



MADE IN CHINA 2025
GLOBAL RAMIFICATIONS
OF CHINA TAKING
THE CENTER STAGE

WHITE PAPER

Made In China 2025 - Global Ramifications Of China Taking The Center Stage

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“China is a sleeping giant. Let her sleep, for when she wakes she will move the world.”

Napoleon Bonaparte.

Key Takeaways

- *We are today observers of a tectonic shift of power and an ongoing re-appraisal of how traditional politics, economies, security pacts, and societal relationships are going to be disrupted. The old world order is being dismantled and a new one is being created.*
- *China is emerging as a formidable bidder for economic, political, and military influence and power. These are the underlying reasons for the realization in Washington that the old policy of constructive engagement no longer is viable. The US is now in a long-run strategic competition with China for technological and military superiority and for dominance of the global economic system.*
- *President Xi Jinping has three long-term political priorities: the “One Belt, One Road” initiative; private-public cooperation in development of military technology; and “Made in China 2025”, the industrial upgrading plan that has identified 10 prioritized industries where China wants to become globally competitive by 2025.*
- *Large parts of the “Made in China 2025” plan are to shift the value added in tech products back to China and reduce the dependency on a strategic competitor.*
- *Today, China has globally leading internet platform companies, but the further downstream you look, the weaker the Chinese position becomes. As a result, China runs a very big deficit in R&D royalties.*
- *Overall, the tech companies in China are highly profitable. High revenue growth combined with good profitability has led to a significant ability to invest in future growth through R&D. Over the last decade, China has significantly increased investments into R&D. It is already spending more on R&D at a national level than the EU and will likely out-spend the US by 2020.*
- *One area of focus is investments into Artificial Intelligence. AI is seen as an important building block for China’s economic development over the coming decades, and development is actively being supported by public sector investments and a minimum of regulation.*
- *Import substitution is another important factor in the growth of Chinese tech. However, longer-term, the growth of China tech will eventually lead to new formidable competition for incumbents across the world as China tech companies leverage their domestic stronghold in an expansion globally. There will be much more competition for the existing revenue pool and the impact will be deflationary.*

US-Chinese rivalry through the prism of Thematics

Focusing on the right question is critical in our business. Unfortunately, excessive focus on short-term performance causes managers of capital to react to events, resulting in higher and higher portfolio turnover. Investors thus become victims of the daily news flow, as this often “urgent” breaking news is utterly unimportant in hindsight. We are all susceptible to this threat of short-termism, but through thematic investment it is possible to focus the attention on what hopefully is lasting knowledge and not temporary information. Recently, we published two papers on demographics, which will help us guide investments in the years to come. The overarching conclusion from this work was that investors need to structurally and significantly increase their capital allocation to the Asian region in the years ahead.

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This paper takes us a step deeper and investigates the reasons for the heightened conflicts between China and the US experienced over recent time and the lasting investment implications.

The theme du jour is tariffs and trade war. We are not going to address tariffs/trade wars at all. Trade tensions are simply symptoms of something larger, a tectonic shift of power, and an ongoing re-appraisal of how traditional politics, economies, security pacts, and societal relationships are going to be disrupted. The old world order is being dismantled and a new is being created. These tectonic shifts and disruptions were ongoing for many years – Donald Trump’s election simply took the curtain off the prior politesse.

While some observers argue that the change in policy under the Trump administration is only negotiating tactics in order to get a better deal, we are more inclined to think that the US is finally

– but not always coherently – reacting to a much more assertive China under President Xi. It is really about China emerging as a formidable bidder for economic, political, and military influence and power over recent years. Xi has three long-term political priorities;

- 1) OBOR, the “One Belt, One Road” initiative also known as the new silk route initiative period. The Eurasian landmass is being integrated into the Chinese economy via infrastructure development in order to guarantee China’s security and establish itself as the dominant power in Asia. They then hope to gradually push the US out of the region, through the creation of economic incentives for countries to align themselves with China.
- 2) The vision for private-public corporation in development of military technology, where the aim is to replicate the success of the US military-industrial complex which, since the end of WW2, has been highly effective at creating military applications for private sector technology breakthroughs and vice versa. We already today see examples of private companies that have been developed on militarily developed technology, and in some cases very advanced technology, that is on par with western technology.
- 3) Finally, “Made in China 2025”, the industrial upgrading plan announced in 2015. More on this later in the paper.

These are important underlying reasons for the realization in Washington that the old policy of constructive engagement is no longer viable. But there is no agreement yet on a new strategy, since there are opposing views within the United States, as listed below:

1. **President Trump**, who seems focused on trade imbalances and seems to be fighting not only China but also historical partners. Eliminating the nation’s trade deficit – despite this being inconsistent with wanting to continue to have the USD as the world reserve currency – is an urgent task for President Trump, who was elected with the support of free trade “losers” in the US manufacturing rust belt. Secretary of Commerce Wilbur Ross illustrated this in April 2017, when responding to IMF criticism of US

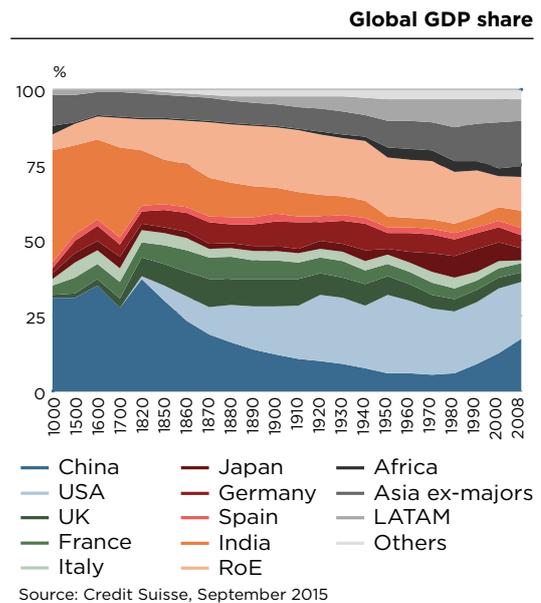
trade policy: “They talk free trade. But in fact, what they practice is protectionism. ... Our tolerance for continuing to be the deficit that eats the surpluses of the whole rest of the world – the president is not tolerant of that anymore.”

“ The US cannot tolerate a more geographically assertive China, state-subsidies, and other massive state support for a competing tech sector that eventually will lead to a Chinese military power capable of challenging the US hegemony.

2. **The trade warriors**, who are focused on using trade and investment curbs to force China to roll back its industrial policy. US Trade Rep. Robert Lighthizer said in September 2017 on China’s approach to trade: “The sheer scale of their coordinated efforts ... to subsidize, to create national champions, to force technology transfer, and to distort markets in China and throughout the world, is a threat to the world trading system that is unprecedented.”
3. **The national security hawks**, whose main concern is sustainability of military dominance over China and containment of China’s geographical expansion (the South China Sea, Taiwan...). National Security Advisor John Bolton says: “It is high time to revisit the “one China policy” and decide what America thinks it means. Mr Trump has said the policy is negotiable. Negotiation does not mean Washington gives and Beijing takes.”
4. **The business lobby**, whose overriding concern is sunk investments in China as well as future access to a booming market. Time will tell how these opposing views will be balanced, but it is accepted that the US cannot tolerate a more geographically assertive China, state-subsidies, and other massive state support for a competing tech sector that eventually will lead to a Chinese military power capable of challenging the US hegemony.

China’s re-emergence as an economic power

Figure 1



Three hundred years ago, as illustrated in figure 1 above, China and India dominated the world economy, accounting for 22% and 24% respectively of the world economy in 1720. What followed were inward looking nations, vulnerable to the industrial revolution of the West and its military superiority, especially on the seas. Now, both countries, but mainly China, want to put this aberrational 300-year period behind them, revert the humility of the Opium Wars of 1840s, lost wars with Japan and Russia, and reassert what they believe is their rightful place in the world – at the top. That is what it is about, not tariffs on steel and aluminium. The ascent of President Xi Jinping supercharged this development – no longer was China prepared to “hide your strength, bide your time” as formulated by Deng Xiao Ping decades earlier.

For China, it is only natural to reestablish the tribute system of past times: “In East Asia’s tribute system, China was the superior state, and many of its neighbouring states were vassal states, and they maintained a relationship of tributes and rewards. ... The appeal and influence of ancient China’s political, economic, and cultural advantages were such that smaller neighbouring states naturally

fell into orbit around China” (Howard French, 2017: “Everything Under the Heavens: How the Past Helps China’s Push for Global Power”, p. 244). There is obviously a strong echo from history in China’s drive to develop the “One Belt, One Road” plan for connecting its near abroad, on land and sea by a vast network of transport infrastructure.

End of Chimerica but what will replace it?

Historian Niall Ferguson and economist Moritz Schularick coined the term Chimerica, describing the symbiotic relationship between China and the US leading up to the financial crisis. Savings by the Chinese and overspending by the Americans led to an incredible period of wealth creation across the world but especially in the US and China. For years, China accumulated large currency reserves and channelled them into US government securities, which kept nominal and real long-term interest rates artificially low in the United States. Ferguson suggested 10 years ago that Chimerica could end if China were to decouple from the United States bringing with it a shift in global power and allowing China “to explore other spheres of global influence”. That is exactly what is happening today.

President Xi’s policy agenda has caused the American security and foreign policy establishment to conclude that the US is now in a long-run strategic competition with China for technological and military superiority and for dominance of the global economic system. Chimerica has ended, but what will replace it is still to be decided.

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Clearly, what we are looking at is a far more complex situation than the Cold War. The Soviet Union was an autarkic economy that had few linkages with the US, little economic influence outside its client states, and not much technology beyond its

military hardware. China, by contrast, is the world’s largest manufacturer and exporter, lies at the heart of global high-technology production chains, and is entangled to an extraordinary degree with the US economy by virtue of the 70,000 American companies that have invested USD 256 billion there (Arthur Kroger, Gavekal, May 8, 2018). Even if the US and China manage to avoid sliding into an economic cold war, it will be a tough task for both nations to strike a balance between promoting commercial opportunity and protecting national security.

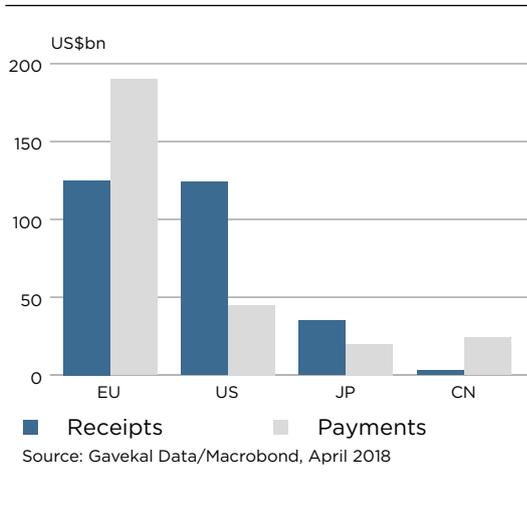
Made in China 2025

The Made in China 2025 strategy was launched by Premier Li Keqiang in 2015 and is focused on China’s industrial modernization, through initially import substitution replacing foreign technologies with home-grown alternatives, and longer-term global dominance. The program identified 10 prioritized industries where China wants to become globally competitive by 2025. These include aerospace, information and communication technology, robotics, ocean engineering equipment, agricultural machinery, railway equipment, power equipment, new materials, new energy vehicles, and medical devices. Contentiously the plan sets specific targets, generally in the range of 50-80% domestic market share controlled by domestic companies by 2025. There is also an overall objective of 70% domestic self-reliance in “basic core components and important basic materials”. The industries will be supported by more than USD 300 billion in government investment, of which 130 billion has been earmarked for the semiconductor industry. Semiconductors are central to the Made in China 2025 import substitution plan, because in recent years, China has spent more on importing microchips than on crude oil.

Today, China has globally leading downstream internet platforms like Tencent, Alibaba, and Baidu. The further upstream you go, however the more dependent the Chinese companies are on foreign technology. It is said that 70% of tech products produced in China are made by foreign companies with foreign IP. The iPhone is a case in point; the phone is exported from China, but only 10% of the value added is made in China. The processor is made in Taiwan, and memory and screens are made in Korea, for example.

Chinese companies are making progress in many sectors, but China is still far away from the leading edge in technology. One way to measure this is to look at international Intellectual Property License Revenues, below in figure 2.

Figure 2
International IPR licensing charges, receipts and payments, 2016 (US\$bn)



The US tech industry runs a big royalty surplus each year, earning USD 125 billion and paying out USD 44 billion in 2016. China, on the other hand, earned just USD 1.2 billion by while paid out 24 billion. Large parts of the 2025 plan are to shift the value added in tech products back to China and reduce dependency of a strategic competitors.

There are three strings to this strategy. First, money is not an issue. As mentioned earlier, more than USD 300 billion has so far been set aside for public support, and state banks and SOE's will do whatever national service that would be required to deliver on the strategy.

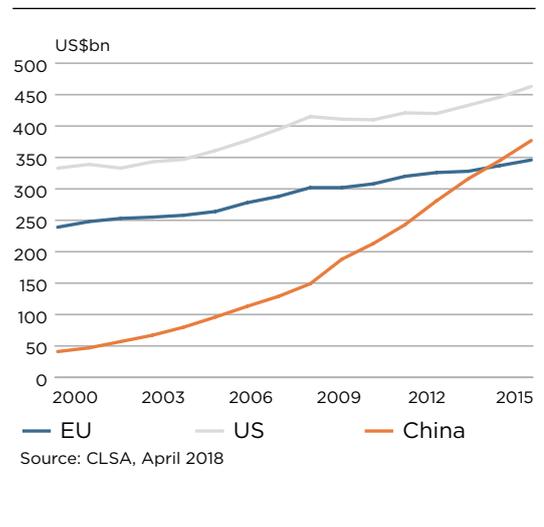
Second, China has to acquire the technology or develop it on its own. Last years "Section 301 report" from the US Trade Representative describes in details the US view of how China has obtained technology historically through compulsory license agreements from foreign companies wanting access to China, JV requirements, strategic acquisitions abroad (while not allowing foreign companies same rights in China), and cyber intrusions (stealing).

Third, as the tolerance of Chinese industrial policy behavior diminishes, and the window for accessing foreign technology diminishes, domestic upgrading of the knowledge base becomes vital. China has been beefing up its own education system, recruiting foreign talent from Japan, Europe, and USA, and growing the number of US educated Chinese moving home period. As a result, China is seeing strong growth in highly educated people.

The rivalry on knowledge and education

Figure 3 below shows that China is already spending more on R&D at a national level than the EU. At its current pace, China will out-spend the US by 2020.

Figure 3
R&D spending



China's appx. 12% annual increase in R&D expenditure annually over recent years is supported by a vast education network. China graduates twice as many science and technology undergraduates than the US or the Europe Top 8. According to Industrial Research Institute (IRI) annual R&D report 2017, 'China graduates more new engineers annually than currently reside in the US.'

Looking at doctorates, in figure 4, China graduates almost as many PhD's as the US.

Figure 4

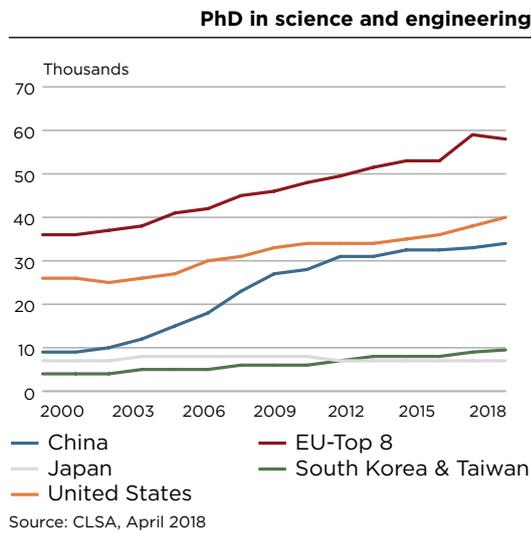
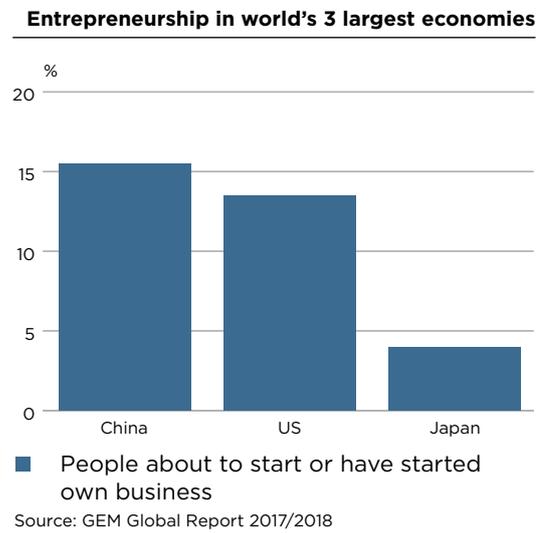


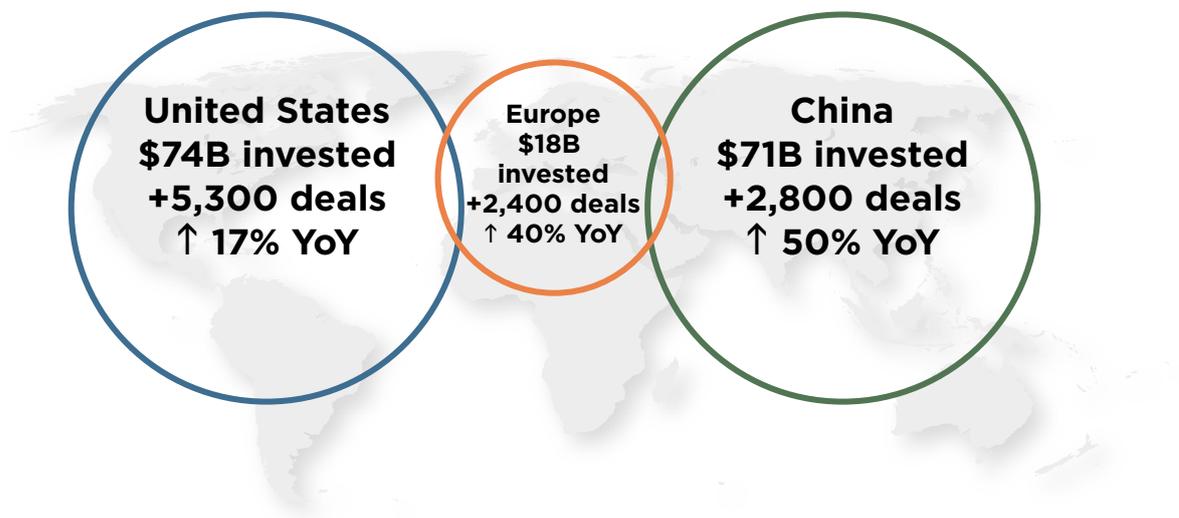
Figure 6



On top of this, entrepreneurship is booming in China to levels that supersede the US. Many of these highly educated people want to build their own businesses, see figure 6.

Figure 5

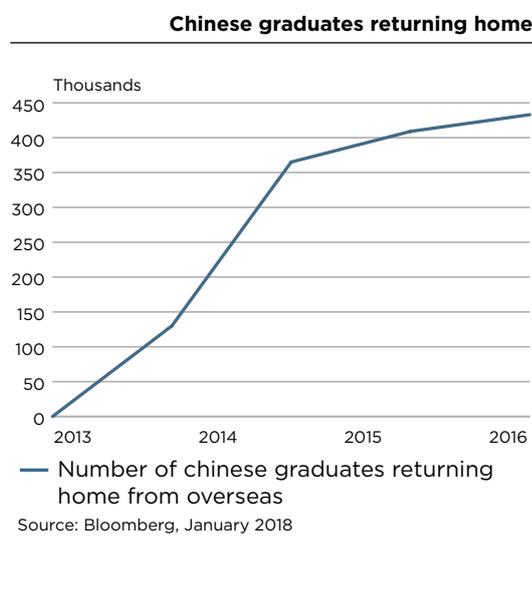
2017 Investing: China catches up to the U.S. in VC funding



Source: PWC | CB Insights Money Three Report Q4 2017

As illustrated in figure 5, they find ample financing opportunities, as the Chinese venture capital industry is booming and today is approaching the size of the US. Thus, and as shown in figure 7, there has been a dramatic increase in the number of educated Chinese, who are returning home from abroad, motivated by better employment opportunities at home.

Figure 7



In response to this, the US State Department recently tightened the Visa requirements for Chinese students in the US, as Chinese students in fields like robotics, aviation, and high-tech manufacturing will only be allowed to study in the US for one year. These areas are amongst the areas focused on in the Made in China 2025 manufacturing plan, and the State Department initiative gives insight into assessing the motives behind the rapidly escalating conflict between China and the US. China is changing fast and is increasingly threatening the strongholds of the US manufacturing base in technology.

China will become the global technology R&D leader

To us, it is obvious that China is making huge strides in science and technology, renewables, defense/military, artificial intelligence,

big data analysis, electric vehicles, super-computers, payment systems, cyber-security, and biotech.

The underlying driver of the Chinese economy is no longer cheap factory labor, but increasingly a booming tech (as well as a service) sector, driven by rapidly rising R&D expenditure and cheaper engineers relative to Japan, Korea, USA, and Europe.

Cheap labor mobilization is over as the unqualified labor pool is shrinking, mandated minimum wages are rising rapidly, and as a result of the lowest-value-add industries are moving out of China; instead, the service industry and high-tech manufacturing are taking over the growth baton.

It is clear that while China is willing to negotiate on tariff levels or even the intellectual property issue, it is not willing to negotiate at all on its security issues nor its ability to upgrade its economy, as the leadership sees this as the route to take for China in order to avoid getting caught in the middle-income trap, where economic development flattens out. If the US increases pressure on China going forward, as the ZTE issue last quarter showed, it will only serve to make Beijing even more focused on upgrading key industrial sectors and becoming less reliant on US technology.

Longer-term it is to be expected that tensions will increase because neither the US or China will give in.

Fight for AI supremacy

In 2017, the Chinese government named 4 national champions in artificial intelligence as partners in an ambitious strategy to accelerate the country towards global technology leadership in AI. China's Ministry of Science and Technology named the internet giants Baidu, Alibaba, and Tencent – collectively known as BAT – and voice intelligence specialist iFlyTek as the first group to spur development of next generation “open innovation” AI technology platforms.

China has several advantages in AI compared to other countries, including the US. First, it has a large amount of data, not only in mobile users, but also the amount of mobile payments, the amount of transactions and the amount of data that are being

captured. The fact that Chinese consumers seem more willing to trade-off some degree of privacy for convenience than Western consumers makes the data acquisition even easier. And on top of that, it is a bigger market.

Second, the Chinese entrepreneurial system is an advantage for China. AI companies are moving very quickly into new spaces, and VC funding is available.

” China is moving at a faster trajectory and looks to be in a position to rival the US some years down the road.

A third big factor is the government support. Today, China has around 70 cities with active AI industrial policies and subsidies to AI companies moving there, they have venture capitalists investing in AI, and they have smart people moving to these cities, including overseas-returning experts. Another aspect is that the Chinese government has always been open to trying technology on the run and adjusting along the way in case of unforeseen issues, as opposed to the Western countries, which tend to want to debate and resolve issues that may relate to privacy, security, bias, and explainable AI.

AI has multiple types of applications. In internet AI, the US has a leadership position with Alphabet, Amazon etc., but the Chinese companies with more data are catching up. With business AI, using data at banks, insurance companies, hospitals and so on, Chinese companies may be moving forward due to accessibility of data, such as in healthcare. But like in most countries up until today, the data in China is not yet fully digitized, structured, or warehoused. Tencent is via WeChat building a big vertical in healthcare, connecting patients, doctors, pharmacies, and is an example of a Chinese company taking an early lead.

Then there is voice and vision AI, which involves using cameras and sensors everywhere to capture faces, motion, people, and objects to derive value. Examples include, recognizing returning customers at a shop or counting attendance at a school.

These are things that affect privacy. Most countries will tend to be cautious about widely adopting it, but Chinese citizens would tend to be more willing to trade some privacy in return for convenience, and certainly for security. China is a clear global leader in this space. Last, there is autonomous AI, which is AI that moves: Industrial robots, commercial robots, home robots, and autonomous vehicles. This is a particularly impactful area, because it is a huge productivity booster and cost reducer for all of society. The US clearly leads in the underlying chip technology. Chinese policies, however, are accelerating the launch adoption of things like autonomous trucks and will not be slowed down by a trucker-union appeal or lobby. And with AI, the faster you launch, the faster you collect data, and the faster you use the data to improve your algorithm and the more you will catch up. It is a game where the US clearly leads China, but China is moving at a faster trajectory and looks to be in a position to rival the US some years down the road.

China clearly sees AI as a vital ingredient in its push from being a “moderately prosperous society” by 2020 to becoming “a great modern socialist country” by the time of the 100th anniversary of the founding of the People’s Republic of China in 2049, as formulated by President Xi Jinping at the 19th National Congress of the CPC in 2017.

Potential investment implications

Recently, CLSA published a report that documents the rise of Chinese tech companies from a bottom-up perspective. At the aggregate level, China’s commercial tech output was insignificant 10 years ago, accounting for only 3% of global tech revenue. In 2017, this had risen to 11% on the back of a 20% revenue CAGR. Net income had outgrown revenue growth with a growth rate of 23% over the same period. Over the same period, R&D had grown from 1.6% of revenue to 8.4%, almost on par with US companies at 9.1% and higher than Korea (7.3%) and Japan (5.5%). Surprisingly to most distant observers of Chinese business, the tech companies in China are generally highly profitable with average ROE of 21% and return on invested capital of 28%. High revenue growth combined with good profitability has led to a significant ability to invest in future growth through R&D, something which should be expected to continue in the future, now also explicitly supported by government policy.

Many companies in China are leaders in their home market, China, and have started to export, living up to the political desire of the Chinese state. One example could be Huawei (private company), the global leader in telecom equipment with a 27% market share. Incumbents Nokia and Ericsson have seen big market share losses over recent years, falling from combined 40% market share in 2013 to 30% in 2017. Add in another Chinese equipment supplier, ZTE, and China now dominates the global telecom equipment market with a market share of 37% in 2017. As an example of this rapid gain of market share, in a sub segment, Huawei saw 92% revenue growth in Ethernet switch revenue in 2017, to be compared with the market leader Cisco's 5% revenue loss the same year.

Another less well-known company that is seeing significant progress and is starting to compete, first via import substitution and increasingly in export markets with global leaders like 3M, Eastman, and Saint-Gobain, is Kangde Xin, China's largest laminating and optical film supplier. Kangde Xin has delivered 39% revenue growth and 42% net income growth 2012-17, and invested significantly in R&D, so much that the company was ranked number 47 in the world's most innovative companies by Forbes in 2017.

We are today seeing examples of private companies that have been developed on militarily developed technology, and in some cases very advanced technology, that have been able to take significant market share. One such example is Hikvision, the absolute market leader in video surveillance. The largest competitor to Hikvision is another Chinese company, Dahua. Both companies have seen 40% plus revenue growth 2012-17 and net income growth of 30-35% over the same period. As other parts of the world follow China in the years ahead with deployment of artificial intelligence applied to video surveillance in general, the Chinese companies have scale advantages to begin with as a result of their early start in China and look well positioned to also gain significant market positions globally.

” High revenue growth combined with good profitability has led to a significant ability to invest in future growth through R&D.

Conclusion

The rise of commercial output of China's knowledge-intensive and high-tech industries leads to a couple investment conclusions. Global investors need to allocate more resources to analyzing Chinese equities that until very recently were not investable for Western investors. The gradual reduction of restrictions for foreign investors trading of A-listed Chinese stocks will eventually give access to more than 3,300 Chinese stocks compared to the current number of listed H-shares of 300 and 200 ADR's that are investable for Western investors. In order to get access to the growth of the Chinese economy in general and more specifically to the growth of the more advanced tech segments in the economy, investors should generally consider investing in Chinese companies, because they will dominate the domestic market. But perhaps more importantly longer-term, the growth of China tech will eventually lead to new formidable competition for incumbents across the world as China tech companies leverage their domestic stronghold in an expansion globally. Time will tell who the ultimate winners will be, but this much is clear; there will be much more competition for the existing revenue pool and the impact will be deflationary.

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