas technology. The 'computers, electronic and optical products' sector (50% foreign value add) is most closely linked to international technologies.

The five sectors have output multipliers much larger than 1



Note: Bars show the values of total backward linkages of sectors. When one sector expands its production, it boosts demand for intermediate goods from other sectors. Total backward linkage of this sector measures the total output increase given one unit of increase in production by this focal sector, so it is also known as the output multiplier.
Source: OECD input output table (2015), HSBC

We then gauge the sensitivity to shifts in tech policy/exports from the US and other economies with high-tech expertise. We find that there would likely be an impact on Chinese growth from any shifts in tech policy and show how understanding the linkages could help quantify the risks.

Restrictions and impact on growth of each sector and the economy

Annual growth rate	Chemical and Pharmaceutical products	Computers, electronic and optical products	Electrical machinery & apparatus, nec	Telecomm	IT and other information services	GDP
CAGR 2006-10	21.6%	17.5%	21.7%	17.1%	17.6%	
CAGR 2011-15	13.3%	8.7%	13.1%	16.9%	19.3%	
CAGR 2021-25						
Without restrictions	6.0%	6.5%	5.5%	17.0%	20.0%	
With restrictions:						
Case 1:	5.4%	3.4%	5.3%	14.3%	15.8%	***0.4ppt↓***
Case 2:	3.5%	-3.0%	3.1%	13.0%	9.0%	***1.2ppt↓***

Note: nec = not elsewhere classified
Source: OECD, NBS, HSBC

For the full report, see *Innovation in China 2025 – Part III: A closer look at technology imports,* 1 September 2021.

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Economics: How worrying is slowing population growth?

- Population growth has slowed to a record low and the labour force is shrinking
- But a smarter workforce is replacing retirees, while faster urbanisation helps to lift labour productivity
- We expect growth in human capital to gain momentum in the years ahead, which is conducive to long-term economic growth

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The census results are in, and the population is still growing, though at a slower pace. But many are concerned about the population peaking in size soon and the impact of a smaller labour force on China's longer-term growth. Indeed, the latest data shows the population is aging fast and the labour force is shrinking. But these concerns are overblown, in our view, as a smarter and more productive labour force is replacing the retirees. We believe human capital will continue to grow strongly over the next decade or so as previous investment into education pays off. Combined with a faster pace of urbanisation, this should more than offset the negative impact on economic growth from a shrinking labour force. We expect China's potential growth to stay above 6.5% in the years ahead.

Concerns about the negative impact on economic growth are overblown …

The headline results showed China's population increased to 1.41bn people in 2020, a 72m increase from the last census in 2010. The compound annual growth rate was 0.5% for the last decade, which was the slowest pace since the census has been recorded. The data also confirms that the population is aging fast. The share of the population over 65 years old saw the largest increase, as the ratio rose by 4.6ppt, while those between 60 and 64 saw the ratio increase by 0.8ppt from 2010.

Meanwhile, new births also stalled. In 2020, the birth rate fell to 0.85%, the lowest on record, though this was most likely an outlier year due to the COVID-19 shock as previous years saw modest growth rates averaging roughly 1.2% from 2010 to 2019. Nonetheless, even excluding 2020, the birth rate has shown a noticeable decline in pace, which also puts pressure on the population growth.

As more people age and retire and the birth rate slows, this in turn means that the working age population is shrinking. The working age population fell to 879m, down 37m from 2010, or a CAGR decline of 0.3%. While the declining working age population has made many investors concerned about the shrinking labour force and its negative impact on China's longer-term growth, this is overblown, in our view.

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… because the work force is getting smarter

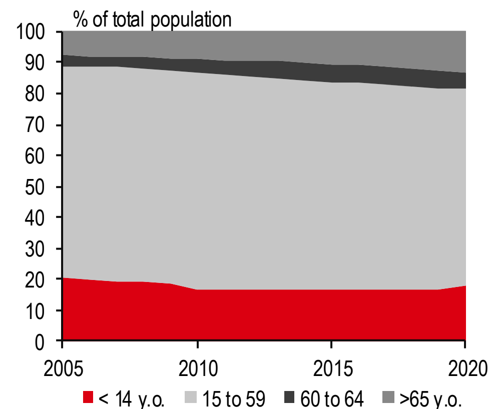
Most importantly, a smarter and more productive labour force is replacing the exiting retirees. In 2020, there were over 218m people who had a university or higher level of education. This is a 73% increase from 2010, and shows the rapid gains in education levels of the population. The share of the educated population with a university or higher level education saw the sharpest increase, rising by 7.2ppt to 17% over the last decade. Meanwhile, the shares of primary and junior high levels of education declined, showing a clear upgrading in education levels.

We estimate that for every two retirees that have less than eight years of education, they are being replaced by 1.9 new graduates who have over 12 years of schooling (see *Fewer workers, more engineers*, 11 October 2019). Moreover, university and post-graduate students are choosing to specialise in more technical fields with over 40% concentrated in science, technology, engineering, and maths (STEM). This should in turn support China's drive for increased technological development.

We believe the smarter workforce can more than offset the shrinking size of the labour force. In fact, once adjusted by education, we find that human capital growth is still positive and likely to continue to grow over the next decade, and is not likely to peak until 2029. This is one year faster than our previous estimate of 2030 as the census data showed a slightly larger decline than anticipated in the working age population. For more details on our forecast method for human capital growth, see *China Inside Out: Mind the gap*, 15 April 2021).

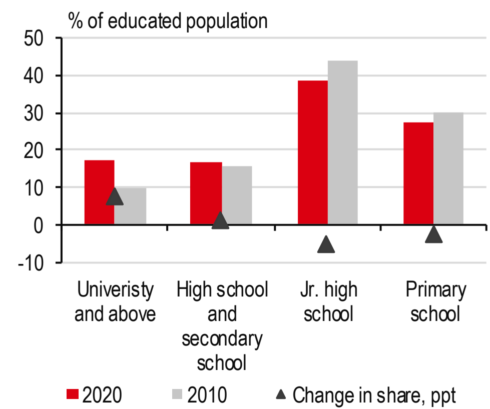
Aside from education, there are also other drivers that would support human capital development. Improvements in health care coverage and health care breakthroughs can improve labour quality, while increased labour market protections and social security coverage would also benefit more productive and satisfied workers.

An aging population …



Source: CEIC, HSBC

… but education levels have increased



Source: CEIC, HSBC

For the full report, see *China Economic Spotlight – Slowing population: How worrying is it?* 12 May 2021.

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Economics: Rising debt – how big is the risk?

- China's debt-to-GDP ratio has surged as Beijing has stepped up stimulus after the outbreak of COVID-19
- But this is only temporary, as a strong growth recovery should help stabilise the ratio
- Our analysis of local government debt shows most has been invested in infrastructure and tangible assets that support productivity

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The stimulus measures Beijing introduced during the pandemic have prevented a prolonged recession and the economy has recovered quickly since Q2 2020. But as with all counter-cyclical policies, fiscal and monetary stimulus also comes with undesirable consequences. The debt-to-GDP ratio surged 23.6ppt to 270.1% at the end of 2020, the fastest pace since the global financial crisis (GFC). Local governments have led the expansion in debt, accounting for c34% of the increase.

With the recovery well on track, Beijing policymakers will naturally pay more attention to the debt risks and strike a balance between sustaining growth and controlling these risks. Although the governor of the central bank recently hinted that stabilising the debt-to-GDP ratio is one of his policy goals, we believe that concerns about rising debt levels forcing Beijing to tighten fiscal and monetary policy are overblown.

First, the recent surge in the debt ratio is only temporary because it will stabilise as a result of the anticipated strong recovery in GDP growth. This can stop the debt ratio from rising without a material slowdown in growth in total social financing (13.3% in 2020).

Second, local government debt has become the focal point of these risks, given its size, rapid growth and complexity. Yet a closer look shows that these debts have been used to finance new investment in infrastructure and other tangible assets. In other words, rising debt is matched with rising assets, so local government balance sheets are not necessarily deteriorating.

More importantly, both data analysis and case studies show that a majority of the investment in infrastructure and commercial projects have a substantial positive spill-over effect on regional productivity and economic growth. For example, Hefei has transformed itself from a backward inland city to a high-tech industrial hub in the past decade and recently joined the trillion-yuan GDP club, by investing through its local government financing vehicles (LGFVs). Analysis of 4,000+ LGFVs shows that the bulk of investment projects have generated decent returns and boosted growth.

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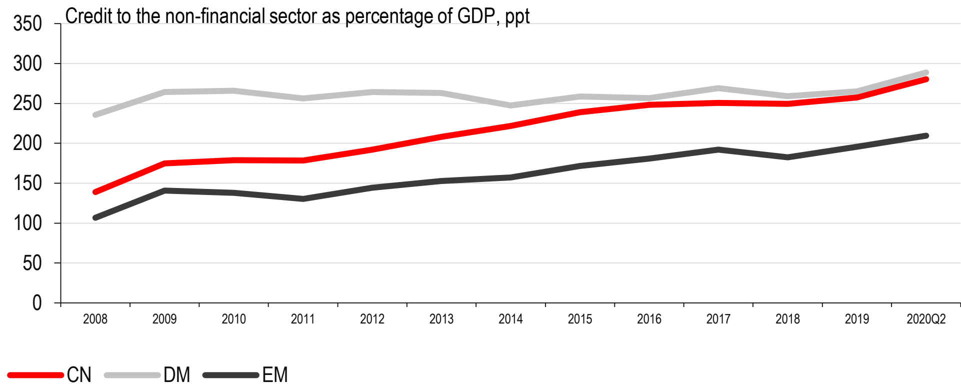
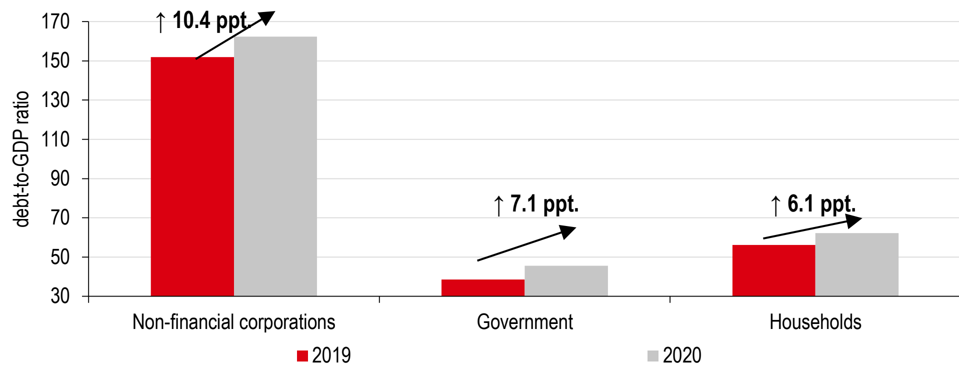
China's debt-to-GDP ratio has risen during the pandemic



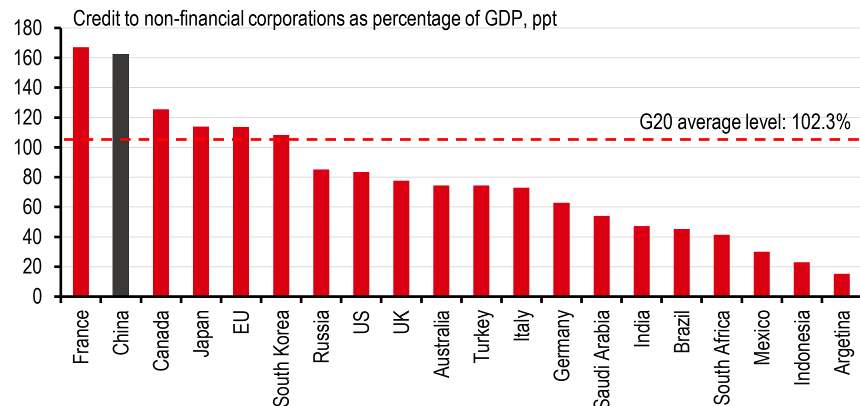
Source: BIS, HSBC

Leverage ratios have grown in the corporate and government sectors



Source: CNBS, HSBC

China's corporate debt-to-GDP ratio is second-highest among the G20 (Q2 2020)



Source: BIS, HSBC

For the full report, see *China's rising debt – How big is the risk?* 26 February 2021.

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Economics: Time for a tech and green stimulus package

- We think the central bank could provide over RMB1trn to banks to encourage more green loans …
- … and central government could spend another RMB1trn supporting core technologies, including green technology
- This would help offset the impact of the property slowdown and keep GDP growth above 5.5% in 2022e

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The backdrop: China's economy continues to slow with rising pressure on the labour market. The young are particularly impacted as many job-hungry graduates are struggling to find high-skilled and well-paid jobs. At the same time, both business and consumer confidence is falling, exacerbating the growth slowdown. All this calls for more decisive action to shore up economic growth. While Beijing has started to loosen restrictions on property lending, this is more aimed at reducing contagion risks and cushioning the slowdown, rather than propping up the economy.

Going green, tackling tech: We believe that rolling out a tech and green-focused stimulus package would be the best policy option for shoring up the economy and provide high-quality jobs. Doing so would (1) boost domestic demand, (2) offset the growth drag from the property market, and (3) redirect capital towards high-tech and green projects. In addition, such measures are aligned to the longer-term goal of technology self-sufficiency and decarbonisation (*China's great transition: from construction to capex and consumption*, November 2021).

Calculating a potential RMB2trn package: We see a possible RMB2trn tech and green stimulus package, equivalent to around 2% of GDP, and made up of two main components. First, the central bank could release over RMB1trn in green re-lending, which translates into over RMB1.7trn for new bank lending to green projects. Second, the central government could increase public spending on core technologies and infrastructure by issuing green sovereign bonds (up to RMB1trn) to support green investments, such as upgrades to the power grid. Other large-scale initiatives like recent COVID-19 bonds have been around this size. We stress that since most green projects involve upgrades to technology and equipment, investments in such projects tend to have higher output multipliers than real estate. Combined with industrial funds and more generous tax incentives for technology upgrading, such measures would attract more private capital into medium and high-tech manufacturing and green projects. This would not only help engineer a modest recovery in GDP growth to above 5.5% in 2022, but also cultivate new drivers of growth for the years ahead.

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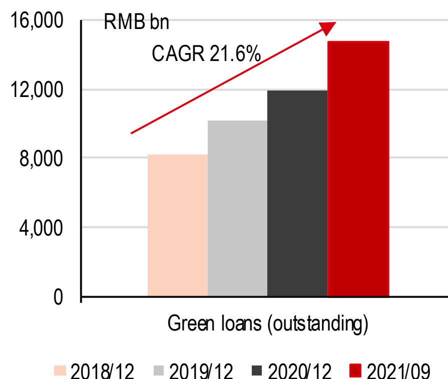
We expect a RMB2-3trn green and tech stimulus package

Policy tool	Amount	Details
Green relending tool	Around RMB1trn	National banks have been asked to extend green loans at market rates benchmarked to the current loan prime rate (LPR, which is at 3.85% for one year), and then they can apply for one-year funding from the PBoC to cover 60% of the loan principal with an interest rate of 1.75%. We expect the central bank to issue at least RMB1trn (Yahoo, Nov 9) in green relending to support green investment over the next several years, which could create over RMB1.7trn in additional new bank loans to finance green projects.
Sovereign green bonds	Up to RMB1trn	Sovereign green bond issuance will also be a valuable tool to drive public spending on decarbonisation and can catalyse the local government green bond market. Other large-scale initiatives like recent COVID-19 bonds have also been around this size.
Budget spending on science and technology	Additional RMB100bn (c.f. RMB900bn+ in 2021)	Budget spending on science and technology is estimated to rise 1.8% to RMB925bn this year according to the government's budget report. Next year, we expect a bigger budget bill to support research and development in science and technology.
More tax cuts and fee reductions for tech and green transformation	Notable increase from an estimated RMB700bn this year	Possible new tax incentives include increasing tax deductions for equipment purchases used for green transformation and expanding VAT refunds for R&D equipment purchases for all manufacturing businesses.

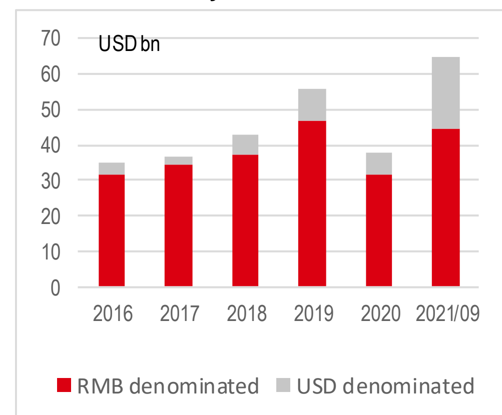
Source: PBoC, HSBC

China's outstanding green loans have grown fast in the past several years



Source: Wind, HSBC

Green bond issuance (esp. offshore) also increases steadily



Source: Climatebond, Bloomberg, HSBC

For the full report, see *China easing – Time for a RMB2trn tech and green stimulus package*, 17 November 2021.

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Economics: Smart manufacturing to fuel capex

- The COVID-19 pandemic has triggered an acceleration in digitalisation and automation
- Policy support will likely reinforce the sustainability of this trend …
- … and fuel a long-lasting upturn in manufacturing investment

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Weakening PMIs and other key data points have raised concerns about the risk of a sharp slowdown in y-o-y GDP growth to below 5% heading into next year. But we believe these concerns are overplayed as we expect a long-lasting upcycle in manufacturing investment to become a new growth engine in the coming years. On top of positive cyclical factors, such as a broad-based recovery in industrial profits and higher than normal capacity utilisation rates, the pandemic-induced acceleration in digitisation and automation will likely fuel stronger manufacturing investment in the years ahead.

Since the COVID-19 outbreak in Q1 2020, investment in digitalisation and automation has been accelerating. HSBC Qianhai's industrial equity research team expects sales of industrial automation production to record 20% growth in 2021, up from low single-digit growth in the last two years. The development of the Industrial Internet of Things has also speeded up. The China Academy for Information and Communications Technology estimates the value-added of the industry to rise 50% in 2021, reversing the deceleration trend in the last few years. All this has led to a recovery in industrial capex spending, with the 2-year compound annual growth rate (2-year CAGR) of listed manufacturers' capex spending rising to 6.2% in H1 versus a small contraction in 2019 before the pandemic. We expect the 5-year CAGR of manufacturing investment to improve to 7-8% from 3.8% during the last five years. We expect this acceleration in digitisation and automation to be sustained in the coming years for three reasons:

- There is still huge potential for China to play catch up with developed economies in this area. Only 21% of manufacturing value-added in China is driven by digitalisation, much lower than the 33% average for developed countries. China's industrial robot density is also only around one-fifth of leading countries such as Singapore and South Korea. Meanwhile, within China, there is also a big gap in digitalisation between leading and laggard companies.
- Beijing will likely double down on policy incentives to promote digitalisation and smart manufacturing in the coming years as they are key components of China's technology self-sufficiency strategy. Likely measures include further tax cuts and exemptions for manufacturers' investments in technology upgrading, as well as favourable credit policies.
- An anticipated policy push under the 14th Five-year Plan to develop smart cities and other digital infrastructure. This should generate more demand for domestic high-tech equipment manufacturing, and lay the foundations for a faster digital transition by manufacturers in more sectors and regions.

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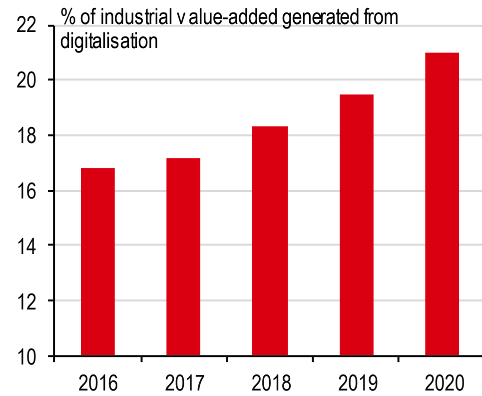
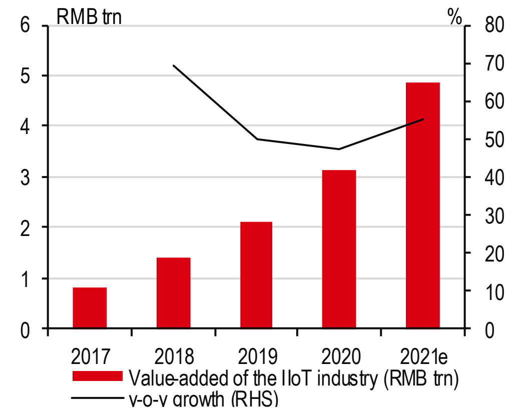
Industrial digitalisation continued to deepen in 2020 despite the pandemic



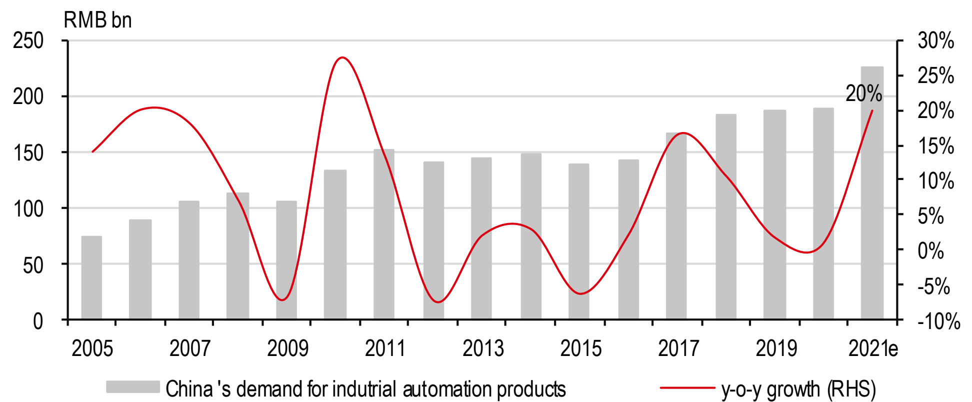
Source: China Academy for Information and Communications Technology (CAICT), HSBC

The development of the IIoT quickened post COVID-19



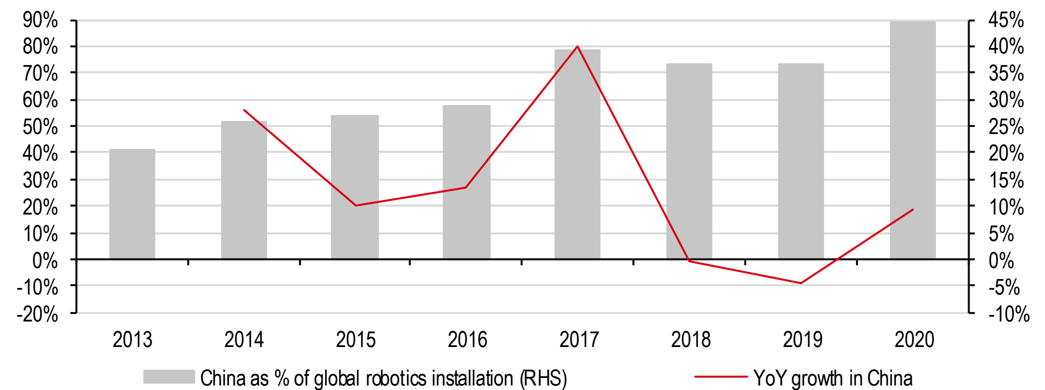
Source: China Academy for Information and Communications Technology (CAICT), HSBC

Sales of key automation products are expected to have risen by 20% in 2021e



Source: Bloomberg, Wind, HSBC Qianhai Securities estimates (see China Automation: Gear up for growth by Corey Chan et al, July 2021)

China accounted for around 44% of global new robotics installation in 2020



Source: International Federation of Robotics (IFR), HSBC

For the full report, see *China Inside Out – Smart manufacturing to fuel an upturn in capex*, 9 September 2021.

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Economics: Common prosperity and tax reforms

- Concerns that Beijing's drive to promote common prosperity will lead to higher taxes for the rich are likely overblown
- Personal income tax is already at the high end of global rates, so the focus will likely be on addressing tax evasion
- We believe an annual property tax could be rolled out more broadly, in line with international standards

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Beijing's new common prosperity initiative has raised concerns about the potential for higher taxes on the rich. We believe the worry is likely overblown as China's drive to narrow wealth inequality is mainly about achieving a more equitable society through expanding the size of the middle class (see *China regulation: The roadmap to common prosperity*, 16 August 2021). Senior officials have also clarified that "common prosperity" is not about bringing down the rich to help the poor (Reuters, 26 August 2021).

A closer assessment of China's system of personal income taxes also suggests Beijing is unlikely to hike rates or introduce more taxes. That's because personal income taxes are already high at over 45% for the highest income earners, leaving them at the top end of global personal income tax rates, and likely little room to rise further. Instead, China may crack down further on tax evasion. There has already been a slew of high-profile tax investigations into celebrities and high-net worth individuals. As a result, we expect China to drive increased tax compliance among the ultra-high income earners with more investigations and increased penalties.

A decades-long housing boom has been the major force behind widening wealth inequality, so wealth taxes in China may naturally focus on real estate. In fact, there are already pilot programs on non-primary homes in Shanghai and luxury residences in Chongqing. These programmes have implemented an annual household property tax rate at around 0.5%, falling within the typical range seen in household property taxes rates in other major economies. We expect similar pilot programs to be rolled out gradually across the country in the coming years. Meanwhile, we also expect Beijing to raise the threshold for charitable donation deductibles as well as to spur a culture of giving.

Personal income taxes are already among the highest in the world
The current system of taxing individuals in China is mainly centred on personal income tax. Like many countries around the world, China's personal income tax follows a progressive model with the tax rate ranging starting from 3% and rising to 45% on taxable income after taking out fixed and special deductibles. While there is some concern that recent rhetoric by officials around achieving a more equitable society could mean tax rates will be raised, in our view these concerns are likely overblown.

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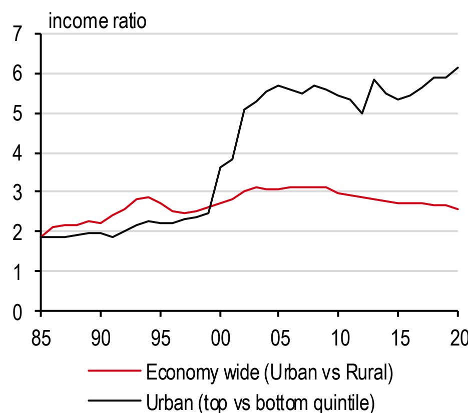
For one, the personal income tax code in China is already fairly comprehensive. Compared with global standards, China's top effective tax rate of 45%, while not the highest, is at the higher end. The highest effective income tax rate among OECD countries is Austria at 55%, while the average for the group is 36.5%, putting China's tax rate at the higher end. After adjusting for total personal income tax to include local government tax rates as well, China is still higher than the OECD average. We believe this means there isn't really much of a need for China to increase its tax rates further for its wealthiest earners.

Additionally, recent income tax reforms have focused on lowering the tax burden as opposed to raising it, also reducing the likelihood that we will see sweeping increases in income tax rates. The most recent reform to the Individual Income Tax law came into effect at the beginning of 2019 and was aimed at lowering the tax burden for lower and middle-income earners. The standard monthly income deductible was raised from RMB3,500 to RMB5,000, while special deductibles included children's education, continuing education costs, health care costs and housing rent or mortgage interest. The lower levels of the tax brackets were raised or widened, lowering the tax burden for lower level income individuals.

Tax compliance will be the focus

As most of the population is exempt from income taxes as they fall below the threshold for tax payments after taking into account deductibles, the focus will likely be on the high income earners to ensure they are paying their tax bills. The State Taxation Administration vowed it would crack down on tax violations and increase supervision of high net worth individuals (State Taxation Administration, 26 August). Recent high-profile tax investigation cases have centred on tax evasion by celebrities or high-net worth individuals.

Income inequality in China has increased over the last few decades



Source: CEIC, HSBC

China's top effective personal income tax rate is fairly high compared with OECD countries

Source: TaxFoundation, World Bank, HSBC; OECD countries; Top effective personal income tax rate is based on the sum of central and local government rates on personal income tax.

For the full report, see *Common prosperity – What does it mean for China's tax reforms?* 8 September 2021.

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Economics: What decoupling?

- Despite COVID-19 and the Sino-US trade war, China's trade and investment ties with Asian economies have deepened …
- … underpinning the resilience of regional production networks
- Beijing's tech upgrading and green initiatives will likely further boost trade and investment flows with Asia in the coming years

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The double whammy of the Sino-US trade war followed by the COVID-19 pandemic have fuelled concerns about supply chain diversification away from China and even economic decoupling. However, data shows that these twin events have enhanced, not undermined, the integration of Asian supply chains.

On the trade front, China's exports to other Asian economies, especially to ASEAN, increased steadily during the Sino-US trade war and COVID-19. ASEAN now accounts for 14.8% of China's exports compared with 12.4% in 2017. More importantly, data shows that China has moved up the value chain across various sectors and has become a more important provider of intermediate goods for Asian economies' manufacturing sectors. China has continued its efforts to reduce trade tariffs and other trade barriers with non-US economies, with its weighted mean tariff rate continuing to fall after the start of trade tensions. This has facilitated a further reconfiguration of Asian supply chains that will support China's efforts in industrial upgrading.

On the investment front, deeper regional integration is reflected in increased direct investment between China and its Asian peers. In particular, Chinese manufacturers have been moving up the global value chain and expanding or relocating part of their production capacity to ASEAN economies to make use of their comparative advantages and local markets. Meanwhile, more developed economies in Asia such as South Korea and Singapore have shown stronger interest in investing in high-tech and high-value-added sectors in China such as IT and electronics.

Looking ahead, China's regional partners are set to benefit from Beijing's new policy initiatives for its 14th Five-year Plan. Beijing's carbon neutral initiative and desire to avoid heavily polluting industries will likely lead to more imports of commodities from key Asian exporters such as Indonesia and Australia. Meanwhile, Beijing is redoubling its efforts to achieve technological upgrading and self-sufficiency, and that should boost the country's demand for machinery and equipment. The recently signed Regional Comprehensive Economic Partnership (RCEP) also provides streamlined rules to facilitate further growth in China's trade with neighbouring economies. The profound damage from the pandemic on all regional players should incentivise Asia to work together to achieve an inclusive and sustainable post-COVID economic recovery.

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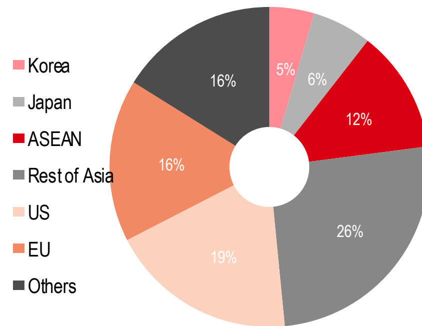
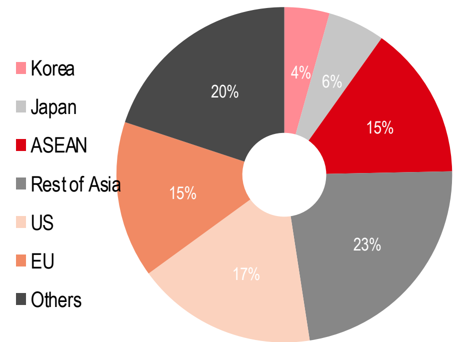
China's export markets in 2017



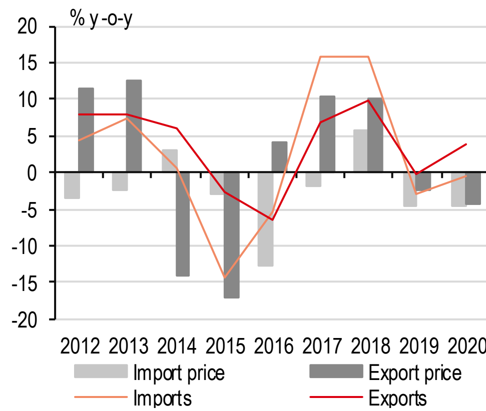
Note: Exports to Hong Kong are redistributed to other markets according to re-export data
Source: CEIC, HSBC

China's export market in 2020



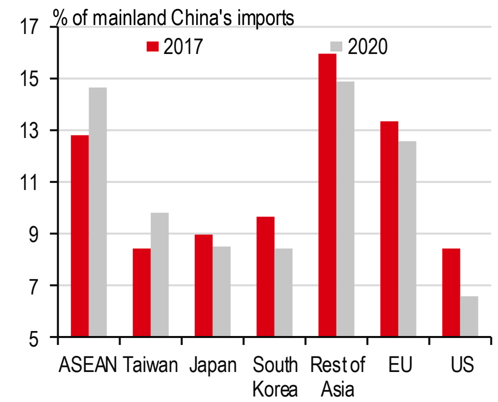
Note: Exports to Hong Kong are redistributed to other markets according to re-export data
Source: CEIC, HSBC

Import growth has been relatively slow compared with exports in recent years



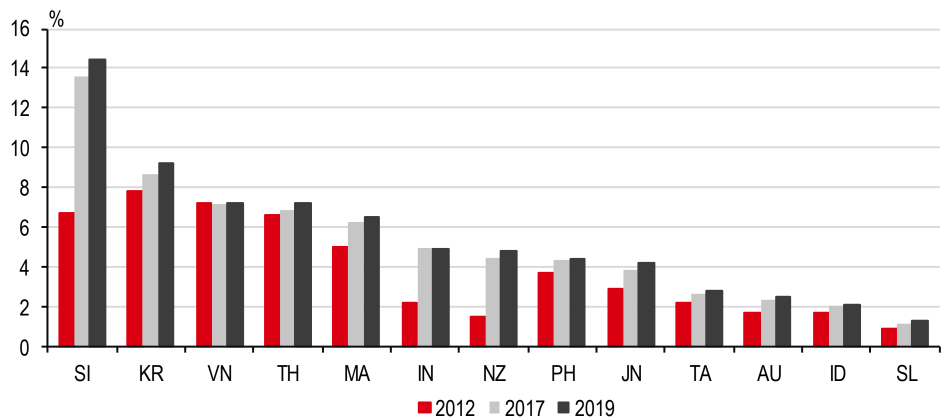
Source: CEIC, HSBC

Products from ASEAN now account for a larger share of mainland China's market



Source: CEIC, HSBC

Share of manufacturing value-added contributed by mainland China in an economy's exports



Source: UNCTAD-EORA, HSBC

For the full report, see *What decoupling? – China's economic ties with Asia are getting stronger*, 29 July 2021.

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Over 4m science, technology, engineering and math (STEM) students graduate every year, more than in the US, Germany, Japan, Korea and UK combined.

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Credit: Property HY – Survival of the fittest

- We identify the pivotal issues for the sector in 2022 …
- … and the signals that could make us more constructive
- Our key investment strategy – to identify the survivors

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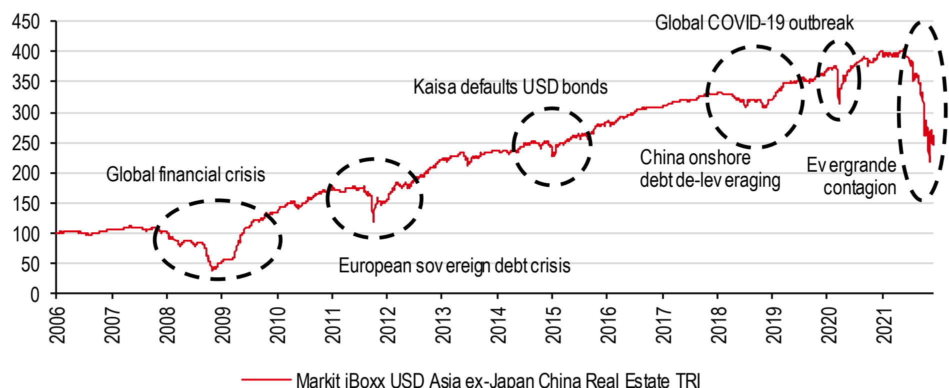
Ouch! With defaults at record levels, the biggest correction in a decade, and -35% total returns* year-to-date, suffice to say we won't miss 2021. We look ahead to what's to come in 2022 and the signals that may make us more constructive on China property high-yield (HY) bonds. Our key investment strategy: to identify the survivors.

Key 2022 themes: (1) The scramble for offshore liquidity, (2) a high concentration of onshore/offshore bond maturity is a red flag, and (3) how to price in the likelihood of more defaults – we highlight the issuers we see as being most at risk.

Five positive signals: (1) Rising property sales, together with a loosening of scrutiny over presale escrow accounts; (2) improved access to refinancing for private-sector developers in the onshore bond and asset-backed securities (ABS) markets; (3) state-owned enterprises taking strategic stakes in large private-sector developers; (4) Country Garden's increasing property sales and land purchases; and (5) developers regaining access to the US dollar bond market.

2021: Biggest correction of China property HY bonds in a decade



Note: TRI stands for total return index. 30 December 2005 = 100. Total return = capital gains (losses) + interest accruals, in USD.
Source: Markit, HSBC

2021 at a glance: A painful year

The combination of synchronised onshore/offshore liquidity tightening as a result of the 'three red lines' policy introduced in August 2020 and the capping of banks' property-related loan exposure by regulators in December has left the China property USD HY bond market heavily scarred. Inevitably, the market has shrunk on the back of substantial repricing of credit risk

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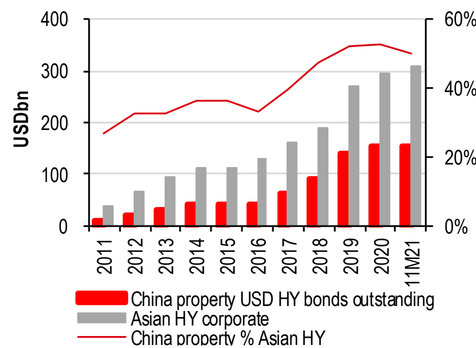
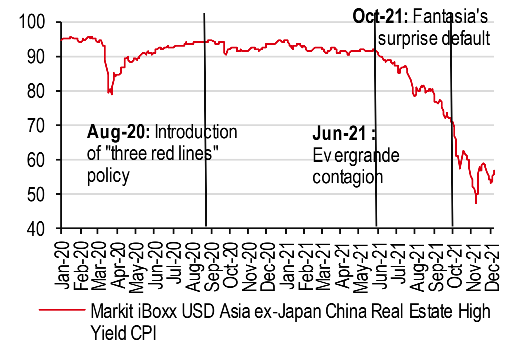
during the year. From a total return perspective, China property HY bonds returned -35% y-t-d (as of 9 December), with 'B' rated names hit hardest and most issuers generating negative total returns in 11M2021. The repricing of risk started in June following the rapid deterioration of Evergrande's balance sheet liquidity and intensified when Fantasia surprisingly defaulted on its USD206m bond that matured on 4 October.

China property HY space shrinks in 2021...



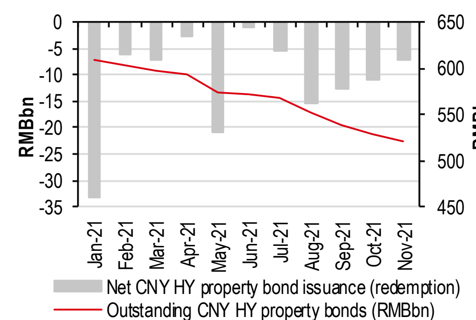
Source: Bloomberg, HSBC

. ... with substantial repricing of credit risk



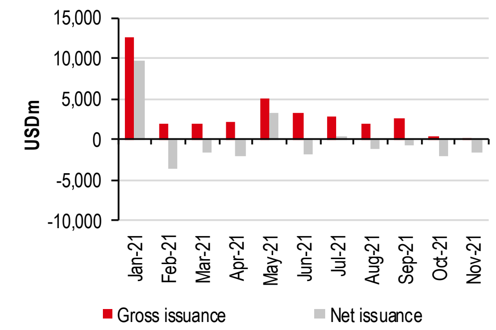
Note: CPI stands for Clean Price Index
Source: Markit, HSBC

Net redemption of CNY HY property bond



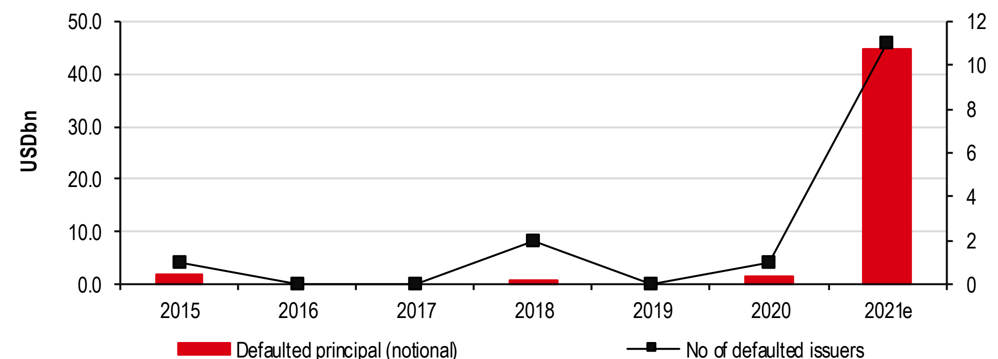
Source: Wind, HSBC

Malfunctioning offshore USD HY market



Source: Bloomberg, HSBC

China property HY: Record USD bond defaults in 2021



Source: Bloomberg, HSBC estimates

For the full report, see *China Property HY – 2022 outlook: Survival of the fittest*, 13 December 2021.

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Credit – AMCs: The wounds are healing

- Bailout banishes the market blues – we think the worst is over
- Government support for Huarong will help support the bonds of the other three big asset managers
- But weak standalone fundamentals need to improve

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A big sigh of relief. There's nothing like a government bailout to settle the nerves of investors, particularly when it involves an ailing state-owned giant like China Huarong Asset Management Co ("Huarong"). The long-awaited announcement in August this year that a group of strategic investors would inject equity into Huarong, China's largest asset management company (AMC), was welcomed by a market concerned about a string of credit defaults. Sentiment perked up once more in November when it was confirmed that the equity injection would total RMB42bn – not massive given the circumstances, but enough for the time being – and that Huarong would soon be allowed to issue bonds on the onshore market again.

2022 looks a bit better. While there's no doubt that 2021 has been a roller-coaster year for the AMC sector, things are looking up for 2022. The market jitters that started in April and spread to China's other three big AMCs – Cinda, Orient and Great Wall – have eased. As of early December, the yields of the entire Huarong dollar bond curve, including its three remaining perpetual bonds (perps), have returned to single digits. Cinda's dollar bond curve has recovered to a lesser extent, but it was not as badly hit as Huarong in the first place.

Hard work needed. Despite the bailout, a lot of hard work is needed to improve the credit fundamentals of not only Huarong, but the entire sector. Remember, Huarong booked impairment losses of RMB108bn in 2020, wiping out cumulative profits for the past 10 years and more. The sector's focus will be on the further divestment of non-AMC businesses and improving the profitability of the AMC segment.

Government support at work

A government bailout goes a long, long way to easing the minds of investors in China's state-run asset management companies. After all, in a sector where the big four AMCs have been highly leveraged for several years, the market has always put more faith in government support than the standalone fundamentals of the companies.

For example, Huarong continued to issue bonds between 2018 and 2020 when technically speaking, Huarong International, the issuing entity of Huarong's dollar bonds, had negative book equity if perps were excluded. No wonder the market turned jittery when the publication of Huarong's annual report was delayed, and the government stayed quiet for more than four months about what the next step would be.

The bailout, when it came, had plenty of government financial muscle behind it – a group of strategic equity investors, led by CITIC Group Corporation (CITIC Group), would make an equity

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injection totalling RMB42bn. We see the hand of the Ministry of Finance (MoF) at work here. It is the controlling shareholder of the big four AMCs and also controls 90% of CITIC Group.

After the dust settles, Huarong's ownership structure – that of a central SOE – will essentially remain unchanged. And the same applies to the other three big four AMCs, whose common largest and second largest shareholders are the MoF and the Social Security Fund. However, it is important to note that the bailout was structured as a market-driven event rather than the use of taxpayers' money to rescue an SOE, although implicit support of the MoF is considered the key factor from market participants' perspective.

The first priority is to streamline Huarong's business segments

The RMB19.2bn committed by CITIC Group to the equity injection into Huarong is relatively small compared with the size of CITIC Group. But, in our view, the total RMB42bn equity injection is probably not enough to fully restore the stability of Huarong's balance sheet. More is probably needed. But the scale, format and timing of the next round of capital injection has yet to be decided. The first priority is to streamline Huarong's business segments, which we discuss in the next section. In the meantime, confidence about further government support would be the key supporting Huarong's bond prices.

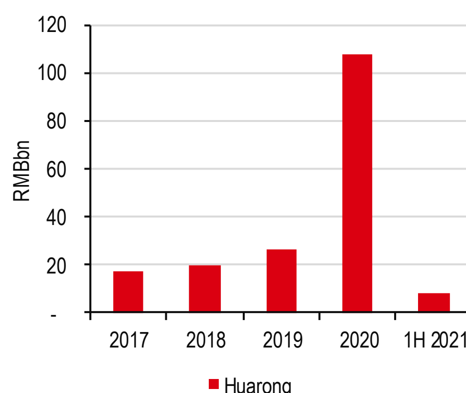
The market reaction has been encouraging

Other than government support, we think the second most important factor that will determine the effectiveness of this bailout is the market reaction. If investors have persistent doubts about the government's ability to turn Huarong around, the chances of success should be significantly reduced.

So far, the market has been supportive. In both the onshore and offshore markets, Huarong's bond prices are now nearly back to where they were at the end of March 2021, before the delay in publishing the annual report spooked the market. Moreover, Cinda and Great Wall have both managed to tap into the onshore and offshore bond markets since August 2021, albeit at an increased, but still reasonable, funding cost.

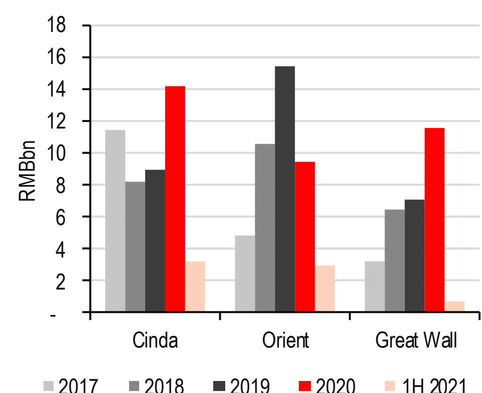
What worried us and the market before August 2021 was the possibility that the government would not step in. However, with the bailout confirmed, we think support will continue, as the reputational risk to the central government and the MoF would be even greater if it turned out to be unsuccessful. We think this bailout will be an important milestone for the whole AMC sector as it recovers from the shock of events in 2021; the next milestone should be Huarong getting access to refinancing in the bond market.

Impairment losses: Huarong



Source: Annual reports, HSBC

Impairment losses: Cinda, Great Wall, Orient



Source: Annual reports, HSBC

For the full report, see *China AMC – The wounds are healing*, 22 November 2021.

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Credit: Bond markets – the promise of diversification

- A tailwind helps. China's bond yields have been falling towards US levels, attracting the attention of global investors
- Improvements in liquidity and credit differentiation will help maintain the trend
- We reaffirm our focus on fundamental credit quality in light of defaults and a realignment of onshore ratings

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Steady returns in the face of uncertainty

China's fixed income market has proved to be an effective diversifier for global investors. In 2020, its credit markets were a relative safe harbour and government bonds provided refuge from rising Treasury yields. Milestones such as index inclusion and the launch of the Bond Connect programme will need to be built upon, and we identify two areas for improvement.

Improvement #1: liquidity

Liquidity in China's fixed income markets, whilst improving, has further to go. By one measure, the US Treasury market is six times more liquid than China Government Bonds (CGBs), but this is largely because of the narrow investor base. The majority of CGBs are owned by commercial banks on a hold-to-maturity basis.

For foreign investors, two measures in particular would enhance market liquidity. Firstly, opening up the onshore futures market will provide an additional hedging avenue to interest rate swaps. Similarly, access to the repo market will allow investors to manage liquidity risk by swapping off-the-run issues with on-the-runs. Given the systemic importance of the repo rate to China's monetary policy framework, this may take time.

Improvement #2: pricing credit risks

There has historically been a lack of credit differentiation among issuers in China credit. Policymakers are aware of this and have been pushing the market to better price credit risks for the past few years. One approach is to curb the moral hazard by allowing selective defaults. Another is to better align onshore credit ratings to reflect a firm's probability of default.

In time, a greater emphasis on fundamental credit quality should attract foreign asset management firms to China's corporate bond market. Meanwhile, some volatility is to be expected as the market navigates this paradigm shift. We prefer an up-in-quality investment approach to China onshore credit.

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Investors generally playing catch-up

Global investors have been increasingly waking up to the opportunity provided by Chinese bonds over the last few years. Now there is more demand for information to compare China's bond market, across both credit and rates, with Europe and the US. China bonds stand out as a diversification opportunity for two connected reasons: (1) investors need to buy to match index levels, and (2) there has been a tailwind, whereby performance of the aggregate index has been consistently positive at a time of great uncertainty.

Tailwind

Positive returns from China fixed income …

The Chinese bond market is no different from its global fixed income peers, in that total returns have been dominated by the duration call and currency moves. USD-based investors have been receiving positive returns from their China bond investments for most of the last five years. Such a performance is no guarantee of future success, but it is at least encouraging for those who require a track record.

Aggregate index performance masks what's going on underneath

… driven mostly by duration and FX …

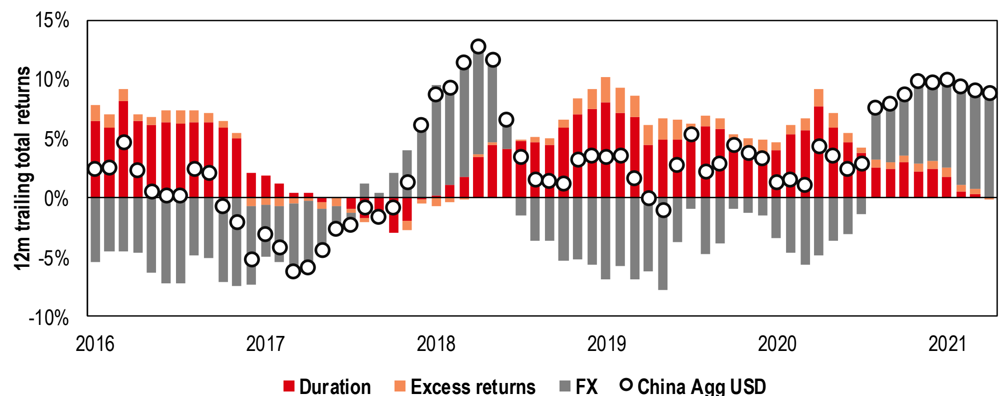
From the chart the grey bars show annual returns attributed to currency moves, and in this case they have been positive for the last nine months, reflecting the performance of the RMB. During the same period there has also been mainly been a positive contribution from duration, shown by the red bars, albeit smaller.

… but credit spreads played a part, too

Excess return represents the performance (mainly) due to credit spreads for the aggregate index. The contribution from credit spreads is not large, but as the chart shows, for most of the last five years it has been positive.

This hides many developments within the aggregate index, with some sectors in the index performing well and other less so. From 2017 to April 2021, the onshore RMB credit bond market delivered an annualised total return of 5.3%, according to our calculation. The insurance, retail and real estate sectors have outperformed, with annualised total return of 5.8% or more over the same period. On the other hand, the telecommunication, pharmaceuticals and auto sectors were the underperformers, with annualised total return of 4.7% or less.

China bonds' total returns have been dominated by duration and FX



Note: Annual returns on a 12-month trailing basis. Impact of index rebalancing on total returns is recorded under duration. Total return measures price appreciation and coupon accrual with reinvestment of coupons and index rebalancing at month end, taking transaction costs into account.
Source: Bloomberg, HSBC calculations

For the full report, see *China's bond markets – The promise of diversification*, 25 May 2021.

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Credit: Internet – sailing into the wind

- Regulatory risks will likely overshadow China Internet companies in the coming year
- Credit profiles and bond prices are set to diverge based on operating challenges and capex commitments
- We expect USD8-10bn gross issuance next year vs USD10bn y-t-d

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Regulatory risks persist. Regulatory risks have shadowed China's Internet industry since March 2019, when Beijing first expressed concerns about children becoming addicted to online games. In 2021, this regulatory oversight has expanded to cover market competition, personal and national data protection, and network security. We expect regulatory risk to continue to play a key role in the sector next year as the government's scrutiny of online operations is broadening, affecting all the Internet companies under our coverage.

Credit profiles to diverge. Most USD bond issuers in the Internet sector have robust financial and liquidity profiles that act as a buffer against market volatility, in stark contrast to the massive repricing seen in the equity market. However, companies' operating and credit profiles are likely to diverge in 2022. A year-long crackdown on the consumer Internet segment has led to slower earnings growth, higher operating costs, and larger investments to broaden companies' business scope and products. Those with stronger liquidity, large monetising opportunities and broader operating scope are better placed to withstand the headwinds.

Gross issuance: USD10-12bn in 2022e in China tech space

Gross issuance y-t-d in the tech space is lower than we expected at USD12bn y-t-d, vs our full year forecast of USD15-17bn. Primary activity has quietened down since September due to a combination of heightened regulatory risks, market volatility and adverse investor sentiment. For 2022e, we believe total issuance will be between USD10bn and USD12bn, flat or slightly below 2021e levels. Looking at the breakdown, we expect Internet companies to account for USD8-10bn and hardware companies USD2-4bn. The lack of growth in issuance is attributable to tighter regulations and less refinancing requirements (see Fig. 13). Our forecast includes the potential refinancing and redemption of convertible bonds that mature in 2022. Despite the headwinds, we think China's tech sector will remain a key issuing group in the country's primary bond market. It had accounted for an average of 10% of overall China USD bond issuance in recent years (9% in 2020 and 11% in 2021e).

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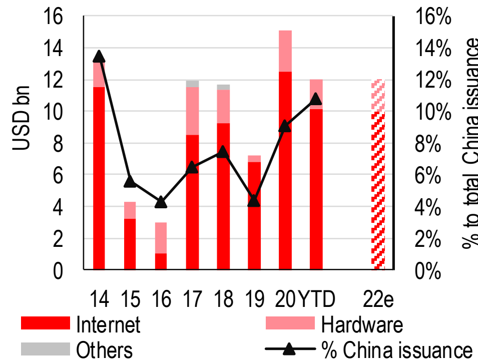
Gross issuance of China technology USD bonds may be lower to flat vs 2021e

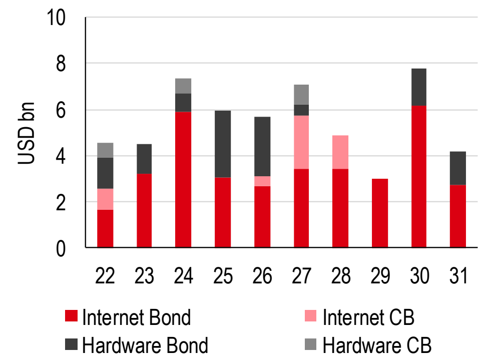
Primary issuance of China technology USD bonds



Source: Bloomberg, HSBC estimates

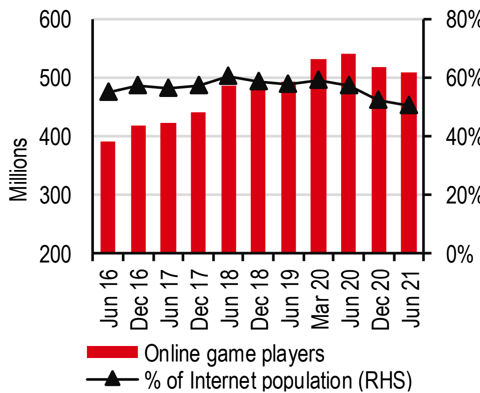
There are limited refinancing needs in the pipeline

China technology USD bond maturity profile



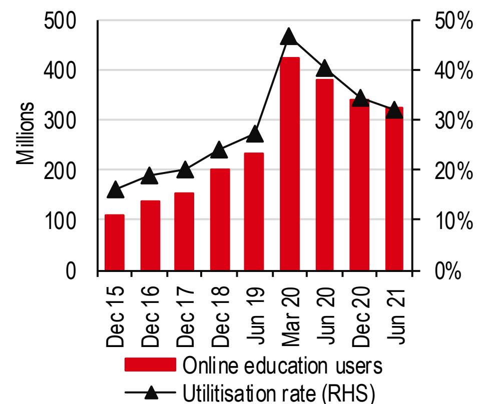
Source: Bloomberg

Online gaming: in decline since 2020



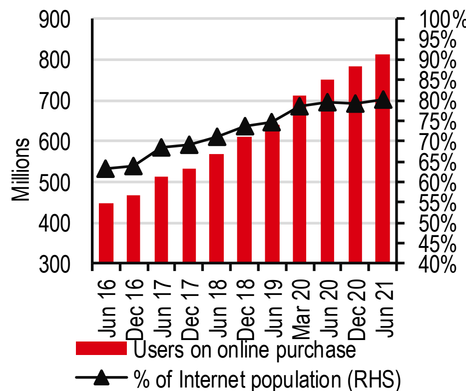
Source: China Internet Network Information Centre (CINNIC)

Active online education users peaked In March 2020



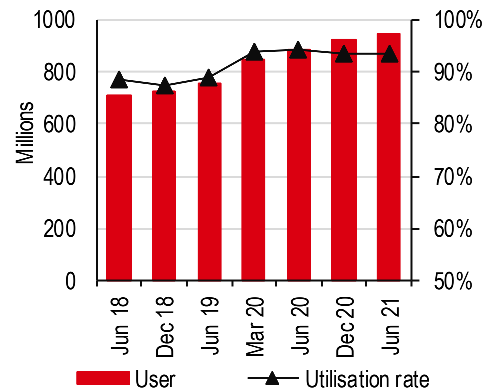
Source: CNNIC

E-commerce business has been growing steadily



Source: CNNIC

Online video usage on the rise



Source: CNNIC

For the full report, see *China Internet: 2022 outlook: Sailing into the wind*, 16 December 2021.

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Credit: LGFVs – 2022 outlook, worried but not scared

- LGFVs outperformed the China dollar bond market in 2021 despite rising debt levels
- We expect policies to remain supportive for most of 2022, but credit events could accelerate in 4Q22
- We think the sector is too big to fail – LGFVs accounted for 46% of gross corporate bond issuance in the first 11 months of 2021

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So far, so good. We recently stated that we thought local government financing vehicle (LGFV) debt, given its size and complexity, was the problem Beijing could not afford to get wrong in 2022, especially after what has happened to the property market (Helen Huang, *China LGFVs: The next shoe to drop?* 13 October 2021). Investors have reasons to be concerned about what lies ahead in 2022. After all, LGFVs are heavily involved in land development, making them potential targets for the next round of deleveraging policies aimed at reducing the economy's reliance on real estate, and their debt levels and leverage ratios are still rising. Despite this, LGFV bonds have outperformed the China USD bond market y-t-d, generating positive returns based on what investors see as implied government support (unlike the property sector).

Concerning, but not scary. There has never been a default on a publicly issued LGFV bond, but we think it's only a matter of time. The good news is that we think defaults will be limited and won't trigger systemic risk, and restructuring will focus on extending payments rather than haircuts or even bankruptcy. In our view, the sector is simply too big to fail. To put this in context, the fall of Evergrande hammered the property sector partly because of its sheer size – the company has RMB2.3trn in assets on its balance sheet. The LGFV sector has total assets of RMB102trn as of 2020, about the same size as China's GDP. At the same time, in the RMB bond market, LGFVs accounted for 46% of gross corporate bond issuance in the first 11 months of 2021.

Timing is key. We think stability will be prioritised over deleveraging in the first three quarters of 2022. After the property sector woes of 2021 and a tough outlook in 1H22e, we think the economy and the financial system need some breathing room. Against this backdrop, we see opportunities to buy LGFV names offering short duration, elevated yields, and a reasonable chance of paying off their bonds. But we are worried about the deleveraging agenda picking up momentum again in 4Q22, which has been a hotspot for high-profile defaults since 2019. Having said that, every previous downturn in the LGFV sector has been a buying opportunity. Overall, we expect LGFVs to continue to make a significant contribution to the incremental growth in China's corporate bonds in both the offshore and the onshore bond market.

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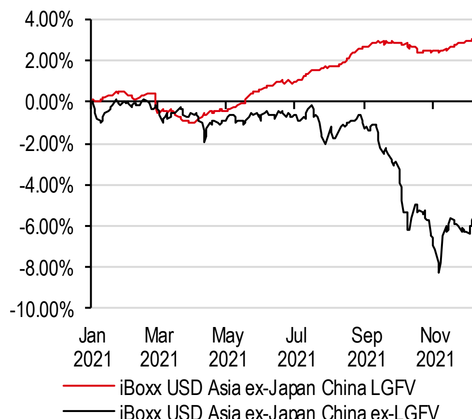
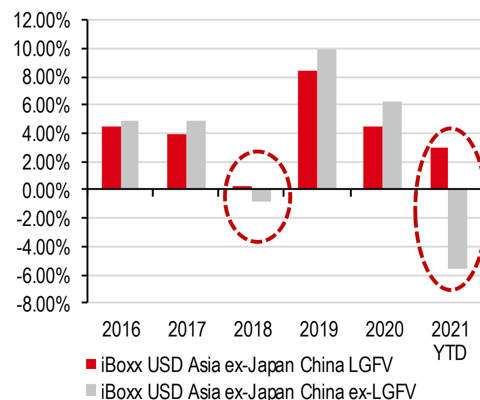
Total return, China LGFVs vs non-LGFV dollar bonds, 2021 y-t-d



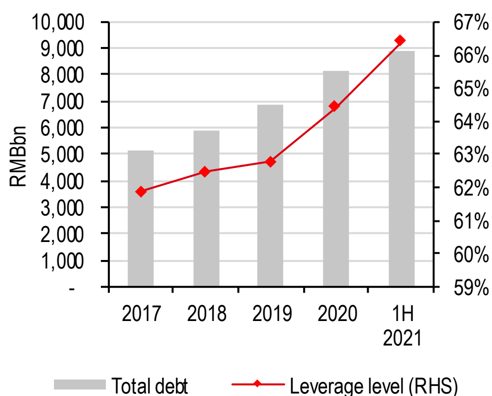
Source: iBoxx, HSBC. Data as of 10 Dec 2021.

Total return, China LGFVs vs non-LGFV dollar bonds, 2016-21 y-t-d



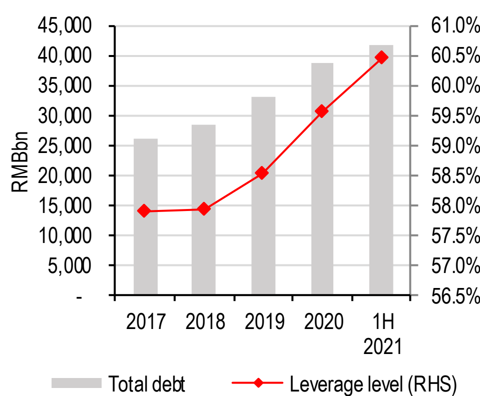
Source: iBoxx, HSBC. Data as of 10 Dec 2021.

Total debt and leverage level, 144 LGFVs with a presence in the Asian dollar bond market



Note: leverage ratio is calculated as sum of total liabilities over sum of total assets of 144 LGFVs that have presence in the Asian dollar bond market, excluding LGFVs that have missing data
Source: Bloomberg, Wind, HSBC

Leverage level, 2,148 LGFVs that have a presence in the RMB bond market



Note: data is calculated as sum of total liabilities over sum of total assets of 2,148 LGFVs that have presence in the RMB bond market, excluding LGFVs that have missing data
Source: Bloomberg, Wind, HSBC

Gross and net issuance, LGFVs vs all mainland China corporates (USDm)

	11M21 gross issuance	11M21 net issuance	2022e gross issuance (low end)	2022e gross issuance (high end)	2022e redemption	2022e net issuance (high end)	2022e net issuance (low end)
Mainland China LGFV HY	1,978	512	13,500	14,500	13,284	1,216	216
Mainland China LGFV IG	25,741	13,974	20,000	24,500	12,601	11,899	7,399
Mainland China LGFV all	27,719	14,486	**33,500**	**39,000**	25,885	**13,115**	**7,615**
Mainland China corp all	114,302	31,097	87,000	107,500	99,532	7,968	-12,532
% of LGFVs in mainland China corp	24%	47%	39%	36%	26%	NM	NM

Source: Bloomberg, HSBC

For the full report, see *China LGFVs – 2022 outlook, Worried, but not scared*, 16 December 2021.

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FX: The e-CNY prepares for lift-off

- The focus on Central Bank Digital Currencies is rising …
- … with more progress expected in 2022, led by the e-CNY
- We track some of the recent developments in China

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It has been a busy time for Central Bank Digital Currencies (CBDCs). China has been leading the way with the e-CNY and we summarise some of the recent developments and comments by senior officials.

PBoC's Mr Mu Changchun at the Hong Kong Fintech Week conference (3 Nov 2021)

Recent developments: China increased the number of individuals with digital CNY accounts to 140m (10% of the population), with 10m corporate accounts created (compared with more than 24m individual and enterprise users with e-CNY wallets at the end of June). Transactions in e-CNY reached CNY62bn (compared with CNY34.5bn at the end of June) in trials rolled out in about a dozen regions. The volume of transactions totalled 150m.

Anonymity and transaction limits: Digital yuan operators can open four types of e-wallets for customers. The least privileged only requires a phone number, so are anonymous even to the PBoC. Daily transaction values for this type of e-wallet holder are capped at CNY5k, with an annual cap of CNY50k. The highest privileged e-wallet needs to be opened at a bank counter with personal identification, with no transaction cap.

Privacy protection: Mr Mu reiterated that these e-wallets collect less transaction information than traditional digital payment services. The PBOC would not provide the information to any third-party or other government agencies unless stipulated by the law (Bloomberg, 3 November 2021).

FX conversion machine (8 Nov 2021)

The Bank of China has a machine that converts foreign currencies into e-CNY, the China Times reported. Users need to link their passports to the transaction, but do not need a bank account, according to the report. The machine, unveiled at China's International Import Expo in Shanghai, currently supports 17 foreign currencies.

Speech by PBoC Governor Yi Gang at the 30th Anniversary Conference of the Bank of Finland Institute for Emerging Economics (9 Nov 2021)

To reduce the reliance on private digital payment providers: "Last year, mobile payment in China increased by 25%, with a penetration rate of 86%... However, mobile payment services are mainly provided by the **private sector**, brewing risks of market fragmentation and privacy infringement. The CBDC allows central banks to continue to provide a credible and secure means of payment in the digital era, while improving efficiency and integrity of the payment system."

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Latest developments: "As of 8 October, pilot scenarios have exceeded 3.5m, over 123m personal wallets have been opened, with transaction volume totalling CNY56bn. The e-CNY scenarios are wide-ranging, including green transportation to support carbon reduction."

Development goals: "Efforts will be made to establish a management model with reference to cash and bank accounts, enhance efficiency, privacy protection and anti-counterfeiting features, increase interoperability with existing payment tools, and improve the e-CNY ecosystem."

Financial stability: "CBDCs impact on monetary policy and financial stability mainly depends on the design. **If a CBDC is more like cash, the impact would be relatively limited**. If a CBDC has the attributes of deposits and other financial assets, deposit substitution is likely, which could lead to disintermediation and less efficient monetary policy transmission.

International cooperation: "We would like to strengthen cooperation with other central banks and international organisations on CBDCs. The PBOC, the BIS, the Bank of Thailand, the Central Bank of the UAE and the Hong Kong Monetary Authority jointly launched the multilateral CBDC bridge project, to explore the role of CBDC in cross-border payment. We also have regular technical exchanges with the ECB. Going forward, the PBOC will continue to study the standards and rules governing CBDCs in an open-minded and inclusive manner, in order to promote the development of the international monetary system while addressing potential challenges" (9 November 2021).

The e-CNY in the securities industry (26 Nov 2021)
"Beijing authorities recently unveiled several fintech innovation pilot programs in the capital market, including one on digital yuan application in the securities industry." Users can use e-CNY to pay for financial services and invest in OTC products (Xinhua, 26 November 2021).

Beijing looks into setting up a digital asset exchange to push the e-yuan (26 Nov 2021)
China is exploring setting up a virtual asset exchange as the government lays out the next step to complement its pilot of the digital yuan, according to a blue print published on the State Council website on Friday. The idea is among a wide range of developmental plans for the Beijing municipal administrative centre, an area situated in the north of Beijing which has been carved out as a key plank of the capital's development up to 2035. "The latest announcement is likely to be related to the promotion of usage of the digital yuan. It shows the country's determination to push the digital currency," said Tom Chan Pak-lam, chairman of the Institute of Securities Dealers in Hong Kong (SCMP, 26 November 2021).

The e-CNY in Beijing Winter Olympics (2 Dec 2021)
"Consumers can use the e-CNY either through wallet apps installed on their mobile phones or via physical wallets in the forms of cards and wearables such as smart watches and ski gloves or badges to meet their diversified needs. Users can easily obtain or open digital yuan wallets at branches of the Bank of China, self-service machines, and some hotels during the upcoming Olympics" (China Daily, 2 December 2021).

The e-CNY to be fully convertible with HKD (9 Dec 2021)
PBoC's Mr Mu Changchun said at a seminar that the PBoC is exploring connecting the e-CNY system into Faster Payment System in HK, meaning that **digital yuan will be fully convertible with HKD**. He also says that conversion between the e-CNY and HKD will happen in virtual order in e-wallets and there will be no currency substitution (Yicai, 9 December 2021).

For the full report, see *Currency Outlook, Dollar in the driver's seat* (page 42), 17 December 2021.

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The PBoC strikes back

- The Chinese authorities have clearly signalled their discomfort with the recent pace of the RMB's appreciation
- But the RMB is supported by a large current account surplus and portfolio inflows
- We believe USD-RMB may stabilise for now, with a durable rebound likely in 2022 when the Fed lifts rates

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The People's Bank of China (PBoC) has a message – the RMB's recent appreciation has been a little over-extended. The authorities have communicated this in three ways:

1. **A statement by the China FX Committee** (chaired by PBoC and SAFE officials) on 19 November in which the key points include: (i) the RMB will fluctuate in both directions; (ii) corporates should neutralise their FX risks and exposures; and (iii) market participants should not speculate on FX.

2. An announcement of **a 2ppt hike in the foreign exchange required reserve ratio (FX RRR)** on 9 December (from 7% to 9%, effective on 15 December). Since there are around USD1trn of FX deposits onshore currently, this regulation will likely lock up about USD20bn of USD liquidity. There could be some impact on banks' liquidity management, since the FX loan-to-deposit ratio is currently 94%. **Theoretically, FX forward points should fall** (implied USD yields should rise and become less negative) on the back of this regulation change – reducing the RMB's carry.

3. **A series of higher-than-expected USD-CNY fixings**. Since 18 November, the fixing has come in higher than the Bloomberg survey every single trading day, except for one day. The fixing on 10 December was 179 pips higher than the survey, the largest positive deviation on record (since Bloomberg's survey began in June 2018). Another way of thinking about policy bias in the fixing is to analyse the beta to overnight broad USD changes. Based on our regression analysis, we believe there is **an asymmetric beta**, whereby the coefficient is higher (around 60%) when the USD strengthens (so USD-CNY will rise more than it would otherwise), and lower (around 40%) when the USD weakens (so USD-CNY falls less). A regression with a sample spanning November 2020 to April 2021 suggests the betas were roughly the same back then (around 45%), regardless of broad USD direction.

The timing of all these policy signals suggests to us that the 6.35-6.40 range in USD-RMB may be quite important to the authorities. Indeed, HSBC's Little Mac Valuation Range suggests that the "fair value" range for USD-RMB is 6.30-7.25. We also estimate that the CFETS RMB index is about 6% overvalued currently, comparable to the overvaluation reached just before the "fixing reform" on 11 August 2015.

Our forecasts for USD-RMB are 6.40 for end-2021 and 6.55 for end-2022 (see *Asian FX Focus: RMB: Overstretching*, 28 October 2021).

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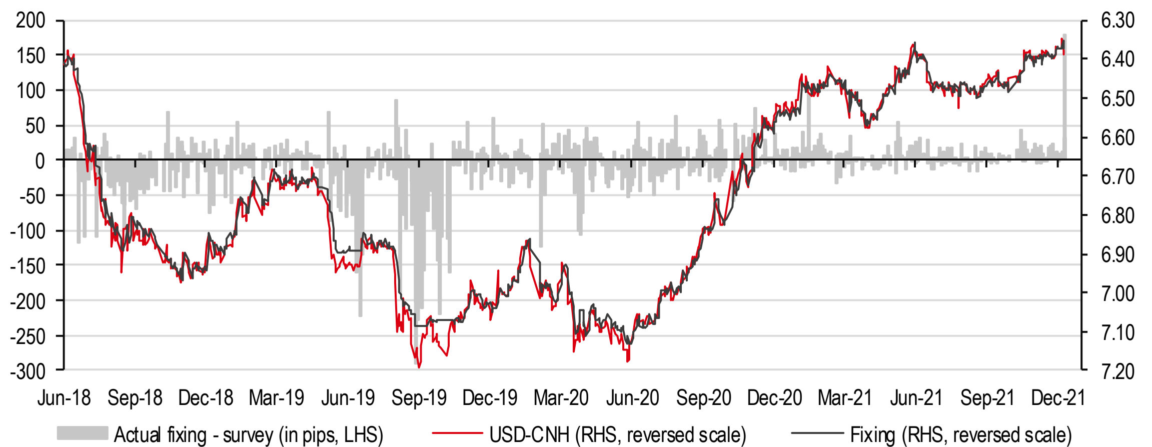
A history of the PBoC's FX policy actions

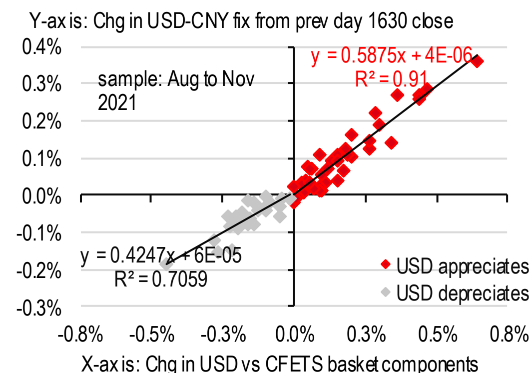
Source: Bloomberg, HSBC

A history of the deviation between USD-CNY fixings and Bloomberg's survey numbers



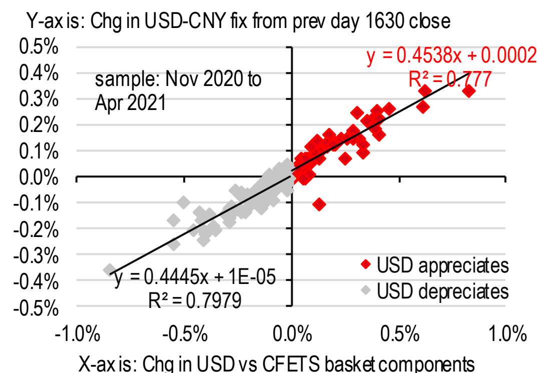
Source: Bloomberg, HSBC

Asymmetric betas in the fixings recently



Source: HSBC

Symmetric betas in the fixings previously



Source: HSBC

For the full report, see *Asian FX Focus: RMB – The PBoC strikes back*, 10 December 2021.

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Rates: WGBI inclusion the last piece of the puzzle

- CGBs included in FTSE Russell WGBI over a 36-month period, from November 2021 to October 2024
- We estimate China's weight in WGBI at 5.9% with potential indexation-related inflows of USD130bn into CGBs, i.e. average monthly inflow of USD3.6bn
- We see minimal impact from Japan's GPIF's move to exclude CGBs from its investment mandate

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The long-awaited inclusion of China government bonds (CGBs) in the FTSE Russell flagship World Government Bond Index (WGBI) was confirmed, commencing on 29 October 2021 for the November 2021 index profile. This process will take 36 months and conclude with the October 2024 index profile. CGBs issued after 1 January 2020 will be included if they reach the required minimum size of RMB35bn, while CGBs issued before 1 January 2020 are eligible for inclusion only if the outstanding stock meets the threshold of RMB100bn. Given these criteria, we estimate there will be 50 CGBs eligible for inclusion, with an average modified duration of around 5-6 years. After assessing the market capitalisation of outstanding CGBs at 29 October 2021, we estimate the weight of China in WGBI at about 5.9%, implying a monthly weight increment of 0.16%.

Currently, the assets under management (AUM) of funds tracking WGBI is USD2.5-3trn (FTSE Russell, May 2021). With an estimated weight of 5.9% for China, we expect USD130bn of indexation-related foreign inflow into the CGB market over the 36-month inclusion period. The estimated monthly inflow of USD3.6bn is smaller than the monthly average foreign inflow of USD5bn seen surrounding the inclusion of two other key indices (Bloomberg Global Aggregate and GBI EM) from April 2019 to November 2020.

On 29 September, Japan's Government Pension Investment Fund (GPIF) announced that it will not be investing in CNY-denominated CGBs despite China's inclusion in WGBI. We believe that the impact will be minimal. The GPIF commands a large AUM of close to USD1.74trn as of June 2021, with USD435bn allocated to foreign bonds, and about USD222bn of GPIF's investments mandated to track WGBI (excluding JGBs) on a passive basis. The last disclosure by GPIF in March 2021 indicated that the ratio of passively managed foreign bond investments account for 76% (i.e. USD331bn) of the foreign bond portfolio, and 67% (i.e. USD222bn) of this passive portfolio tracking WGBI. Assuming these ratios remained at similar level, we estimate that GPIF's decision would result in foregone inflows of USD15bn for China's bond market (i.e. 5.9% of estimated weight in WGBI) over the inclusion period, or just USD0.4bn of foregone flows per month. We are mindful that this could be an underestimate as other institutional investors in Japan might follow GPIF's move to exclude CGBs from their investment mandates. However, we think such downside risk is low, given the attractive yields offered by CGBs compared with other low-yielding countries.

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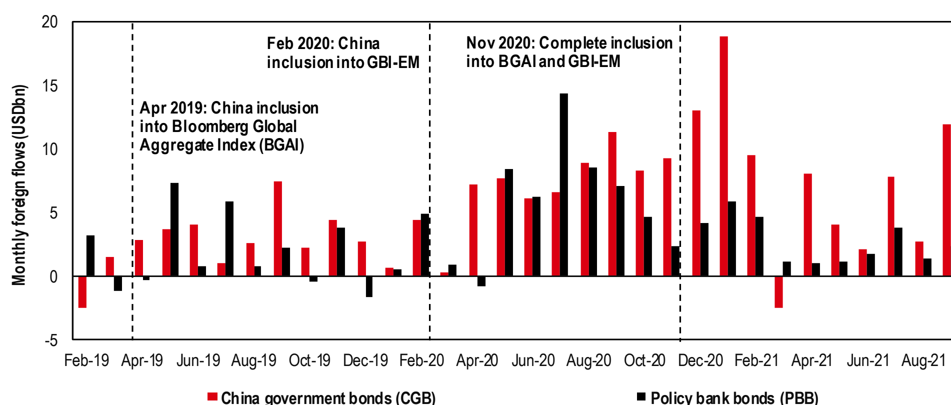
Sizeable foreign inflow in September is unlikely a result of WGBI inclusion

Given the strong foreign inflows into CGBs after multiple index inclusions, the foreign ownership of CGBs has climbed from 8.5% in December 2019 to 10.6% as of September 2021. There was quite a large inflow of USD12bn into CGBs in September 2021 but we do not think this was contributed by WGBI trackers as most of these funds are passively managed, so the index-related inflow usually materialises only when the inclusion process begins. Instead, the inflows in September are possibly triggered by intensifying concerns over China's growth outlook following the energy shortage. It is also likely that the central bank's credible liquidity guarantee in the money market has further convinced investors about CGB outperformance, particularly in the recent environment of higher US rates.

Foreign inflows into China's bond market



Source: CEIC, HSBC

Weights in major bond indices and impact of China's WGBI inclusion

Country	WGBI weights as of 30 Jun 2021 (%)	WGBI weights after China's full inclusion (%)	WGBI flow impact (USDbn)	BBGA weights (%) as of 30 Jun 2021	Moody's Issuer Rating
China	-	5.87	133.83	6.86	A1
United States	37.93	35.70	(50.76)	42.20	Aaa
Japan	16.54	15.57	(22.14)	13.24	A1
France	8.40	7.91	(11.24)	0.00	Aa2
Italy	7.98	7.51	(10.68)	0.01	Baa3
Germany	6.27	5.90	(8.39)	0.00	Aaa
United Kingdom	5.36	5.05	(7.17)	4.99	Aa3
Spain	4.97	4.68	(6.65)	-	Baa1
Belgium	1.96	1.84	(2.62)	-	Aa3
Australia	1.71	1.61	(2.29)	1.47	Aaa
Netherlands	1.63	1.53	(2.18)	-	Aaa
Canada	1.65	1.55	(2.21)	2.87	Aaa
Austria	1.24	1.17	(1.66)	-	Aa1
Ireland	0.69	0.65	(0.92)	-	A2
Mexico	0.61	0.57	(0.82)	0.26	Baa1
Poland	0.53	0.50	(0.71)	0.20	A2
Finland	0.52	0.49	(0.70)	-	Aa1
Denmark	0.41	0.39	(0.55)	0.19	Aaa
Malaysia	0.40	0.38	(0.54)	0.29	A3
Israel	0.38	0.36	(0.51)	0.15	A1
Singapore	0.36	0.34	(0.48)	0.19	Aaa
Sweden	0.25	0.24	(0.33)	0.43	Aaa
Norway	0.21	0.20	(0.28)	0.10	Aaa

Source: FTSE Russell, Bloomberg, HSBC

For the full report, *see* *China's long-awaited WGBI inclusion – Last piece of the puzzle*, 27 October 2021.

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ESG

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HK SFC updates guidance for fund disclosures

- HK adopts EU-style disclosure requirements for ESG funds
- Though less strict than the EU, HK tries to avoid 'greenwashing'
- We think more regulators will adopt similar measures globally

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ESG fund disclosures. Hong Kong's Securities and Futures Commission (SFC) in June issued its *new guidance on enhanced disclosures for ESG funds*. Funds that incorporate ESG considerations as a key investment objective will be required to disclose additional ESG-related information from 1 January 2022. We view this as an ongoing attempt by the regulator to avoid misleading "ESG labelling" as well as the perception of "greenwashing" for funds registered in Hong Kong.

Chasing ESG quality. Hong Kong follows the EU's *Sustainable Finance Disclosure Regulation* (SFDR). The HK rules will apply to locally authorised funds that claim ESG as a key investment focus. Disclosures include the area of "ESG focus", the investment strategy that delivers this ESG focus, asset allocation and benchmarks. Funds must also disclose how ESG is measured and monitored, the methodologies used, relevant risks and details of the **engagement approach**. These are to be given in offering documents as well as periodic reports. There is also additional guidance for funds with a specific focus on climate change, but not any other ESG issue.

What's in a name? Given strong growth in ESG awareness in financial markets and the commensurate rise in the number of "ESG-labelled" funds, more regulators are stepping in to ensure the quality of ESG objectives (and analysis) is not diluted. In other words, to ensure that "ESG-labelled" funds **actually take ESG factors into consideration in a demonstrable manner** – although this can be difficult to verify independently. We expect other markets to adopt similar measures in the near future.

HK's ESG fund disclosures are less stringent than the EU's (but a good start)

	EU SFDR	HK ESG Fund disclosure guidance
Effective date	10 March 2021	1 January 2022
Disclosure level	Corporate and product level	Product level
Funds that are "in-scope"	◆ All financial products (Art. 7) ◆ Products that promote "E" or "S" characteristics (Art. 8) ◆ Products that have sustainable investment as their objectives (Art. 9)	◆ SFC-authorised Funds that incorporate ESG factors in their investment strategy or focus ◆ The SFC will maintain a list of ESG funds that comply with the guidance
Documentation requirements	◆ Pre-contractual disclosure ◆ Periodic reporting ◆ Website product disclosure	◆ Disclosure in offering documents ◆ Periodic reporting

Source: European Commission, SFC of HK

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New ESG fund guidance in Hong Kong

The guidance "applies to SFC-authorised funds which incorporate ESG factors as their key authorised funds which incorporate ESG factors as their key investment focus and reflect such in the investment objective and/or strategy". It will be effective from 1 January 2022, such that existing "ESG labelled" funds will have to ensure that disclosures meet the requirements by 2022. The SFC will maintain a list of all authorised ESG funds on its website – new funds will have to apply for inclusion and demonstrate compliance with these updated guidelines.

Key requirements

Disclosure in offering documents

The ESG focus of the fund – such as "Climate change; Environment; ESG / sustainability; Food security; Forestry; Social; Renewable energy; Sustainable transportation; Water; Others"

Criteria and methodologies used to measure this ESG focus

ESG investment strategy – such as "Best-in-class / positive screening; Impact investing; Thematic; Other" as well as how the strategy is implemented

Associated risks – such as lack of data / taxonomy, limitations of methodology, reliance of third party sources, or degree of "subjective judgment in investment selection"

Reference benchmark – which benchmark (if any) and how is it relevant

Engagement policies – such as voting policies and engagement strategies

Periodic assessment and reporting

Frequency – reporting "at least annually", to asses if the fund "attained its ESG focus"

Allocation – proportion of investments that meet ESG focus i.e. were eliminated / included

Engagement – actions taken such as engagement activities and proxy voting records

Source: HK SFC

A step in the right direction … but revisions required in future

We think it is very positive that Hong Kong has taken a leaf out of the EU's Sustainable Finance Disclosure Regulation (SFDR) to make disclosures for ESG funds mandatory at this stage. However, we believe this is clearly a first step for the SFC because we consider the guidelines as much simpler than its SFDR equivalent. For example, the list of ESG issues is fairly *narrow*, in our view, whereas the description and disclosure requirements are fairly *broad*. We think this leaves a wide berth for interpretation.

As the number of registered ESG funds grows, we expect the SFC to further tighten the criteria to avoid another round of "greenwashing". As for now, we think it is a step in the right direction to require fund managers to be more transparent in ***how they are considering ESG factors in their investment decisions,*** especially if funds are being marketed with ESG labels. This also propagates the 'virtuous circle' of ***investors demanding more ESG information from companies*** – so that investors can meet disclosures requirements themselves. We expect other regulators to release similar regulations in the near future – with the purpose of tightening fund labelling, avoiding the perception of greenwashing and improving ESG integrity.

For the full report, see *ESG Matters – HK SFC updates guidance for ESG fund disclosures*, 6 July 2021.

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HK to embed more ESG in revised governance code

- The Stock Exchange of Hong Kong has proposed further revisions to its Corporate Governance Code for listed entities
- ESG issues such as culture, independence, diversity and stakeholder engagement could become more prominent
- Although generally positive, we think the potential revisions still lag behind global best practice in some areas, such as diversity

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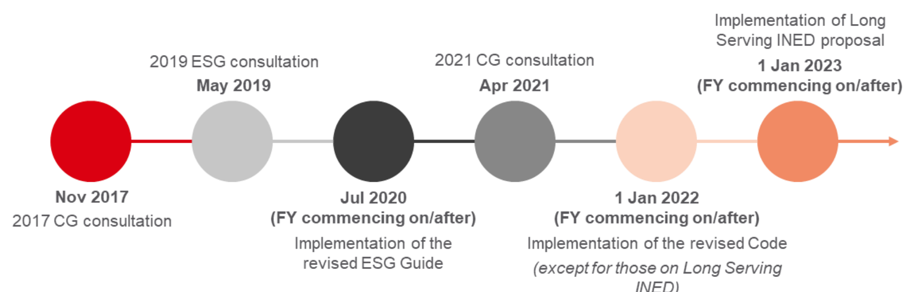
Revisiting Governance. On 18 June 2021, *a public consultation on proposed revisions to the Corporate Governance Code (CG Code) and related Listing Rules* in Hong Kong by the stock exchange closed after two months. As public listings in the Hong Kong market continue to grow, we think there should be a better balance between the interests of listed companies and those of investors and other stakeholders.

Consulting with purpose. The consultation takes into account various issues that are rising up the global governance agenda, including: corporate culture and its alignment with strategy, the independence of boards, and broader engagement. Gender diversity is now an issue with single gender boards to be deemed not acceptable. Hong Kong is behind other markets, in our view, as it proposes diversity implementation timelines but no formal targets.

Better but not far enough. In our opinion, the proposals could bring incremental positive change to Hong Kong's corporate governance practices. However, in some areas, the proposed revisions still lag behind global governance practices. For example, whilst there is a focus on board effectiveness, there is no required timeframe for board effectiveness reviews. We have already seen a rise in engagement on sustainability issues by investors and believe they, and other stakeholders, will demand more comparable disclosures and higher transparency. As other markets in the region update their own codes, we think Hong Kong needs to evolve further to maintain its position as a leading destination for companies to list.

ESG regulation development in Hong Kong



Source: HKEX, HSBC

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Consultation highlights

Culture
- Alignment of company culture with vision, value and strategy
- Establishment of anti-corruption and whistleblowing policies
- Development of whistleblowing system for stakeholder to raise concerns

Directors' independence
- Establishment and annual review of policy to ensure independent views that are available to the Board
- Re-election of INED (tenure > 9yrs) requires independent shareholder approval through separate resolution
- Appointment of a new INED if all existing INED have served more than 9 yrs.

Diversity
- Target and timeline setting for achieving gender diversity at board level and across the workforce
- Annual review of diversity policy

Nomination committee
- Establishment of a nomination committee comprising majority INEDs, including chair

Investor relations
- Disclosure of communication policy which should include communication channels for shareholders
- Annual review of communication policy

ESG and others
- Inclusion of ESG risks under risk management
- Publication of ESG reports should be at the same time as annual reports
- Removal of the requirement of appointment of non-executive directors for a specific term

Code Provisions (Comply or Explain) Listing Rule Mandatory Disclosure Requirement

Source: HKEX, HSBC

For the full report, see *ESG Matters – HK to embed more ESG in revised governance code*, 21 June 2021.

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Climate Investment Update – China's 14th Five-year Plan

- China's 2021-25 development plan lacked more detail on how to achieve carbon neutrality by 2060
- No cap on total emissions but there are subtle changes to language; commitment to coal remains
- We await more concrete plans as wrangling over targets and policies between industries and regions continues

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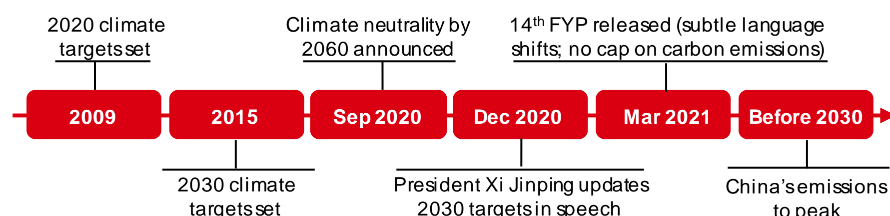
A new plan? On 5 March 2021, China released its 14th Five-year Plan (FYP) for the 2021-25 period. There were much fewer details than expected, with only modest insight into how China will achieve its long-term climate aims, most notably carbon neutrality by 2060. The FYP reiterated many known goals with imperatives limited to aspirations such as we will: "focus on", "vigorously implement", and "formulate guidelines". In our view, this highlights the enormity of the task ahead, the coordination of so many moving parts within the planned economy, and possibly the internal politics of officially setting targets and allocating responsibility.

The same plan? The headline climate-related targets for 2021-25 were lower than anticipated and do not, at this stage at least, indicate any sudden change of course or accelerated policies. For example, the **climate intensity** reduction target **remains the same** at -18% (2021-25), whilst the decline in **energy intensity** is to be **lower**, at -13.5%, compared with the -15% of the 13FYP (though -18% was achieved). Water intensity of GDP is set at -14% compared with -23% in the 13FYP. China will work on "an action plan for carbon emissions to peak by 2030."

An updated plan? Although few new climate-related targets were set, we note *subtle shifts in the language* used to describe certain issues. We believe this is a sign of the direction of travel but without details of the precise routes. For instance, there will be "stricter policies and measures to reach carbon neutrality by 2060" although no details were given in the 14FYP. **China did not set a cap on total emissions**. We think this highlights the difficulty in gathering *accurate information*, *controlling* then *reducing* emissions in the world's largest carbon emitter.

The evolution of China's climate targets



Source: HSBC

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Few new targets, but subtle changes in language

Climate pledges: Across the various reports, there were varying phrases to indicate a determination to meet China's 2030 climate pledge (nationally determined contribution, NDC). The Economic and Social Development Plan indicated that NDC targets had already been raised – we acknowledge remarks made by President Xi at the Climate Ambition Summit on 12 December 2020 although a formal submission to the UN is yet to be made.

China's 2030 climate pledge

	Official pledge (30 June 2015)	Xi Jinping speech (12 December 2020)	HSBC comments
Carbon intensity reduction (2030 vs 2005)	60-65% decline	by over 65%	China is well on the way to meeting this target; questions remain over when China may move from *intensity* to *absolute*
Emissions peak	*around* 2030	*before* 2030	It is widely acknowledged this is achievable and "before" indicates this side of 2030 but with room to manoeuvre
Non-fossil fuels (as a % of primary energy)	20% by 2030	25% by 2030	This element includes hydro and nuclear; a 75% reliance on fossil fuels makes the 2060 carbon neutral path challenging
Forest coverage	4.5bn m^3	6bn m^3	We think this is gearing up for a major part to play in the carbon offset market as carbon neutrality involves sinks

Source: HSBC (based on Chinese Government and Xinhua)

Carbon consideration: Whilst China will continue to focus on reducing carbon *intensity*, there was a mention that *absolute* emissions reductions should be brought into consideration. We think this is a tacit acknowledgment that the rest of the world is slowly moving towards absolute reduction targets, but that China is not ready for these at the moment.

Carbon transformation: China will deepen the low-carbon transformation of industry, construction and transportation. We think this acknowledges the difficulty in balancing GDP growth and decarbonising these parts of the economy. This balancing act, with GDP still a priority, is not something that can be done quickly. There were specific mentions of the green transformation for the steel, petrochemicals and building materials sectors.

Other greenhouse gases (GHGs): The FYP document also mentioned the control of other greenhouse gases such as methane, hydrofluorocarbons and perfluorocarbons. We anticipate some stricter rules to affect the sectors that produce these gases (e.g. agriculture and food waste, etc.) however visibility on when changes could happen is low.

Carbon trading: Carbon and energy trading were mentioned (as expected) as a tool to achieve climate targets, however we also note the improving of trading of "voluntary GHG reductions" which implies that China is working on further developing its carbon offset market.

Renewable energy: Renewable energy was discussed with little fanfare although we note in particular mentions of: **waste-to-energy**, **hydrogen power** and **energy storage**.

Finance: China is looking to introduce "special policies" that will contribute to the financial support of green and low carbon development.

Fossil fuels: These continue to be the linchpin in China's desire for energy security. Coal will remain a significant part of the economy as the production, supply and storage of fossil fuels is to be improved over the next Five-Year plan period. We note that China continues to promote the "clean and efficient use of coal".

For the full report, see *Climate Investment Update – China's FYP: more of the same*, 8 March 2021.

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Green Bonds in China

- China has updated its green projects catalogue – removing 'clean coal' and providing details on acceptable green projects
- The PBoC to mobilise more green investments by allocating green bonds to reserves and developing market infrastructure
- We think policy support for green finance will accelerate as China aligns its markets with sustainable development

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Aligning shades of green. China has updated its green bond projects catalogue to further mobilise green investments and attract more foreign participation in its domestic green bond market. The revised catalogue (effective 1 July 2021) is now more aligned with international standards. The most significant change was the removal of 'clean coal' as an eligible activity, a feature of the 2015 edition of the catalogue which was questioned by international investors.

Aligning carbon targets. In our view, the PBoC is aligning its financial oversight to China's key climate targets: reducing emissions intensity, peaking emissions and working towards carbon neutrality. Besides the effort to mobilise green investments, the PBoC is evaluating the potential impacts of climate change on financial stability and monetary policy. For example, it has asked pilot financial institutions to measure emissions and disclose associated climate risks. We think this is a major step towards addressing climate change – both the risks and the opportunities – within the financial system, and is in line with what other major economies are doing.

Aligning the future. We view this as the next step to a more focused alignment of China's financial system with sustainable development. For example, China can use policy to promote greener financing and green investments by enhancing its supporting infrastructure. We expect onshore green bond supply to increase 15-20% per annum in the coming three years. Over time, this should improve the diversity and liquidity of the green capital markets in China. We expect more guidelines and regulations that support and develop green finance and climate risk management to be released in the future as China seeks to raise investor and issuer confidence.

Defining what counts as green

China's Green Bond Project Catalogue

The Green Bond Project Catalogue was first developed in 2015 by the PBoC to provide specific criteria for projects that may be eligible for green bond financing. At the time, the catalogue only covered bonds issued by regulated financial entities, but now applies to all eligible green bond issuers such as listed companies and other financial institutions.

This revised edition of the catalogue, jointly issued by the People's Bank of China (PBoC), the National Development and Reform Commission (NDRC) and the China Securities Regulatory Commission (CSRC), is designed to do the following:

- provide further regulation to the domestic green bond market;

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- direct more capital flows (domestic and international) to green projects; and
- align more to international standards.

Changes in the 2021 edition

The catalogue now lists over 200 project types, up from the 38 from the previous edition. Many of the categorisations have become more nuanced. Key changes to the revised edition are:

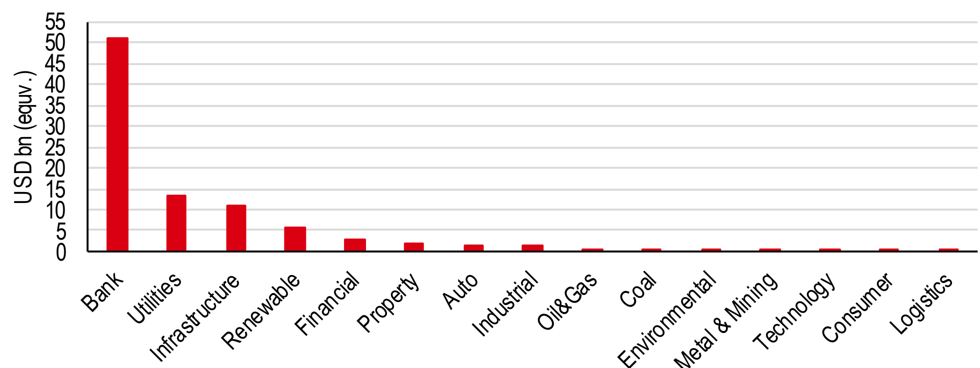
- the exclusion of activities related to clean coal and clean fossil fuels
- the expansion of activities to include green agriculture, sustainable building, water conservation, green services;
- the introduction of a fourth level of classification.

Key revisions to China's Green Bond Project Catalogue

	203 project types	38 project types
Project Scope	Green Services **(31)**	Ecological protection and climate change adaptation **(4)**
	Green upgrade of infrastructure **(36)**	Clean transportation (11)
	Ecological and environment-related industry **(29)**	Use of resources (7)
	Clean energy industry **(26)**	Clean energy **(7)**
	Clean production industry **(19)**	Pollution prevention (3)
	Energy saving and environmental protection industry **(62)**	Energy efficiency enhancement (6)
Classification	4 levels	3 levels
	Green Bond Project Catalogue (2021)	**Green Bond Project Catalogue (2015)**

Source: PBoC

Banks are the largest group of domestic green bond issuers in China



Source: Bloomberg, HSBC calculations

For the full report, see *Green Bonds in China, Aligning financial markets with climate targets*, 5 May 2021.

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Equity Strategy

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China Equity Strategy: 2022 outlook

- We forecast 9-16% index upside for A shares in 2022e on pro-growth policies, improving earnings and ample liquidity
- We analyse the four big sentiment drivers – Sino-US trade talks, COVID-19, US Fed and property – and turn more upbeat
- Highlight four themes: green economy, tech self-sufficiency, SME champions, and mean reversion

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A better year. After being cautious on the China indexes in 2021, we foresee healthy gains of 9-16% in 2022e, given these four key factors:

- The Central Economic Work Conference held in December 2021 released a clear signal to stabilise growth pre-emptively in 2022;
- HSBC's China economists expect RMB2trn in stimulus for tech and green investments, one half through monetary tools like green relending, and the other half fiscal. Moreover, the regulatory crackdown on the Internet, education and gaming sectors is priced in while local-level policy fine-tuning for property will spread nationwide;
- We expect 14-23% earnings growth for the major A-share indices on improving margins. Moderating PPI and higher CPI in 2022e should provide further support to mid-stream manufacturers' and downstream sectors' profitability;
- Ample market liquidity should persist as Chinese households continue to diversify into equities and offshore investors allocate more to A-shares. We conservatively estimate northbound net inflows could reach RMB300bn in 2022e. For the 10 trading days up to 14 December, we notice that net inflows to northbound and southbound reached cRMB76bn and cRMB21bn respectively, indicating positive market sentiment.

Four key issues for the market. We see the risk of a further de-rating as limited after analysing the major sentiment/valuation drivers: (1) **Sino-US trade talks** may resume in 1H22. We also expect the set-up of working groups where there is more consensus than disagreement; (2) China has the option to ease **COVID-19** restrictions which could boost consumption and market confidence; (3) the potential spillover risk from quicker-than-expected **Fed tightening** will impact China much less than other EMs; and (4) a **property sector** soft landing is still our base-case scenario.

Four themes: (1). Green economy: New infrastructure, EV (and its value chain batteries, battery components + equipment), and new materials; **(2) Tech self-sufficiency:** Semiconductor equipment, consumer electronics (notably AR/VR, innovative drugs); **(3) SMEs specialised in niche markets,** especially high-end manufacturing and digitalisation; and **(4) Mean reversion:** Selected agriculture, banking, consumer names, petrochemicals and media.

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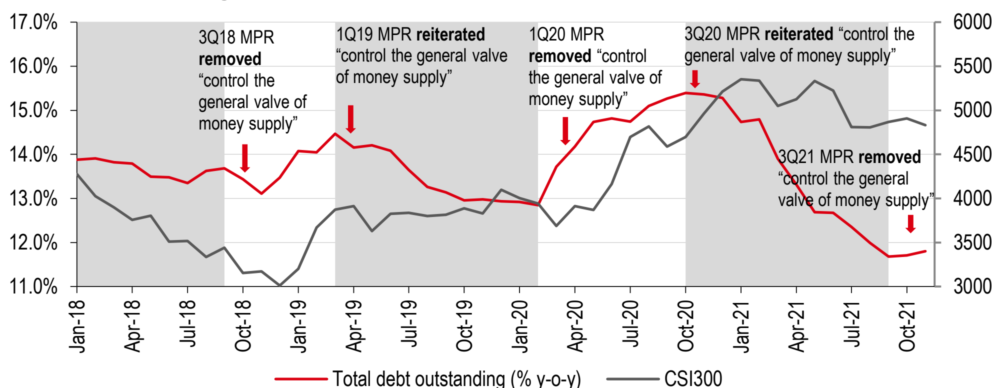
2022e year-end index targets and earnings forecasts

	SHCOMP	CSI 300	SZCOMP
Dividend yield	2.8	2.3	1.6
Index level (14 Dec 2021)	3,661.5	5,049.7	15,136.8
EPS growth YR1	13.7%	15.8%	23.3%
EPS growth YR2	11.8%	13.9%	20.1%
Growth in stage 2	10	12	16
No of years of excess growth	10	10	12
Perpetual growth rate	3	3	3
COE (%)	8.5	8.5	8.5
Payout ratio now (%)	33	32	32
Payout ratio at end of stage 2	33	32	32
Fair value	3994	5589	17435
Under/overvalued (%)	-11%	-12%	-15%
HSBC end-2022 targets	**4,000**	**5,600**	**17,500**
HSBC target implied 12M FWD PE	12.9	15.1	23.7
Index upside	9.2%	10.9%	15.6%

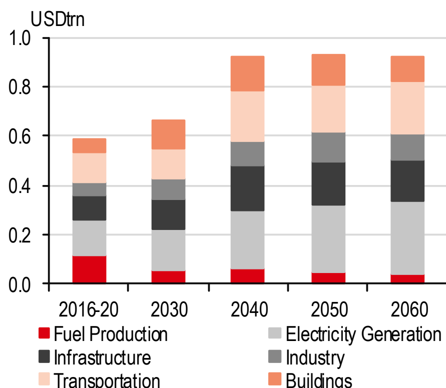
Note: Upside is as of each market close on 14 December 2021
Source: Bloomberg, Wind, HSBC Qianhai Securities

The PBoC's 3Q21 Monetary Policy Report (MPR) signalled an upcoming credit cycle upturn, a positive signal for the A-share market



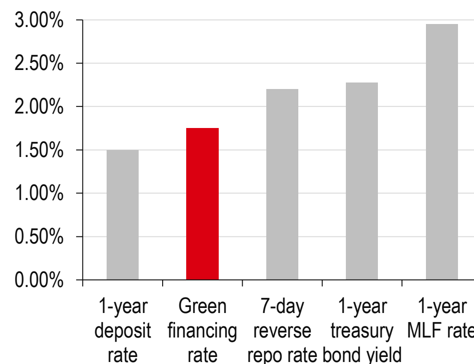
Note: Shaded area indicates when money supply was tighter. Total debt includes RMB loans, government bonds, and corporate bonds
Source: PBoC, HSBC Qianhai Securities

Average annual green investments to surpass RMB5trn in 2020-60, of which RMB2trn is gov't driven



Source: IEA, HSBC Global Research

PBoC now offers cheap funding to banks that extend green loans via re-lending (RMB1trn)



Source: Wind, HSBC Global Research

For the full report, see *China Equity Strategy – 2022: Moderate index gains as headwinds ease*, 16 December 2021.

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China is now home to more than 2m high-net-worth individuals, those with the equivalent of at least RMB10m (USD1.55m) in investable assets. We think this number will rise to 5m by 2025.

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Why we remain overweight on mainland China

- Valuations have turned attractive; ample liquidity to extend support
- Eligible onshore institutional investors can invest in Hong Kong's bond market, subject to a daily and annual quota
- Consensus expects net profit growth of 15% for FTSE China in 2022e. We remain overweight mainland China

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We remain overweight on mainland China given (1) a decent earnings growth outlook despite all the macro-economic uncertainties; (2) attractive valuations relative to other major markets in Asia; and (3) ample liquidity with global funds underweight Chinese stocks. We expect a shift in policy tone from de-risking to pro-growth, with a focus on boosting green investments and containing real estate risks.

Consensus expects net profit growth of 15% for FTSE China in 2022e. Meanwhile, earnings have become much more diversified. Unlike previous years, when it was the mainland Chinese internet companies that spearheaded earnings growth in this market, earnings growth in 2022e is likely to be more broad-based. We believe a new round of scientific and technological innovations, industrial upgrading and energy transition will be the new driving force of earnings growth.

Earnings momentum, however, has remained weak. Mainland China experienced one of the largest downward revisions to forward earnings growth in 2021, led by IT and consumer discretionary names. Valuations have become attractive – FTSE China is trading at a forward PE of 11.4x, 6% below its five-year average.

We foresee supportive liquidity at both the macro and the market level. Our house view expects Beijing to introduce more targeted easing measures in coming months to cushion the economic slowdown. This is likely to come in the form of increased credit support for green investments, small businesses and manufacturers, and more tax incentives and subsidies devoted to promoting innovation and technological upgrading. This should bode well for mainland China equities. The ample market liquidity should persist as Chinese households continue to diversify into equities and offshore investors allocate more to A-shares.

There's the potential spill-over risk of an EM crisis if the US Fed tightens more quickly than expected. We believe China is better positioned for potential Fed rate hikes given a higher trade surplus and the government's pro-growth tone. While there are signs of contagion risk from Evergrande and investors are worrying about a potential property hard landing in 2022, we see more supportive policy signals helping to prevent systemic risk.

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1. Returns (%, LC)

	FTSE China	HSCEI
3-month	-16.5	-18.1
6-month	-22.0	-25.0
12-month	-11.4	-11.8
24-month	17.5	-17.1

2. Valuations

	2021e	2022e
PE (x)	13.7	11.8
PB (x)	1.58	1.43
Dividend yield (%)	2.0	2.2

3. 3-month sector performance (%)

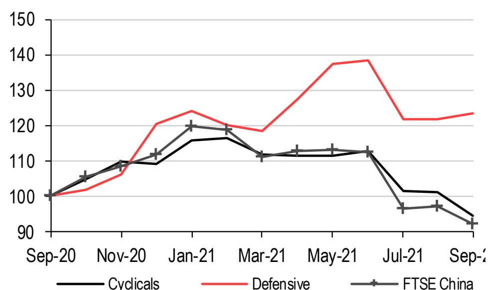
Sector	Perf	Sector	Perf
Oil & Gas	16.8	Consumer Services	-25.2
Utilities	10.6	Tech	-20.7
Basic Materials	4.8	Telecom	-16.9

4. Earnings (%)

	2021e	2022e
Earnings growth (y-o-y)	34.2	15.9
ROE	11.5	12.1
ROA	4.3	4.5
Net debt/equity ratio*	27.6	21.5

Note: Performance as of 8 October 2021. Return is the change in price index during various periods *ex-Financials.
Source: FTSE Russell, FactSet, HSBC estimates

Market performance

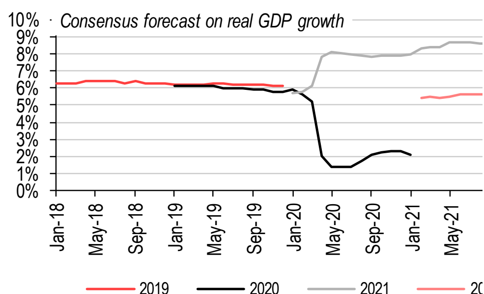


Source: FTSE Russell, FactSet, HSBC

Earnings momentum

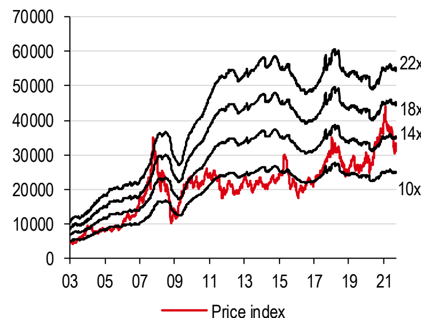
Note: Earnings momentum = 3-month % change in 12-month forward EPS.
Source: FTSE Russell, FactSet, HSBC

Economy



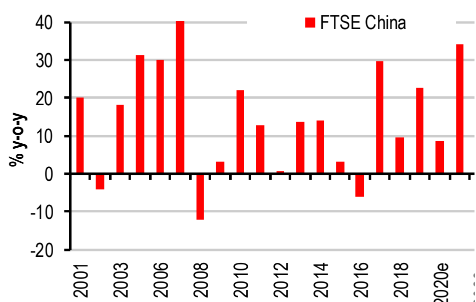
Source: Consensus Economics, HSBC

Valuations



Source: FTSE Russell, FactSet, HSBC

Earnings



Source: FTSE Russell, FactSet, HSBC

Foreign flows

Note: Data as of June 2021
Source: Bloomberg, HSBC

For the full report, see *Asia Equity Strategy Quarterly*, 6 January 2022.

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Ageing and pensions

- In the era of common prosperity, pension reform is attracting greater attention from policymakers
- Policies supporting the development of the private pension market set to redirect other forms of savings towards pension products
- Chinese pension funds will exert greater market influence as assets grow and converge with global asset allocation practices

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China's Seventh National Population Census revealed 264m people were aged 60 and over – 18.7% of the population, from 13.3% a decade earlier. Against a backdrop of rapid ageing, China's pension system is undersized at about 9% of GDP, or 12%, including strategic reserve assets; this compares to 92% across the OECD area in 2019. Recent policy messages and new pilot schemes suggest an increased focus during the 14th Five-year Plan on tackling the issues of underfunding, under-penetration and underdevelopment across Pillars 1-3 of the nation's pension system – the public system, workplace pensions and private pensions.

Balancing the pillars. Public pension (Pillar 1) benefits are the primary source of income for many retirees; however, the main scheme for urban staff receives a significant level of fiscal subsidy and replaces only about 45% of the average wage. The pension scheme for rural residents and flexible economy workers offers much lower income replacement to its 542m participants (while relying more heavily on subsidies). Only 63m people in the country are covered by supplementary (Pillar 2) occupational pension plans. As wider system reform is being planned, development of the private pension (Pillar 3) market offers the most immediate path forward.

Expansion of the private pension market. The need for longevity funding is a key factor shaping the development of China's wealth management industries. New pilot schemes aim to broaden the range of products and financial institutions in the market. These include flexible contribution products suited to informal workers and a pilot launched by the wealth management subsidiaries of four major banks to provide retirement savings products in four cities. A new National Pension Company is in a preparatory phase, with 11 banks' wealth management subsidiaries holding a combined stake of 72.5%. The eventual blueprint for the Pillar 3 system is expected to centre around an individual account-based national infrastructure with incentives to spur participation.

Market implications. The rise of pension funds as an investor group supports the development of institutional financial services by increasing the pool of long-term capital. We expect to see a higher proportion of equity investment and potential allocation towards overseas markets over time. We estimate that less than 7% of total pension assets – ex-funds managed by the National Council for Social Security Fund (NCSSF) – are invested in equities vs. 43% in the seven largest pension markets. Pension funds also have a tendency to rebalance portfolios towards higher-risk assets during times of market downturn, providing a counter-cyclical impact.

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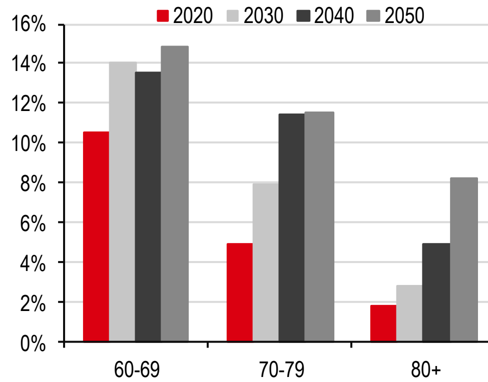
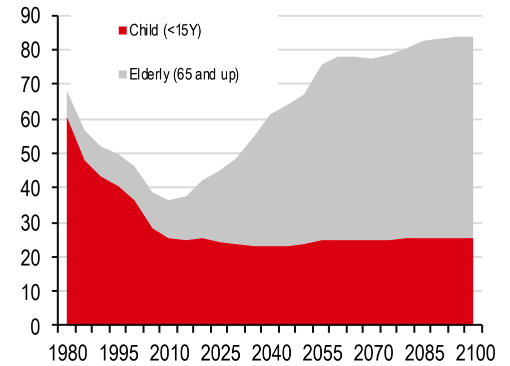
We discuss our positive long-term thesis for financial institutions along the pensions value chain that stand to benefit in different ways from an expanding market.

Share of total population: Now and in the future



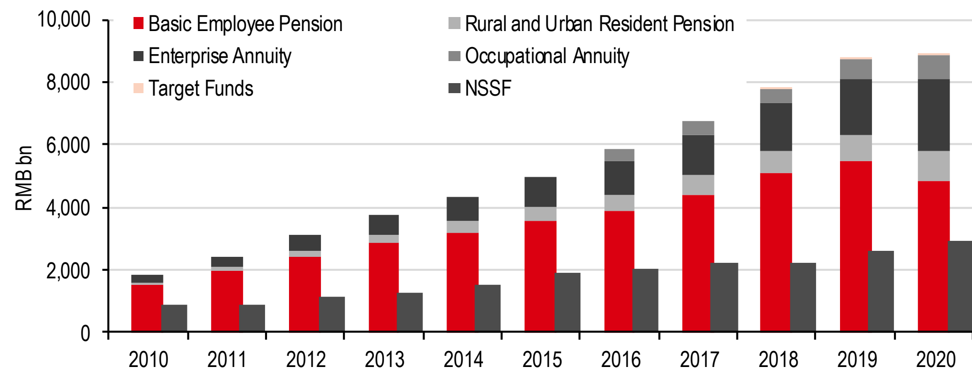
Source: UN Population Division, HSBC

Climbing old-age dependency*



Source: HSBC, UN Population Division
*Ratio of population per 100 persons aged 15-64

Accumulated pension balances



Source: MOHRSS, Ministry of Finance, Refinitiv Lipper Research, Morningstar, HSBC

For the full report, see *Spotlight – Ageing and pensions in China: Anticipating reform and the private pension opportunity*, 21 October 2021.

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'East, West, Home Best': ADRs and VIEs

- New disclosure rules in the US have put renewed focus on Chinese ADRs and their VIE structures
- We look at the implications – Hong Kong is an attractive option, but not all ADRs meet local listing requirements yet
- This is transforming the Hong Kong market into 'the Nasdaq of the East', attracting many more mainland Chinese investors

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Hong Kong calling. New disclosure rules in the US are making life difficult for mainland Chinese companies with American Depository Receipts (ADRs). Their Variable Interest Entity (VIE) corporate structures may also come under greater regulatory scrutiny. They have to decide whether to comply with the new regulations or delist and move elsewhere, highlighting the merits of the Hong Kong market, an increasingly attractive alternative.

Potential new HK listings. There are 37 mainland Chinese companies with a market cap of >USD1bn that are listed in the US, but not in Hong Kong. They have until 2024 to decide what to do. It's a big deal. They have a combined market cap of USD278bn and total trading value in the US of USD3.7bn. Not all of these companies meet Hong Kong's listing requirements yet and might have to do a primary listing there.

Total liquidity. Companies with a dual listing can opt to cancel their US listing and move all trading to Hong Kong. There are 23 companies in this situation, with a combined market cap of USD1.6trn and total trading liquidity of USD11bn on both exchanges. As trading in these stocks in the US is typically at least twice as big as in Hong Kong, total combined liquidity is likely to fall upon delisting in the US.

New shareholders. A new listing changes the shareholder structure, in particular for companies that are part of the Stock Connect programme as their shareholders may become increasingly concentrated in mainland China. And that might impact how the companies think about paying dividends. There are nine such companies, with a combined market cap of USD831bn and trading liquidity of USD2.3bn in Hong Kong.

'Nasdaq of the East'. This 'homecoming' trend is leading to a radical transformation of the traditionally financial-centric Hang Seng Index. Tech now accounts for 17% of the total index and consumer discretionary 19%, up from 12% and 6% in 2019. If all remaining ADRs relist in Hong Kong and are included in the Hang Seng Index, these numbers would rise to 18% and 23%. Market liquidity could rise from USD22bn to USD27bn.

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'East, West, Home Best'

Many Dutch proverbs have their origins in 16th century maritime history, when galleons navigated the oceans in search of spices and gold. 'East, West, Home Best' means that regardless of where you are, home is always best. These days, many Chinese companies with a listing in the US might be feeling a bit homesick, just like those old Dutch sailors.

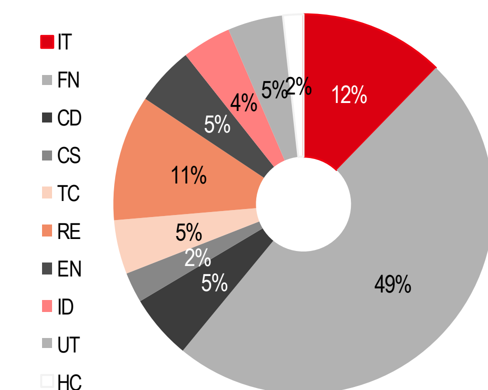
Due to renewed focus on US-China tensions, Chinese companies listed in the US have come under scrutiny again. There are, broadly speaking, two issues that dominate the discussion. First, new listing requirements in the US make it more difficult for Chinese companies to list in the US; some have decided to list in Hong Kong instead. Second, these companies often have a distinct corporate structure as Variable Interest Entities, or VIEs, which may also come under greater scrutiny. VIEs operate in a regulatory grey area. Their purpose is to access foreign capital, despite national restrictions on foreign ownership. Risks can be separated into three broad categories – regulatory, operational, and related to profit extraction.

A new look for the Hang Seng index

We have seen a major transformation in the Hang Seng Index as US-listed mainland Chinese companies increasingly seek a secondary listing in Hong Kong. Alibaba was the first in 2019, but there's a continued focus driven by uncertainties around new US accounting regulations. Over a three-year horizon, we assume that most of the largest mainland Chinese companies listed in the US will re-list entirely in Hong Kong and delist themselves from the US.

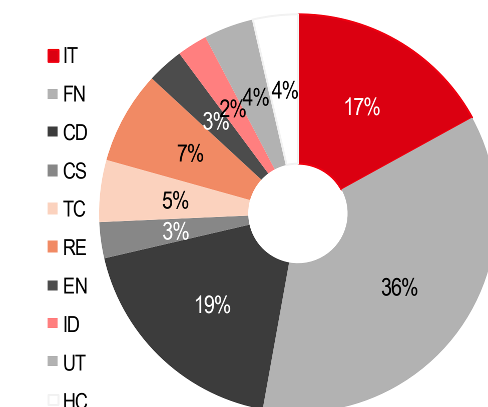
This is already happening and has altered the make-up of the HSI in the last two years, with the weights for the consumer discretionary sector jumping from 5.5% to 18.5% and tech rising from 12% to 17%. This has come at the expense of the financial sector, which traditionally dominates the index, with its weight falling from 49% to 36%. The HSI could see higher multiples and faster growth in earnings.

Composition of the Hang Seng Index in 2019 …



Key: EN = Energy, ID = Industrials, TC = Telecoms, UT = Utilities, FN = Financials, CS = Consumer Staples, IT = Tech, CD = Consumer Discretionary, HC = Healthcare
Source: FTSE Russell, FactSet, HSBC

. … by 2021, it had changed significantly



Key: EN = Energy, ID = Industrials, TC = Telecoms, UT = Utilities, FN = Financials, CS = Consumer Staples, IT = Tech, CD = Consumer Discretionary, HC = Healthcare
Source: FTSE Russell, FactSet, HSBC

For the full report, see The Flying Dutchman – East, West, Home Best,: ADRs and VIEs, 10 January 2022.

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Hong Kong Equity Strategy: 2022 outlook

- Expectations for the Hong Kong market in 2022 are low due to policy fatigue; this may lead to better-than-expected gains
- Eight themes: the metaverse, transformers, ESG, greener energy, consolidators, rate hikes, roaring back, and global recovery
- We think H-shares offer the most potential upside

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After a challenging year for the Hong Kong market, we believe 2022 will be better. Expectations are low, given many new government initiatives have been announced, leading to policy fatigue, but this may lead to better-than-expected performance. Given some 80% of companies listed today in Hong Kong today are based in mainland China, our starting point is to divide the Hong Kong market (represented by the Hang Seng Index) in two. There are local companies (FTSE HK index is the key proxy) and mainland China firms listed in the city (HSCEI index is the key proxy). We detail the specific catalysts for the two major different segments of the market below.

Hong Kong-focused stocks. We expect US interest rate hikes to serve as a catalyst as these stocks are highly sensitive to US Treasury 10-year yields. Our house view is for three US rate hikes in 2022 and another two in 2023. This would be positive for certain sectors like banks, despite the higher cost of equity, and bode well for the overall market, given the large financial sector. The real estate market may also see a modest improvement and gradually return to its pre-pandemic state.

Mainland China stocks in Hong Kong (H-shares): The catalysts here are different and include stimulus measures like targeted policy easing by Beijing and certain sectors receiving policy support. The extensive selling of these stocks over the past few months has made them attractive, given (1) low PE valuations, (2) an improving growth outlook, and (3) funds are underweight these stocks (*Back to the old order*, 17 November 2021). They offer more potential upside than local Hong Kong stocks.

Eight themes to follow in 2022: (1) The metaverse; (2) greener energy; (3) ESG; (4) transformers; (5) market consolidators, (6) interest rate hikes; (7) roaring back; and (8) a global business recovery.

Index forecasts. We are constructive on Hong Kong equities with an end-2022e Hang Seng Index (key representative index) target of 28,030 and an end-2022e FTSE HK (local Hong Kong stocks) target of 1,180, implying 17% and 13% upside, respectively. The Hang Seng Index trades at an 11.4x 2022e PE, below its five-year average of 12.4x. Alongside the investment themes, we see sectors such as financials, hardware technology, industrials and real estate as attractive.

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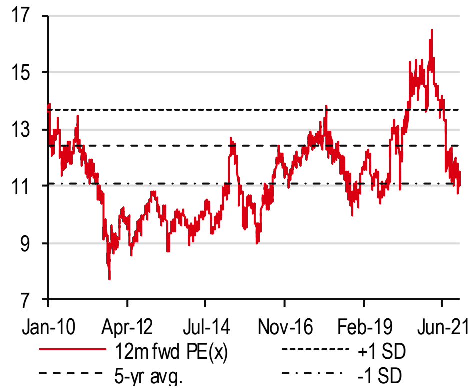
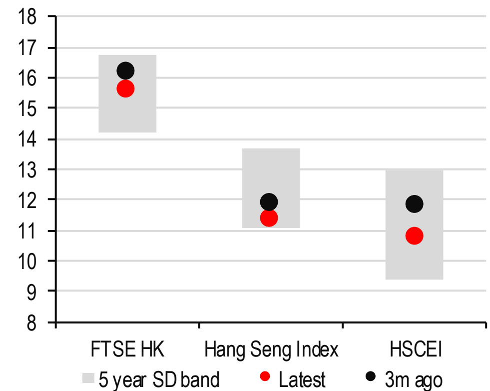
The Hang Seng Index (HSI) PE multiple is down at an 11.4x 2022e PE …



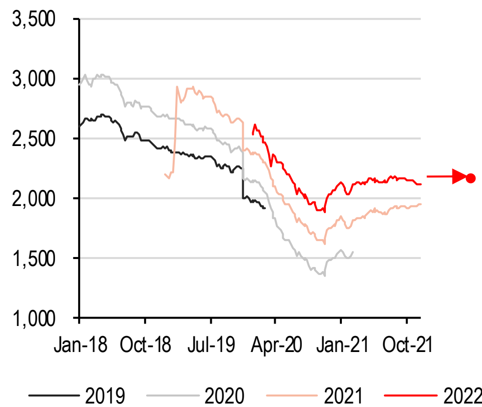
Source: Bloomberg, FactSet, HSBC (priced at close of 14 December 2021)

… making it attractive from a valuation perspective



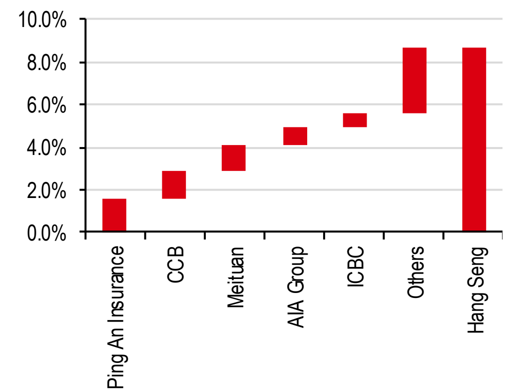
Source: Bloomberg, FactSet, HSBC (priced at close of 14 December 2021)

We expect the EPS integer of the HSI to be stable in 2022e …



Source: Bloomberg, FactSet, HSBC

… with financials driving earnings growth for the HSI in 2022e

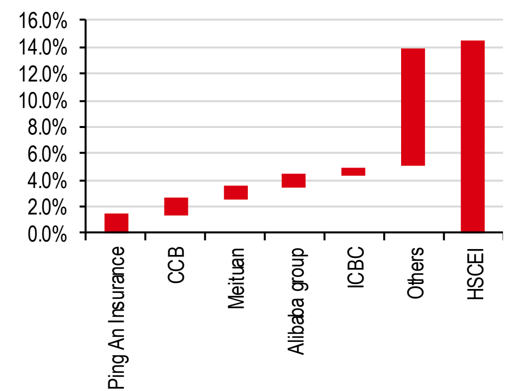


Source: FactSet, HSBC

HSCEI forward PE multiples

Source: FactSet, HSBC (priced at close of 14 December 2021)

Stock-level earnings contribution in 2022e



Source: FactSet, HSBC

For the full report, see *Hong Kong Equity Strategy – 2022: A new narrative*, 17 December 2021.

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Equities

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Aluminium: Going green – challenges vs opportunities

- Government decarbonisation initiatives will make China's aluminium industry greener and more energy efficient …
- … but this will come with increasing production costs, higher capex, and disruptions to demand and supply
- We don't think aluminium prices will exceed near-term peaks

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We assess the impact of decarbonisation and energy transition on China's aluminium industry by looking at five themes: (1) the upside to aluminium consumption driven by energy transition may be lower than expected; (2) diversifying the energy mix in favour of renewables will be delayed due to recent power shortages, but the trend will continue; (3) Beijing's recent energy controls have kept aluminium supply tight but not enough to offset the decline in demand; (4) aluminium recycling will increase supply; and (5) the viable options to decarbonise aluminium.

Tying it all together – our conclusions

- We don't expect the growing demand for aluminium driven by energy transition to offset the fall in demand caused by the slowdown in construction activity in China. As a result, we expect aluminium prices to decline in 2022-23e to more normalised levels.
- We expect higher capex and production costs due to the change in the energy mix. This should eventually benefit leading players with the scale and balance sheets to lower emissions swiftly when more structural supply changes take place due to carbon emission controls, such as carbon trading platforms and coal consumption targets.
- We don't think the price of aluminium stocks in China will return to the peaks of September 2021 in the near term for the following reasons: (1) a lack of potential share price catalysts; (2) aluminium prices expected to come down; (3) despite power restrictions that cap production, we don't expect substantial demand growth and rising imports and quantities of scrap to offset lower supply; (4) rising production cost from higher power tariffs; and (5) rising capex from diversifying power usage and stricter standards in energy consumption.

This is our latest report on the Energy Transition theme. If you want to subscribe to any of our nine big themes, *click here*.

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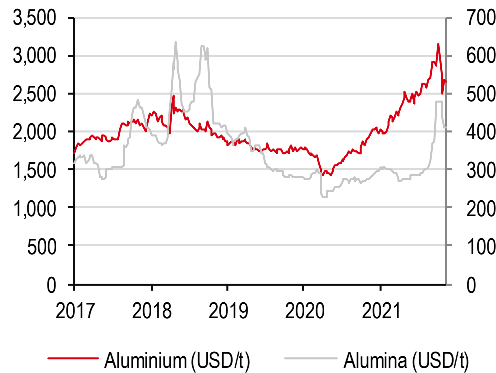
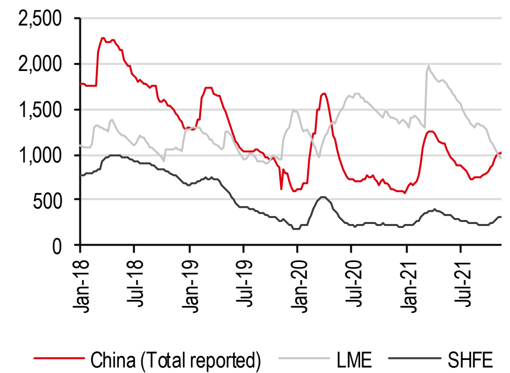
Aluminium and alumina prices



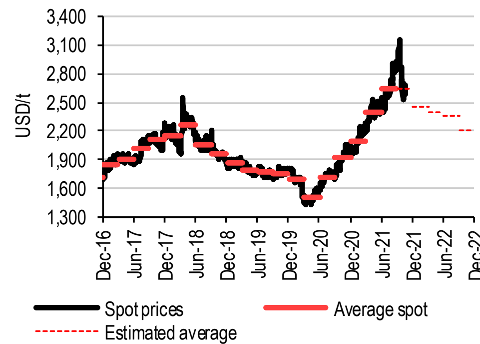
Source: Bloomberg, HSBC

Aluminium inventory (kt)



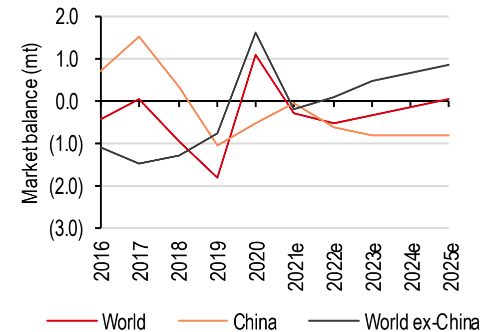
Source: BBG, Refinitiv DataStream, HSBC

HSBC aluminium price forecast (USD/t)



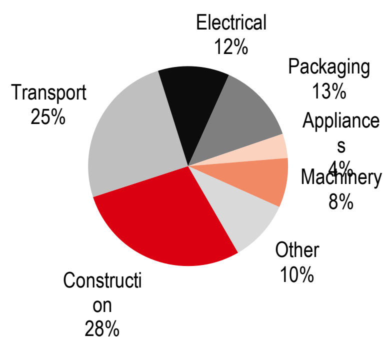
Source: Refinitiv DataStream, HSBC estimates

Aluminium market balance



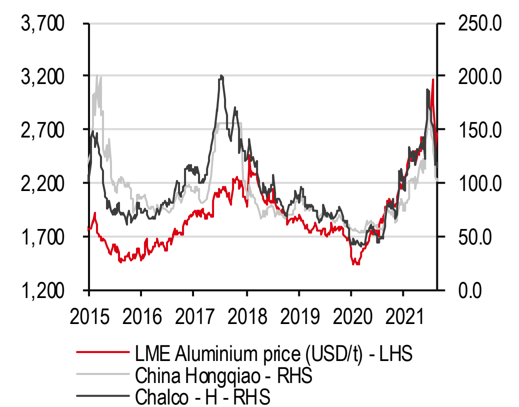
Source: LME.com, HSBC

Aluminium demand by industry in China



Source: Wood Mackenzie, HSBC

Aluminium prices vs share prices (rebased to 100 as of 2015)



Source: Bloomberg, HSBC

For the full report, see *China Aluminium – Going green: more challenges than opportunities,* 2 December 2021.

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Autonomous driving: Smart cars need smart sensors

- The number of sensors in cars – like cameras, radars and laser-based LiDAR – is rocketing higher as autonomous driving improves
- We take a deep dive into this rapidly emerging market, map out the technology and profile some of the key players …
- … and see the autonomous driving sensor market jumping from USD7.3bn in 2020 to USD41.4bn in 2030e

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The dream of cars that can fully drive themselves is getting closer. It's largely thanks to a wave of innovations in hardware, software and algorithms together with the boom in electric vehicles. But for autonomous driving to become a reality, cars are going to need a lot more sensors – especially cameras, radars and an emerging laser-based technology called LiDAR – which is the focus of this report. These devices collect all sorts of data from outside, and even inside the car, to enable the complex decision making required today for vehicles.

Before we get too excited, we're clearly still some years away from fully automated cars, but we are getting closer as cars begin to migrate to the next level in autonomous driving. But even for this jump, the technology needs to ratchet up a lot and which is why we're so bullish on the sensor sector. We forecast the auto sensor market to double from USD7.3bn in 2020 to USD18.9bn in 2025e and then to double again to USD41.4bn in 2030e. We focus on the three main sensors:

Cameras: These are the most commonly adopted sensors in cars. We forecast the average number of cameras per car to increase from 1.7 today to 5.3 in 2030e. And they'll get smarter, too – with higher pixel counts, technology that prevents nuisance flickering, and improved images. Humans are the viewers today, but increasingly the images will be used by machines. We see lenses and image sensor makers as the key beneficiaries and forecast the addressable market size for these devices to increase from over USD2bn in 2020 to over USD11bn in 2030e.

Radars: These are improving their long-range functions and precision by using new frequency bands, materials, and becoming more integrated. Less than one radar was in each car in 2019, but we forecast that to rise. A few Chinese radar companies are starting to supply auto makers and are mainly focused on design, system integration and algorithms.

LiDAR: This provides high-precision 3D images for more advanced levels of autonomous driving and generates the highest incremental value for the smart car sensor system. It's in the process of moving from mechanical to solid-state technology with cost reduction the key priority to increase the adoption rate. Still, it's an emerging technology with over 100 companies working on it.

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Sizing up the car sensor market

Technology roadmap to autonomous driving to fuel demand for sensors in cars …

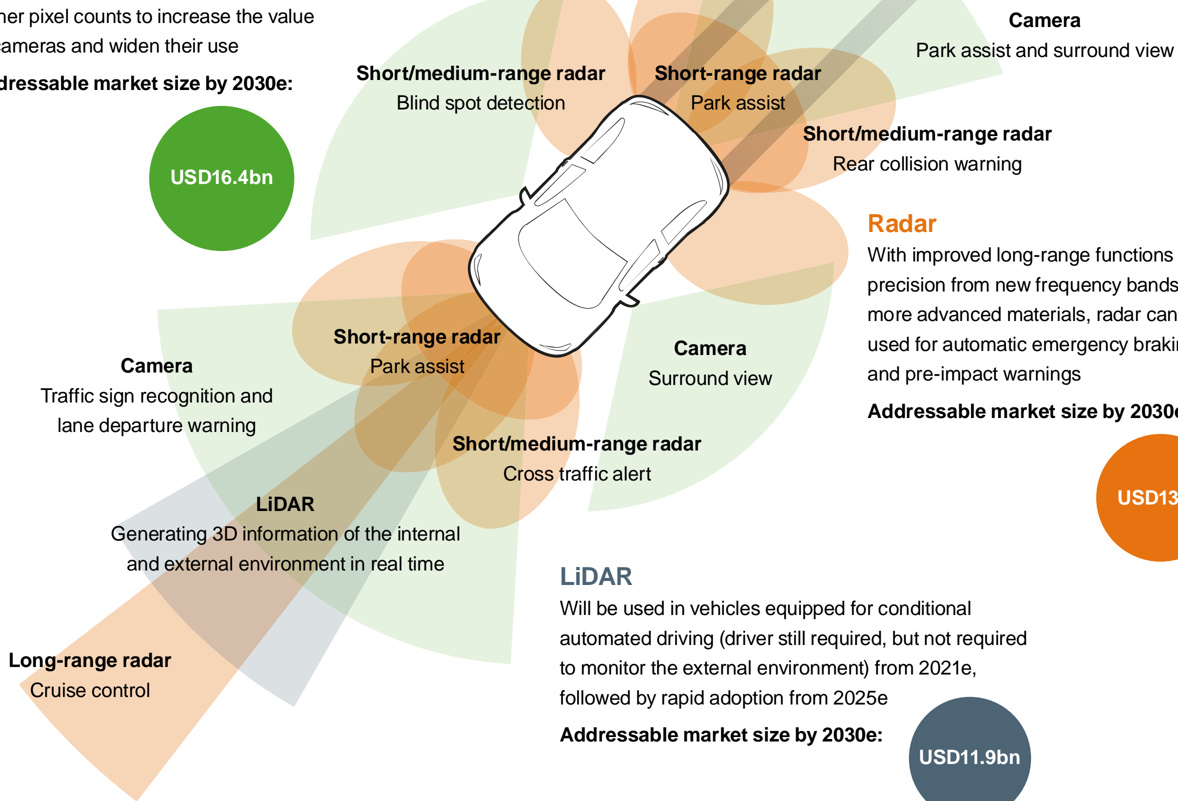
We project the automotive sensor market size will increase significantly (USD)

… supported by three major pillars – cameras, radars and LiDAR (similar to radar but uses laser pulses) …

Camera

Average cameras per car to increase from 1.7 currently to 5.3 in 2030e. Upgrades such as anti-flickering and higher pixel counts to increase the value of cameras and widen their use

Addressable market size by 2030e:



Radar

With improved long-range functions and precision from new frequency bands and more advanced materials, radar can be used for automatic emergency braking and pre-impact warnings

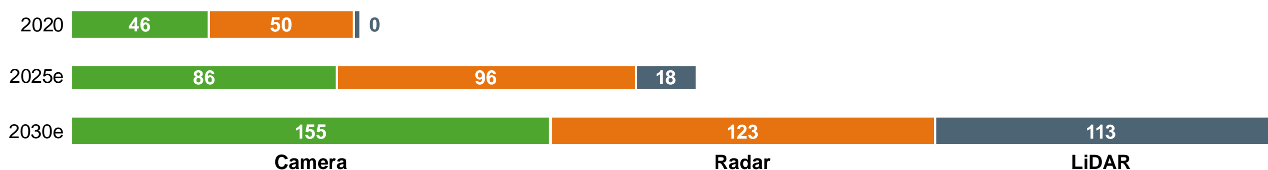
Addressable market size by 2030e:

LiDAR

Will be used in vehicles equipped for conditional automated driving (driver still required, but not required to monitor the external environment) from 2021e, followed by rapid adoption from 2025e

Addressable market size by 2030e:

… raising the value of sensors per car (USD)



Source: TSR, Yole Development, Magna, HSBC Qianhai Securities estimates

For the full report, see *Spotlight – Autonomous driving sensors: Smart cars need smart sensors*, 4 June 2021.

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Banks: A new playbook for wealth management

- As China gets richer, individuals need more advanced wealth management products and services
- We see this fast-growing business as a powerful earnings driver for banks
- We look at the different models banks use as well the growing importance of private banking

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Wealth management is an enormous growth opportunity for banks in China. For the entire wealth management industry – including brokers and mutual fund managers – total assets under management already exceed RMB100trn – about the same size as China's GDP in 2020. But despite its size the reality is that the industry is still at an early stage of development. The products on offer are fairly rudimentary and advisory services pretty limited. We think the days of a one-size-fits-all wealth management model are over. After all, China is now home to more than 2m high net worth individuals (HNWIs), those with the equivalent of at least RMB10m in investable assets. HSBC thinks this number will rise to 5m by 2025e.

This report explains to equity investors what needs to be done for banks to move to the next level of the wealth management industry. Success will help to boost revenues at a time when their traditional growth model is flagging. An important part of the story centres on private banking, a relatively new service that can help these banks strengthen their brands and make them much more competitive.

This is an important time for the industry; 2021 is the final year of a policy transition covering wealth management products (WMPs), part of a major overhaul of the asset management industry. The aim is to lower systemic risk by curbing off-balance-sheet shadow banking by stopping banks from guaranteeing returns on WMPs. While the regulators are closing some doors they are opening others, creating huge opportunities for banks to stand out from the crowd in this extremely competitive market. New, more sophisticated, risk-adjusted products and top-level advisory services represent the future of this industry. In this report we:

- Introduce a three-dimensional framework for a successful wealth management franchise: (1) identifying clients; (2) understanding their needs – what are they saving for, when will they need the money, what's their risk appetite; and (3) providing the right products and services.
- Explain the different business models and the growing importance of having sophisticated private banking services, either as a standalone business or as part of the wealth management department.
- Compare A-share banks' wealth management services with developed western banks.

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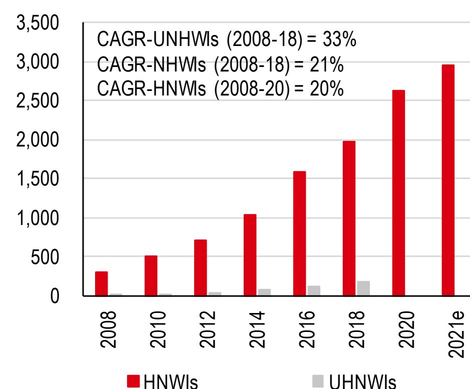
A fresh approach

We think China's wealth management industry is following in the footsteps of developed markets, which evolved in three phases: (1) the sell-side model led by brokerages; (2) the buy-side model with a focus on asset allocation; and (3) a more all-round, comprehensive service. We believe China is in transition from phase one to phase two.

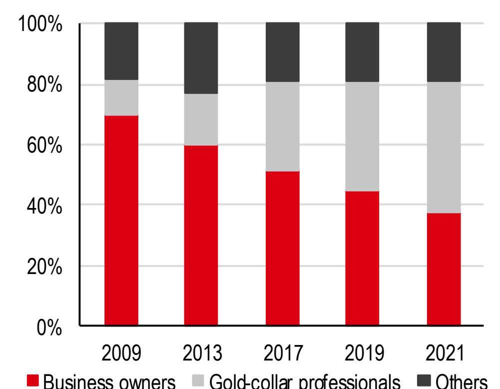
- **Phase One: Sell-side one-size-fits-all approach**
  - Wealth managers focus on transaction volumes, the scale of clients' assets and transaction frequencies to earn a commission.
  - Products are selected based on their investment track records or pre-determined yield of guaranteed return WMPs. There is little product differentiation.
  - Risk appetite is generally not part of the conversation. Wealth managers tend to stress the ability of the fund portfolio manager.
- **Phase Two: Buy-side service with risk-return oriented products**
  - Products are combined with services and the income of wealth managers is based on both AUM and investment performance. The intense price competition and low margins of agency sales and brokerages will push the industry to enter phase two.
  - Asset allocation that is aligned with investment goals becomes a more important part of the equation, bring the interests of wealth managers and investors more into alignment. However, deficiencies still exist. Wealth managers' income increase significantly with exceptionally strong performances but there are no penalties for poor returns. This encourages wealth managers to take more risks.
- **Phase Three: A comprehensive service**
  - Wealth managers' remuneration depends on how well they meet the needs of their clients. They provide a wide range of wealth management services, including liability management, pensions, and investments to cover health care, education, and inheritance.
  - The liquidity and tenor of products become more important to reflect investment horizons and risk appetites.

Number of HNWIs in China ('000s)



Source: Bain & Company estimates, China Merchants Bank, HSBC Qianhai Securities

HNWI professional mix



Source: Bain & Company, China Merchants Bank, HSBC Global research, HSBC Qianhai Securities

For the full report, see *Spotlight – A-share Banks: A new playbook for wealth management*, 26 November 2021.

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Construction: Buying time to build new businesses

- Despite a short-term boost, growth in traditional infrastructure investment is set to decline to 4% a year during 2022-25e
- While sector consolidation helps, the future lies in building green, high-tech businesses
- Smart city and carbon neutral strategies are likely to be the future of municipal investment in China

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The transition is underway. While fixed asset investment (FAI) in infrastructure should enjoy a moderate rebound in 1Q22e, long-term growth is set to slow down. Growth was below expectations in 10M21, so the Ministry of Finance announced that it would use up its full-year bond quota to provide a gentle stimulus to infrastructure FAI. Policy support is likely to continue in 4Q21e, which may lead to a rebound in infrastructure FAI growth in 1Q22e. Longer term, we believe FAI in traditional infrastructure – i.e. roads, rail and airports – will slow to 4% y-o-y during 2022-25e, consistent with HSBC Economists' view that China's decade-long boom in infrastructure is coming to an end (see *China's great transition: From construction to capex and consumption*, 9 Nov 2021).

Given the change in outlook, all the major construction companies are looking to build new businesses like green investment and upgrading technology, which currently generate little revenue. The contribution to FAI by advanced industries, including high-end manufacturing, electricity, and environmental protection, has been rising since 2019. We see this as the next growth driver – so the business models need to change.

Traditional infrastructure investment is no longer a major driver of GDP

The past decade was the golden period of traditional infrastructure investment. Annual investment in transport infrastructure increased 5x during 2004-19. As one of the three drivers of China's GDP growth, infrastructure FAI grew rapidly, especially after the 2008-09 Global Financial Crisis when the government launched a huge infrastructure stimulus programme. Based on our calculations, the average transportation infrastructure growth multiplier to China GDP growth was about 1.5x in the past 15 years. This multiple hit a historical high at 5x in 2009, when RMB4trn infrastructure stimulus package was launched.

As China shifts to digital and green investment, we think traditional infrastructure will be replaced as the major driver of economic growth entering the 14th Five-year Plan (FYP). However, investment in traditional infrastructure will still be an important part of the economy. While this should result in less volatile infrastructure spending, its growth rate may decline to low single digits. In 2022-25e, we expect the GDP growth multiplier for traditional infrastructure (transport infrastructure) spending to decline to 0.6-0.8x and the average spending growth for traditional FAI could be around 4% a year.

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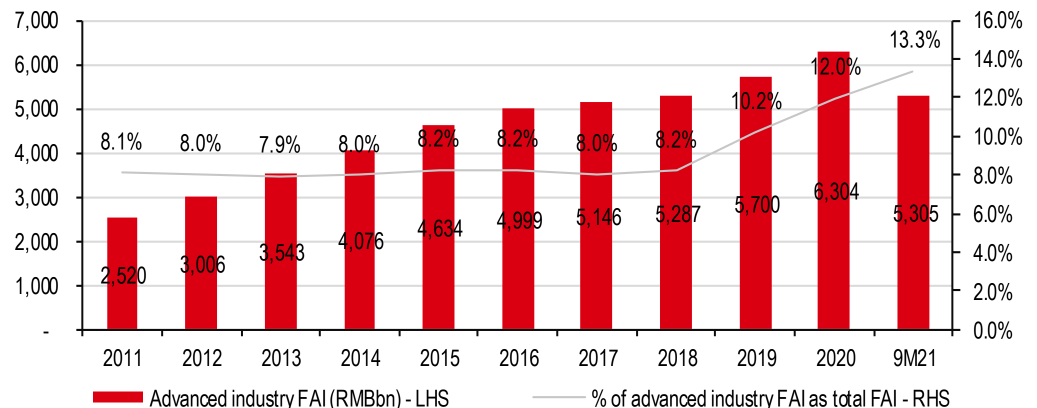
New infra and green investment partially offsetting the softness in traditional infra
The FAI contribution of advanced industries – including high-end equipment manufacturing, computer and communications, electricity, gas and water production and supply – to total FAI has been rising since 2019 and we expect advanced industry FAI to maintain high levels of growth in the 14th FYP. New infrastructure and green investment should become the new driver for infrastructure FAI. The HSBC Economics team has set the average annual growth rate of total infrastructure investment at 5-7%, vs traditional infrastructure FAI growth at 4%, lifted by new infra and green investment.

What is new infrastructure in the construction sector?
In China's 14th FYP, new infrastructure will be a key driver of growth in infrastructure spending, including 5G networks, big data centres, artificial intelligence (AI), the industrial Internet, ultra-high voltage power transmission, intercity and new energy vehicle charging stations. While traditional infrastructure mainly covers railways, roads and airports, new infrastructure is "digital, smart and innovative". The investment is likely to focus on R&D spending and equipment procurement rather than pure construction.

In terms of new infrastructure investment, traditional construction companies can contribute through the construction of intercity/high-speed railways, which is already their existing business, and building the base for other new infrastructure sectors.

Contribution from advanced industry FAI has been increasing since 2019



Source: NBS, HSBC; We calculated advanced industry FAI include high end equipment manufacturing, computer and communication, electricity, gas and water production and supply and etc.

For the full report, see *China Construction– 2022 outlook: Buying time to build new businesses,* 24 November 2021.

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China accounts for more than 20% of global spending on research and development, second only to the US. Investment in high-tech manufacturing is rising sharply.

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Cosmetics: Time to shine for local brands

- Cosmetics is a fast-growing corner of China's vast consumer market; we see per capita spend doubling to US99 by 2025e
- Up to now, foreign brands have dominated, but local competitors are gaining traction, especially in the mass market …
- … driven by a better insight into what local buyers want and increased brand loyalty

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China is already the world's second-largest cosmetics market, it is also the fastest-growing major cosmetics market, and at home it's one of the fastest-growing consumer segments.

But big and rapidly expanding markets are nothing new for China. What sets it apart for investors in China is that domestic brands are gradually taking off and appealing to fashion-conscious buyers. Foreign brands have long dominated, especially in high-end products, but local leaders are emerging and recording success in products like skincare to makeup. China is also creating unique products like those with extracts from some of the 17,000 natural plants found in Yunnan Province with supposed health benefits.

A major attraction of the cosmetics segment is that it is relatively resilient during an economic downturn thanks to affordable small-ticket items such as facial creams and lipsticks. In 2020 as COVID-19 rocked the economy, retail sales of cosmetics grew 9.5%, significantly higher than overall consumer goods, which fell 1.0%.

Another trait is that users are increasingly buying beauty care products online from sites like Alibaba's Taobao or the new Tiktok shops, and COVID-19 has only accelerated this trend. Social media is also a big influence where celebrities and key opinion leaders (KOLs) share their skincare experiences and encourage users to make purchases.

Then there's the long-term growth story. China's per capita cosmetics consumption is just c19% of Japan and c20% of the US, suggesting significant growth potential ahead. We expect per capita cosmetics spending in China to almost double to USD99 in 2025e from USD53 now on:

1) **Trading up.** Consumers are spending more on premium cosmetics as their incomes rise.
2) **A large consumer base:** Gen-Z and millennials are getting interested in cosmetics from a younger age.
3) **Diversifying:** Consumers are getting more sophisticated and want variety. Brands often focus on niche segments of the market. Digitalisation is speeding up this process with new product launches being more rapidly rolled out.

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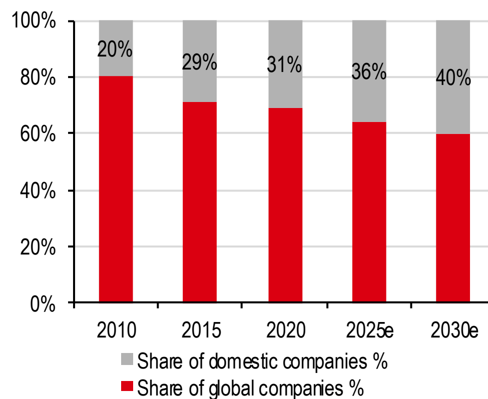
Local brands to take foreign share … starting with the mass market

Yet for all its promise, China's market has mostly been dominated by foreign firms. In the premium cosmetics market, the top five overseas companies include L'Oréal, P&G, and Estée Lauder. We estimate, that when combined, domestic companies have a market share of c10% (2020). But the mass market is a different story as two domestic companies are among the top five operators and together domestic companies held a market share of 38% in 2020, up c9ppt vs. its 2015's level.

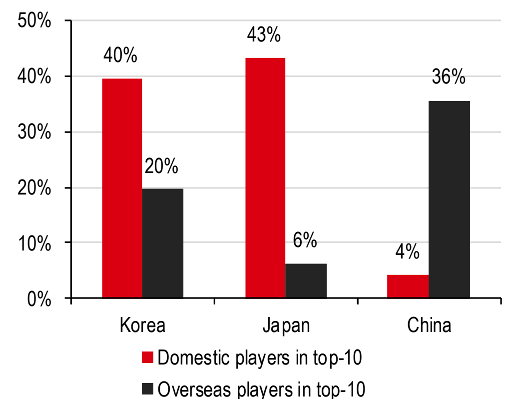
The reason for this is that local players have grown quickly in lower-tier cities thanks to early moves and cost-effective products. Now they are increasing investment in R&D to improve their quality and brands, raising their market share in certain segments, and using online methods to take on higher-tier cities. Importantly, they react faster to market changes, are more adept at digital marketing, and have a deeper understanding of changing consumer preferences. Overall, we expect the market share of domestic brands to rise to 36% by 2025e from 31% in 2020.

China cosmetics market share by global + domestic firms (2010-30e)



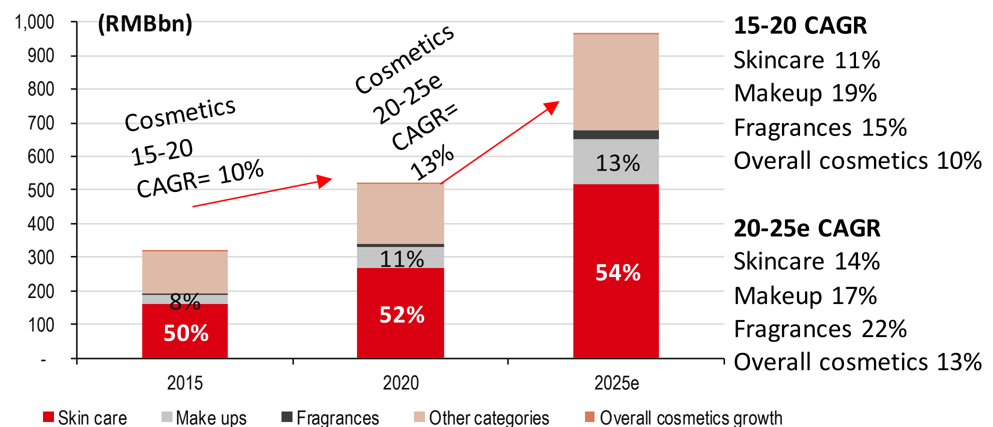
Source: Euromonitor, HSBC Qianhai Securities estimates

Market share of top 10 players by domestic/overseas in three Asian countries (2020)



Source: Euromonitor, HSBC Qianhai Securities

China's cosmetics market value forecasts



Source: Euromonitor, HSBC Qianhai Securities estimates

For the full report, see *China Cosmetics – Initiate coverage: Time to shine for local brands*, 25 August 2021.

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Financials survey: Anatomy of a financial consumer

- Our third proprietary survey gauged consumer preferences towards financial products and services as we emerge from the pandemic
- Internet giants are preferred for payments, but not for borrowing, saving or insurance
- The desire to buy insurance protection significantly outstrips savings for the first time

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We present the findings from our third proprietary survey of attitudes and preferences of Chinese individuals towards China's financial services sector, and how they are changing due to the pandemic and growing online penetration. Our survey sample of 2,031 is skewed towards individuals with income levels above the national average, more developed cities and/or regions, and those of working age. Highlights include:

- Only 12% of the respondents increased borrowing over the past year, with nearly 60% not changing borrowing levels. In addition, almost half of the individuals save for precautionary reasons such as unforeseen events and health issues, with the allocation to health rising among more wealthy individuals and unforeseen events falling in more developed areas.
- Internet platforms continue to be preferred for money transfers across all age groups and income levels. However, individuals' propensity to borrow is not materially impacted by whether they use credit cards, personal loans or internet platforms, while consumers remain most sensitive to factors favouring traditional financial institutions such as lending rates for loans, diseases covered for health insurance and critical illness, brand for motor insurance, and fund strategy for investments.
- Individuals still trust banks most for advice on financial products, but only one third see them as most trustworthy vs two-thirds in our previous surveys; the ranking of online has dropped below friends & family and agents. Where individuals do use online to purchase financial products, they tend buy money market funds, health products, and banks' wealth management products.
- Individuals' desire for protection is greater than savings for the first time, with health insurance the most preferred product; only 17% are now focused on buying savings products compared with c60% in 2018. Demand for critical illness increases as individuals get older, with around two-thirds preferring sum assured below RMB500k (c3.5x the average earnings of the sample), while the preference for purchasing fast-growing short-term health is through insurers vs internet channels.
- Commission rates have become the main factor in choosing between brokers, while banks and brokers remain the key distribution channels. The preference for internet platforms has slipped.

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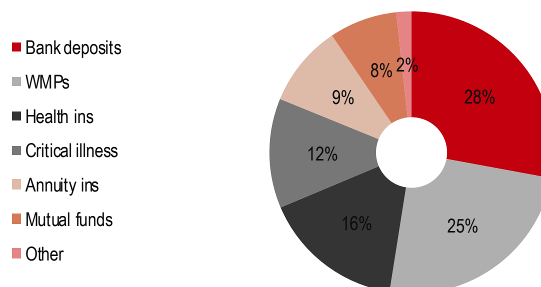
What surprised us

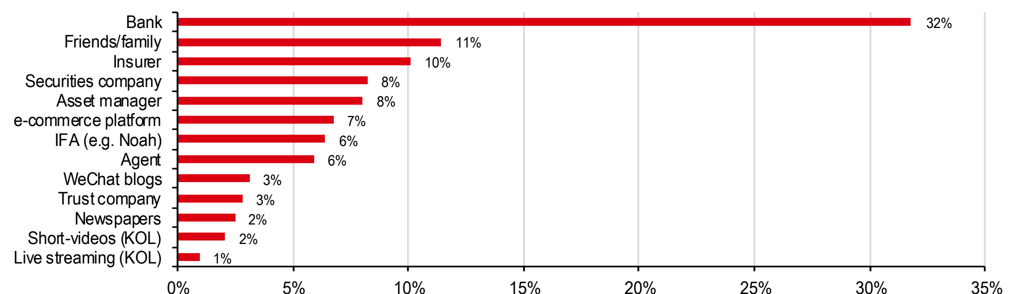
- 70% of the respondents indicated no fall in income and 20% reported a rise in income over the past year.
- There is a greater risk aversion around COVID-19, highlighted by an increased desire to allocate funds towards bank deposits, health insurance and critical illness products vs less towards market-sensitive products such as bonds, securities and trusts.
- However, there is a preference for increased spending on financial products to be allocated to wealth management products and bank deposits over the next three years.
- The bank channel remains most trusted for advice on financial products, but only 32% of the respondents rank it as the most trusted vs 67% in 2019 and 72% in 2018.
- Friends & family and insurance agents are ranked second and third most trusted for advice on financial products, respectively, while internet platforms have dropped to fourth from second in our 2019 survey.
- Internet giants are preferred for payments but not borrowing, saving or insurance.
- Individuals' propensity to borrow does not appear to be materially impacted by whether they use credit cards, personal loans or internet platforms.
- Consumers prefer to use insurance channels over internet players to purchase short-term health products, with "million-dollar" short-term medical insurance purchased through insurer websites/apps at 30% (21% in 2019), followed by Alipay at 22% (26% in 2019).

Destination for savings over the next three years



Source: HSBC, Toluna. Note: Health ins – health insurance. WMPs – wealth management products. Annuity ins – annuity insurance.

Most trusted financial institutions



Source: HSBC, Toluna. Note: IFA – independent financial advisors.

For the full report, see *Spotlight – China Financials Survey: Anatomy of a financial consumer – back to basics,* 3 March 2021.

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Hong Kong Real Estate: Building back better in 2022

- We expect housing prices to resume growth of 3-5% in 2022e …
- … and now prefer retail landlords over office landlords
- Five themes for 2022: (1) "Northern Metropolis," (2) growth via acquisitions, (3) luxury retail, (4) buybacks, (5) dividend growth

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A "triple whammy". Hong Kong's property market has been recovering well from a "triple whammy" of an economic recession, COVID-19 and rising geopolitical tensions over the last two years. We expect the property market to gradually return to a pre-COVID-19 environment, pushing valuations higher, with housing prices to resume growth of 3-5% in 2022e.

2022 – focusing on growth. We are constructive on Hong Kong's property developers given their current depressed valuations and the renewed clarity over the direction of government housing policy. Many real estate companies are actively looking for growth by acquiring property projects, which should lift their earnings above pre-COVID-19 levels. The strategic development of the city's "Northern Metropolis" should eventually solve the housing woes in Hong Kong and offer developers opportunities to scale up their business with better growth visibility. The sector currently trades at a 60% NAV discount and 9.0x FY22e PE, 1.0 SD below its five-year average.

Five themes in 2022. We expect the pace of recovery to vary among companies and identify five drivers of share price outperformance: (1) "Northern Metropolis," (2) new growth engines via acquisitions, (3) luxury retail spending, (4) share buybacks, and (5) dividend growth. We also discuss Hainan's duty free business, a potential threat for retail landlords in Hong Kong.

Sub-sector preference – Residential > Retail > Office. We continue to view developers as the most attractive from a risk-reward perspective, and now prefer retail landlords to office landlords. We expect housing prices to regain momentum starting from 2Q22e following a mild adjustment of -5% since August 2021, given the impact of the negative wealth effect. In the retail segment, our base case includes the assumption that international travel will remain largely limited and that the re-opening of the border between mainland China and Hong Kong will be gradual. While this might offer some support to the retail market, we think much of the good news has been factored in. Central office rents returned to positive growth in 2H21, driving a re-rating for some office landlords, so we are cautious about how much share prices can rally from here.

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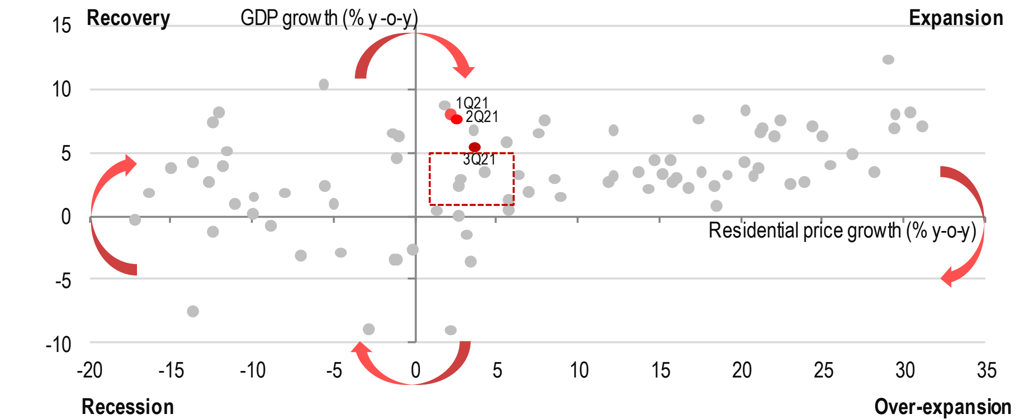
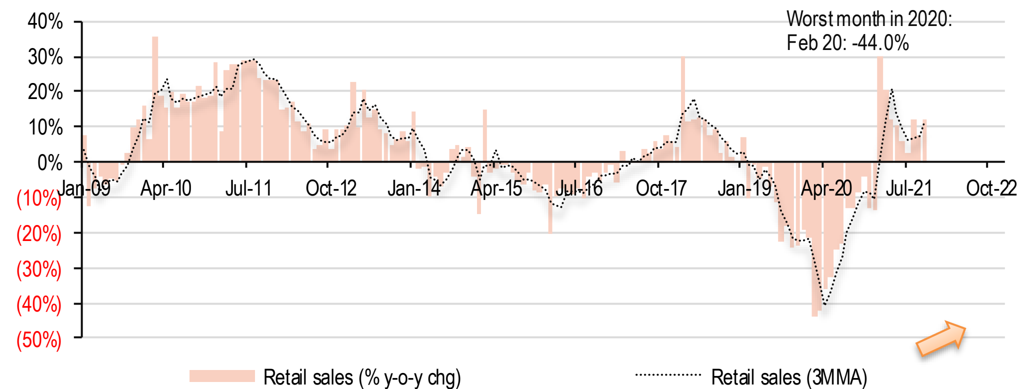
Focus charts – the big picture

We expect housing prices to grow by 3-5% in 2022e



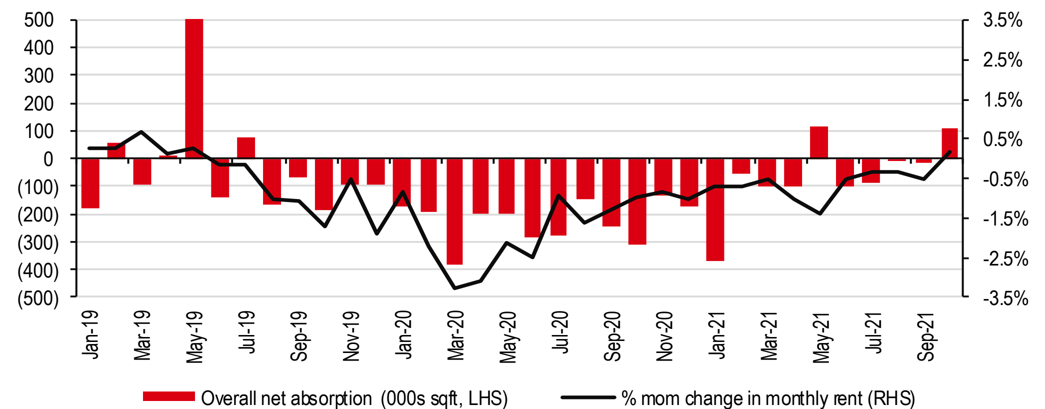
Source: Rating and Valuation Department, Census and Statistics Department, HSBC estimates

A resumption of tourist spending could support retail sales growth



Source: The Census and Statistical Department of the Hong Kong SAR Government, HSBC. Note: Retail sales are till October 2021

Office rents have started rising following a cyclical adjustment in the past two years



Source: Real Estate Intelligence Services (REIS), Jones Lang LaSalle, HSBC

For the full report, see *Hong Kong Real Estate – 2022 outlook: Building back better*, 9 December 2021.

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Internet data centres: Regulated growth

- Data generation is forecast to rise at a 2016-30e CAGR of 64%
- The industry's growth prospects outweigh the policy risks
- We assess what drives this fast-growing industry – location, price competition, client mix, connectivity, and power use

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From policy darlings to policy risk. When China announced in 2020 that big data centres were one of the seven categories of "new infrastructure", share prices of leading companies soared on the news of policy support for this fast-growing industry. Prices corrected due to the clampdown on internet companies, price competition, and difficulties in acquiring permits in prime locations. This report looks at industry growth drivers, weighs the risk-reward outlook, and identifies where we see value emerging.

Location. The prime sites for data centres in China are in the heart of big cities. This guarantees the fastest connection speeds and in turn means data companies can charge clients the highest fees. But these locations are becoming scarcer and permits harder to acquire, often due to limited electricity supply or regulations, and with more data centres being developed on the outskirts of cities. Although this means average selling prices (ASPs) will fall, we think this will be offset by cheaper land acquisition costs, protecting investment returns.

Client mix. The client base is split between wholesale (cloud service providers and internet companies) and retail customers (financial institutions, large enterprises, and public services). The wholesale business (GDS is a major player) is larger in scale, and lower in terms of monthly service revenue (MSR) as customers have greater bargaining power. The retail business is smaller in scale and higher in terms of MSR as more value-added services are required.

Connectivity. Better interconnection is a key competitive advantage as it allows customers to connect directly within or between data centres, increasing client stickiness and boosting margins. Operators in mainland China offer fewer interconnected services in order to maintain relationships with the big three telecom carriers.

Electricity and ESG. Data centres use a huge amount of electricity and the government is imposing new standards to address the issue; the results so far look promising. We think that if the market leaders succeed in hitting the power targets, this will support their strong growth prospects, driven by the exponential rise in data use.

Growth forecasts

This report assesses the level of policy risks against a backdrop of strong industry growth, as demand booms as a result of cloud services, 5G, virtual reality (VR), augmented reality (AR), big data, and AI applications used in e-commerce, autonomous driving, and computer gaming. Based on data from iResearch, Qianzhan, and Mordor Intelligence, growth forecasts for data generation in China, cloud services, and the carrier-neutral IDC market are.

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- **China's data generation**: A 2016-30e CAGR of 64%.
- **Cloud service providers**: The largest customers for IDCs are expected to expand at a CAGR of 34% over 2019-24e, with the value of the market reaching RMB645bn by 2024e.
- **The carrier-neutral data centre market**: This excludes carrier-operated data centres run by China Telecom, China Mobile, and China Unicom. The market is expected to grow at a CAGR of 32% over 2019-24e and reach RMB75bn by 2024e.

The market
China's IDC market can be divided into two categories – carrier-operated and carrier-neutral. The three largest operators, all carrier operated, are run by the major telecom companies and accounted for 63% of the market in 2019. They are generally located in non-core cities and do not compete directly with carrier-neutral IDCs, which mainly serve customers in Tier-1 cities. Carrier-neutral IDCs are considered to have a competitive edge in terms of service standards, customisation capability, and data centre stability as they have access to all three major telecom networks

Wholesale business model
Cloud service providers and large internet companies usually require a large net floor area per facility and a high level of customisation to house their own proprietary servers and racks. Under the wholesale model, data centre service providers commit a significant portion of a data centre to these customers. The contract term is usually 5-10 years and the churn rate – the annual percentage rate at which customers stop subscribing to a service is low.

- **Cloud service providers:** Large-scale cloud service providers, who serve large enterprises, internet companies, and the government, need large data centre capacity to meet customer needs. They often require custom-designed specifications for IT hardware, server racks and computer rooms.
  Example: *Ali Cloud*
- **Internet companies:** Some large internet companies are also cloud service providers. They use their cloud platforms for internal IT needs and also provide services to external customers.
  Example: *Alibaba*

Retail business model
Financial institutions, large enterprises, and public service providers usually require less capacity and little customisation. The retail model allows multiple customers to co-locate in the same data centre facility and contracts are usually shorter with a higher unit price.

- **Financial institutions:** Industry regulations require banks, insurance companies, and securities firms to house their IT systems in data centres that guarantee reliability and security. Outsourced data centre providers must meet high design and operational compliance requirements to host their IT systems.
- **Large enterprise and public services:** As government services move online, demand for data centres is increasing.

This is our latest report on the Automation theme. If you want to subscribe to any of our nine big themes, *click here*.

For the full report, see *China Internet Data Centres – Regulated growth in a booming market*, 11 October 2021.

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Meat products: The need for speed

- Growth opportunities led by lifestyle demand for faster, more convenient, often home-delivered meals
- We see this as a great chance for industry leaders to boost their revenue in a hugely fragmented market
- Declines in pork and chicken prices set to improve profitability; the development of online channels to drive sector consolidation

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Meat products are on the move. The need for speed – faster, more convenient, often home-delivered meals for the time-strapped younger generation – is driving demand for product upgrades. Against a backdrop of flat industry growth, we believe three niche sub-sectors offer annual growth rates of more than 10%: (1) processed meat products; (2) fast-frozen food dishes; and (3) the 3Rs – ready-to cook, ready-to-heat, and ready-to-eat. We expect the leaders in the hugely fragmented meat product market to outpace industry revenue growth over the next three years.

Growth is flat

Meat processing is in the midstream of the industrial value chain, between livestock and slaughtering upstream and supermarkets, wet markets and catering services downstream. Products include pre-processed chilled meat, frozen and fresh meat, as well as further-processed categories such as sausages, preserved and cured meat.

According to the National Bureau of Statistics, China's total meat consumption stayed largely flat over 2014-20. In 2020, China's meat consumption was around 85.4m tonnes, implying a market size of cRMB4.6trn. We forecast that the size of the market will increase at a CAGR of 1% over 2021-23e, average selling prices (ASPs) will fall 1%, and total consumption will increase 2% over the same period. It is clear that fresh growth drivers are needed.

What's changing

Demographic shifts, the rising incomes of the younger generation, and changes to consumer preferences are driving demand for product upgrades. The emphasis is on speed and convenience. Against a backdrop of flat industry growth, three niche sub-sectors offer annual growth rates of more than 10%: (1) processed meat products; (2) fast-frozen food dishes, and (3) the 3Rs – ready to cook, ready to heat and ready to eat.

- **Processed meat:** We estimate this market was worth RMB250bn in 2020, about 5.5% of the total meat product industry. We anticipate rapid growth to RMB275bn in 2021e, RMB305.3bn in 2022e, and RMB341.9bn in 2023e, up 10%, 11% and 12% y-o-y.
- **Fast-frozen dishes:** This market was worth about RMB48.4bn in 2020, around 1.1% of the meat product industry. We expect it to expand rapidly thanks to the popularity of the hot pot

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market. We forecast that this sub-sector will grow to RMB53.8bn in 2021e, RMB59.7bn in 2022e and RMB66.3bn in 2023e, up 11% y-o-y each year.

- **The 3Rs:** The young generation work long hours and do not want to spend time cooking. The ready-to-cook, ready-to-heat and ready-to-eat market is the fastest growing industry sub-segment. We estimate that it was worth RMB200bn in 2020, c4% of the meat product industry, and we forecast a 2021-23e CAGR of c15%, supported by online food delivery

Lower pork and chicken prices to improve industry profitability

Hog capacity in China has been rising since September 2019 as the impact of African swine fever faded. At the end of June 2021, the inventory of breeding sows had recovered to 45.64m, surpassing the pre swine-fever level of 44.72m at the end of 2017. This inevitably leads to an increase in hog production and in turn a decline in pork prices. We estimate weighted average hog prices will fall from RMB20/kg in 2021e to RMB17/kg in 2022e and then rise to RMB19/kg in 2023e (unchanged). As pork is a major raw material for the meat product industry, a decline in hog prices should boost profitability.

After chick prices peaked in 2019, the white-feather broiler capacity has continued to increase. Since it takes around 15 months for the industry capacity to ramp up, we believe broiler supply will continue to grow and chicken prices will stay low over 2021-23e. We estimate white-feather broiler prices will be RMB7.3/kg in 2021e, RMB7.1/kg in 2022e and RMB7.2/kg in 2023e. Again, this should improve the profitability of meat producers use chicken as a raw material.

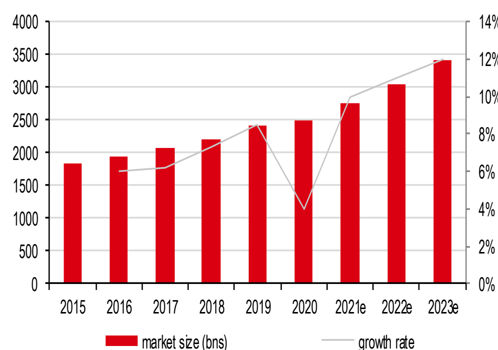
Industry consolidation likely to accelerate

China's meat product industry is highly fragmented

China's meat product industry is highly fragmented. The top 10 operators have a combined market share of only 3.65%, led by Shuanghui (1.65%). The main reasons for this are:

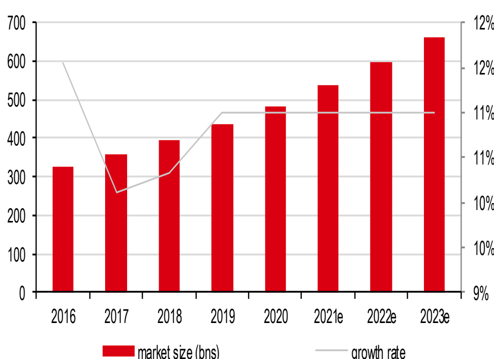
- The low concentration of the upstream farming industry. The slaughtering market is very fragmented as plants are usually built near farms;
- Entry barriers are low and there is little product differentiation, so it is easy for small players to survive and for local brands to establish a presence by relying on offline channels;
- Diverging consumer demand for meat products makes it difficult for companies to fully meet market demand. These enterprises usually target specific parts of the market, making the industry highly fragmented.

We expect the processed meat market to keep growing rapidly …



Source: Wind, HSBC Qianhai Securities estimates

… along with the fast-frozen meat market



Source: Wind, HSBC Qianhai Securities estimates

For the full report, see *China Meat Products – The need for speed: How to deliver fresh growth*, 29 October 2021.

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Olefins: Strong home base, big home run

- China, the main driver of olefin demand, is rapidly expanding domestic capacity via …
- … light hydrocarbon cracking, a process which has cost and environmental benefits and higher margins
- We project that downstream olefin demand in China will grow strongly in 2021-23e, with stable spreads

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Building a home base. Olefins are the chemical building blocks used in everything from plastics, autos and home appliances to garments, construction and consumer electronics. There is huge and growing demand in China but the industry is still heavily reliant on imports. That is changing as the domestic olefin industry expands and we believe leading domestic companies have the potential to become giants in the olefin industry. We think 2021 will be a pivotal year in its transition and forecast a 28% EPS CAGR over 2021-23e. We look at how much of this story is already in the price.

Margin expansion. The best route for growing capacity is the light hydrocarbon cracking process, which has cost and environmental benefits and which will make Chinese companies highly competitive in the global market, reducing the reliance on imports. Margins should also expand in line with the higher price of crude and improved integration along the domestic industry value chain.

Olefin 101. Olefins – petrochemicals produced by cracking feedstock from gas, crude oil, and coal, are important raw materials used in basic chemicals such as ethylene, propylene and butadiene. They are often used to produce olefin derivatives such as polyethylene (PE), polypropylene (PP), ethylene glycol (EG) and acrylic acid (AA). These downstream products are widely used in plastics, autos, garments, construction, and chemicals. This report looks at four segments of the olefin industry: (1) raw materials (crude oil/ethane/ propane/coal) for production; (2) intermediate olefin for processing, (3) the sale of olefin derivatives (PE and PP); and (4) sales of modified plastic and other new materials.

Import dependency an opportunity for China's olefin players

China is a large consumer of global chemical products but olefin products rely heavily on imports. In recent years, Chinese companies have been building olefin projects to ease the supply shortage in the domestic market, leading to a sharp decline in olefin imports from the Middle East and South-East Asia. Although this capacity expansion in China may have an impact on the global olefin market, we are not concerned about oversupply as we think robust demand in China will support the booming olefin industry, led by the following factors:

- **Polyethylene (PE):** We forecast an 8% CAGR in demand for PE in China over 2021-24e vs. an 11.3% CAGR rise in capacity. We see China's contribution to global PE capacity rising from 18% in 2020 to 22% in 2024e, with import dependence falling from 49% in 2020

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to 40% in 2023e. We expect utilisation rates in China to climb from 90% in 2020 to 93% in 2023e.

- **Polypropylene (PP):** We expect demand for PP in China to increase at a 10% CAGR over 2021-24e, vs a 12% CAGR rise in capacity. This will raise China's contribution to global PP capacity from 34% in 2020 to 44% in 2024e. We expect import dependence to drop from 20% in 2020 to 8% in 2023e, with utilisation rates remaining above 80% in 2021-23e.

Cost advantages

Light hydrocarbon cracking offers advantages in energy saving, product purity and investment returns

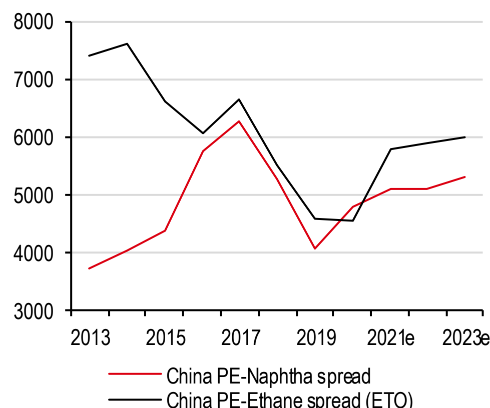
Light hydrocarbon cracking, which offers advantages in terms of energy saving, product purity and investment returns, will be the key source of olefin capacity expansion in China in 2021-23e. Compared with traditional naphtha cracking, we think China's ethane to olefin (ETO) facilities have strong cost advantages in the global market.

China's ETO equipment is about USD100/tonne more expensive than equipment in the US as a result of the higher cost of obtaining ethane. However, our HSBC global chemicals team believes that the growth model has moved from feedstock to capital costs (*Global Chemicals: Growth is not on the menu*, 16 September 2020, by Sriharsha Pappu). The fixed investment of Zhejiang Satellite's 2.5mt ethane cracker is below USD5bn – a 4x relative capital cost advantage compared with a typical US gas cracker. This can completely offset the disadvantage of the higher cost of raw materials and drive up ROIC.

Similarly, based on our comparison of different propylene facilities, we think propane dehydrogenation (PDH) facilities outperform naphtha cracking. Naphtha cracking remains the most important source of global olefin production (70%) and offers stable costs, but the cost benefits of light hydrocarbon cracking will be further expanded by higher oil prices. Based on HSBC's global oil price forecast of USD65/b for 2021-23, we expect the ETO/PDH cracking spread to grow in line with oil prices.

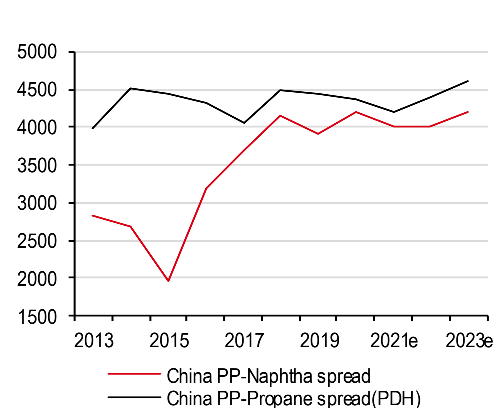
We expect China's PP-propane spread to rise from RMB4,360/t in 2020 to RMB4,600/t in 2023e and the PE-ethane spread to rise from RMB4,550/t in 2020 to RMB6,000/t by 2023e.

We expect spreads of PE to widen over 2021-23e (RMB/t)



Source: IHS, HSBC Qianhai Securities estimates

We expect PDH facilities to have higher spreads than naphtha cracking (RMB/t)



Source: Company data, HSBC Qianhai Securities estimates

For the full report, see *China Olefins Industry, Strong home base, big home run*, 5 July 2021.

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Passive Components: Getting aggressive

- China is catching up in passive components; they are relatively simple but vital parts found in all electronic goods; sector is fairly defensive
- They are also in demand due to complex 5G smartphones and EVs
- We prefer inductors over multilayer ceramic capacitors (MLCCs) as this segment is less cyclical and more resilient

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Small parts, big market

After our report on printed circuit boards (*The global leader with more room to run,* 8 July 2021), we look at another fundamental tech hardware sector: passive components. These are relatively simple but vital parts found in all consumer electronics. Inside every 5G smartphone there are 200 inductors and 1,000 multilayer ceramic capacitors (MLCCs). Surprisingly China has up to now been relatively small in this low-end segment, but like so many other parts of the tech landscape it is looking to become more self-sufficient and to make more complex types too

Why passive components?

Across the entire tech supply chain, passive components are the most upstream as they are the farthest away in terms of production from end-demand such as smartphones, PCs, and servers. Our analysis shows this makes the sector defensive, especially when there's a demand down cycle (such as 2018 when smartphone shipments fell 4.1%, per IDC) or during supply disruptions (such as Japan's earthquake in 2011, or more recently, COVID-19).

Passive components deserve more attention, as a defensive sector, given an uncertain 2022

Looking into 2022e, with demand for PCs, monitors, and TVs set to moderate given a high base in 2021, we think passive components are a sector that deserves more investor attention. In addition, we expect these components to become more expensive and more of them to be in each device as they enable more complex functions like 5G, driving up prices and volumes.

We prefer inductors over multi-layer ceramic capacitors (MLCCs)

The two categories we think investors should focus on are inductors (used to resist changes in a current and convert voltages) and MLCCs (used to temporarily store and discharge electricity) as they are big enough for the major players to significantly grow in. Their combined size was USD33bn in 2021e, roughly two-thirds the size of the PCB market and, based on our estimates, we expect them to grow at a CAGR of 7% over the next five years.

Of the two, we prefer the inductor sector as: (1) it's less competitive vs MLCCs, (2) there are no excessive capacity expansion plans over the next three years, and (3) it's less cyclical than MLCCs. Therefore, we see the inductor market as more resilient in 1H22e vs MLCCs.

By contrast, we are cautious on MLCCs, as (1) order lead time peaked at the end of 3Q21, suggesting prices will soon peak in 1Q22e, (2) vendors and distributors have increased their

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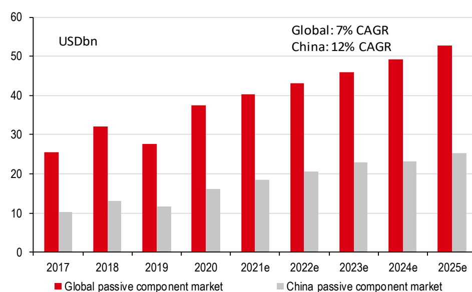
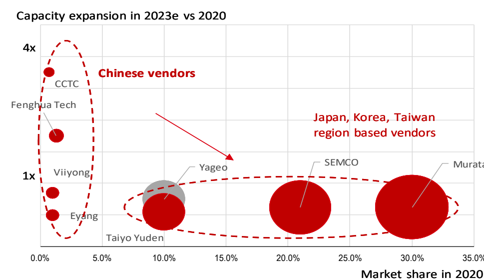
inventory in 3Q21, and (3) most importantly, vendors in China, such as CCTC and Fenghua, plan to triple their capacity by 2023e implying price competition in the more commoditised segments.

China's passive component market to grow at a CAGR of 12% in 2020-25e, above the 7% for the global market



Source: Technavio, Qianzhan, HSBC Qianhai Securities estimates

Chinese MLCC vendors are trying to catch up with peers



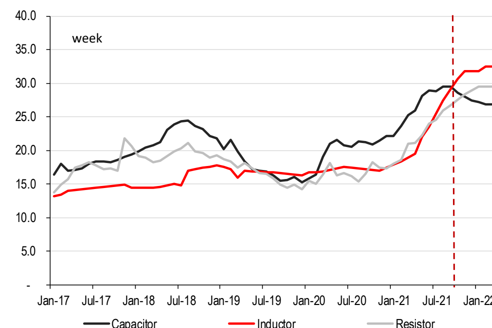
Note: Dotted area presents market share in 2020.
Source: Company data, HSBC Qianhai Securities

Why do Chinese companies have a chance now?

China is the largest and fastest-growing market for the two passive component segments we highlight above. The entire passive component market is expected by us to grow at a CAGR of 12% over the next five years, 5ppt more than the global market.

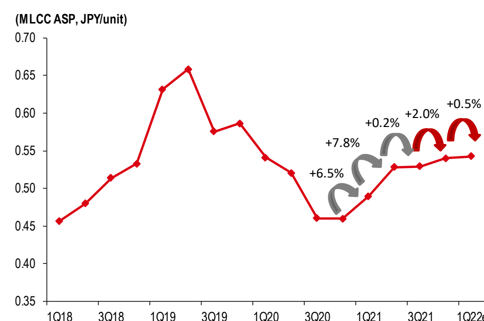
We see five reasons why Chinese companies can increase their market share over the long term: (1) overseas peers are retreating from low-end and mid-market passive component markets, (2) clients are moving from "just-in-time" to "just-in-case", opening the door to more suppliers, (3) Chinese brands are using more local goods as part of their "localisation" push, (4) China is achieving technological breakthroughs in basic materials and production equipment, and (5) there's cheap and abundant capital for companies thanks to a buoyant A-share market.

Order lead times to decline with inductors increased resilient vs MLCCs



Source: Paumanok Research, HSBC Qianhai Securities estimates

Order lead times suggests MLCC prices to peak in early 2022e, then fall



Source: Japan METI, HSBC Qianhai Securities estimates

For the full report, see *China Passive Components – Initiate on the sector: Getting aggressive in passive parts*, 2 December 2021.

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Printed circuit boards: Global leader with more room to run

- China dominates the market for printed circuit boards (PCB) and despite worries, we see it increasing its share more than consensus
- Copper clad laminate (CCL), the raw ingredient for PCB, is our preferred sector as we see short-term and long-term catalysts …
- … as leaders have strong bargaining power and product upgrades

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China's dominates this niche hardware tech sector

Printed circuit boards (PCB) are an important part of the tech supply chain as they're used in every electronic device. The major producers are based in mainland China and Taiwan with the industry situated somewhere between upstream materials and downstream electronics sectors. While there are some concerns that the industry might move to Southeast Asia, we spell out why we think China still has many advantages and can grab 60% of the global market by 2025 (versus consensus for 55%) even as the growth rate slows down.

Chinese PCB makers are expanding their production into higher-end products and eyeing opportunities in supplying more to sectors including servers, smartphones, 5G and EVs. This will boost the number and value of Chinese PCBs in each electronic device.

Still, it's not all rosy, as we also conduct supply-side analysis and find there's a risk of overcapacity as many Chinese PCB makers are expanding into multi-layer PCBs used in more complex electronic devices and low-end high-density interconnects used in smartphones and laptops even though these markets are already very competitive.

Our preferred segment is copper clad laminate (CCL)

The upstream raw material that PCBs are made from is standardised copper clad laminate (CCL), which as the name suggests, is principally made from copper. It's this segment that we most favour for a number of reasons:

1. **Consolidated competitive landscape.** The top CCL makers have strong pricing power over their main PCB customers. It's a concentrated industry with the major CCL makers specialising in different products, so price competition among suppliers is low.
2. **High entry barriers.** New entrants struggle as they aren't able to compete in the mass market given prices are already so low there, and struggle to enter the high-end given a lack of chemical know-how and client licensing.
3. **Upgrade cycle.** Demand is moving from ordinary CCLs to high-speed and high-frequency CCLs, all suggesting higher prices in the future.
4. **Localisation.** CCL is increasingly made in China which helps PCB makers take advantage of the cluster effects in the tech supply chain.

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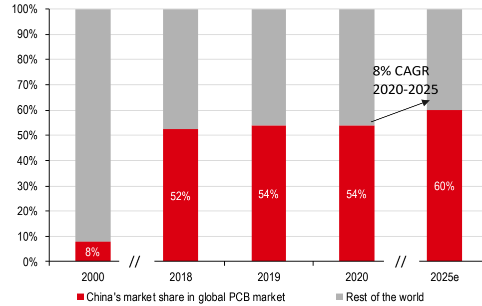
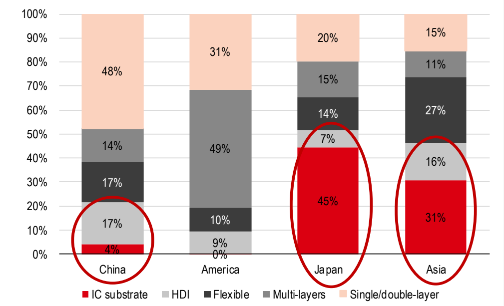
Six charts that tell the story

China dominates the PCB market and will have 60% share in 2025e …



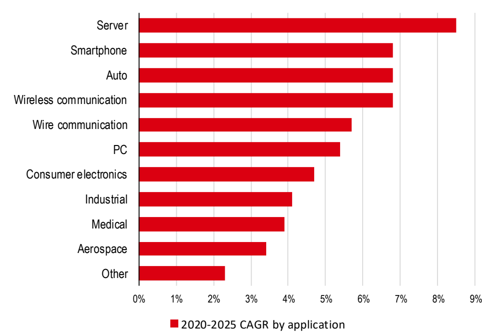
Source: Prismark, HSBC Qianhai Securities estimates

… but is still lagging in high-end PCBs such as IC substrate and HDI



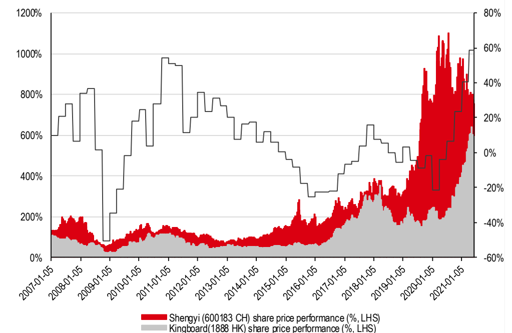
Source: Prismark, HSBC Qianhai Securities
Note: IC = integrated circuits, HDI = high-density interconnects

Servers, smartphones, 5G, and EVs will be the PCB growth areas



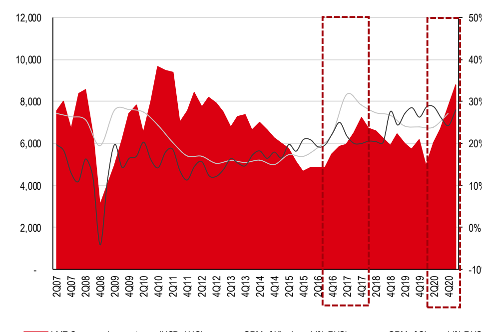
Source: Prismark, HSBC Qianhai Securities estimates

CCL makers Shengyi, Kingboard have handled copper price cycles well



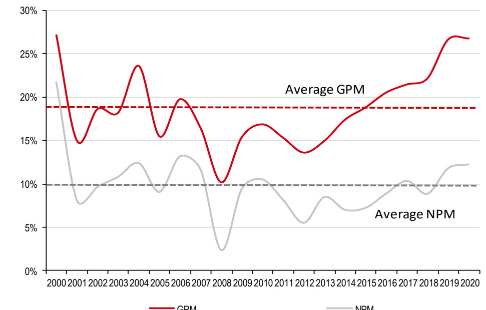
Source: Company data, HSBC Qianhai Securities

CCL makers' GPMs have steadily increased over the past 10 years



Source: Company data, HSBC Qianhai Securities

Shengyi has a unique product strategy and better profitability



Source: Company data, HSBC Qianhai Securities estimates

For the full report, see *China PCB Industry – The global leader with more room to grow*, 16 July 2021.

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While residential living space per person has doubled since 2000, the country can no longer rely on the housing boom to drive the economy forward.

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Railways: Let the train take the strain

- High-speed rail is going from strength to strength
- We expect the share of railway passenger transport rising from 64% in 2019 to 80% by 2025e
- Rail freight is bouncing back, thanks to policy support

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Several billion passengers are whisked across China every year at speeds of up to 350km per hour on environmentally friendly high-speed railways, easing the pressure on congested roads and highways. While less glamorous, the country's rail freight network is also extensive and vitally important to the economy.

Passenger transport: High-speed rail (HSR) is now mainstream
According to the National Bureau of Statistics (NBS), China's high-speed rail carried 64% of all railway passenger traffic in 2019 – up from 0.5% in 2008 – and we believe that number will continue to grow. In 2019, the HSR network expanded to 35,400km – from 672km in 2008 – and is by far the largest HSR network in the world; the government's target is to hit 70,000km by 2035. HSR operators in the more populous, wealthier eastern areas of the country have sustained strong profitability due to large scale, improving efficiency, and lower construction and labour costs. We expect this to continue, driven by increased urbanisation, and government policies designed to boost rail travel to reduce pollution levels.

The business model used by Chinese HSR operators is similar to that of Japanese peers. Apart from ticket sales, they generate revenue from fees charged for using their railway lines and renting retail outlets at stations.

Freight rail: Light at the end of the tunnel
A comparison with the US is useful here. The US has a well-established railway system, covering more than 200,000km in 2017 (US Department of Transportation), which has long carried a large portion of the country's freight. China also has a large rail network – 140,000km as of 2019 (China Railway) – but until recently road transport dominated the freight market.

This was because railway transport had been slow to adopt market-driven practices and many rail companies were not efficient. As a result, the market share of rail freight declined to 10-15%, well below the around 20-30% level in the EU and the US (US Department of Transportation, Eurostat, 2018). With dwindling volumes, declining utilisation rates and regulated prices, Chinese railway freight operators were far less profitable than global peers.

The market started to change in 2017. As part of the fight against pollution, China introduced policies to shift more freight from trucks to railway lines. The result was a V-shaped recovery in rail freight – annual growth was above 9% over 2017-19, its fastest pace since the 1980s. We believe the worst is over and there is ample room for growth. As growth in capacity slows and

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freight rates become more market-driven, as a result of reforms, we see utilisation rates and profitability continuing to climb.

Industry outlook

Passenger rail transport: 2020 was a tough year. According to the National Bureau of Statistics (NBS), railway passenger volume grew at a CAGR of 9.2% in 2015-19 but dropped 55.5% y-o-y in the first four months of 2020 because of COVID-19. The fall has narrowed to 19.1% y-o-y by October. The long-term picture is much brighter, in our view. China will continue to expand the national HSR network, the urbanisation rate keeps rising, as does the average number of journeys people take each year. This growth story is underpinned by government policies that encourage the shift from conventional railways and road transport to high-speed rail. We expect high-speed rail passenger traffic to grow at a CAGR of 10-11% in 2020-25e, with the share of railway passenger transport rising from 64% in 2019 to 80% by 2025e.

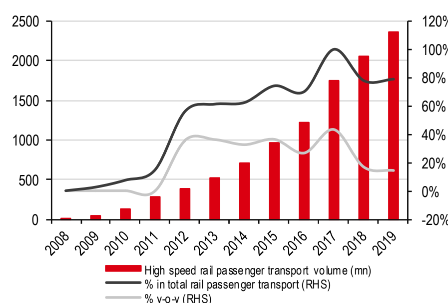
Railway freight: NBS data show that, after declining in 2014-16, freight volume recovered in 2017-19, with a CAGR of 9.6%. Rail freight was also resilient in 2020, with volume up 3.2% y-o-y between January and October. Supported by transport policies, including the shift from road to rail, we expect volume to rise at a CAGR of 7-8% in 2020-25e, with improved balance between supply and demand pushing up capacity utilisation and freight rates.

Two key positives: High dividend yields and railway reforms

Dividends: A-share companies in the railway industry recorded an average dividend yield of 5.2% in 2019, way above that of airlines, airports, shipping and other transport sub-sectors. This trend has been in place since 2015**.**

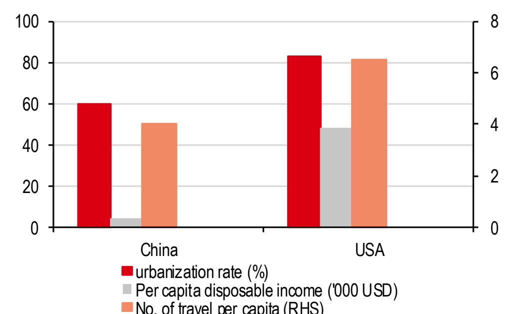
Reforms: Between September 2016 and June 2018 the railway sector traded at a premium of over 20% to the CSI 300, driven by a recovery in railway freight volume and ongoing railway reforms. China State Railway Group introduced mixed-ownership reform in 2018, with asset securitisation as one of the key tools. The trend accelerated in 2020 – Beijing-Shanghai High-speed Railway and Tieke Shougang went public.

Rapid growth in HSR passenger volume



Source: National Bureau of Statistics, HSBC Qianhai Securities

Significant upside in per capita travel in China



Source: National Bureau of Statistics, Wind, HSBC Qianhai Securities

For the full report, see *China Railway – Initiate coverage: Let the train take the strain*, 15 January 2021.

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Telemedicine: A RMB1trn market by 2030e

- China's online pharmaceutical market is set to grow almost 10-fold to RMB1trn by 2030e
- We see 15% of prescription drugs moving online driven by sales of drugs for chronic diseases, which are c75% of outpatient demand
- But there are also risks, including regulatory changes, which could disappoint the high-growth expectations of many in the industry

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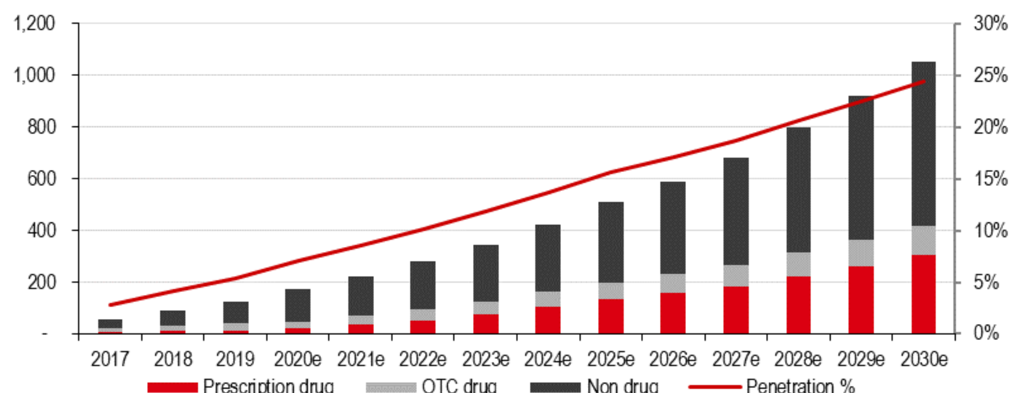
Even before COVID-19 emerged, Chinese consumers were starting to purchase medical drugs from telemedicine platforms, switching out of hospitals and physical pharmacies where they used to buy. That trend is now accelerating, but it's unclear how far or fast it will go. We set out to find out as it's critical to anybody investing in the sector. Our extensive analysis finds that the online pharmaceutical market will grow from RMB125bn in 2019 to RMB1trn in 2030e. That means the online penetration will jump from 5% to 24%. It's all part of Beijing's efforts to reform the medical industry and allow chronic disease patients in particular to benefit from better accessibility to healthcare services and lower prices.

Part I: Sizing up and projecting the online market potential

We estimate the online pharmaceutical market will jump almost 10-fold over the next decade fuelled by (1) growing demand for medicines amid an ageing population, high levels of obesity, and a high percentage of smokers, and a lack of exercise, and (2) as consumers switch to buying medicines online given cheaper prices in some cases and the convenience that comes with complementary health management and medical services provided by telemedicine platforms.

China's online pharmacy market to grow to RMB1.1trn in 2030e



Source: Menet, HSBC estimates

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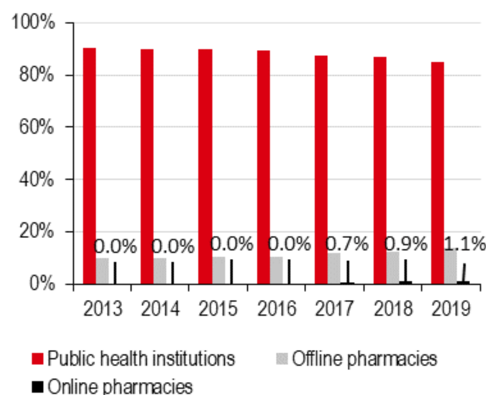
Part II: A deep dive into the prescription drug market

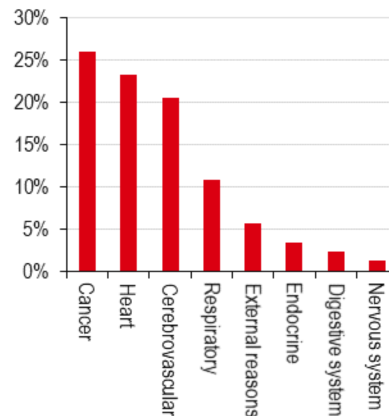
Prescription drugs have been a major laggard in the move to online, making up just 1% of sales in 2019. But we see this changing given more supportive regulatory changes; we forecast 15% of prescription drug sales to move online by 2030e. We believe getting chronic disease patients to buy online is key to growing prescription drug sales.

Rx drug sold in different channels



Source: NHC, Menet, IQVIA, HSBC

Chronic diseases are a leading the cause of death (2018)



Source: NHC, HSBC

Part III: ESG and risks

The key environmental, social and governance (ESG) issues for the sector are the mountains of packaging waste from the delivery of drugs and the potential misuse of personal data. Making medical services more accessible and affordable, and raising health awareness, are positives for the industry. Still, there are plenty of regulatory risks, while provincial governments and user adoption are some of the factors that could slow down the rapid growth that's expected by many in the industry.

Estimated annual outpatient drug cost for patient X in 2020 (in Guangzhou under UEBMI)

	Metformin	Second drug				Total annual	Eligible for	Under BMI scheme		Out-of-pocket
	annual cost	Type	name	Rate	Annual cost	drug cost	reimbursement	BMI	Self-paid	
Main therapy	792	Insulin secretagogues	Glimepirid	100%	219	1,011	1,011	859	152	-
	792	AGI	Acarbose	100%	1,627	2,419	2,419	2,056	363	-
	792	TZDs	Pioglitazone	100%	1,144	1,936	1,936	1,646	290	-
	792	DPP-4 inhibitor	Vildagliptin	95%	3,240	4,032	3,870	2,400	586	1,046
	792	SGLT2	Dapagliflozin	95%	934	1,726	1,679	1,427	252	47
Alternative therapy	792	Basic insulin	Insulin Glargin	95%	3,613	4,405	4,224	2,400	604	1,401
	792	GLP-1RA	Liraglutide	95%	9,720	10,512	10,026	2,400	910	7,202
Average (excluding GLP-1RA)						**2,588**	**2,523**	**1,798**	**374**	**416**
% of total annual drug cost								**69%**	**14%**	**16%**

Note: Metformin is 100% reimbursable, BMI reimbursement ratio is 85% with an annual cap of RMB2,400 in Guangzhou
Source: NHC, HSBC

For the full report, see *Spotlight – China Telemedicine: A RMB1trn market by 2030e*, 24 March 2021.

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Titanium dioxide: Batteries now included

- LFP, the next mainstream EV battery material, offers a new growth driver for top titanium dioxide (TiO_2) makers
- We expect China to dominate the global supply of LFP; we forecast that demand will rise at a CAGR of 50% over 2020-25e
- The TiO_2-LFP manufacturing process offers a clear cost advantage

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We turn more bullish on producers of titanium dioxide (TiO_2), which is traditionally used in paints and coatings, as they enter the lithium ferrous phosphate (LFP) market, the fastest-growing battery cathode material used in China's booming electric vehicle (EV) battery industry and energy storage market. We estimate that LFP capacity will rise at a CAGR of 40% over 2020-25e, supported by a demand CAGR of 50%.

LFP can be produced by using by-products of TiO_2 which currently generate little value. This process will be at least 10% cheaper than mainstream LFP production techniques, creating a "trash to treasure effect", cost advantages and economies of scale. According to Lithium Australia, China supplies 98% of the global LFP supply and we believe LFP's emergence as a new battery cathode material will help support plans to make the country more self-sufficient in high-end manufacturing.

The new growth driver

The growth of China's real estate market has been the major driver of the TiO_2 business for years, but the recent tightening of property regulations has clouded the outlook for traditional TiO_2 demand. We think the emergence of LFP as a growth driver is a very big deal, given the rapid growth of the EV battery market. For example, Tesla recently announced that it will start using LFP batteries in its standard range vehicles. LFP technology is regarded as being cheaper and safer than nickel-based batteries, although it comes with lower energy density, which means the driving range on a single charge is shorter.

We think the days of big cyclical swings in TiO_2 are over

The market has a long memory of the TiO_2 downturn between 2011 and 2016 which hit the industry hard. The explanation is straightforward. From 2000, global TiO_2 price levels were pretty flat until 2011, when capacity in China grew 82% y-o-y, and then 50% y-o-y in 2015. During that period, TiO_2 prices fell 40% from RMB20,000 to RMB12,000, while the spread dropped from RMB12,000 to RMB8,000, close to the breakeven point.

Unlike the market, we think the days of high levels of volatility are over. We expect TiO_2 prices to fluctuate in a narrow range in 2021-23e and forecast that the average industry spread will rise slightly from RMB10,000 in 2021e to RMB10,500 in 2022-23e. Our view is based on the changes in industry policy and the market environment since 2015 which have structurally constrained TiO_2 capacity. For example:

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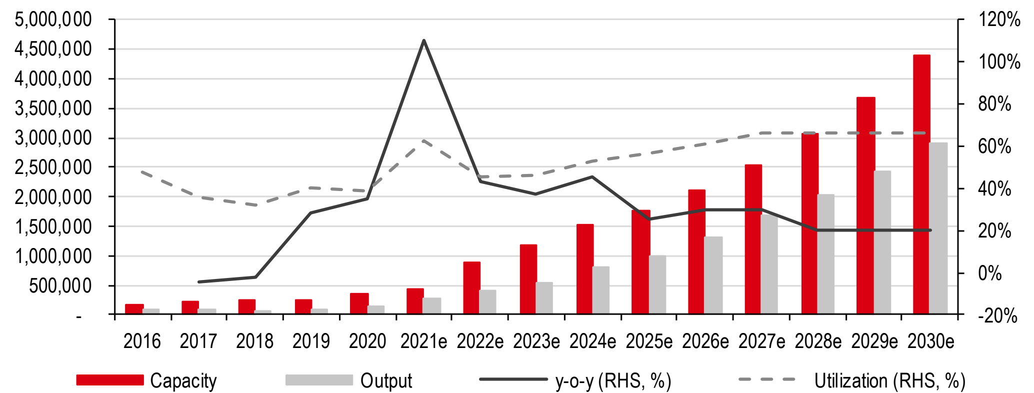
- Supply-side reforms launched in 2015 accelerated the pace of industry consolidation;
- Carbon neutrality initiatives, which began in 2020, have led to a huge rise in EV battery production; and
- The TiO_2 process upgrade from the sulfate to the chlorination method has increased technical barriers.

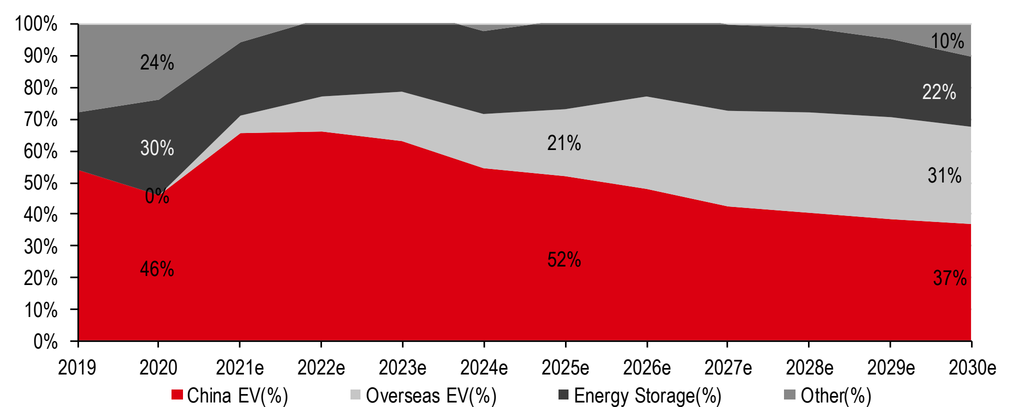
On the demand side, the downstream TiO_2 market is led by coating products, where demand has remained steady, although the long-term growth potential is still significant from the global perspective. We believe a steadier, less volatile market will improve market expectations. In our view, China will remain the key source of global TiO_2 capacity growth.

We expect 2020-25e global LFP capacity and demand CAGRs to be 40% and 50% (tonnes)



Source: Baiinfo, HSBC Qianhai Securities estimates

We expect 2030e global EV to contribute around 70% of LFP demand, and energy storage 22%



Source: Baiinfo, HSBC Qianhai Securities estimates

For the full report, see *China TiO_2 Industry – Batteries included: A big deal for LB Group and CNNC*, 5 November 2021.

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Vocational Education: Driven by job-hungry graduates

- Rising competition for jobs is pushing students to turn to vocational training, a market we see doubling by 2025e compared with 2020
- Unlike after-school tutoring this segment has policy support
- Leaders to benefit from strong brands, teaching and research

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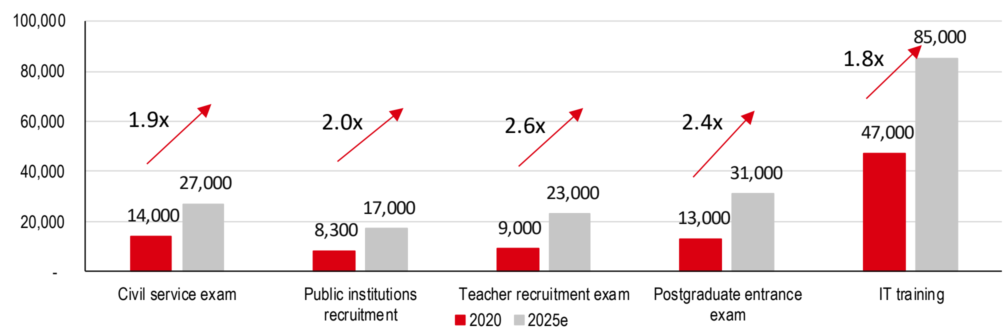
Market to double. We take a differentiated look at vocational education in China, a corner of China's vast education market that's backed by government policy as it helps university graduates find jobs. Using demographics and examining China's economic structure, we show there will be an oversupply of highly educated students for years to come. And where there are high-quality jobs on offer, they are concentrated in just a few areas. The result is the scramble to find jobs is getting tougher. That means demand for vocational training – which includes preparation for civil service exams and teaching qualifications – is heading higher as graduates look to find an edge to make them stand out. We see the market doubling by 2025 to RMB180bn from 2020.

Market size and growth estimates of key segments in vocational training industry (RMBm)



Source: Company website, Offcn, Huatu, HSBC Qianhai Securities estimates

While vocational education can refer to education that provides academic qualifications, this report focuses on training that provides skills or professional knowledge for job-hunters. We look at three major segments: (1) recruitment exams that target fresh graduates; (2) improvement training which includes postgraduate entrance exams and exams to get students into colleges and universities; and (3) vocational skills training which offers IT, finance, judicial and other exams.

We also show how the vocational training market is more concentrated than K12 training given many of the entrance exams they train students for are seasonal which is a model that favours larger players. Plus, vocational education is frequently changed faster than K12 so trainees gravitate to large institutions with brand strength and who can develop their materials faster.

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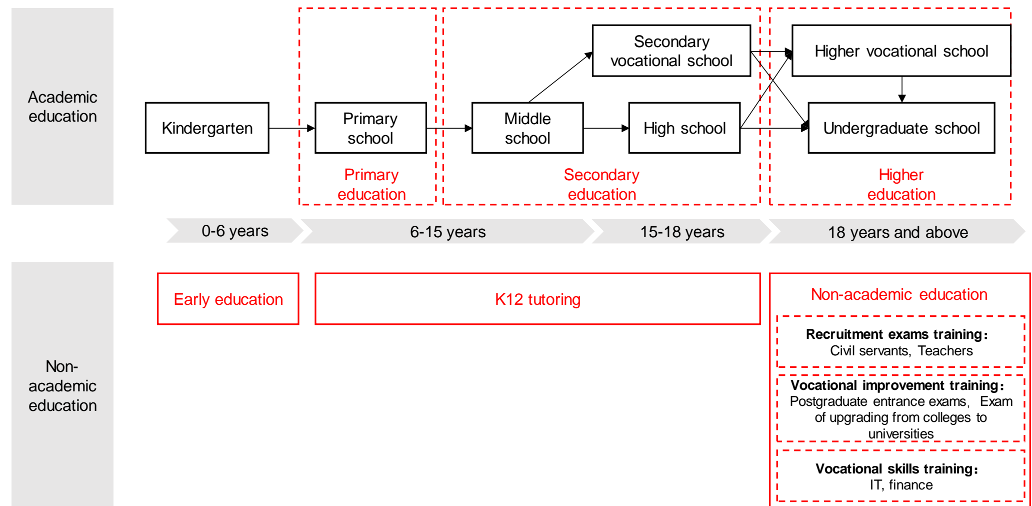
China education industry breakdown



Source: HSBC Qianhai Securities

Learnings from Germany and the US

To provide an international perspective we looked at two developed markets, Germany and the US. In Germany, the use of a "dual system" where corporates and schools team up to train staff is popular and plays an important role in youth employment. In the US vocational education depends more on the free market with listed companies offering boot camps and online universities. Our takeaway is that partnerships between schools and corporates are an important driver of developing vocational education, while the private market is an effective way to improve the supply of job-oriented training which helps to keep unemployment down.

A corner of the education sector that's strongly supported by policy

Strict regulations have largely put the brakes on China's education sector, especially the K12 tutoring segment since the spring of 2021. But for vocational education it's a different story as policy has been supportive given it is a part of the education sector that has a positive impact on enhancing the quality of the labour force and facilitating employment. To be more specific, regulations for vocational education are more relaxed in terms of asset securitisation, school permits, approving authorities and teacher certificates.

Could K12 after-school tutoring companies muscle into vocational education?

As has been widely reported, since the start of this year the after-school K12 tutoring industry has become strictly regulated. The result is some companies operating in this sector are planning to transform their business models and move into other educational segments, with vocational education being one of the options. However, we believe it is hard for these K12 tutoring companies to transform fully into vocational education companies.

For the full report, see *Spotlight – China Vocational Education: Backed by policy, driven by job-hungry students*, 11 August 2021.

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Notes

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Disclosure appendix

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Foreign exchange: Basis for financial analysis

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Definitions for currency trades on DFs and NDFs

Buy: refers to buying the first currency in the named pair in exchange for the second currency in the named pair.

Sell: refers to selling the first currency in the named pair in exchange for the second currency in the named pair.

The tenor of the instrument will be denoted and will refer to a settlement date relative to the opening date of the trade idea e.g. 1m refers to a settlement date 1 month forward from the open date of the trade idea. NDF trades normally fix two working days prior to the settlement date.

Distribution of currency trades

The nature of foreign exchange forward trade ideas is such that there will always be an equal number of buy and sell trades (buying one currency in exchange for selling another), both outstanding and historically.

Equities: Stock ratings and basis for financial analysis

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From 23rd March 2015 HSBC has assigned ratings on the following basis:

The target price is based on the analyst's assessment of the stock's actual current value, although we expect it to take six to 12 months for the market price to reflect this. When the target price is more than 20% above the current share price, the stock will be classified as a Buy; when it is between 5% and 20% above the current share price, the stock may be classified as a Buy or a Hold; when it is between 5% below and 5% above the current share price, the stock will be classified as a Hold; when it is between 5% and 20% below the current share price, the stock may be classified as a Hold or a Reduce; and when it is more than 20% below the current share price, the stock will be classified as a Reduce.

Our ratings are re-calibrated against these bands at the time of any 'material change' (initiation or resumption of coverage, change in target price or estimates).

Upside/Downside is the percentage difference between the target price and the share price.

Prior to this date, HSBC's rating structure was applied on the following basis:

For each stock we set a required rate of return calculated from the cost of equity for that stock's domestic or, as appropriate, regional market established by our strategy team. The target price for a stock represented the value the analyst expected the stock to reach over our performance horizon. The performance horizon was 12 months. For a stock to be classified as Overweight, the potential return, which equals the percentage difference between the current share price and the target price, including the forecast dividend yield when indicated, had to exceed the required return by at least 5 percentage points over the succeeding 12 months (or 10 percentage points for a stock classified as Volatile*). For a stock to be classified as Underweight, the stock was expected to underperform its required return by at least 5 percentage points over the succeeding 12 months (or 10 percentage points for a stock classified as Volatile*). Stocks between these bands were classified as Neutral.

*A stock was classified as volatile if its historical volatility had exceeded 40%, if the stock had been listed for less than 12 months (unless it was in an industry or sector where volatility is low) or if the analyst expected significant volatility. However, stocks which we did not consider volatile may in fact also have behaved in such a way. Historical volatility was defined as the past month's average of the daily 365-day moving average volatilities. In order to avoid misleadingly frequent changes in rating, however, volatility had to move 2.5 percentage points past the 40% benchmark in either direction for a stock's status to change.

Rating distribution for long-term investment opportunities

As of 31 December 2021, the distribution of all independent ratings published by HSBC is as follows:

Buy	61%	(33% of these provided with Investment Banking Services in the past 12 months)
Hold	33%	(29% of these provided with Investment Banking Services in the past 12 months)
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For the purposes of the distribution above the following mapping structure is used during the transition from the previous to current rating models: under our previous model, Overweight = Buy, Neutral = Hold and Underweight = Sell; under our current model Buy = Buy, Hold = Hold and Reduce = Sell. For rating definitions under both models, please see "Stock ratings and basis for financial analysis" above.

Fixed income: Basis for financial analysis

This report is designed for, and should only be utilised by, institutional investors. Furthermore, HSBC believes an investor's decision to make an investment should depend on individual circumstances such as the investor's existing holdings and other considerations.

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Definitions for fundamental credit and covered bond recommendations

Overweight: For corporate credit, the issuer's fundamental credit profile is expected to improve within the next six months. For covered bonds, the bonds issued in this country are expected to outperform those of the other countries in our coverage over the next six months.

Neutral: For corporate credit, the issuer's fundamental credit profile is expected to remain stable for up to six months. For covered bonds, the bonds issued in this country are expected to perform in line with those of the other countries in our coverage over the next six months.

Underweight: For corporate credit, the issuer's fundamental credit profile is expected to deteriorate within the next six months. For covered bonds, the bonds issued in this country are expected to underperform those of other countries in our coverage over the next six months.

Definitions for trades (Rates & Credit)

Buy and **Sell** refer to a trade call to buy or sell a bond, option on an interest rate swap (**"swaption"**), interest rate cap or floor, inflation cap or floor, or Total Return Swap (**"TRS"**). The buyer/seller of a TRS receives/pays the total return of the underlying instrument or index at the end of the period and pays/receives the funding leg.

Buy protection and **Sell protection** refer to a credit default swap (CDS): the protection buyer/seller is effectively selling/buying the reference entity's credit risk.

Pay and **receive** refer to a trade call to pay or receive the fixed leg of an interest rate swap (IRS), a non-deliverable IRS, the first-named leg of a basis swap, the realised inflation leg of an inflation swap, or a forward rate agreement (FRA). An investor that executes a pay or receive trade is said to be **"paid"** or **"received."**

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Payer and **receiver** refer to inflation caps or floors and to swaptions: a payer is an option giving the right but not the obligation to enter a paid position in an interest rate or inflation swap, and a receiver is an option giving the right but not the obligation to enter a received position in an interest rate or inflation swap.

ASW (also asset-swap, Buy on asset swap, Buy on an asset-swapped basis): Buy a bond packaged with a swap that is tailored to eliminate the bond's interest rate risk, effectively transforming the bond to a floating rate instrument whilst preserving the credit exposure to the bond issuer.

RASW (also reverse asset-swap, Sell on asset swap, Sell on an asset swapped basis): Sell a bond packaged with a swap that is tailored to eliminate the bond's interest rate risk, effectively transforming the bond to a floating rate instrument whilst preserving the credit exposure to the bond issuer.

Distribution of fundamental credit and covered bond recommendations

As of 31 December 2021, the distribution of all independent fundamental credit recommendations published by HSBC is as follows:

Overweight	23%	(55% of these provided with Investment Banking Services in the past 12 months)
Neutral	52%	(42% of these provided with Investment Banking Services in the past 12 months)
Underweight	26%	(36% of these provided with Investment Banking Services in the past 12 months)

For the purposes of the distribution above the following mapping structure is used: Overweight = Buy, Neutral = Hold and Underweight = Sell. For rating definitions under both models, please see "Definitions for fundamental credit and covered bond recommendations" above.

Distribution of trades

As of 31 December 2021, the distribution of all trades published by HSBC is as follows:

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