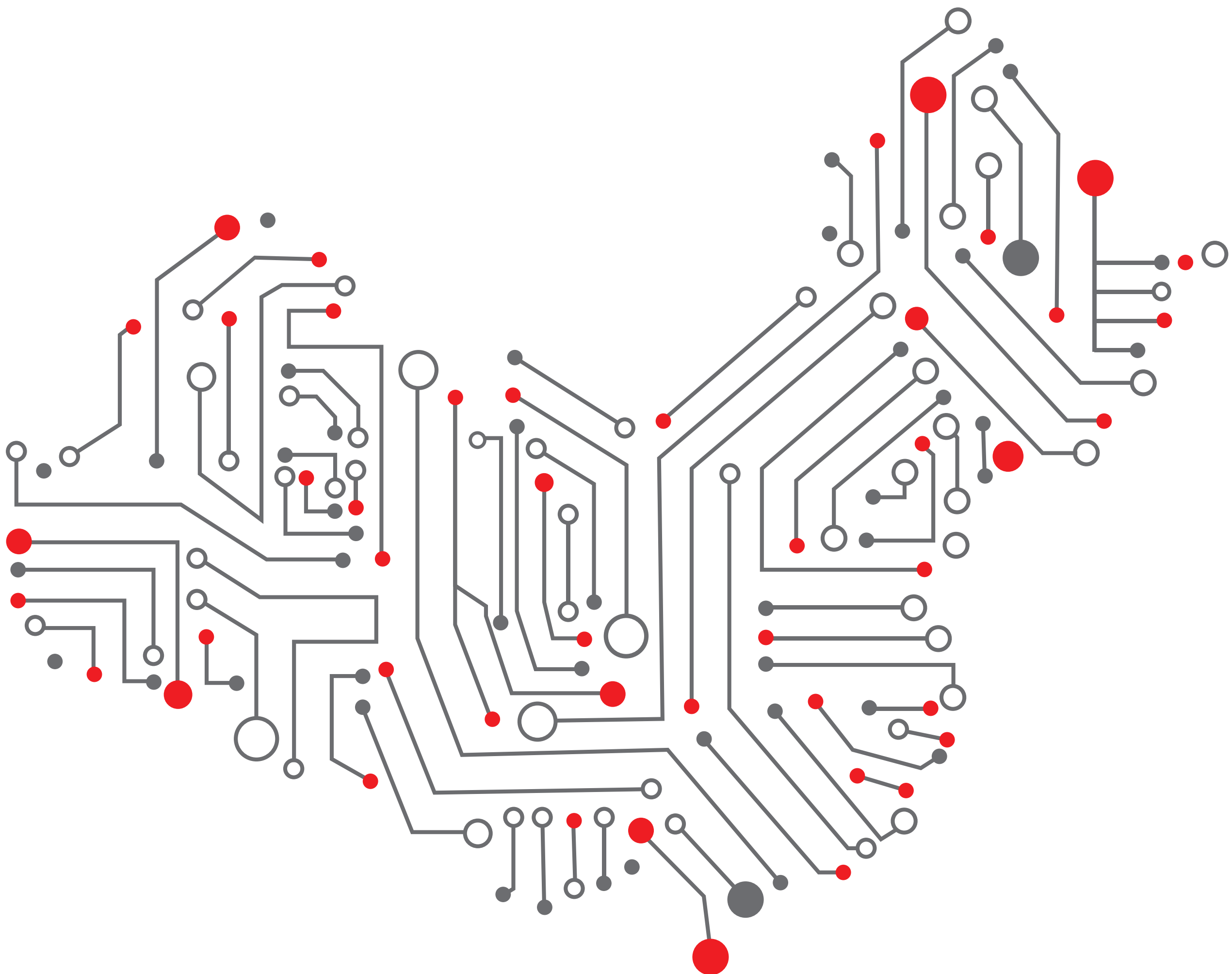
UBS

For marketing purpose only
For professional / institutional clients, qualified investors

Stepping into the future

How China is transforming its economy and creating opportunities



China is stepping into the future and creating opportunities by proactively applying reforms and policies that are opening the financial sector, boosting new industries, upgrading its manufacturing base, building on its new hi-tech labor advantage, and reshaping world trade.

Table of contents

4 **Delivering the plan: Accelerating reforms, transforming the economy**

6 **China's financial sector: Increasing access, expanding opportunities**

8 **Index Inclusion**

11 **The services-led economy: New economy sectors take the lead**

14 **Manufacturing 2025: Creating the future through upgrading and automation**

17 **China's new labor advantage: STEM Graduates**

20 **Going global through Belt & Road**

23 **Trade tensions and China's outlook**

24 **UBS Asset Management: Your first call for China**

26 **Glossary**

Delivering the plan

Accelerating reforms, transforming the economy

- China will focus on delivering the goals of 13th Five Year Plan
- Reforms and policy support will accelerate to meet these goals

As China steps into the future, we are expecting it to go through a significant transformation that will reshape the economy, cement China's position in the world, and create a wealth of opportunities for investors.

That transformation has to meet a series of challenges, many of which have been facing policymakers for some time.

The most pressing of these challenges include rebalancing the economy from investment to consumer-led growth, addressing the build-up of debt in the financial system, managing a rapidly ageing society and a shallower labor pool, and creating a cleaner environment.

The goals of the 13th Five Year Plan have been set with these challenges in mind, and will have to be met by 2020.

The goals are based on the following fundamental strategies:

- **Services and consumer-led growth**: where services account for 56% of total GDP and consumer demand overtakes investment as the principal driver of the economy.

- **Financial sector reforms**: RMB internationalization, focus on deleveraging, and the continued opening of China's financial markets to overseas investors.

- **Innovation-led development**: expanding internet services, improving internet infrastructure, increasing R&D expenditure, supporting hi-tech education, boosting the quality and value of patents.

- **Industrial upgrading**: following the Made in China 2025 strategy, China will boost productivity, occupy new economy sectors and maintain a dominant share of world manufacturing.

- **Environmentally-friendly growth**: developing renewable energy and new energy vehicles, protecting land resources, reducing energy and water consumption.

- **Increasing urbanization**: boosting urbanization to 60% of the population, loosening barriers to rural-urban migration, creating 50 million urban jobs.

Against the backdrop of the 13th Five Year Plan, we are expecting to see a series of reforms being rolled out which will mean that the drive to restructure the economy will accelerate in the coming years.

Notable reforms in recent months include removing controls on overseas investment in the domestic banking sector, issuance of private land rights to rural citizens, further restructuring of the SOE sector, and more stringent enforcement of environmental standards on China's industrial sector.

The goals of the Five Year Plan and the above policy changes are to meet the challenges mentioned and also promote closer integration with the global economy, improve industrial productivity, and expand consumer-led economic growth.

Reform packages and policy changes will create a range of opportunities for investors across many different sectors. With these in mind, and the prospect of China emerging as a dominant player in the world economy, China is now, more than ever, too big to ignore.

Financial sector reforms
Services and consumer-led growth
Industrial upgrading
Innovation-led development
Environmentally-friendly growth
Increasing urbanization

China’s financial sector

Increasing access, expanding opportunities

- China remains intent on reforming its financial system
- Deleveraging is an essential part of that process and will continue through H2 2018 and into 2019
- Debt levels are high but concentrated in the state-owned sector, private companies have little or no debt
- Stock & Bond Connect programs have made China’s financial markets more accessible
- Global equity and fixed income indices have included onshore assets, which will spark estimated inflows of more than USD 600 billion[1]
- China is making a concerted effort to promote RMB internationalization, which we think is increasingly likely in the coming years

China is intent on reforming its financial sector and there are clear reasons why. It wants to move decisively from the old system of state-directed loan financing to a financial system that has a more diversified and disciplined range of credit channels that both allows foreign capital to play a greater role and relies more on market-based principles.

Aside from addressing debt levels, opening up to foreign investors marks a key element of China’s financial reforms, and China has made a number of landmark reforms that mean investors have greater access than ever before to China’s equity and fixed income markets.

Deleveraging: an essential part of the reform process

Tackling China’s debt pile is an essential part of reforming the financial system because China’s debt, estimated at 259% of GDP in 2016[2], will weigh on future growth and balance sheets if left unaddressed.

While we see the debt build-up as a long-term issue, it’s important to note that most of the debt is concentrated in the state-owned enterprise sector and owed to the state, rather than international institutions. In contrast, companies in the private sector, particularly those that are in the consumer-led sectors that are powering the new economy, have comparatively low debt levels.

Since mid-2016 regulators have employed a variety of tools to limit credit growth, including curbs on lending, controls on wealth management products, and increased oversight of local government debt issues.

We are expecting this campaign to continue through H2 2018 and into 2019 because it has been listed by the government as a ‘critical battle’ for the future, and will take time to reduce the debt pile and impose new discipline on the financial sector.

While this will likely impact near-term economic growth prospects, the deleveraging campaign will improve China’s long-term growth potential by forcing the closure of excess capacity, imposing greater discipline on lending practices, and addressing the rate of debt accumulation.

Shanghai & Shenzhen Stock Connect

The Shanghai and Shenzhen Stock Connect programs, launched in November 2014 and December 2016, respectively, have opened up over 70% of the market value of China A-shares for offshore investors and about 85% of H-shares to onshore investors[3].

Investors can now quickly and effectively deploy capital and are no longer subject to the lock-up and repatriation restrictions imposed by the QFII program.

Unsurprisingly, the programs have been a great success, with overseas investors' A-share holdings reaching a record RMB 1.27 trillion in June 2018, up 46.9% from June 2017, according to the People's Bank of China (PBoC)[4].

Bond Connect

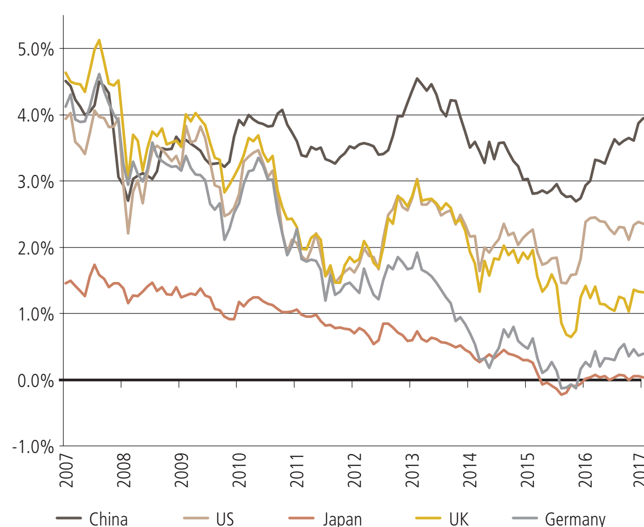
There's a similar story in China's onshore bond markets. After a series of reforms, international investors now have direct access after the start of Bond Connect in July 2017.

This marks a major step forward for China's integration with the global financial system. More than access, the reforms have imposed international standards of governance and disclosure and have also brought in necessary changes such as allowing foreign ratings companies to issue ratings and bring onshore markets into line with global standards.

And following the opening of the Bond Connect program, overseas investors have significantly upped their onshore holdings. At the end of June 2018, overseas investors held a total of RMB 1.6029 trillion of onshore bonds, up 79.7% compared with June 2017, according to PBoC data[4], with inflows increasing markedly since the start of the Bond Connect.

That's partly because current yields on the onshore market are looking increasingly attractive on an international basis, but also because overseas investors have been underinvested due to the previous controls.

Fig. 1: 10-year government nominal bond yield, 30th July 2007-27th July 2018



Source: Bloomberg, July 28, 2018

[1] UBS: Bringing China into Focus, June 16th 2018
[2] UBS: China by the Numbers, December 15th 2017
[3] UBS: Thinking Out Loud: MSCI Index Inclusion, June 26th 2017
[4] Peoples Bank of China: Financial Market Statistics, July 30th 2018

Index Inclusion
Now that reforms have opened China's financial markets to international investors, the inclusion of onshore equity and fixed income markets in global index benchmarks means investors can participate in China's ongoing growth story.

China Equities
From June 1, 2018, 234 large-cap A-share stocks have been included into MSCI's Emerging Markets equity benchmark, with those companies having an average market cap of RMB 109 bn[5], concentrated in the financials, consumer, industrials, IT, and healthcare sectors.

Inclusion will happen in two stages: with a 2.5% weighting being brought in on June 1, and a second 2.5% weighting of eligible stocks being included in August 2018.

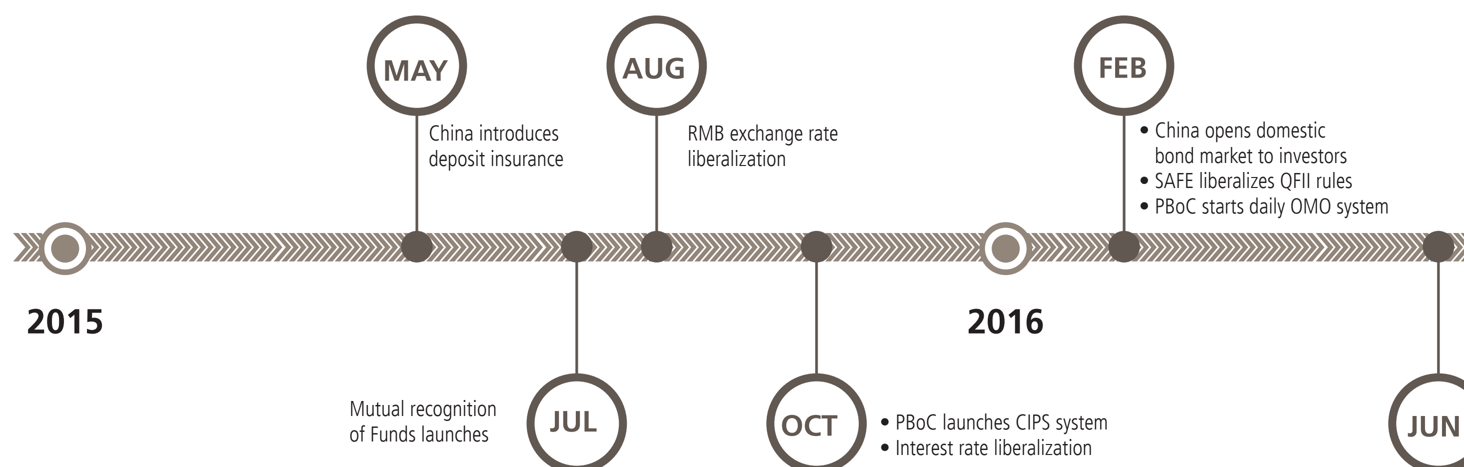
Bringing 234 A-share stocks into MSCI's benchmark is, we believe, a first step in a process that could lead to full inclusion of China A-shares in MSCI's benchmarks.

This first step has been estimated to bring approximately USD 18.4 billion[5] of overseas capital into A-shares. If, as we expect, MSCI moves to full inclusion in the future, an estimated USD 370 billion of overseas capital will flow into onshore markets[5].
Importantly, MSCI's inclusion of A-shares in its index sends three key messages to global investors:
– firstly, that reforms have successfully opened up China's equity markets;
– secondly, that the water is 'safe to swim'; and,
– thirdly, that Chinese equities now become a mandatory, rather than optional, investment.

A positive change for the market
MSCI inclusion brings benefits too. As more global investors are attracted to the A-share market, different investment strategies, i.e. long-term oriented and fundamentally-driven, will become more influential and may change the structure of the market.

That's because China's A-share market is dominated by retail investors, and an influx of institutional capital may reduce volatility and make the market more fundamentally-driven.

The MSCI opportunity
For investors, MSCI inclusion brings access to companies



[5] UBS: What can we expect from MSCI A-share inclusion?, May 14th 2018

in China's fast-growing sectors, such as IT, consumer, and healthcare industries, which are well-positioned to benefit as China shifts to a 'new economy' model where services and consumer demand drives growth.

Importantly, there are many unique sectors in the A-share space, like baijiu, traditional medicine, and home appliances, that can only be invested in via onshore markets, so MSCI inclusion opens more opportunities for investors.

Index inclusion also positions investors in a market that we see as primed for long-term growth. Chinese companies capacity to innovate will be a key driver here, and we see the steady growth in R&D spending in China, plus new innovations like drones and online payments, as signaling China's longer-term potential, which we feel investors must prepare for.

A-share exposure also brings diversification benefits since the A-share has low average correlations with global equity markets. That's a valuable aspect of the A-share space, particularly since volatility has returned to global markets.

As overseas investors become more active in the market, so listed companies in China will be under tougher scrutiny and they'll have to bring their disclosure and governance practices into line with international standards.
Put together, we believe the inclusion of A-share equities, like China's growth prospects, brings investment opportunities that investors simply can't ignore, so it's time to start thinking seriously about how to position in the China equity space.

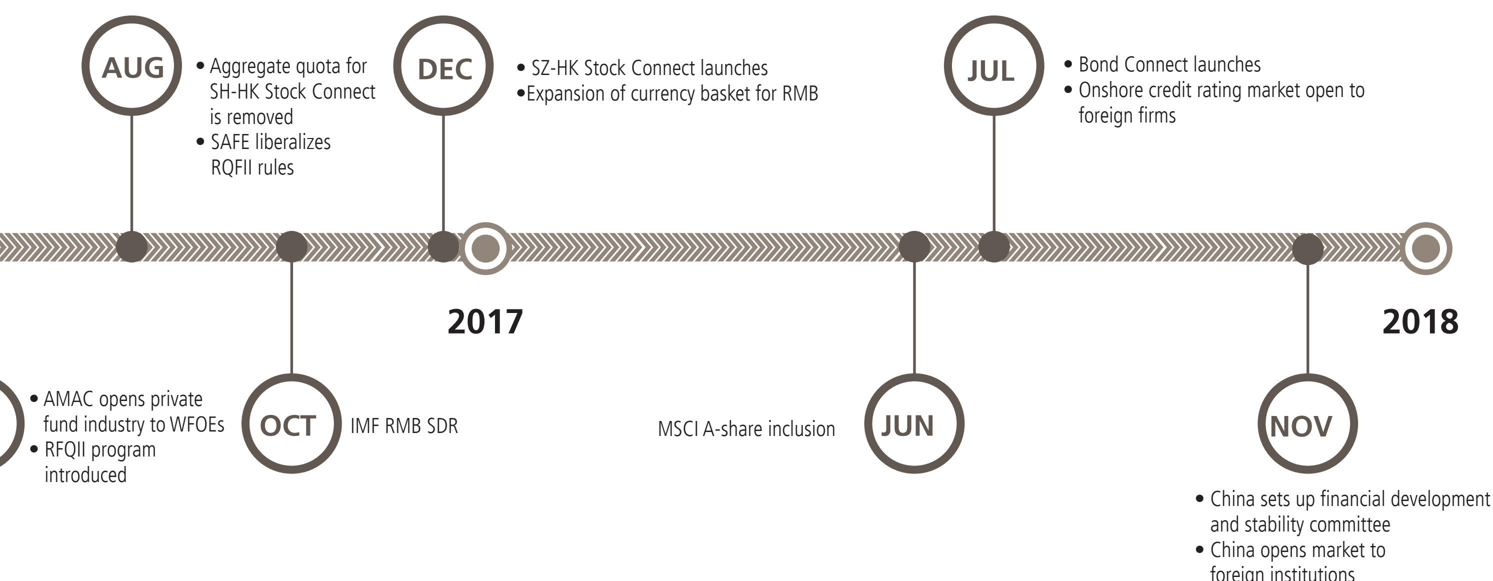
China Fixed Income

But index inclusion isn't just limited to equities because China's fixed income markets will also be brought into global benchmarks in the coming years bringing in inflows of an estimated USD 250 billion to USD 300 billion[6].

Citigroup began adding onshore bonds to its emerging markets and Asia bond indices in March 2018, and we expect inclusion in its World Government Bond Index in the future.

From April 2019, Bloomberg has proposed to begin a 20-month process of adding over 300 bonds from policy banks, the government, and some credit bonds into its Bloomberg Barclays Global Aggregate Bond index benchmark.

When completed, international investors that track the benchmark will have to allocate to China's onshore markets,



[6] UBS: Bringing China into Focus, June 16th 2018

and that amounts to a large commitment because the bonds included will account for an estimated 5.49% of the total index, or a projected market value of $2.94 trillion, according to Bloomberg data as of January 31, 2018[7].

In mid-2018, JP Morgan will conduct a yearly review of its Government Bond Index - Emerging Markets. China bonds are expected to be up for review and if included at a weight of 10%, it's been estimated that USD 20 billion of inflows will be brought into onshore markets[8].

Also, FTSE Russell will review its World Government Bond Index in Q4 2018. If added at an expected weighting of 5.3%, it will trigger an estimated USD 159 billion of inflows[9].

RMB Internationalization

Opening onshore markets and becoming included in global benchmarks is all part of strategy to promote RMB internationalization.

The inclusion of the RMB in the IMF's special drawing rights basket in October 2016 marked a milestone in China's drive to establish the RMB as a global reserve currency, and also provided recognition of China's progress in opening its financial markets and moving towards international standards.

Since that time, the RMB's use in overall international trade transactions has remained stable, but the China has been laying the groundwork for the RMB's future role as a reserve currency. Notable changes include:

- **Money market reforms:** the People's Bank of China has introduced a new range of monetary policy tools to more closely manage liquidity flows in domestic markets and bring them more into line with international standards.

- **RMB-denominated payment systems:** introduced in 2015, the Cross-Border International Payments System (CIPS) enables cross-border RMB clearing, uses international reporting standards, handles payments in 17 time zones, and offers an alternative payment system SWIFT.

- **Offshore clearing centers and currency swap deals:** the PBoC has set up 23 clearing centers globally for RMB trade, and has signed RMB 3.3 trillion worth of bilateral currency swap deals with 35 central banks across the world.

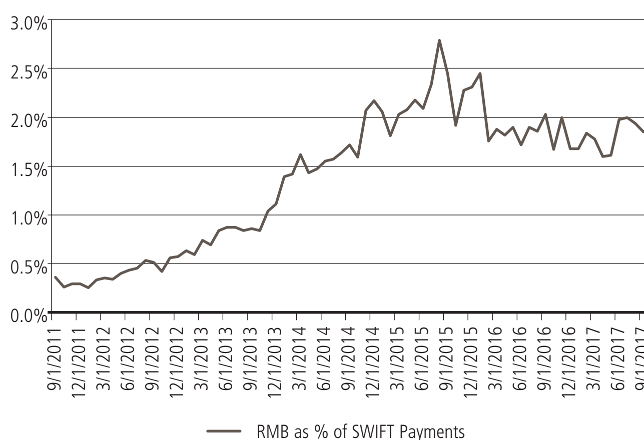
- **Free Trade Zones to test RMB convertibility:** China now has 11 free trade zones that are pilot zones for testing convertibility of RMB, wholly foreign-owned fund management companies, interest rate liberalization, and liberalization of foreign currency limits and offshore financing.

Aside from these policy initiatives, the China's overarching strategy is to push RMB internationalization to mitigate China's exposure to macroeconomic currency risks in the long term, help the its national firms trade in RMB, and to force domestic reforms, such as the freeing up of its capital account.

Put together, China's efforts to deleverage, promote RMB internationalization and open up its stock and fixed income markets amount to a concerted effort to reform its financial sector.

As China moves to bring its financial markets in line with international standards, and global indices move to include China's market, we can expect China's markets to become a much more significant part of the global economy, and that's why investors can no longer ignore the opportunities China presents as it steps into the future.

Fig.2: RMB as a % Share of Total SWIFT Trade Transactions, July 2011-July 2018



Source: Bloomberg, July 28 2018

[7] Bloomberg: Bloomberg to Add China to the Bloomberg Barclays Global Aggregate Indices, March 23rd, 2018
[8] FT: Foreigners Lured by warm yield to China's untapped bond market, May 17th, 2018
[9] UBS: Chinese bonds – what's the big deal?, June 30th, 2017

The services-led economy

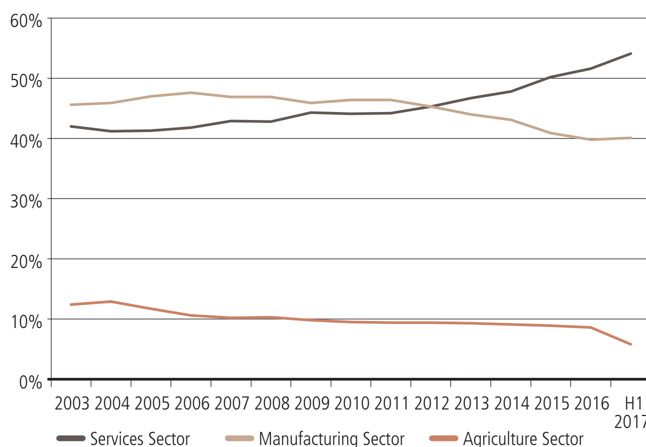
New economy sectors take the lead

- Reforms and growing consumer demand are supporting the emergence of the services sector
- China's services sector still has much more room for growth compared with other countries
- New industry leaders are emerging, particularly in the private sector, and our China equity funds favor healthcare, IT, education, and consumer sectors

China's economy passed a watershed moment in 2012 when the services sector took a dominant share of GDP and eclipsed manufacturing as the economy's main driver and confirmed that the process of economic rebalancing was well underway.

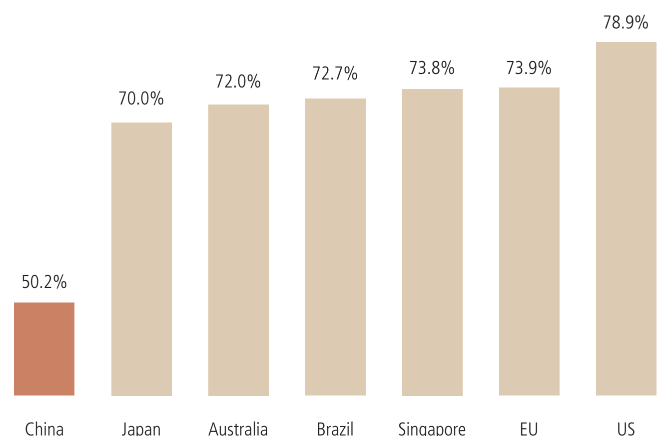
Though China is on track to meet its goal of making services 56% of the economy by 2020, there is still ample room for China's services sector to catch up as a share of the economy with more developed nations.

Fig.3: China GDP: Sectoral Breakdown (%), 2006-2017



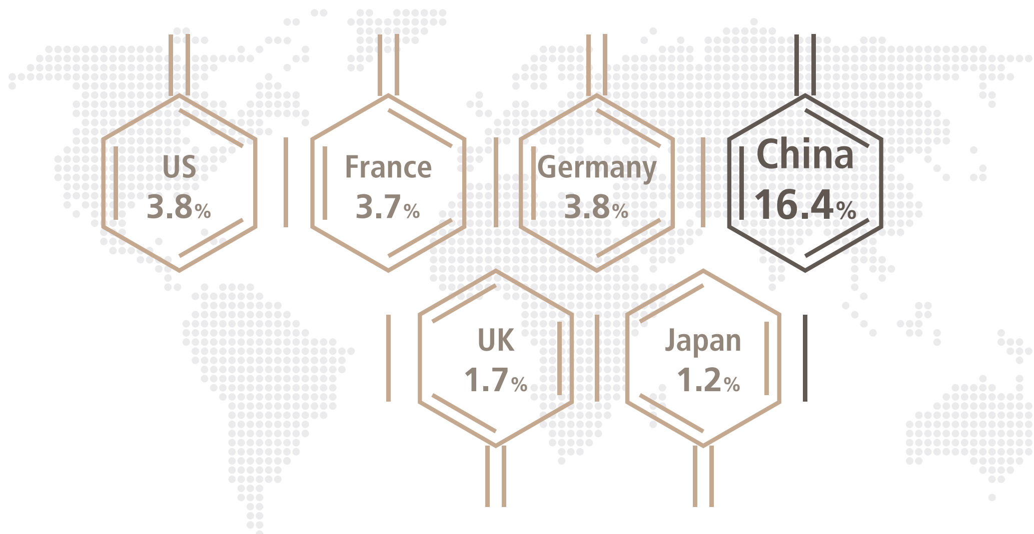
Source: National Bureau of Statistics, March 18th 2018

Fig. 4: Services sectors compared globally, 2015 (% of GDP)



Source: World Bank Open Data Resources, December 2017

Fig. 5: China: CAGR in private healthcare expenditure, 2005-2014 (%)



Source: World Health Organisation: Global Health Expenditure Database, December 2017

And that's why the government is aggressively supporting the development of new industries within the services sector, with three industries standing out in particular:

Healthcare

China faces the challenge of boosting healthcare coverage whilst also managing increased demand for health services from its rapidly ageing population which will see an extra 110.7 million residents aged over 65 by 2030, according to United Nations' forecasts[1].

With this in mind, China is boosting spending on public healthcare services, passing reforms to promote private investment in healthcare services and medical products, reducing waiting times for drug approvals, and strengthening intellectual property protection laws.

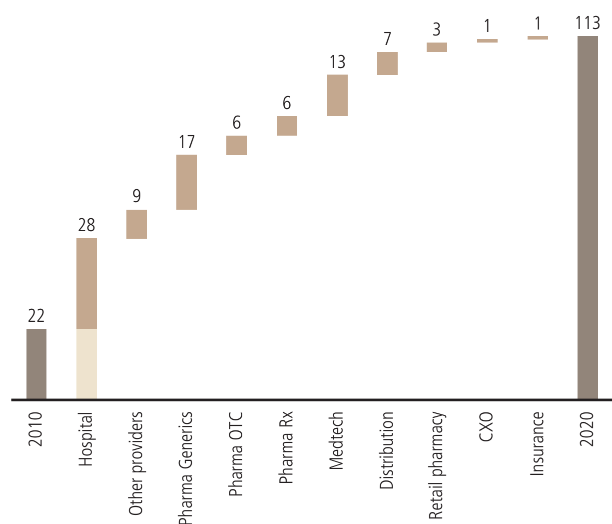
A further source of demand for healthcare comes from Chinese citizens' increasing spending on medical services. As incomes rise and healthcare options increase, consumers are spending more on private healthcare, with total private spending growing an estimated 16.4% per year between 2005 and 2014, according to WHO data[2].

And while the rates of both public and private health expenditure are growing fast, there is still significant room for growth because actual healthcare spending levels in China remain low by international standards, with healthcare spending in estimated at 5.5% of GDP in 2014, compared with 10.2% in Japan, and 17.1% in the US, according to WHO data.

These reforms, plus increasing private expenditure on healthcare services – which is far outstripping growth in developed nations – are creating a new breed of leading industry companies in the health sector, supplying a range of services and goods including medical devices, pharmaceuticals, and healthcare services.

And prospects for growth look so strong that Bain & Company predict that China's healthcare sector will generate USD 113 billion in profits between 2010 and 2020, and grow at a CAGR of 17.6% p.a.[3].

Fig. 6: China: Healthcare profit pool: 2010-2020 (USD billions)



Source: Bain & Company: Healthcare 2020, June 2013

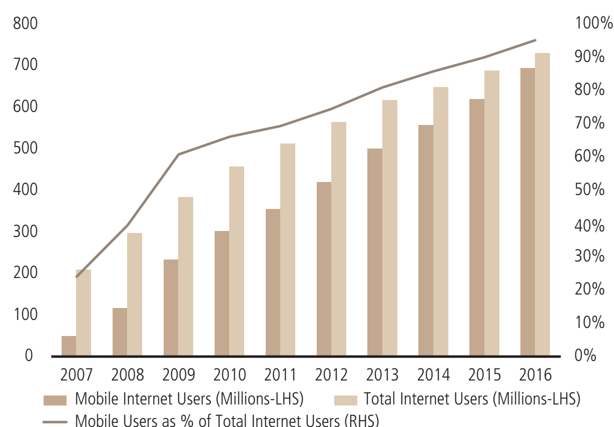
Internet services
China's rapidly expanding internet user base represents a high-potential market for IT services companies. Mobile users account for an increasingly large share of China's online population, and it's via widespread mobile usage that we are seeing drastic changes in consumer behavior.

Chief among them is the growth of online retail. China is the world's largest online retail market, accounting for an estimated USD 1.05 billion in 2017[4], compared with USD 453.5 billion in the US[6], and USD 111.3 billion in Japan[5]. Online retail now accounts for an estimated 19.6% (4) of total retail sales in China, compared with 13% in the US[6], 17.9% in the UK[7], and 8.2% in Japan[8].

But China's internet sector has much more room for growth.

Though its internet user base is the largest in the world, penetration rates (54.6% in 2016) lag behind developed markets such as the UK (94.8%), Japan (93.3%), and the US (87.9%)[9], this factor, combined with government efforts to improve telecoms coverage as laid out in the 13th Five Year Plan, means this user base will likely grow considerably in the future.

Fig. 7: China: Mobile Internet Users as % of Total Internet Users, 2007-2017



Source: CNNIC: 40th Survey Report, June 2018

Education
As rapid urbanization raises competition for places in China's best schools and universities, Chinese parents are spending increasing amounts on their children's education, and this is fueling demand for private education and after-school tuition services.

Adults, especially graduates, are also increasingly looking for additional tuition services amid fierce competition for jobs in local markets and employers' increasingly high-end demands for labor as they shift up the value chain.

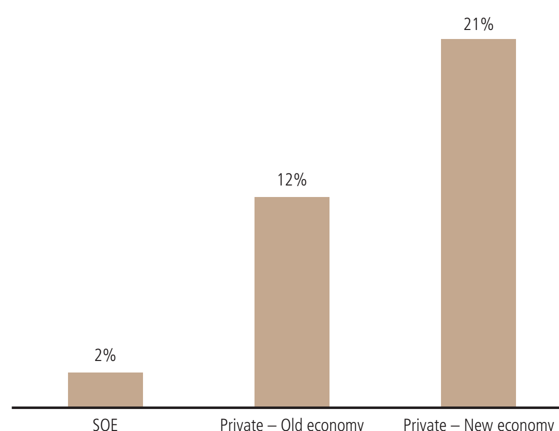
Recent reforms to open the education sector to private investment are presenting great opportunities to private firms to benefit from this trend.

Private companies increasingly lead services sector growth China's structural economic transformation to services and consumer-led growth is largely being led by companies in the private sector.

Recent statistics show that private companies are much more dynamic and they are leading the charge, accounting for over 80% of all jobs[10], and 90% of new urban job creation in China[11].

Indeed, within MSCI's China index, new economy sectors, such as healthcare, IT and consumer staples, are dominated by private companies, whose earnings consistently outperform those of both SOEs and old economy sectors.

Fig. 8: Sectors earnings growth compared, CAGR (%), 2011-2016



Source: Factset, Macquarie Research, June 2016

[1] UN: World Population Prospects: The 2017 Revision, August 2017
[2] World Health Organisation: Global Health Expenditure Database, October 2017
[3] Bain & Company: Healthcare 2020, June 2013
[4] Xinhuanet: China retail sales up 10.2 pct in 2017, January 18th 2018
[5] Statista: Japan: retail e-commerce sales 2014-2019, July 30, 2018
[6] Internet Retailer: U.S. e-commerce sales grow 16.0% in 2017, February 16th, 2018
[7] Office for National Statistics: Internet sales as a percentage of total retail sales (ratio) (%), July 30, 2018
[8] Statista: Japan: retail e-commerce sales as % of total retail sales, July 30, 2018
[9] Internet Live Stats: Internet Users by Countr, April 15th 2018
[10] China Daily: China's private sector regains strength on optimistic economic outlook, 2nd August 2017
[11] Reuters: China needs the private sector to step up, May 16th 201

Manufacturing 2025

Creating the future through upgrading and automation

- China has a long-term plan to upgrade its industrial sector
- Closures and tighter monetary policy are impacting low value-added sectors
- Consumers are becoming more sophisticated and manufacturers are adapting to this trend
- Chinese companies are becoming increasingly innovative and automation is more widespread
- China is leading the world in installed robotics, particularly in the auto and electrical manufacturing sector

Made in China 2025: The core of China's industrial upgrading strategy

The 'Made in China 2025' strategy is driving industrial upgrading by:

- **Phasing out old-economy sectors**: subsidies, tax rebates, and cheap loans have been steadily phased out for low-value added, labor-intensive sectors and factories are being forcibly closed and/or relocated overseas.

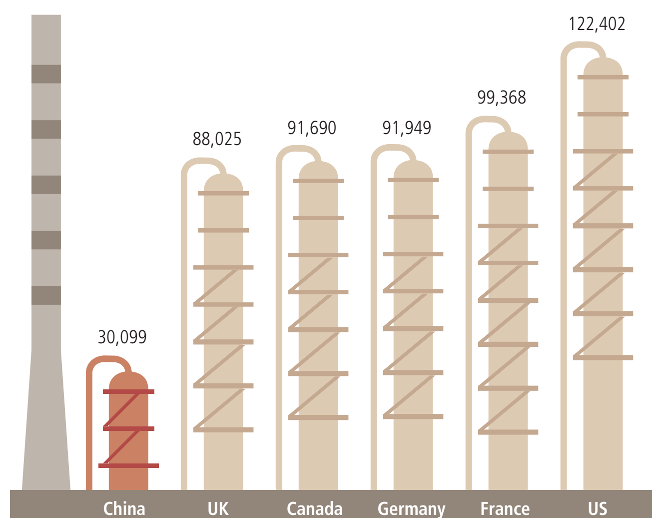
- **Supporting new industries**: dedicated funds have been set up to provide financing for start-ups, policy banks are supplying financing for new industrial sectors, and local governments are offering tax breaks, grants, and other subsidies to companies operating in industries earmarked by China's Made in China 2025 strategy.

Raising productivity is key

Raising productivity lies at the heart of this strategy. Despite China's undisputed success in dominating the global manufacturing sector, productivity, or total output per worker, still lags behind other nations, according to The Conference Board, the US-based research organization[1].

Since China's labor pool is shrinking as demographic trends play out, companies are facing the challenge of doing more but with fewer workers, and that means they have to invest in technology.

Fig. 10: Output per employed person (USD), 2017



Source: The Conference Board: International Labor Comparisons, December 2017

[1] The Conference Board: International Labor Comparisons, October 2017

China: Global AI leader by 2030
While the Made in China 2025 includes many different initiatives, none encapsulate China's ambitions better in the industrial upgrading process than the government's plan for artificial intelligence.

China plans to build a domestic artificial intelligence industry worth USD 150 billion by 2030, and is supporting this goal by offering funding for AI-related companies, special grants for start-up companies in the field and increased support for AI-related academic research.

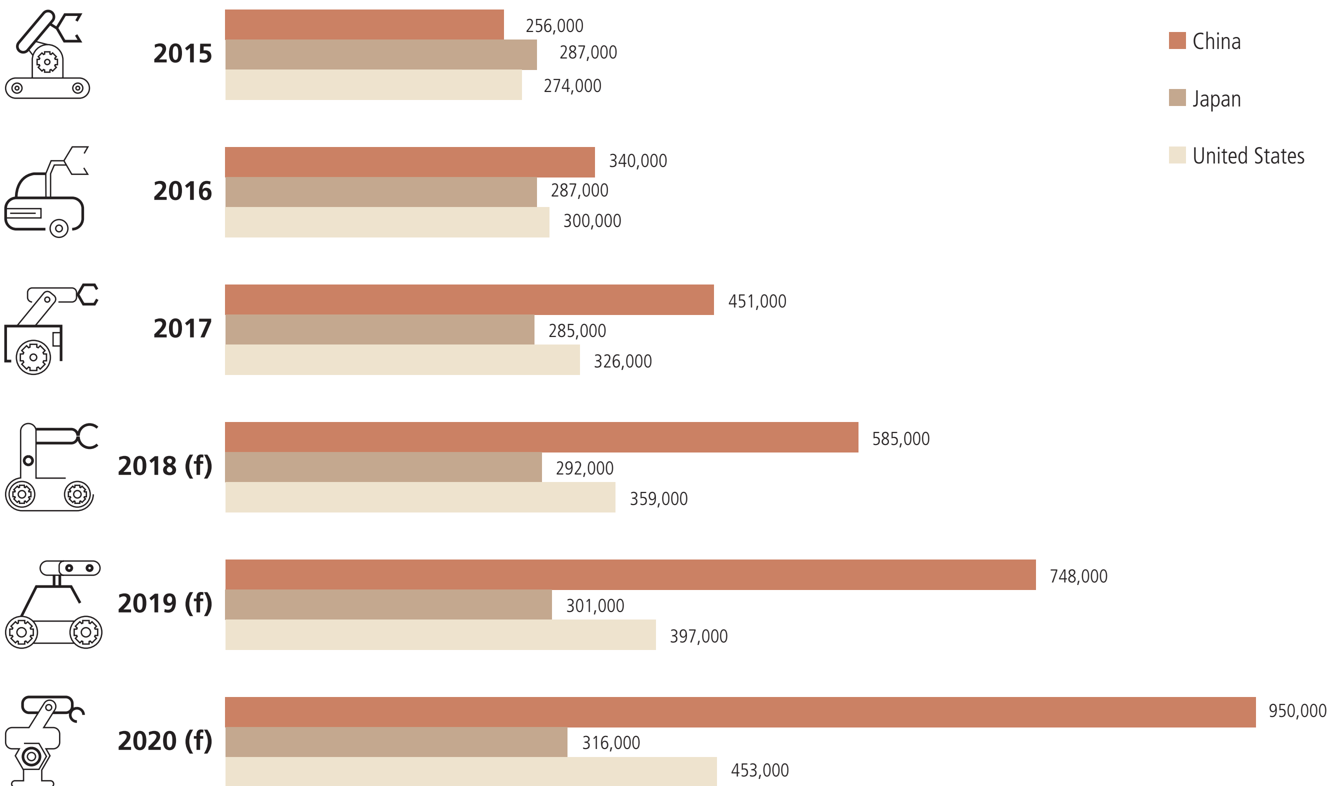
China already leading in robotics
The most obvious, or well-known application of AI to manufacturing is in the form of developing robotic production systems, and with China's push to apply AI to manufacturing, Chinese manufacturers are responding by automating their manufacturing processes and replacing humans with robots.

Indeed, the increase in installed robotic machinery in China has been dramatic. In 2016, China overtook the US and Japan, the previous leaders in installed robotics systems, with an estimated 340,000 industrial robots installed across the country, and that has grown significantly from the 17,000 installed robotics units estimated by the International Federation of Robotics in 2006, implying a CAGR of 90%[2].

As well as installing the largest base of robotics systems in the world, Chinese companies are rapidly acquiring the knowhow to create robots of their own. For example, Midea, a Chinese electricals manufacturer, spent USD 4.7 billion in acquiring the German robot specialist Kuka, which has been regarded as one of the world's leading robotics manufacturers.

And China is expected to dominate the global robotics industry by 2020, supplying 40% of all robots produced globally, according to IFR projections.

Fig. 11: Installed robotics systems: China, Japan & United States compared, 2015-2020 (f)



Source: International Federation of Robotics (IFR): How robots conquer industry worldwide, September 27th 2017

[2] International Federation of Robotics (IFR): How robots conquer industry worldwide, September 27th 2017

Robotics supporting China's auto industry
China's auto sector accounted for approximately 48% of all of China's installed robotics systems in 2014, according to the China Robot Industry Alliance[3].

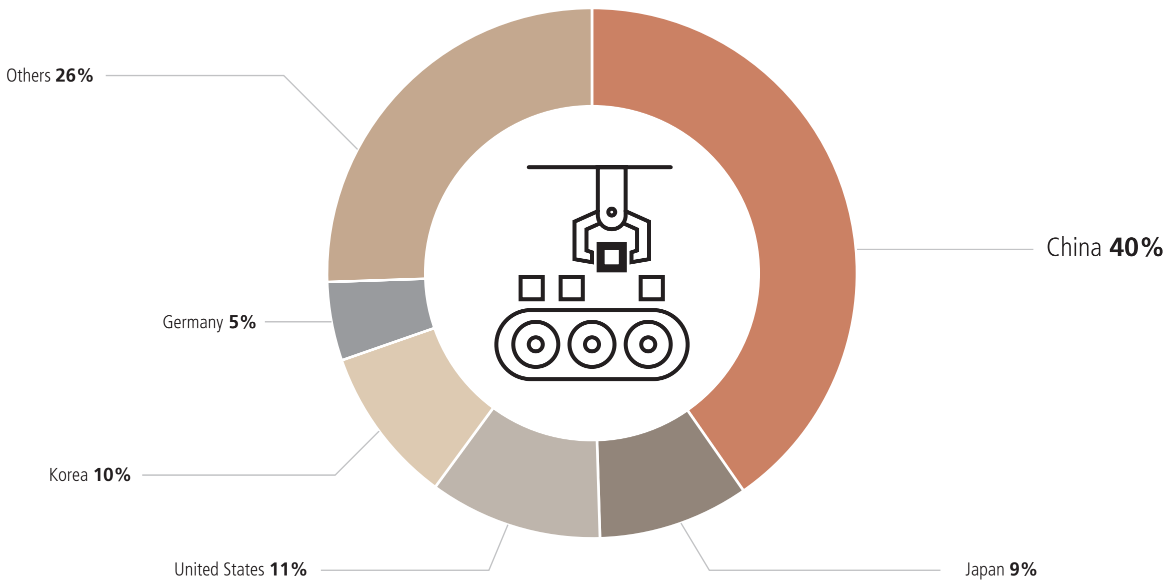
This commitment to upgrading is consolidating China's position as the world's leading car market, producing an estimated 30% of all cars sold globally[4].

And that's why leading global auto names such as BMW and Mercedes Benz continue to invest in China, and see China's upgrading production capability as creating the world's largest production base for new energy vehicles.

Automation is an all-encompassing trend
And these are just some of the industries where China's application of AI, robotics, automation, plus its development of high-tech knowhow and intellectual property is transforming its industrial base. Other industries include:

- **Logistics**: With competition for customers growing ever fiercer in China's e-commerce market, online platforms like Alibaba and JD.com[5] are automating their warehouses to handle shipments more efficiently. Tests at Amazon's US bases showed that robotic order sorting systems reduced click-to-dispatch times from 60-75 minutes to 15 minutes[6].
- **Shipbuilding**: Long considered to be an excess capacity sector, Chinese shipbuilders are upgrading and rationalizing their production capacity by introducing automated welding capacity into their production processes to cut down on costs and manpower[7].
- **Electrical goods**: With profits and worker supply tightening, major electronics manufacturers are shifting to automation, with Foxconn, the iPhone manufacturer, announcing plans to gradually replace its workforce and achieve 30% automation by 2020[8].

Fig. 12: Share of global robotics supply (%), 2020 (f)



Source: International Federation of Robotics (IFR): How robots conquer industry worldwide, September 27th 2017

[3] HKTDC: China's 13th Five-Year Plan: Smart Solutions Required to Upgrade Chinese Robots, June 17th 2016
[4] MMTA: The Chinese Automotive Market – Much more than just large, June 22nd 2017
[5] Tech in Asia: Chinese ecommerce giant shows off its first ever 'robot warehouse', September 16th 2016
[6] Quartz: Amazon is just beginning to use robots in its warehouses and they're already making a huge difference, June 17th 2016
[7] Engineering at Sea: Automated shipyards: The growing prevalence of robotics in shipbuilding, October 10th 2017
[8] SCMP: Foxconn's Foxbot army close to hitting the Chinese market, on track to meet 30 per cent automation target, January 23rd 2018

China's new labor advantage

STEM Graduates

- China's labor advantage is shifting
- By 2030, China will have produced 48 million graduates in science, technology, engineering and mathematics (STEM) fields
- China's new labor advantage is already driving an increase in AI and computer studies-related research
- China's expanding knowledge base supports our positive view on China's tech and pharmaceutical sectors

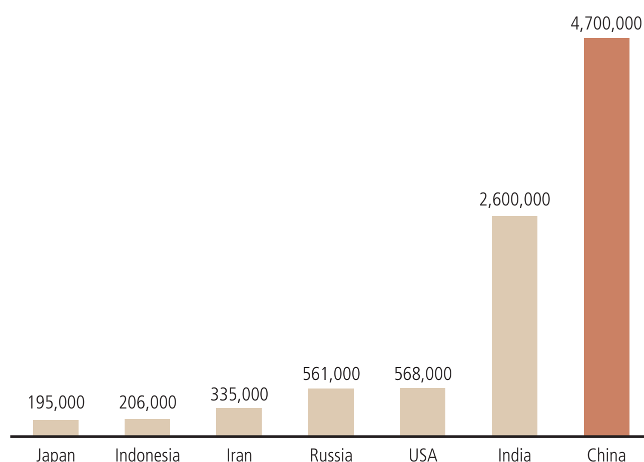
China's earlier growth was propelled by low-cost, low-skilled labor, but that advantage has shifted because it now has a large and growing workforce capable of propelling the innovation-led economic development path that the government is promoting.

China leads in STEM Education
The Chinese government has ramped up spending in education with a total of RMB 3.01 trillion invested in 2017[1], compared with RMB 478 billion in 2006, in line with its plans to drastically improve the skills and education levels of the population, with recent emphasis being squarely placed on technical subjects.

This has created a huge population of students graduating in the Science, Technology, Engineering, and Mathematics (STEM) subjects, with 4.7 million Chinese students graduating in the field in 2016[2], far in excess of India (2.6 million), the USA (568,000) and Japan (195,000), according to data compiled by the World Economic Forum.

And this talent pool is being augmented by a flow of returning students from overseas, with 432,500 (80% of the 544,500 going abroad in 2016) coming back to China in 2016, up from 272,900 in 2012[4].

Fig. 13: Total STEM graduates, 2016



Source: World Economic Forum, March 2017

[1] Bloomberg, July 30, 2018
[2] World Economic Forum: Human Capital Report: Measuring Human Capital, March 2017
[3] The Pie News: 80% of Chinese students return home – MoE, March 16th 2017
[4] China State Council: More Chinese students return from overseas in 2016, March 1st 2017

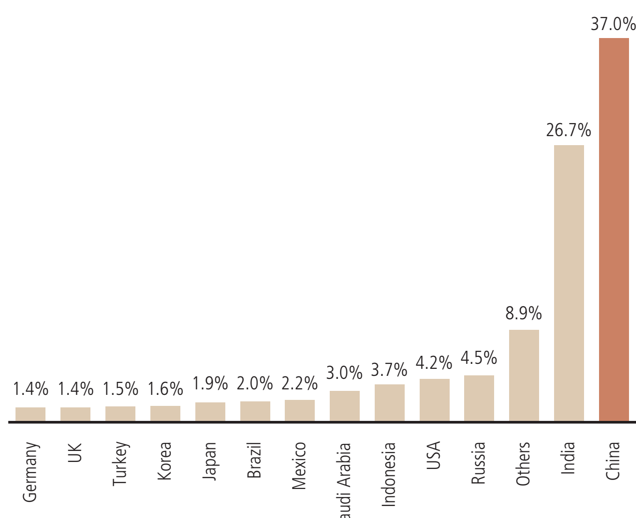
The knowledge base for innovation-led development
Looking ahead, the OECD estimates that China's superiority in producing STEM graduates is only going to increase.

Between 2015 and 2030, China will produce approximately 48 million STEM graduates, compared with an estimated 10 million in the USA, and 2.5 million in Japan[5], meaning that it will take the majority of STEM graduates globally.

And it's this expanding knowledge base that will be at the heart of China's drive for innovation-led development. And the trends are already lining up, with China's output of cutting-edge research, particularly in subjects like artificial intelligence and computer studies, growing significantly in recent years.

Chinese educational institutions account for two of the top institutions in the world, and 15 of the top 100, for citations for artificial intelligence papers.

Fig. 14: % Share of STEM graduates globally, 2030



Source: Economist Intelligence Unit: Education to 2030, May 2016

"China has around 43% of trained AI scientists globally"

Kai Fu Lee
AI expert and Former President of Google China[6]

Fig. 15: AI Citations

Institute	Country	No. of AI Citations
Microsoft	US	6,528
Nanyang Tech	Singapore	6,015
Chinese Academy of Sciences	**China**	**4,999**
CNRS	France	4,492
Carnegie Mellon	US	4,389
University of Toronto	Canada	4,315
MIT	US	4,283
Google	US	4,113
Tsinghua University	**China**	**3,851**
New York University	US	3,506

Source: FT: China's AI ambitions revealed by most cited research papers, November 6th 2017

[5] Economist Intelligence Unit: Education to 2030, May 15th 2016
[6] Forbes: China's AI Advantage: Why Google China's Founder Sees The U.S. Losing Its Edge, May 30th 2017

Businesses are Investing in China's STEM Workforce
China's rapidly growing knowledge base is a key attractor for both domestic and overseas businesses.

In a 2017 McKinsey survey[8], 37% of respondents cited the improved capabilities of Chinese workers, particularly engineers, as a key reason why they were investing in product and business development in China, and this explains why R&D spending in China has been growing rapidly, and is projected to have grown 8x between 2007 and 2020.

China's expanding knowledge base, fed by steady growth in university graduates and an increase in knowledge workers coming from overseas, is at the base of China's growing superiority in hi-tech sectors, and here are two examples:

China's pharmaceutical sector
China's huge base of R&D researchers, numbering some 3.8 million at the end of 2015[9], are the basis for China's fast-growing pharmaceutical sector.

And this huge talent base lies at the core of China's massive increase in patent/research output in recent years, which has seen Chinese companies surpass others.

And it's this ability to create cutting-edge output for the pharmaceutical sector that explains why total sales of pharmaceuticals have grown rapidly in recent years, with sector revenues reaching RMB 1.7 trillion in 2016, and increasing at a CAGR of 12.8% per year between 2012 and 2016.

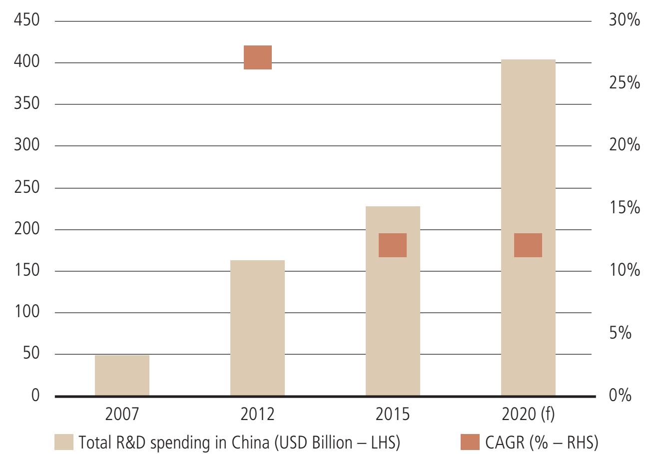
Having a strong supply of graduates and STEM professionals helps China's leading internet services firms build the services that create their leadership advantage.

Internet services
Companies like Baidu, Tencent and Alibaba have grown to become giants of China's internet sector in part because of the rapid growth in internet users, but also because of their ability to digest the huge volumes of data created by their millions of users and create appealing services that are targeted at consumer behavior.

That's the story behind Alibaba's development of fintech services for small businesses, which uses financial data from online businesses' transactions and investments to gauge whether or not that party can qualify for a loan. Alternatively, Tencent uses data on how users operate on WeChat to gauge how firms should allocate their marketing spending.

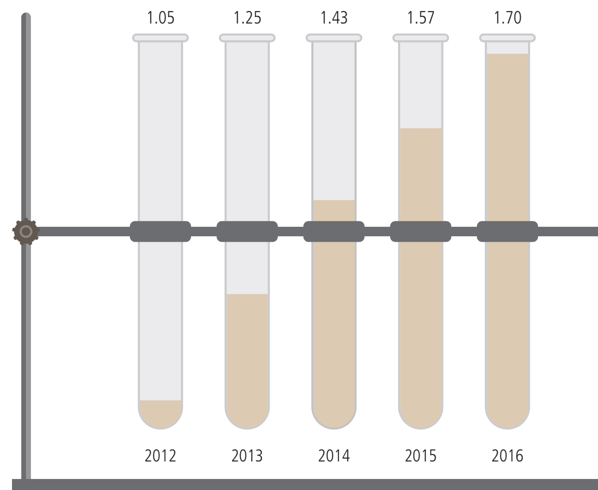
Having a strong supply of graduates and STEM professionals helps China's leading internet services firms build the services that create their leadership advantage, and all indicators show that these firms are investing in developing their local talent pools, with Alibaba and Huawei recently announcing new R&D and training facilities in China.

Fig. 16: China: Total R&D spending (USD billions) & CAGR, 2007-2020 (f)



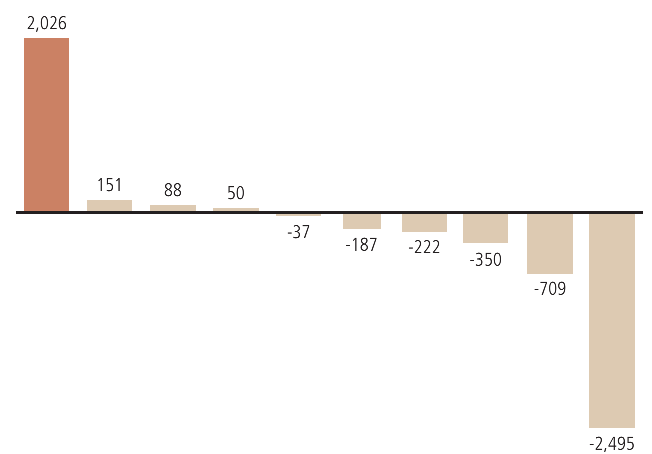
Source: McKinsey: How semiconductor companies can win in China's new product-development landscape, March 2017

Fig. 17: China: Pharmaceutical sales (RMB trillion), 2012-2016



Source: DBS: China Pharma: Inflexion Point Emerging, May 2017

Fig. 18: The nature index: Growth in WFC, 2012-2016



Source: The Nature Index, December 2017

8 McKinsey: How semiconductor companies can win in China's new product-development landscape, March 2017
9 UNESCO Institute for Statistics: Education, Science, Tech & Innovation Statistics, November 2016

Going global through Belt & Road

- Belt & Road will restructure the global trade system
- Major infrastructure investments are being commissioned that will create demand for Chinese companies in sectors such as construction services and equipment

China's 'new era' also means a more active role in world affairs, and the principal channel for this approach will be through its Belt & Road strategy.

The project has been left open-ended, with various estimates of total investment ranging from USD 800 billion to USD 1 trillion on the total amount of investment implied by the plan.

Essentially, the Belt & Road strategy is about establishing closer trade links between China and the outside world. The primary component of this concept is the development of real assets to support greater connectivity and interaction among international businesses.

Similar programs (albeit at smaller scale) have been implemented in various locations across the globe. As this development strategy unfolds, real assets will play a vital role in the region's productivity and investment opportunity.

To this end, a review of Infrastructure and Real Estate investments around the world can help investors take advantage of the opportunities and minimize the risks associated with a global development program.

Developing infrastructure lies at the core of this strategy, and various projects around the world will create demand for the project expertise that Chinese companies have, which explains why state-owned infrastructure development firms have been so active since the strategy was announced in 2013. Notable projects include:

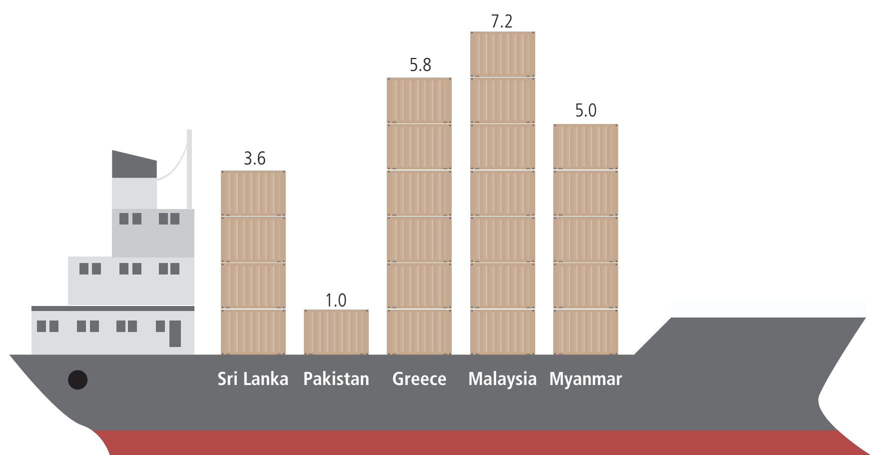
- **Kunming-to-Singapore Rail Link**: Connecting Kunming, an emerging industrial hub in South China, with Laos, Thailand, Malaysia and Singapore, the rail link is intended to boost trade and investment flows, and has seen financial commitments of an estimated USD 5.2 billion from Thailand[1], plus an estimated USD 6 billion from China[2], to fund separate parts of the project.

- **Yiwu-to-Rotterdam 'New Silk Road'**: Yiwu and Rotterdam mark two ends of an extensive network of train lines connecting trade hubs throughout China, Central Asia, Eurasia, and Europe such as Chongqing, Urumqi, Tehran, Istanbul, and Moscow. Train services on the route began in 2016 and are expected to increase as infrastructure develops, cutting the estimated time of shipping a container from Yiwu in China to Rotterdam in Holland to 23 to 25 days by rail, compared with 50 to 55 days by rail[3].

- **Massive Port Investments**: China is pumping huge investments into developing new ports across the world to manage and take control of key strategic trade hubs along its main trade routes. China's investment in new port facilities in Malacca, Malaysia, is a case in point. By opening up an alternative to Singapore, China can reduce potential trade slowdowns and can prevent Singapore being used as a choke-point for oil imports.

[1] Channel News Asia: Thailand Approves USD 5.2 billion for delayed China rail project, July 11 2017
[2] Wikipedia: Kunming-Singapore Railway, July 2018
[3] JOC: China-Europe rail routes continue to add services, May 31st 2016

Fig. 19: China's port investments



Sources: American Enterprise Institute: China Global Investment Tracker, July 2018; Wikipedia: Gwadar Port, July 2018; Bloomberg: China Wants This Malaysian Port to Rival Singapore (And That's Not All), August 1st 2017; Reuters: China to take 70 percent stake in strategic port in Myanmar – official, October 17th 2017

Real estate investment will begin when the prospect of revenue becomes apparent. The timing of delivery is important to the success of the overall development. Thus, control and incentives are key features leading to successful real estate development. It is important to establish critical mass and understand interrelationships, when considering investment into projects of this scale. In the near-term, the new initiatives will create demand for infrastructure, construction services, and equipment, as well as steel, aluminium and cement.

New trade bases

Reshaping the global trading system also means opportunities for Chinese manufacturing companies through the creation of new production bases, and access points into overseas markets, from the development of the Belt & Road strategy.

One sector example includes the auto industry, where Chinese companies are setting up manufacturing capacity in countries, like Sri Lanka and Czech Republic, which have signed trade and investment deals in line with China's Belt & Road strategy.

So there's lots for investors to consider as infrastructure projects ramp up and Chinese companies align themselves with the strategy. In the near-term, the new initiatives will push Chinese firms' global expansion and create opportunities for infrastructure investment and will create demand for construction services and equipment, as well as steel, aluminium and cement.

Trade tensions and China's outlook

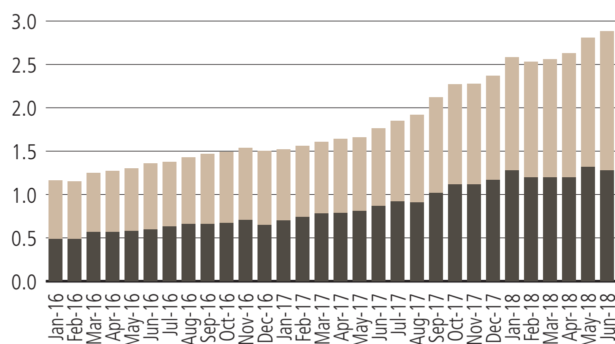
Trade tariff measures and protectionist rhetoric have dominated headlines during the past 18 months. And there remain risks from an escalation, with estimates of a 0.5ppt hit to China's growth rate in 2018 and 2019 to 6.5% and 6.2%[1], respectively, from additional tariffs on USD 200 billion of Chinese exports.

Nonetheless, despite the trade tensions and uncertainty, China's economy is on a better footing today compared to a few years ago. Authorities have adequate room to loosen policy if necessary, and targeted support to the economy became clear in June 2018.

Also, the health of China's economy has improved in recent years. The sustained deleveraging policy has checked the build-up of debt in the financial system and imposed a risk culture in the economy, particularly around the use and allocation of credit, that didn't exist before.

And as the US turns protectionist, China has stepped up its integration with the global economy, through the expansion of Shanghai & Shenzhen Stock Connect links with Hong Kong, the opening of Bond Connect, withdrawal of limits on QFII and RFQII, inclusion of A-shares in global equity benchmarks, and liberalisation of its financial and industrial sectors to allow more foreign involvement.

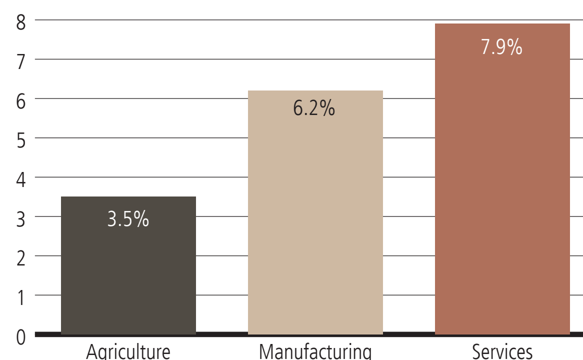
Figure 20: Overseas Investors' Onshore Equity and Fixed Income Holdings (RMB Trillions), Jan 2016-Jun 2018



Source: People's Bank of China: Domestic RMB Financial Assets Held by Overseas Entities, August 2018

At the same time as China steps up its global integration, so its economy continues to rebalance toward a services and consumption-driven model. The services sector continues to lead growth, growing by 7.9% y-o-y, on average, every quarter since 2015, compared with average growth of 6.8% for the economy as a whole during the same time period.

Figure 21: China: GDP Growth by Sector, Q1 2015-Q2 2018



Source: National Bureau of Statistics, August 2018

And the structural changes underpinning the evolution of China's economic model still have much longer to run. The reform agenda within the 13th Five Year plan discussed earlier still has space for implementation, with further reforms to spur rural-urban migration and job creation still to come.

Specifically, these reforms will spur an influx of an estimated 242.5 million people into China's cities between 2015 and 2030 with positive spillovers for consumer demand, particularly in the healthcare and education sectors. Furthermore, there's strong potential for further growth in the internet sector, since China's internet penetration still lags behind many developed markets.

So, while trade tension is a significant issue with the potential to impact China's growth rate in 2018 and 2019, we feel there is scope for the government to support growth and that China's economy remains on a strong footing.

Outside of trade tensions in the headlines, investors need to remember the profound structural changes that are happening to the Chinese economy which remain relatively insulated from the impact from the trade issues. These structural changes continue to create investible trends that offer excellent prospects for 'new economy' industries like consumer, IT, healthcare, financials, and e-commerce.

[1] UBS: Trade War Escalation Knocks Down China GDP & CNY Forecasts, July 17th 2018

UBS Asset Management, your first call for China

And as China steps into the future, UBS Asset Management is ideally placed to help you capitalize on what we expect will be a wealth of opportunities.

UBS Asset Management has been investing in China since 1997. Over the years, we have developed extensive local expertise. Being the first international manager with both Qualified Domestic Limited Partner (QDLP) and Private Fund Management (PFM) licenses, we continue to grow our presence in China.

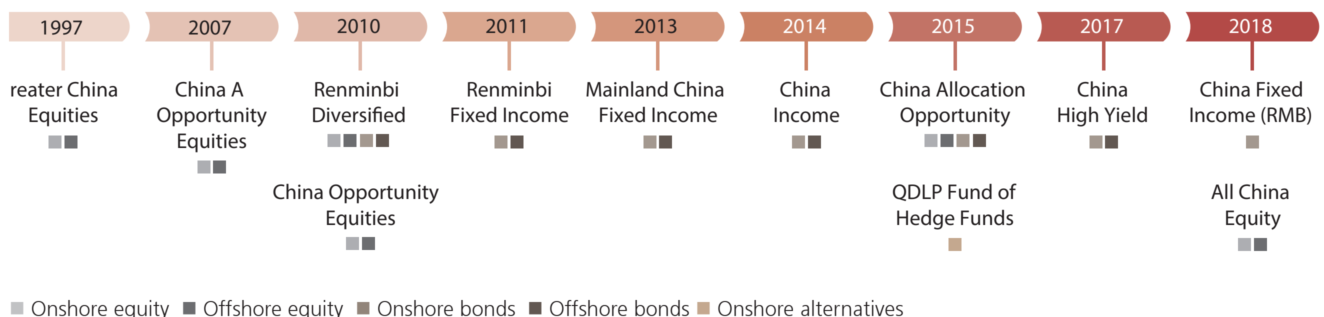
Together with our in-depth knowledge of China, we have built an outstanding team of experienced investment managers for traditional and alternative assets. Our dedicated China team benefits from the support of our regional and global specialists, with access to a global network of proprietary research databases.

Portfolio management is supported by the regional team, covering both execution and investment communication. As a truly global firm, UBS provides investment solutions which include a risk system incorporating both proprietary and industry standard risk analytics.

The depth and breadth of our capabilities allow us to offer global and domestic investors a broad range of traditional China strategies and alternative solutions including real estate, private equity and hedge fund solutions. Investors can access China's onshore and offshore market through our wide spectrum of equity, fixed income and multi-asset class strategies with varying risk and return attributes to fit their specific needs and goals.

For offshore investors

UBS Asset Management has been offering equity, fixed income and multi-asset solutions since 1997



Source: UBS Asset Management

So, as China steps into the future, we expect a sustained drive to both reform and support the economy, so as to provide access to the financial sector, boost its new industries, upgrade its manufacturing base, build on its new hi-tech labor advantage, and reshape world trade through the Belt and Road initiative.

Glossary

'A' shares: Shares in mainland China-based companies that trade on Chinese stock exchanges.

Belt & Road: A China-led strategy that includes a 'belt' – a land-based infrastructure network connecting China with Southeast Asia, the Middle East, Central Asia, Russia, and Europe, and a 'road' – a sea-based infrastructure network connecting China with Southeast Asia, Oceania, North Africa, and Europe.

Bond Connect: A mutual market access scheme allowing mainland China and overseas investors to trade in each other's bond markets via brokers in China and Hong Kong. Launched in July 2017, the system currently allows for northbound (Hong Kong to China) trading, southbound trading will be brought in at a later date.

CIPS: A payment system which offers clearing and settlement services in RMB. The first phase began in October 2015.

'H' shares: Shares of companies incorporated in mainland China that are traded on the Hong Kong Stock Exchange.

Made in China 2025: An initiative to upgrade China's industrial sector that is similar in form to Germany's "Industry 4.0" plan introduced in 2013. The plan stresses innovation-driven industrial development and the importance of quality over quantity.

MRF: Mutual Recognition of Funds gives mainland China and Hong Kong fund products cross-border mobility. Starting on July 1, 2015, onshore asset managers can offer fund products registered in mainland China to Hong Kong investors, while Hong Kong fund products will also be made available to mainland China investors.

NPC: Officially titled the National Congress of the Communist Party of China, the NPC meeting occurs every five years in either October or November, and usually sees top-level leadership changes in China's ruling Communist Party.

OMO: Open market operations undertaken by the People's Bank of China to adjust the supply of money in financial markets.

QFII: Introduced in 2002, the Qualified Foreign Institutional Investor scheme allows qualified offshore institutional investors to invest in onshore products in China.

QDII: A scheme through which domestic investors in China can invest in offshore markets.

RQFII: Introduced in late 2011, the RMB Qualified Institutional Investor scheme lets Hong Kong-based institutions raise RMB and then invest the proceeds in onshore securities markets.

SAFE: State Administration of Foreign Exchange – China's foreign exchange regulatory agency and part of the People's Bank of China. SAFE manages China's foreign exchange reserves and implements RMB policy.

Shanghai-Hong Kong Stock Connect: An investment channel linking the Shanghai Stock Exchange and the Hong Kong Stock Exchange. Investors in each market are able to trade shares on the other market using local brokers and clearing houses. Launched in November 2014.

Shenzhen-Hong Kong Stock Connect: Similar to the Shanghai-Hong Kong Stock Connect but linking Hong Kong with Shenzhen. Launched in December 2016.

SOE: State-owned enterprises.

STEM: Acronym for Science, Technology, Engineering, and Mathematics.

For marketing and information purposes by UBS. For professional clients / qualified / institutional investors only.

This document does not replace portfolio and fund-specific materials. Commentary is at a macro or strategy level and is not with reference to any registered or other mutual fund.

Americas
The views expressed are a general guide to the views of UBS Asset Management as of June 2017 The information contained herein should not be considered a recommendation to purchase or sell securities or any particular strategy or fund. Commentary is at a macro level and is not with reference to any investment strategy, product or fund offered by UBS Asset Management. The information contained herein does not constitute investment research, has not been prepared in line with the requirements of any jurisdiction designed to promote the independence of investment research and is not subject to any prohibition on dealing ahead of the dissemination of investment research. The information and opinions contained in this document have been compiled or arrived at based upon information obtained from sources believed to be reliable and in good faith. All such information and opinions are subject to change without notice. Care has been taken to ensure its accuracy but no responsibility is accepted for any errors or omissions herein. A number of the comments in this document are based on current expectations and are considered "forward-looking statements." Actual future results, however, may prove to be different from expectations. The opinions expressed are a reflection of UBS Asset Management's best judgment at the time this document was compiled, and any obligation to update or alter forward-looking statements as a result of new information, future events or otherwise is disclaimed. Furthermore, these views are not intended to predict or guarantee the future performance of any individual security, asset class or market generally, nor are they intended to predict the future performance of any UBS Asset Management account, portfolio or fund.

EMEA
The information and opinions contained in this document have been compiled or arrived at based upon information obtained from sources believed to be reliable and in good faith, but is not guaranteed as being accurate, nor is it a complete statement or summary of the securities, markets or developments referred to in the document. UBS AG and / or other members of the UBS Group may have a position in and may make a purchase and / or sale of any of the securities or other financial instruments mentioned in this document.

Before investing in a product please read the latest prospectus carefully and thoroughly. Units of UBS funds mentioned herein may not be eligible for sale in all jurisdictions or to certain categories of investors and may not be offered, sold or delivered in the United States. The information mentioned herein is not intended to be construed as a solicitation or an offer to buy or sell any securities or related financial instruments. Past performance is not a reliable indicator of future results. The performance shown does not take account of any commissions and costs charged when subscribing to and redeeming units. Commissions and costs have a negative impact on performance. If the currency of a financial product or financial service is different from your reference currency, the return can increase or decrease as a result of currency fluctuations. This information pays no regard to the specific or future investment objectives, financial or tax situation or particular needs of any specific recipient.

The details and opinions contained in this document are provided by UBS without any guarantee or warranty and are for the recipient's personal use and information purposes only. This document may not be reproduced, redistributed or republished for any purpose without the written permission of UBS AG.

This document contains statements that constitute "forward-looking statements", including, but not limited to, statements relating to our future business development. While these forward-looking statements represent our judgments and future expectations concerning the development of our business, a number of risks, uncertainties and other important factors could cause actual developments and results to differ materially from our expectations.

UK
Issued in the UK by UBS Asset Management (UK) Ltd. Authorised and regulated by the Financial Conduct Authority.

APAC
This document and its contents have not been reviewed by, delivered to or registered with any regulatory or other relevant authority in APAC. This document is for informational purposes and should not be construed as an offer or invitation to the public, direct or indirect, to buy or sell securities. This document is intended for limited distribution and only to the extent permitted under applicable laws in your jurisdiction. No representations are made with respect to the eligibility of any recipients of this document to acquire interests in securities under the laws of your jurisdiction.

Using, copying, redistributing or republishing any part of this document without prior written permission from UBS Asset Management is prohibited. Any statements made regarding investment performance objectives, risk and/or return targets shall not constitute a representation or warranty that such objectives or expectations will be achieved or risks are fully disclosed. The information and opinions contained in this document is based upon information obtained from sources believed to be reliable and in good faith but no responsibility is accepted for any misrepresentation, errors or omissions. All such information and opinions are subject to change without notice. A number of comments in this document are based on current expectations and are considered "forward-looking statements". Actual future results may prove to be different from expectations and any unforeseen risk or event may arise in the future. The opinions expressed are a reflection of UBS Asset Management's judgment at the time this document is compiled and any obligation to update or alter forward-looking statements as a result of new information, future events, or otherwise is disclaimed.

You are advised to exercise caution in relation to this document. The information in this document does not constitute advice and does not take into consideration your investment objectives, legal, financial or tax situation or particular needs in any other respect. Investors should be aware that past performance of investment is not necessarily indicative of future performance. Potential for profit is accompanied by possibility of loss. If you are in any doubt about any of the contents of this document, you should obtain independent professional advice.

Australia
This document is provided by UBS Asset Management (Australia) Ltd, ABN 31 003 146 290 and AFS License No. 222605.

China
The securities may not be offered or sold directly or indirectly in the People's Republic of China (the "PRC"). Neither this document or information contained or incorporated by reference herein relating to the securities, which have not been and will not be submitted to or approved/verified by or registered with the China Securities Regulatory Commission ("CSRC") or other relevant governmental authorities in the PRC pursuant to relevant laws and regulations, may be supplied to the public in the PRC or used in connection with any offer for the subscription or sale of the Securities in the PRC. The securities may only be offered or sold to the PRC investors that are authorized to engage in the purchase of Securities of the type being offered or sold. PRC investors are responsible for obtaining all relevant government regulatory approvals/licenses, verification and/or registrations themselves, including, but not limited to, any which may be required from the CSRC, the State Administration of Foreign Exchange and/or the China Banking Regulatory Commission, and complying with all relevant PRC regulations, including, but not limited to, all relevant foreign exchange regulations and/or foreign investment regulations.

Hong Kong
This document and its contents have not been reviewed by any regulatory authority in Hong Kong. No person may issue any invitation, advertisement or other document relating to the Interests whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public in Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to the Interests which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" within the meaning of the Securities and Futures Ordinance (Cap. 571) and the Securities and Futures (Professional Investor) Rules made thereunder.

Japan
This document is for informational purposes only and is not intended as an offer or a solicitation to buy or sell any specific financial products, or to provide any investment advisory / management services.

Korea
The securities may not be offered, sold and delivered directly or indirectly, or offered or sold to any person for re-offering or resale, directly or indirectly, in Korea or to any resident of Korea except pursuant to the applicable laws and regulations of Korea, including the Capital Market and Financial Investment Business Act and the Foreign Exchange Transaction Law of Korea, the presidential decrees and regulations thereunder and any other applicable laws, regulations or rules of Korea. UBS Asset Management has not been registered with the Financial Services Commission of Korea for a public offering in Korea nor has it been registered with the Financial Services Commission for distribution to non qualified investors in Korea.

Malaysia
This document is sent to you, at your request, merely for information purposes only. No invitation or offer to subscribe or purchase securities is made by UBS Asset Management as the prior approval of the Securities Commission of Malaysia or other regulatory authorities of Malaysia have not been obtained. No prospectus has or will be filed or registered with the Securities Commission of Malaysia.

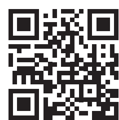
Taiwan
This document and its contents have not been reviewed by, delivered to or registered with any regulatory or other relevant authority in the Republic of China (R.O.C.). This document is for informational purposes and should not be construed as an offer or invitation to the public, direct or indirect, to buy or sell securities. This document is intended for limited distribution and only to the extent permitted under applicable laws in the Republic of China (R.O.C.). No representations are made with respect to the eligibility of any recipients of this document to acquire interests in securities under the laws of the Republic of China (R.O.C.).

Source for all data and charts (if not indicated otherwise): UBS Asset Management.

© UBS 2018. The key symbol and UBS are among the registered and unregistered trademarks of UBS. All rights reserved. August 2018 - 26788A

Follow us on WeChat and LinkedIn for more insights

WeChat



LinkedIn

Visit **www.ubs.com/chinaforesight**

For more information, contact your local UBS Asset Management representative.

UBS