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From Shells to Smartphones

How China's money is evolving

- Will China control the next generation of wireless internet?
- Who is cleaning up from China's anti-pollution drive?
- Why is China worried about the finances of its growing middle class?

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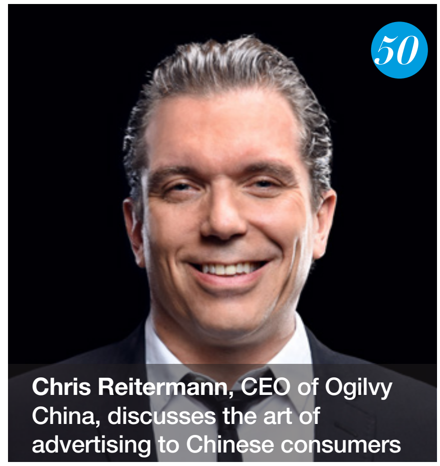

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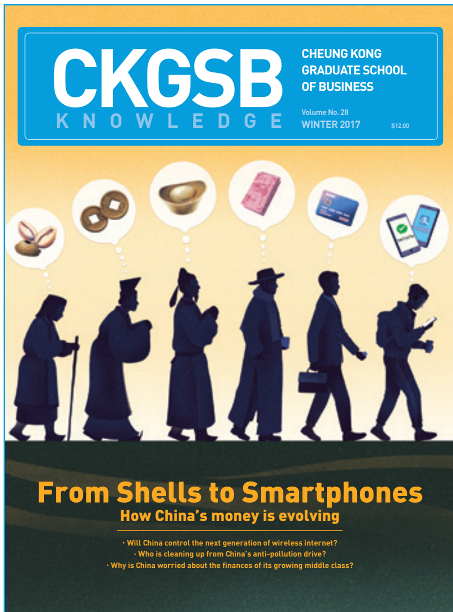
Tech Trends and Policy Pivots

Firstly, a happy and prosperous New Year to all our readers. The next 12 months promise to bring significant change to both the Chinese and global economies as powerful new technologies and policy trends disrupt decades-old norms. Our first issue of 2018 shines a light on many of these changes, and attempts to identify where they are leading us.

We begin with an unseen revolution taking place in the world of finance, where artificial intelligence threatens to make the business models of the industry's biggest players obsolete. CKGSB Professor Li Haitao analyzes the implications of this in "AI and Finance: Have We Reached the Tipping Point?" (page 6).



Our cover story focuses on another tech-driven challenge to China's big banks, which is coming from a new generation of innovative Chinese financial technology—fintech—companies, many of which lead the world in their categories. Does the future of Chinese finance belong to these fintech upstarts? Find out in "The Fintech Uprising" (page 31).

The other technology-focused story in this issue—"The Race for 5G" (page 36)—examines a very different do-or-die struggle: the global tussle for control of the next generation of wireless internet.

Of course, many of the biggest changes taking place in China today are being driven by shifts in policy rather than technology, and we have a trio of stories examining major policy-driven trends. The first looks at an issue that has generated a lot of headlines recently: the Chinese government's move to encourage many of the country's 280 million migrant workers to leave wealthy coastal areas, especially big cities like Beijing. "Home Sweet Home?" (page 9) weighs up the pros and cons of this policy.

"Cleaning Up" (page 15), meanwhile, outlines the huge opportunities being opened up by China's increasing emphasis on "high-quality development," which prioritizes environmental protection and sustainability over breakneck economic growth. "From Rust to Gold" (page 23) asks how China can fix the severe economic problems plaguing the Rust Belt provinces in the Northeast.

In "Out of Reach" (page 41), we zoom in on an issue that is the source of much debate in China-watching circles: whether China's middle class is taking on too much debt. Then we raise a glass in "Champion Spirit" (page 59) to Kweichow Moutai, the legendary Chinese liquor company that recently became the most valuable distiller in the world. Finally, "Serious Child's Play" (page 63) explains how China's fast-growing toy market is really all about education.

We also have some fascinating interviews with leading figures from the China business world in this issue. Shaun Rein, Managing Director of the China Market Research Group, discusses the problems facing foreign brands in China (page 54). Ioana Kraft, General Manager of the European Union Chamber of Commerce in Shanghai, says that many overseas businesses are finding that operating in China is tougher every year (page 28). Chris Reitermann, China CEO of global advertiser Ogilvy, shares his insights into how to sell your product in China (page 50), while Brian Viard, Associate Professor at CKGSB, outlines why pollution damages our economy as well as our health (page 20).

In other words, there is plenty in this issue to think about and to discuss. As usual, if you have any comments or opinions to contribute, we would love to hear from you (*lzhou@ckgsb.edu.cn* or *ckgsb.knowledge@ckgsb.edu.cn*).

Yours Sincerely,

Zhou Li
Assistant Dean, CKGSB
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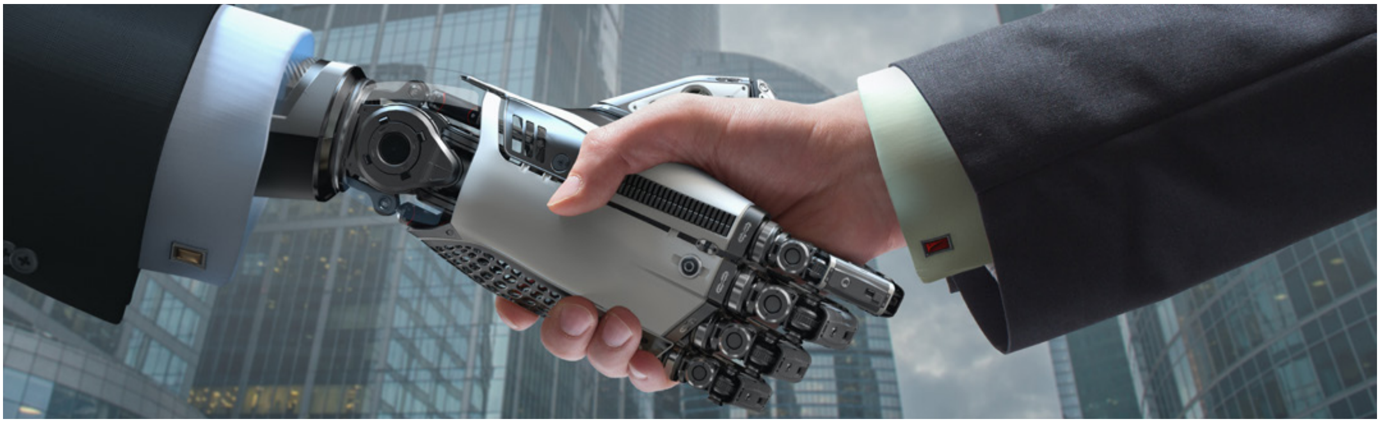
For more insights on the Chinese economy and business, please visit the CKGSB Knowledge *site: http://knowledge.ckgsb.edu.cn/*

AI and Finance: Have We Reached the Tipping Point?

Artificial Intelligence is revolutionizing the financial sector

By Li Haitao, Professor of Finance and Director of the Cheung Kong Global Investment Center at CKGSB



In the eyes of financial technology industry insiders, if you are not talking about "AI + Finance," then you are behind the times. Even worse, you risk being left behind, just as stubborn holdouts in another era were stranded when they failed to accept the internet.

AI (artificial intelligence) is not a new thing: it was first proposed as a field of research at a workshop at Dartmouth College in the United States in 1956. But the continuous evolution of algorithms, the maturation of hardware and the growing terabytes, petabytes and exabytes of data give AI hugely greater power today, especially as it relates to finance.

Traditionally, finance has two core functions: to lower transaction costs and to improve asset pricing. The widespread use of the internet has undermined the first by enabling more direct transactions, and AI is now disrupting the second by improving the speed and accuracy of asset pricing. Threatened by this are bank credit services, asset allocation by asset management firms, advisory services from investment and securities companies and the actuarial pricing services of insurance companies.

In the past, such financial institutions were protected by strong consumer "stickiness," heavier capital investments and their first-mover advantage on data, and these factors still provide a bulwark against dramatic disruption. But significant change is coming and the threat to those who fail to adapt may come more from internet giants than from the emerging fintech (financial technology) players.

Changes Already Underway

Many financial institutions are building offerings around smart AI-based customer services. For example, Nordea Bank in Northern Europe has launched an AI-powered chatbot and virtual assistant called Nova that serves the bank's network in Norway and other markets. Nova answers questions relating to the bank's pensions and insurance business, and if it encounters a question it does not understand, it redirects the query to a human staff member.

In addition, some traditional financial institutions are now collecting customer information with AI technology. The authentication of customer identity information is an important part of risk control for financial institutions, and AI technology can enhance the efficiency of this process. For example, Ping An Insurance, the world's largest insurance company by some measures, has developed live facial recognition technology that processes up to 30,000 faces per minute with an accuracy of 99.8%.

Such developments threaten the jobs of many employees at traditional banks. Nova and similar AI assistants are beginning to replace customer service staff throughout Europe and the United States, and job losses will increase as AI makes itself felt in other functions.

In the traditional loan approval process, a loan officer must collect the relevant information and then make a judgment call on whether to issue a loan. With AI technology, a far wider range of data is used for credit assessment. For example, traditional credit risk control models use only 20 to 30 variables, but data-based credit risk control models integrate more than 10,000 variables. Moreover, algorithmic methods such as "deep learning" can automatically identify specific variables relevant to credit performance that may be overlooked by traditional assessment frameworks. And AI is also playing an increasing role in fraud detection.

Yet, while AI technology is helping traditional financial institutions reduce staff numbers, save costs and improve efficiency, these gains only represent a small part of the subversive potential of AI in finance. The truly revolutionary aspect of the technology lies in how it will impact the two core functions of the financial industry: reducing transaction costs and asset pricing.

Real Subversion

The impact of AI on the second of the two functions will be significant: The entire financial industry should be on guard against the subversion of asset pricing. The pressure AI is exerting on the financial sector in this regard is greater than that of the internet on transaction costs.

The reason is that, for most financial institutions, effective asset pricing is more important to the business than reductions in transaction costs. For commercial banks, lending is the main source of profit, not the handling of payments. For insurance companies, the core business is the design and pricing of insurance products, which means that actuaries are the heart of the industry, not sales agents. For asset managers as well, success is primarily determined by the performance of investments and asset allocation. A good sales team is usually just a bonus.

Other aspects of the finance industry that have always been dependent on people are also threatened by AI, such as the investment advisory services offered by securities companies. Analysts are traditionally the soul of an investment advisory business. Based on their study of macroeconomic data and the financial data of listed companies, they produce research reports to provide customers with buy and sell stock recommendations. In the past, the analyst's experience and judgment were important in determining their success and reputation, but AI is challenging this.

> The next target for AI subversion may be insurance

Algorithmic models working at high speed now produce fast assessments from the very latest economic variables and financial indicators. It is also possible to quickly find the point in history most similar to the current situation, and then produce a forecast based on past asset performance. Some platforms in the US, such as Automated Insights and Captricity, use AI to automatically generate analytics reports based on announcements from public companies, press coverage and even the latest news on social media (for example, President Trump's tweets).

One of Wall Street's best-known pioneers is Kensho, a data analytics company that deploys scalable machine learning and analytics systems to solve complex problems. For instance, Kensho can tell you, using historical data on the movements of the S&P and Dow Jones during Federal Reserve rate hikes, which industries will perform better or worse on the stock market when hikes occur. In the past, such predictions required long hours of hard labor by expensive analysts.

From the point of view of complexity and degree of specialization, the next target for AI subversion may be insurance. The mainstays of this industry, the actuaries who design and price insurance products, used to price insurance products mainly by dealing with probabilities such as survival, mortality, morbidity and so on.

Due to the complexity of the calculations, the actuarial business has not yet felt much of a technology shock, but the situation is changing because a core strength of AI lies in its ability to predict probabilities. With the massive amounts of data now available, it is likely that AI will soon change the business model of the actuarial industry by enabling more dynamic and accurate predictions of mortality and morbidity.

Don't Panic

Although traditional financial institutions are feeling the impact of AI, there are three reasons for them not to panic.

First, consumer habits in the financial sector are "stickier" than in most other industries. After all, when it comes to big financial decisions, people are still more likely to trust someone they can talk to in person. For example, although the smart investment consulting industry can absorb many long-tail customers with small amounts of money, high-end private bank clients still demand the personal service of an account manager.

Second, AI requires heavy capital investment, and the strong capital position of financial institutions makes it possible for them to spend generously on IT. In the United States, JPMorgan Chase's annual IT budget is $9.5 billion, Bank of America's is $9 billion and Wells Fargo's is $7 billion. Ping An's annual R&D investment is more than RMB 7 billion ($1.1 billion). Emerging financial technology players cannot match this. At the end of the third quarter of 2016, the total invested by the US in AI startups was only $3.1 billion.

Third, the financial industry's advantage as a first mover in data is even more obvious. Data is the foundation of AI and deep learning, and the need for confidentiality with financial data is high, and so the financial industry's advantage is clear over any new challengers.

If the financial world's big beasts make the most of these advantages, it could be the case that the brave new world of AI finance looks similar to the old one.

Home Sweet Home?

Millions of migrant workers are leaving China's coastal cities

By Dominic Morgan

Image by Lisa Ye

Economic changes and government policies are driving millions of China's migrant workers away from the wealthy coastal regions. What impact will the exodus have?

In late November, shocking images from the outskirts of Beijing spread like wildfire across China's social media, showing streets strewn with rubble, shivering people hunched over in the freezing cold, piles of hastily-packed bags lying among the detritus.

The chaos was caused by a "clean-up" campaign launched by the Beijing government following a fire the previous week in a workers' dormitory, which killed at least 19 people. Officials said the mass evictions were necessary to root out unsafe and illegal housing.

Whatever the intentions of the campaign, the incident served as a stark reminder of the increasingly uncertain future facing China's 280 million migrant workers in a rapidly-changing world.

For the past 30 years, China's economic miracle has been largely fueled by the movement of people into the coastal cities. But in the past couple of years, this trend has begun to reverse itself. The migrant workforce in China's coastal provinces shrank by 0.3% in 2016, while the number of migrants working in the less developed western provinces rose 5.3%, according to a National Bureau of Statistics survey.

"A lot of people are returning to their homes, especially from Beijing," says Xu Bing, a business owner from Chashui, a village in Anhui Province. "A lot of factories are… closing and there's nowhere else to go, so they come back."

Like the earlier outward-bound flood from west to east, this new wave of migration is being driven largely by the government. People are being encouraged to go "home" using a range of policy carrots and, as events in Beijing indicated, a few sticks. The question is what impact this trend will have on those heading west and on the Chinese economy.

End of an Era

The trend toward westward migration is a clear sign that a fundamental change to China's economy is in progress, as a growth model that lifted more than half a billion people out of poverty starts to slow.

From the early 1990s onwards, China's double-digit GDP growth was fueled largely by the cheap labor provided by people leaving their farms in China's poorer inland provinces to find work in the factories springing up along the coast.

"The general estimate is 20% of economic growth in China was directly accredited to taking people out of the countryside and putting them in cities," says Bradley Gardner, author of *China's Great Migration*, adding that the 20% figure is a conservative estimate because it does not account for the indirect benefits of migration such as the creation of industrial clusters in cities like Dongguan and Shenzhen.

But the "made in China" model of rapid growth based on cheap, labor-intensive manufacturing already appears to be on the wane. In 2008, 37.2% of Chinese migrant workers worked in factories. By 2016, the figure had dropped to 30.5%, as services overtook manufacturing as the biggest employer of migrant labor.

> **A lot of people are returning to their homes, especially from Beijing**
>
> Xu Bing
> Business owner
> Chashui, Anhui Province

The decline in manufacturing jobs is being driven by several factors, including rising wages. The average salary of a Chinese factory worker rose 64% between 2011 and 2016 to reach $3.60 per hour, according to market researchers Euromonitor. This is making life tough for factories in low-margin industries.

Xu Bing has noticed a rise in the number of people being laid off from factories. "More are coming back from jobs in export-oriented factories, clothing and products like that," he says. "Costs are now too high for the factories so they're closing. A lot of privately-owned companies have just closed down."

Manufacturers are also being affected by China's crackdown on pollution, which has ramped up significantly since 2014. "A lot of factories are being closed due to the environmental regulations," notes Xu.

China's government is accelerating this trend by encouraging manufacturers to automate production. "[Automation] is not just a corporate behavior; in China, it is definitely a Chinese government decision as well," says Jenny Chan, Assistant Professor at Hong Kong Polytechnic University.

Many local governments are providing subsidies to factories to help them purchase industrial robots, raising the prospect of massive layoffs. In Zhejiang Province, robots replaced more than 2 million workers between 2013 and 2015, Chan points out.

Logistical Problems

The services sector has so far done a good job of creating new jobs to offset the layoffs in manufacturing, and China's official unemployment rate actually dropped to 4.0% in 2016, according to the NBS (although these figures do not include migrant workers).

Migrants can find new jobs in a different industry without having to move back to their hometowns, and many have done just that. When Chan spent time investigating working conditions for migrants in Beijing, she found many people had moved directly from factories to working as drivers for logistics and e-commerce companies such as Yinda, SF Express and JD.com, delivering everything from packages to pizzas. "Some of them, to my surprise, actually had been working for Foxconn in Taiyuan," she recalls.

Tens of millions of people are now working in China's delivery industry, attracted by the potentially higher salaries on offer. Chan says some workers she met earned more than RMB 8,000 ($1,200) per month, more than double what most would earn in a factory.

But the work is exhausting and more precarious than factory work since delivery workers are typically classified as independent contractors, meaning that they have no entitlement to benefits such as sick pay or insurance and can be fired at a moment's notice.

What's more, the living conditions of delivery workers usually compare badly with those of factory workers. "It's often even worse than what I saw as an undercover researcher at Foxconn," says Chan. "Foxconn is bad, but it's still an 18-storey, highly modern dormitory. But at the Yinda workplace, it's really just a makeshift place." The November fire provided a sobering example of the dangers posed by ramshackle living spaces.

Go West

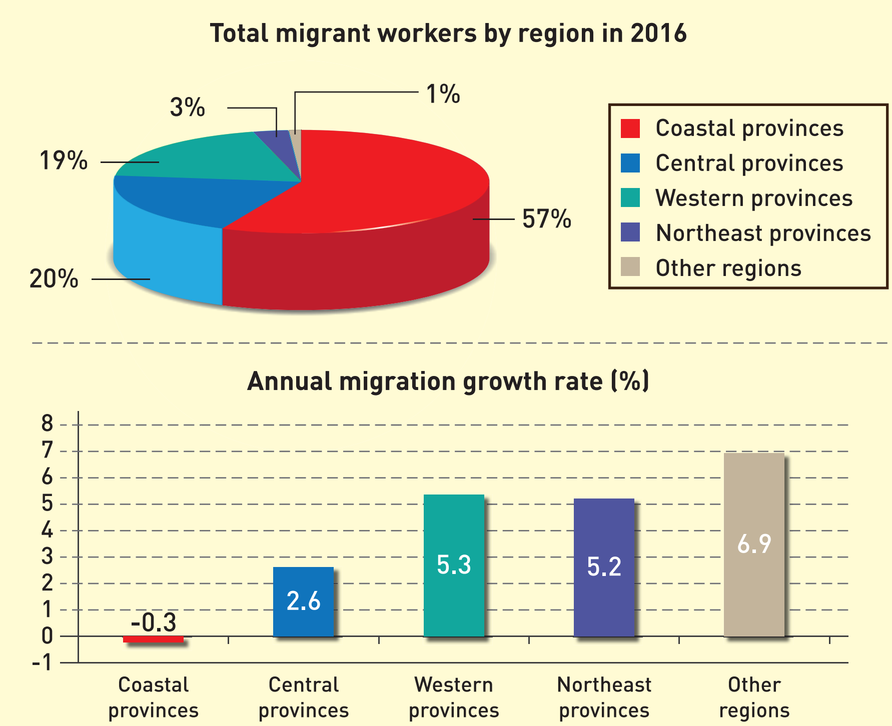
It is not only delivery drivers finding life tough in China's big cities. Rising living costs and other pressures are leading more people to consider trying their luck elsewhere. Yuan Jiasheng, a teacher who moved to Shanghai from nearby Jiangsu province, said she had considered moving back to her hometown. "There are more problems in big cities," she says. "A good job in a small city is better than a common job in a big city."

Chan echoes this comment. "The push factors [are also important]. It has become overcrowded and unfriendly and polluted in the cities," she says.

In the past, the higher salaries on offer on the coast outweighed any concerns about these issues for most migrants. But Chan has observed that for an increasing number of people, earning the highest

Heading West

China's coastal regions are no longer a magnet for migrant workers



Source: National Bureau of Statistics

A delivery worker speeds across central Shanghai

wage possible is no longer the only priority. Instead, they are focusing on access to public services like health care, pensions and social security.

"That really tells you that they are hoping to get a secure life in the long run," says Chan. "In the past they didn't care so much about social insurance, they would love to get more wages instead of looking into the long term."

For migrant workers, attaining this long-term security largely depends on becoming an official resident in their new city under China's *hukou,* or household registration system.

Those who live in a city but do not have *hukou* face a number of challenges in accessing public services as Guan Hao, a sales manager from Shanxi Province who lives in Shanghai, has found. He is relatively fortunate as his company provides him with social insurance, but his lack of *hukou* makes it almost impossible to own a car, buy a house or, in the future, send his children to public school. Those on lower incomes are affected even more severely.

Many migrants moved to the coasts in the expectation that the *hukou* system would eventually be abolished, but this has not happened and there is no sign it will. In fact, in Beijing and Shanghai the restrictions have got tighter still as the cities try to cap their populations at 23 million and 25 million, respectively. Even for graduates like Guan, attaining a *hukou* in Shanghai seems an impossible dream. "It's like a joke. People want the *hukou,* so they go to the Shanghai government to apply, and the government says, 'OK, but you have to wait 15 years,'" he says.

Instead, the government is encouraging people to move inland to spur economic development in the lower-income regions and ease the pressure on the big cities' overstretched infrastructure. One of the ways it is doing this is by offering migrants *hukou* status in these smaller cities. "The *hukou* system in those small- and medium-sized cities is almost freed, fully reformed, to accept more people in the urban area," says Lu Ming, Professor at Shanghai Jiao Tong University.

The government is also investing billions in these regions in a bid to attract migrants and stimulate growth. Massive subsidies have helped turn unfashionable Guiyang in southwest China into a big data hub, with Apple, Qualcomm, Microsoft and Tencent all setting up facilities there, while Foxconn was lured to build its "iPhone City" hub in Zhengzhou in central Henan Province. "Investment is rising very fast in those inland regions," says Lu.

For increasing numbers of migrant workers, the choice appears quite simple, Lu explains. "On the one hand, in the coastal areas where they receive more migrants, relatively speaking they are discriminating against migration even more than before. At the same time, in your hometown nearby, you can find better jobs [than before]. Why not stay?"

Rebalancing Challenges

Many migrant workers appear to be making the same calculation. In 2016, 88% of the rise in migration came from people moving to a city within their home province, rather than to another province, according to the NBS. Chan expects that unless there is a change in policy, this trend will continue. "I still see the trend of migrating out of the hometown or villages [continuing], but it might be closer to home," she says.

The return of large numbers of people has been beneficial for many parts of the Chinese hinterland. "In the rural areas, the economy seems pretty good," observes Anhui business owner Xu. "With labor coming back to the rural areas, it definitely has a positive impact on local development. In the past, when they came back once a year bringing a bit of money with them, that was no use."

"In places like Zhengzhou… it's worked out very well," agrees Gardner. "Migrant workers have flooded into these areas because the price of housing is really low… and they're closer to their families."

The influx of people has also helped alleviate a potentially alarming property glut in many inland cities. "Part of the reason why they've had this investment … was that there was fantastic overbuilding of housing in those areas," Gardner explains.

> **Sometimes the government invests a lot of money, and seizes a lot of land, and migrants never show up**
>
> Bradley Gardner
> Author of *China's Great Migration*

But the government's rebalancing strategy also has fundamental problems, not least that it essentially runs counter to market logic. "They're trying to redirect migrant workers away from places where they can make more money to places where they can make less money," says Gardner.

In some cases, the western development projects pay off, but there are also costly mistakes. "Sometimes the government invests a lot of money, and seizes a lot of land, and migrants never show up," Gardner told *The Diplomat* in a July interview.

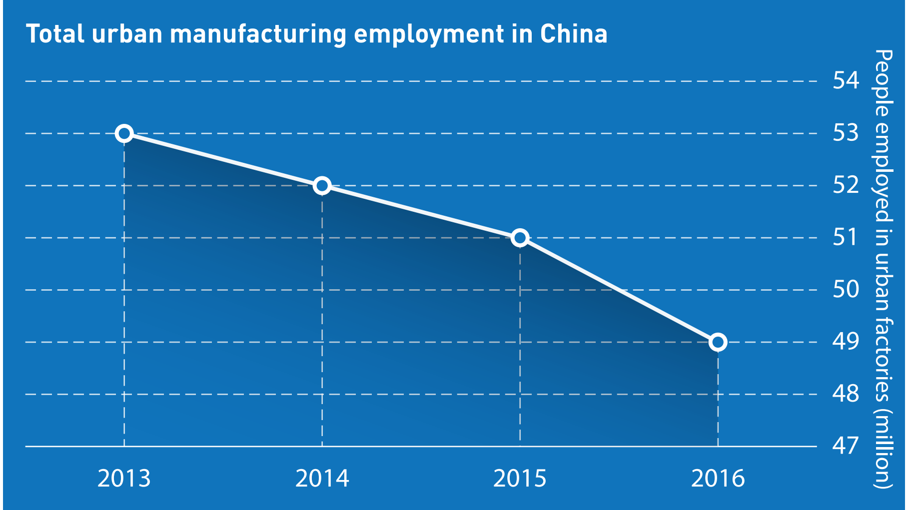
What's more, the policy methods the government is using to cajole migrants and investors to move inland have had significant side effects. One example is the huge rises in land and property prices in the big cities, which has in large part been caused by the government's decision to restrict land supply in an effort to reduce migration. "In China, we restrict land supply and accordingly we also restrict housing supply as a policy to restrict population growth. This is distortion," argues Lu.

This has not only made life tough for people in the cities, particularly migrants forced to live in appalling conditions; it has also accelerated the decline of the manufacturing sector, as rising land prices increase costs for factories. "Those policies have raised the costs in the coastal areas too early, too fast," Lu adds.

The *hukou* restrictions have also had a terrible impact on the well-being of migrants' children. Those who move with their families to the city often have their education disrupted, while many of the estimated 60 million children who are left behind by their parents in the countryside suffer lasting emotional trauma. According to one study by Guangzhou University, nearly 80% of young migrant workers with criminal records were once left-behind children. "In the short term, it's a social prob-

Falling Factory Jobs

Manufacturing employment continues to decline in China



Source: National Bureau of Statistics

lem. But in the long run, it's an economic and even a political issue," predicts Lu.

Reversing the Flow

For many analysts, the problem with China's economy is not that its major cities are too big; it's that they are not big enough. "If you compare the urbanization ratio with other countries at the same development level… China's urbanization ratio is at least 10% lower at this point," says Lu.

Trying to restrict the growth of the country's top cities is counterproductive as a policy for reducing poverty in the long run, Lu argues, because big cities generate more wealth, create more jobs and raise income levels faster than smaller cities. At the moment, "people and economic activities are not located in the places where they can have higher returns," he says.

Gardner seconds this point. "[The rebalancing] might take some burden off Shanghai's infrastructure," he says. "But in terms of the overall amount of economic growth that we're going to be seeing, it's not great."

The current strains on infrastructure and public services in Beijing and Shanghai are mainly due to poor planning, according to Lu. "The current supply… is actually based on a prediction of population [made] in the late-1990s," he states, adding that Shanghai expected to have 18 million people in 2020, but already has more than 24 million.

The obvious solution to these issues is for the government to allow the big cities to grow. In the aftermath of the "clean-up" campaign, this seems further away than ever. But there are tentative signs that a change may be coming.

"The issue is whether Shanghai and Beijing should also open their *hukou* systems and whether [their] land supply should also be increased," says Lu. "What I can see is, they're actually doing so, but they're not saying so."

Lu believes a number of recent moves by the government indicate that it is becoming more open to a market-led migration policy. Beijing recently announced dramatic rises in the amount of land being made available for affordable housing, and more officials are saying that "land supply should be consistent with migration direction, not against it." Meanwhile, the appointment of Xi Jinping ally Li Qiang as party chief of Shanghai could be a sign that the central government is ready to push forward the creation of a megacity encompassing Shanghai and other cities in Zhejiang and Jiangsu provinces.

Does this mean that the recent trend toward inland migration could soon reverse itself? "The answer to your question depends on whether you believe that China will continue implementing the current policy or they will really move to a market economy," says Lu. "If you believe the latter, I can say with confidence that they will move to the places where they can find better jobs."

Cleaning Up

As China pours billions into environmental protection, companies are cashing in

By James Lord

Image by Wei Bingnan

China's massive anti-pollution campaign is driving thousands of factories out of business. But it's also creating big new opportunities for green technology companies

Each spring, usually around mid-May, large parts of China's third largest freshwater lake turn bright green. By the time the sweltering east China summer gets underway, thick, smelly clumps of algae are forming all over the surface of Lake Tai, the result of years of wanton pollution by the farms and factories lining its banks.

For the government of Wuxi, a city bordering Lake Tai, the arrival of the giant algal bloom every year is a nightmare. It impacts the revenues of local tourism sites and can even threaten the drinking water supply for millions of residents. But for Liu Bo, General Manager of Jiangsu Jinshan Environmental Protection Group, the return of the algae is a welcome sight.

Liu's company has developed a method for turning Lake Tai's pollution into piles of cash. Enormous filters stretched across five kilometers of the lake's northern shallows hoover up thousands of tons of algae, which the company then dries and sells to Algix, a US-based business that processes the algae powder into bioplastics for use in everything from sneaker soles to yoga mats.

Jinshan earns RMB 300 ($45) from the Wuxi government for each ton of algae it collects and around RMB 800 ($120) per ton of powder from Algix, earning the company a 60% profit margin, according to Liu. "We expect to make a RMB 190 million [$28.7 million] profit this year and RMB 300 million next year," he says.

The Wuxi company is an early mover in an enormous new sector emerging in the Chinese economy—environmental protection. China used to have a reputation for talking big but doing little on the environment, with officials focusing on economic growth above all else. But those days appear to be over. The government is pushing environmental protection to the very top of its policy agenda.

"When we're talking about environmental protection now, it's not only slogans—we're also seeing real action," says Song Shilei, a senior manager at "cleantech" solutions provider Evac.

In October during his address to the 19th Party Congress, Xi Jinping declared that the transition "from a phase of rapid growth to a stage of high-quality development" was the core of his vision for China. This shift in focus is likely to have far-reaching effects.

"The theme of development now is prioritized around increased demand for better quality of life and not just on speed of development," says Li Yan, Deputy Program Director at Greenpeace East Asia. "That kind of top-down weight on key items in environmental protection is crucial."

The Chinese government's change in attitude threatens to disrupt a wide range of industries. "Companies in the West don't really know this is going on, but China's been shutting down 20,000 factories in the past year," says John Pabon, Founder of sustainability consulting firm Fulcrum Asia. "Obviously that has huge implications for global supply chains because if you can't have a stable supply chain in China, you can't operate—it doesn't work."

But it is also creating big new opportunities for cleantech companies with the government set to pour vast sums into its war on pollution. "During China's 13th Five-year Plan (from 2016 to 2020), the Chinese government will invest at least $477 billion in environmental protection," states Li Huihui, Analyst at research firm IBISWorld. "With strong government support, demand for pollution control equipment has large growth potential."

Blind Development

Such jaw-dropping investment is understandable given the severity of China's pollution problem. Decades of breakneck development have taken a terrible toll on the air, water and soil. By 2013, the average level of PM2.5 particles—a type of pollutant—in the air in China's cities had risen to 60.5 micrograms per cubic meter, more than six times higher than the level recommended by the World Health Organization (WHO).

Nearly 40% of the water in the country's major rivers and 55% of its groundwater was unfit for human contact, a 2011 study by China's Ministry of Environmental Protection found. Another government study in 2013 estimated that 20% of its agricultural land was contaminated.

The human cost of this pollution is

equally severe. More than one million people in China die prematurely each year due to air pollution, according to the WHO. A further 60,000 are killed by diseases caused by water pollution, a 2007 World Bank report concluded.

For a long time, the central government made the right noises about fixing the problem, introducing a series of policies and targets, but for a variety of reasons the rules were rarely implemented at the local level. "The regulations have kind of always been there; enforcement is a totally different thing," observes Pabon.

But, gradually, things have changed. A turning point came in 2014, when Premier Li Keqiang made a landmark speech criticizing China's "blind development" and calling for the country to "declare war" on pollution. Since that point, in Pabon's words, "there have been so many watershed moments… it's hard to keep track of them all."

"Environmental protection has been leading political rhetoric for the last decade, but in recent years it has turned toward a political agenda with real power and strong momentum," agrees Greenpeace's Li.

In 2015, the *Environmental Protection Law* was updated for the first time in 25 years to increase penalties for polluters and hold local governments more accountable for implementing the law. Even more importantly, according to Li, changes were made to the performance assessment system for government officials so that environmental governance "actually became central to their political careers." The country's environmental authorities have also been handed new powers giving them "more teeth to bite," Li adds.

Flicking the Switch

Just how sharp these teeth have become can be seen from the stories of sudden crackdowns filtering through from different provinces across China in recent months.

"The government flicked the switch on this and said, 'OK, now we're going to enforce this,'" says Pabon. "It's not a typical China cat-and-mouse game where the inspectors come in, we clean up what we're doing, the inspectors leave, and we go back to normal. It's the inspectors come, they read between the lines of what's going on, they shut us down and we never reopen."

One of the earliest examples of this new approach came in 2014, when Zhejiang, an eastern coastal province, shut down more than 21,000 of the 22,000 crystal glass workshops in Pujiang county for violating environmental regulations. Since then, similar campaigns have rolled out in other regions home to highly polluting industries.

"The government is doing it cleverly by implementing it step-by-step," comments Yuval Ben-Sadeh, CEO of AST Clean Water Technologies. "They're not destroying everything. They're taking it region by region, and doing part of each region. It's kind of a signal to the other regions: 'Tomorrow we'll be coming. Start to treat, start to do it now.'"

> **Back in 2012, we faced skepticism that environmental regulations in China would impact businesses. Today, it is a different story**
>
> Debra Tan
> Director
> China Water Risk

The message appears to be getting through. Debra Tan, Director of the non-profit group China Water Risk, has noticed a marked change in attitude among Chinese companies toward sustainability and corporate responsibility.

"Back in 2012, we faced skepticism that environmental regulations in China would impact businesses," she says. "Today, it is a different story. Even Chinese banks like ICBC are taking the lead in assessing the impact of pollution regulations on their loan portfolios."

A 2017 survey of 85 textile manufacturers in China by China Water Risk reported that 88% said they had upgraded their factories in the last two years to avoid shutdown. Companies that source materials from Chinese suppliers are feeling the impact.

"The price of packaging has increased over 100% because lots of cardboard manufacturers were shut down," relates Ben-Sadeh. "It's also affecting the coatings industry—the supply chain is being disrupted."

New Horizons

But for cleantech companies, China's new era of green-first policymaking promises a bonanza. The private sector will play a key role in China's war against pollution, Pabon argues, as local governments search for solutions to their problems.

"The government will hand down a quota or some sort of regulation to the provinces, who will pass it down to the local leadership," Pabon says. "But as you get down to a certain level, these government officials are not experts in that—they don't know what to do. So that's where the private sector comes in, as experts in particular areas."

Private actors will also be essential because, despite the government already committing to spend $477 billion on tackling pollution by 2020, there is still a huge funding gap. The area where the disparity is most stark is soil pollution remediation.

"The cost of the clean-up is estimated

to be $1.3 trillion," shares Joe Zhang, a legal adviser at the International Institute for Sustainable Development. "But in the *12th Five-year Plan for Environmental Protection*, only RMB 30 billion [$4.5 billion] was budgeted for soil remediation."

Pollution treatment companies have started to fill this gap. The Chinese treatment equipment industry generated over $64 billion in revenue in 2017, estimates IBISWorld, a global market research firm. This is expected to rise to nearly $100 billion by 2022. The most lucrative market is currently air pollution control, which accounts for 50% of industry revenues, according to IBISWorld.

"Air pollution is the number one priority now, and that's driven by massive public demand for clean air and for a healthy life," states Li. The market is quite mature and competition is fierce, though Li notes that there is still plenty of room for growth since "people and governments in inland cities increasingly want this technology too."

China's battle against air pollution is also creating new markets for products aimed at both governments and consumers. The most famous example is air purifiers, which is now a $1.3 billion market in China and growing at around 10% per year, according to analysts Research & Markets. And consumers' concerns about air quality have also created huge demand for new products, such as portable pollution monitors.

"Before 2014/2015, it was hard to imagine that portable air pollution monitors, for example, could be a new market," says Li. "Our public wants air pollution monitors on their desks and that's already a booming business."

Tech companies, meanwhile, are gaining contracts with local governments across China to help them forecast spikes in air pollution. IBM has already announced a partnership with the northern city of Zhangjiakou—where the 2022 Winter Olympics will be held—to create an air quality modeling system. Microsoft has completed a deal with the Ministry of Environmental Protection thanks to its ability to provide 48-hour pollution forecasts.

In contrast to air pollution, the battles against water and soil pollution have barely begun. "In my industry, it will be booming, there's no doubt," shares Shi, whose company specializes in wastewater treatment systems.

There is huge potential for growth in water pollution solutions as only 3% of villages and townships in China have wastewater treatment facilities, according to Dezan Shira & Associates. Less than half the country's industrial parks have centralized treatment plants, consultants Aranca also point out.

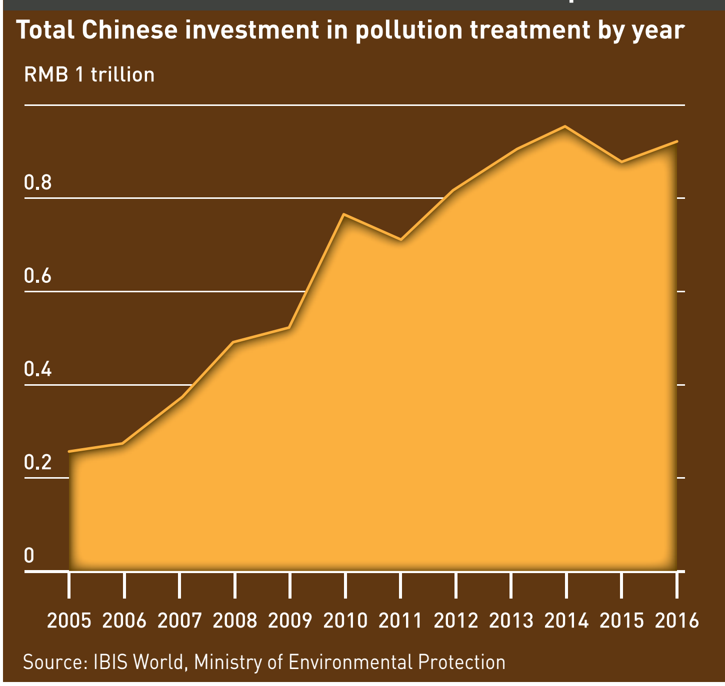
Local governments are building treatment facilities at a rapid rate, many of which are financed by public-private partnerships (PPP), Aranca notes. More than RMB 3 trillion ($450 billion) worth of PPP deals were signed in China during the first nine months of 2017 alone.

The soil pollution solutions market is even less developed. "Soil remediation is a goldmine, but it's not clear who has the tools to dig it," says Li.

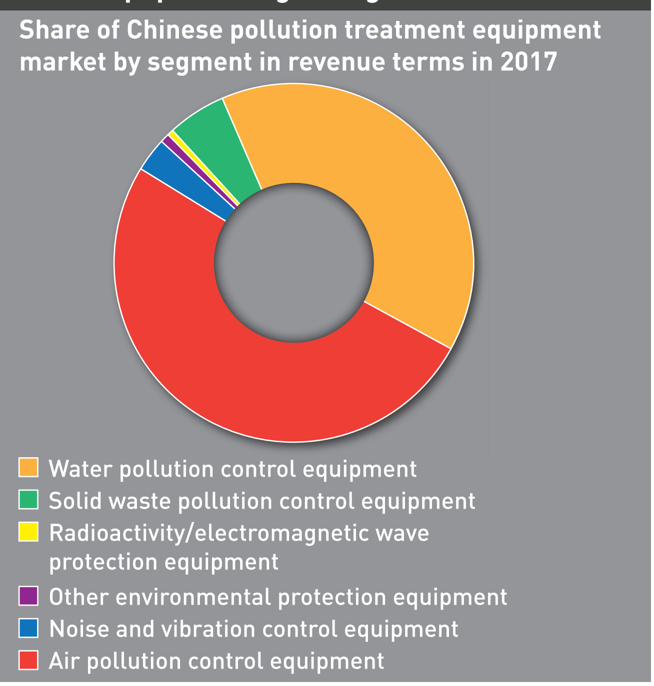
The government is determined to detoxify agricultural and brownfield land, and has published at least eight policy documents since 2008 attempting to address the issue. But progress remains

Brown Gold: China's Trillion-RMB Pollution Treatment Market

Chinese investment in pollution treatment equipment is growing



Source: IBIS World, Ministry of Environmental Protection



Vast algal blooms choke Lake Tai in eastern China each summer

slow due to lack of funding and the high cost of current remediation solutions.

"Restoration at this stage is still super expensive," says Li. "So, any innovation… would be critical to solving the bigger problem." Companies able to develop low-cost solutions are likely to find big opportunities.

If You Can't Beat Them...

For foreign companies, however, taking advantage of these opportunities requires a realistic mindset, Ben-Sadeh insists. "It's still a game for the big environmental Chinese companies, not so much small private companies," he says. "At the end of the day, the big industries tend to work with the big Chinese companies."

Contracts for large projects such as centralized waste treatment plants tend to go to large industrial groups like China Tianhao Group and China Datang Corporation, which have good connections and huge resources. For Ben-Sadeh, the key is not to compete with these companies, but find ways to work with them. "The foreign companies generally cannot be the main contractor. They can be the service provider, they can provide part of the solution," he argues.

Cooperating with Chinese partners is likely to become even more important in the future as the government may tighten restrictions on the use of foreign technology in strategic sectors. The State Council, China's cabinet, has already set a target that 70% of equipment used in desalination plants should be made in China, for example, and similar rules are gradually starting to be introduced in the wastewater treatment industry, according to Evac's Shi.

"That's in fact a topic we are currently talking about because we're working on a huge project where the customer has said that no 100% foreign company can sell to this project," reveals Shi. About 20% of Evac's projects in China are affected by this kind of rule, he estimates.

"We can still find a way to do this project, because we have reliable partners and reliable suppliers in China," Shi adds. "We can provide our systems to them, it just needs to be manufactured in a different way."

In some cases, the requirement to source equipment in China may not turn out to be harmful to some foreign companies, according to Ben-Sadeh. "My ability to compete has become better," he says. "When I first came to China, I couldn't trust the local products. I had to bring it [equipment] because it was better quality. Today, on the contrary, it's class-A production with a competitive price."

But this improvement in standards in China has a downside for foreign cleantech players—domestic rivals are providing a much fiercer challenge. "Ten years ago, foreign companies made fortunes here. Today, they have huge competition from local challengers," says Ben-Sadeh.

Overseas companies will need to up their game to find success in this new era. According to Ben-Sadeh, the key will be to "analyze and understand what are really the needs of the market" and to "keep in front in technology," even if the parts must be manufactured on the Chinese mainland. Doing so will be a big challenge, but the potential rewards promise to be even greater.

The Real Cost of Pollution

Brian Viard, Associate Professor of Strategy and Economics at CKGSB, explains how air pollution is as bad for the economy as it is for public health

By Liu Sha

We all know that air pollution is bad for our health. But what is often overlooked is that high pollution levels also cause significant harm to our economy.

Brian Viard, Associate Professor of Strategy and Economics at CKGSB, has been researching the economic effects of pollution for much of the past few years. His team has found persuasive evidence that the costs of air pollution are greater and more wide-ranging than most people realize.

In this interview with *CKGSB Knowledge*, he explains how tackling the pollution crisis could actually make the Chinese economy more productive.

Q: What inspired you to begin researching the effect of pollution on the economy?

A: I have to give the credit to my co-author, Fu Shihe, who brought the idea up and we started talking about how to approach it. The reason we wanted to do this was, there had been various papers talking about pollution and productivity, but they were narrowly focused on just one occupation in a single firm or a few firms.

We wanted to make this more useful for broad policy-making, and to do so you have to estimate at a broader level than just one occupation. This is what motivated us to do the project. To set policy, you need something that is ideally nationwide, or at least something that covers a large region.

Q: Could you briefly introduce your research?

A: The objective is to relate pollution and output and get estimates at the national level. The simple way to do that is to directly see how firm output varies with pollution. But the problem with doing this is that it will tend to make pollution look like it is either good or less bad than it actually is. The reason is that, if you look across China, an area with high output will have high pollution levels, simply because firms there are producing a lot. So when you start doing the comparison, you might see that output is higher when you have a lot of pollution! It tends to make pollution look like a good thing.

So, that's the main problem we faced. This is called "reverse causality." Output causes more pollution, making it difficult to measure how pollution levels affect output. We solved this using the idea of "thermal inversions," a meteorological phenomenon, which is when warm air ends up above colder air, trapping the colder air and air pollution below it.

Inversions are useful for us because they are caused purely by weather and are not affected by output. If we want to break the reverse causality, we want something that breaks the link between output and pollution. Inversions do this—they independently raise pollution levels and are unrelated to output. So, the strategy is, when inversions increase, to see how output responds to that.

Q: What are the major findings?

A: There are different ways to quantify the results. If you want to use this for policy purposes, there are two main ways to present the numbers. One is just based on the measure of pollution itself. The two pollutants, PM2.5 and SO2, are measured by density in micrograms per cubic meter. If we reduce the PM2.5 density by one microgram per cubic meter, manufacturing labor productivity increases by 0.011 percent. If you do the same for SO2, labor productivity goes up by 0.036 percent.

The second way is to translate this into monetary terms. If you lower PM2.5 by one percent (0.53 micrograms per cubic meter) through means other than lowering manufacturing output, the average manufacturing firm's output would increase by RMB 74,000 ($11,100) annually. Across all firms, the increase would be RMB 11.8 billion ($1.77 billion) annually or 0.079% of China's annual GDP. The same numbers for a one percent reduction in SO2 (0.15 micrograms per cubic meter) are RMB 70,000 annually and across all firms RMB 11.1 billion or 0.075% of GDP.

Q: Could you explain the mechanisms behind how air pollution affects labor productivity?

A: There are several ways that air pollution can affect labor productivity. Air pollution can affect people's physical health, making them work more slowly. If it's physical labor, the effect could be direct. When pollution is more extreme, workers may become sick and have to miss work. They may also have to miss work to stay home and take care of a family member, particularly young children or the elderly who are most affected by pollution. Another possible effect, sadly, is shorter life expectancy. People can die prematurely from the accumulated effects of pollution. If a worker who dies is replaced by one with less experience, productivity falls.

These are ways the pollution can affect physical performance. There is also evidence that air pollution can slow people's thinking. This means even knowledge workers could be affected by high pollution levels. If you think about a factory manager who has to make decisions, air pollution could slow their decision-making.

> There hasn't been much evidence collected on the cost of pollution in terms of manufacturing output

Q: How do your estimates identify these mechanisms?

A: Unfortunately, the answer is that we cannot. The reason is that we can only measure revenue per employee at the firm level. We don't observe individual employees or individual output, so we don't know how many hours an individual works in a given year or how many days they miss work. This is an important question, but we cannot answer it, because our goal is to get something that's comprehensive and nationwide. So, we must use data that is aggregated at a higher level.

Q: Why do you think it is important to conduct this research in China?

A: The straightforward answer is that pollution levels in China are fairly high. China is developing quickly and output has increased a lot. Some of the costs of this pollution, like health costs, have been identified fairly clearly. But there hasn't been much evidence collected on the cost in terms of manufacturing output. If the government is considering doing something about pollution from a policy standpoint, the effects on output should be factored in so that they take a comprehensive look. Of course, there are other countries that have similar issues, such as India. We cannot use our data to estimate conditions in India, but our technique could be used.

Q: A problem the government faces is that firms claim extra effort to reduce air pollution will negatively affect their profits. How can the government use your findings to respond to such complaints?

A: I have to say that there is a way they can and there is a way that they cannot. When a factory produces pollution, it doesn't just affect itself but also the other factories around it. No individual firm probably has sufficient incentive to solve the problem. If a factory reduces its pollution, it will help the firm but by such a

> If a firm takes steps to reduce their employees' exposure to pollution, that will likely help their productivity

small amount that they will choose not to do this. But the pollution reduction objectively speaking is a good thing, because the firm is helping out other firms around it who benefit from the reduction. So I don't think the government will ever win this argument with an individual firm. It's up to the government to make this happen because it has to be coordinated.

However, what we show is that a coordinated effort to solve this problem has significant benefits. If the government is considering pollution reduction policies, these benefits should be taken into consideration.

There is a way in which the government could convince firms to do something about this that would be in their interest. If a firm takes steps to reduce their employees' exposure to pollution, that will likely help their productivity. For example, if the firm installs filters to clean the air inside a factory, this will increase the firm's productivity. Similarly, if workers are missing work because their children are getting sick from pollution exposure, then cleaning the air in the school could also help productivity. That's the argument you could win because it's in the firm's interest. Unfortunately, however, these steps won't reduce the pollution itself.

I hope our estimates can help the government make the case to society as a whole that cleaning up pollution offers not only health benefits but benefits in manufacturing output as well.

Q: Given that automation has been displacing human labor from assembly lines and AI may further replace white-collar workers in offices, do you think the costs of air pollution will be lower in the future?

A: If a factory could be automated, its output of course wouldn't be affected much by air pollution. There would be very little labor to be affected. That is true. But then the question you have to ask yourself is: these workers who used to be in the factory, what are they doing now? For example, if they all go to service industries, because manufacturing is all automated, this raises the question of what effect air pollution will have on service industries. We didn't estimate that because we only have data from manufacturing firms. If service industries are affected, there is still going to be productivity loss. It will just be shifted to the service sector.

If you're asking whether we expect to find effects on the service sector, I would guess that we would. Whether these effects are higher or lower than for manufacturing, I would not want to speculate. But certainly I would expect to find effects, because a lot of service jobs are done outdoors or in indoor settings that are not protected from pollutants.

Another alternative for the displaced workers is that they will still be involved in manufacturing but doing jobs like controlling the machines and coordinating things. So, the question is how they will be affected. That's a harder question. We do compare high-tech and low-tech manufacturing firms and find similar outcomes, which suggests that there would be effects.

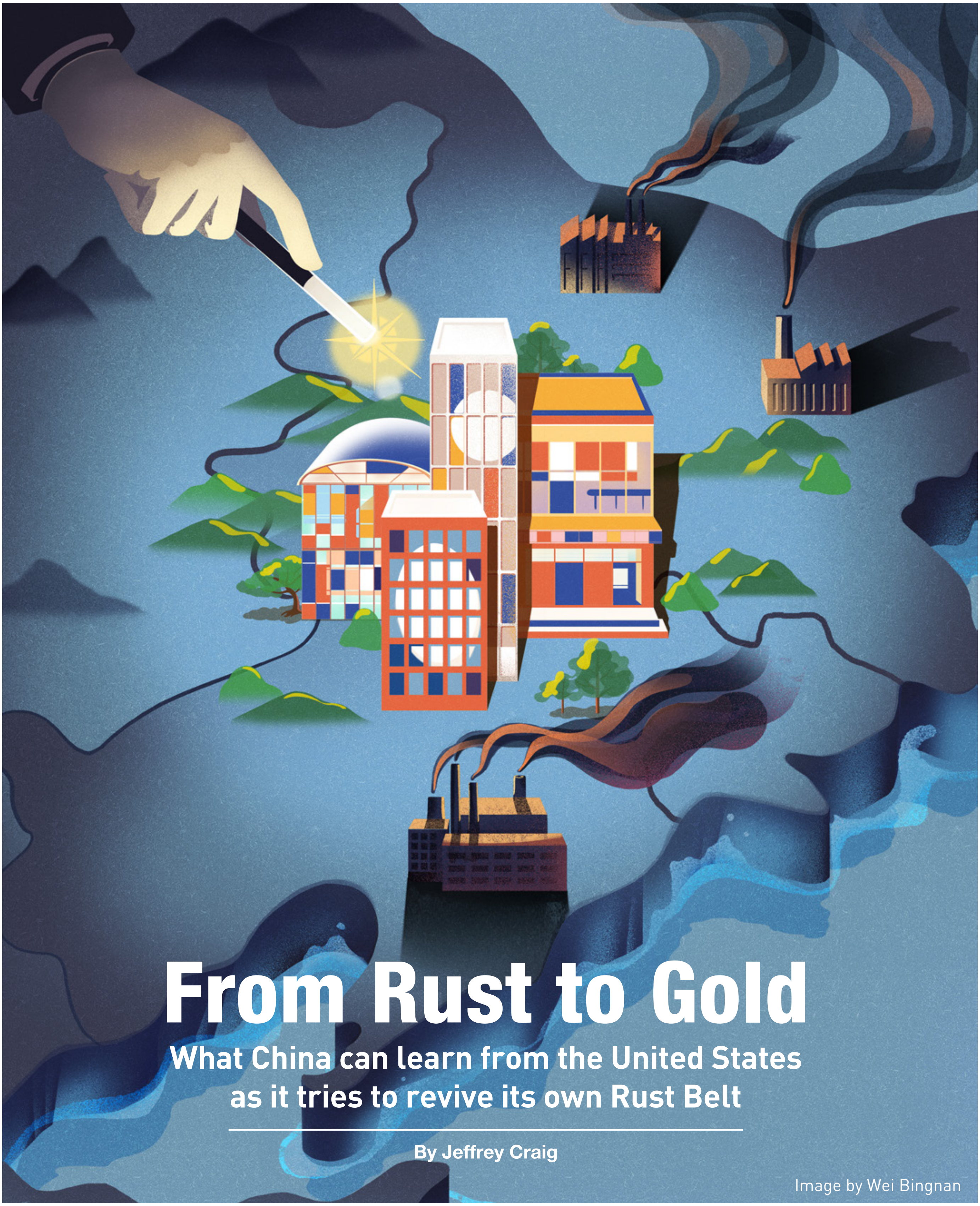
Q: The data used in the study is from 2007. What would change and what would not if you used more recent data?

A: Obviously it would be good to have more recent data but we don't have it. To answer your question, I don't think the fundamental relationship that we found between pollution and productivity would change dramatically. The main way I guess it might change somewhat would be, if firms have taken a lot of steps since 2007 to reduce their employees' exposure, you might see the effects get smaller.

Q: Based on your study, what do you think we should do about air pollution?

A: Obviously one direct way to reduce air pollution is to shut down factories. This will of course lead to a productivity boost due to less pollution. But we'll also have less output because we shut the factories down. And obviously the effects of the latter will outweigh the former. So, I wouldn't recommend the government shut down factories just to reduce pollution. Of course, if a factory is to be shut down for other reasons, like violating environmental regulations or being inefficient, there will be a productivity boost. My point is that, in the cost-benefit analysis of whether these actions should be taken, this productivity boost should be considered.

There are other ways to reduce pollution, such as installing abatement equipment that extract pollution before it leaks into the air. That's a way to get a productivity boost. There are also non-factory sources of pollution like automobiles, so if you have cleaner automobiles that will reduce pollution and boost productivity. Road dust actually produces a lot of pollution. If you see these trucks that spray the streets of Beijing with water, it's not just cleaning the street but also reducing dust and therefore particulates. These are the main ways of reducing air pollution. Of course, all of these cost money, so that doesn't necessarily mean they should all be done. But the productivity benefits should be considered in these calculations.



From Rust to Gold

What China can learn from the United States as it tries to revive its own Rust Belt

By Jeffrey Craig

Image by Wei Bingnan

China's once-mighty industrial heartland in the Northeast has fallen on hard times in recent years. Could the key to its revival lie in the American Rust Belt experience?

When Li Junwen left her hometown of Dalian in China's Northeast and flew to Detroit to begin her master's degree at Michigan State University in 2016, she felt oddly at home. The vacant lots and abandoned factories her taxi cruised past in the center of Detroit reminded her of rundown districts in northeastern China.

"You can tell both are not as prosperous as they were before," says Li. "They're really similar."

Though separated by more than 10,000 kilometers, Li's home region does share much in common with the Rust Belt states of the United States. Like Michigan, Indiana and Pennsylvania, the Chinese provinces of Liaoning, Heilongjiang and Jilin, once known as Manchuria and now collectively referred to as *Dongbei* (which means "the Northeast" in Mandarin Chinese), used to be the engine room of the economy, but in recent years have fallen on hard times.

"After 1949, the Northeast was important because of the steel industry and the coal industry," says Li. "But after the industry went, the glory faded."

As happened in the US Rust Belt, *Dongbei*'s once-mighty industrial firms—almost all of them state-owned—started to struggle in the 1980s. They have been in decline ever since, leaving local governments with a cluster of problems that would be instantly recognizable to policymakers in Gary, Indiana, or Pittsburgh, Pennsylvania.

"You've got similar concentrations of heavy industry and debt levels, you've got similar environmental problems because of the heavy industry concentrations and you have difficulties in attracting newer industries," says Andy Rothman, Investment Strategist at Matthews Asia.

But unlike its counterparts in the West, which have now largely transcended the phase, the decline of heavy industry in China's northeast Rust Belt is still taking place. "Over the last three years, we've seen the number of steel workers go down by more than a million and the number of coal workers fall by more than a million," says Rothman. "Add in about half a million ship workers, and you're talking about job cuts that are equal to sacking the entire population of Chicago."

What's more, it remains unclear what will happen once the layoffs finally run their course. "There's actually a big national debate around what the best path forward is," notes Andrew Polk, Co-founder of advisory firm Trivium/China. "How to fix *Dongbei* is still a wide-open question."

In August, Justin Lin, the World Bank's former Chief Economist, sparked a heated debate in Chinese policy circles when he published a landmark report on *Dongbei*. He argued that the region's best shot at recovery lay in replicating the model that turned coastal provinces such as Guangdong into thriving economic centers—a strategy based on low-wage light manufacturing.

Some analysts have questioned Lin's logic. They point out that there are geographical problems associated with manufacturing in the relatively remote Northeast with its freezing winters. The relatively high wages and job security generally provided by China's state-owned factories also make it difficult for private manufacturers to compete.

"You can't compare it to Guangdong. For people from the rural areas, a job in a factory in Guangdong was a step up," argues Paul Armstrong-Taylor, a professor at the Hopkins-Nanjing Center, Nanjing University. "It's very easy to get people to take a step up, quite hard to get them to take a step down."

Instead, *Dongbei* may be better off looking West, and learning from the experience of the United States and its former industrial heartland.

Decline and Fall

For proud locals such as Mr. Qu, a municipal official in Fushun, Liaoning province, the Northeast's current problems are even harder to take because of the status his region used to enjoy within China.

For most of the 20th century, *Dongbei* was the most modern and wealthiest region in China. Japan annexed the resource-rich area in the 1930s and turned it into China's first industrial center, building the railways and modern factories they needed to fuel their imperial ambitions. After the Commu-

> **The national trends that worry people in China tend to be concentrated in the Northeast**
>
> Andy Rothman
> Investment Strategist
> Matthews Asia

nist Party took over the mainland in 1949, *Dongbei*'s heavy industry became the driving force of the economy.

"After the founding of the People's Republic of China, the Communist Party made use of the industrial foundation left by Japan and vigorously developed the state-owned economy," says Qu. "For a long time after the founding of New China, *Dongbei*'s economy was the strongest in China and the level of urbanization was also the highest, because at that time most other regions in China were mostly agricultural."

But things changed following the death of Mao Zedong in 1976 and the rise of Deng Xiaoping in 1978, as China gradually began to reform its overwhelmingly state-run economy. The Northeast could not compete in a more market-driven, export-led economy, since the provinces on China's southern and eastern coastline had easier access to global markets and cheap labor.

Slowly but surely, *Dongbei* began its descent from economic dynamism to dependency. In 1978, Liaoning, Heilongjiang and Jilin were the fourth, fifth and eighth richest provinces in China, respectively. By 2016, they had slipped to 12th, 14th and 22nd.

Even these statistics do not reflect the depth of the region's problems. "The national trends that worry people in China tend to be concentrated in the Northeast," observes Rothman.

The region's economy remains dominated by old state-run industrial groups that, despite decades of reforms and layoffs, are still hemorrhaging money. They remain open mainly due to massive government subsidies. "The situation of state-owned enterprises has slightly improved, but the underlying economic problems remain prominent," says Qu.

State factories and mines are continuing to shed millions of jobs. The Chinese Academy of Social Sciences has predicted that China's coal industry alone will cut its workforce by a further 2 million by 2020. And with growth almost non-existent, the region is also suffering from a severe brain drain as people seek their fortunes elsewhere. More than 2 million people left the region between 2000 and 2010, and the young and educated are ever more likely to leave.

"Two-thirds of my classmates have gone to another city to find jobs," comments Cui Mengmeng, who grew up in Heilongjiang, but has since moved to Shanghai. "There are not enough opportunities for the young to stay. That's [*Dongbei*'s] biggest problem."

Faced with crippling debt, mounting job losses, terrible levels of pollution and a shrinking population, the region's situation appears almost hopeless. Yet, the US Rust Belt states faced a similar set of challenges toward the end of the last century. How they dealt with these problems could provide a useful reference for *Dongbei* as it searches for a road to revival.

Putting the Lid Back on Hell

Jim Biancotti still remembers the crash of the early 1980s as if it was yesterday. At the time, he was just a few years into his career as a manager at the United States Steel Corporation facility in Gary, Indiana, one of the biggest steel mills in the country.

For decades, companies like US Steel had made enormous profits and provided jobs for millions of Americans, thanks to the global dominance of US industry. At its height in 1950, 43% of the US workforce lived in what is now known as the Rust Belt.

But by the late 1970s, all was not well at US Steel. "In addition to foreign competition, we also had internal competition, called mini-mills, which were non-union but had more modern equipment," Biancotti recalls. "We needed 30 per shift, they needed 10. And they made more—they were running at three, four, five times the production."

In an echo of today's China, the Rust Belt's lumbering giants had been left behind by more agile, modern competitors in the US South. In 1982, the managers at the Gary plant came to a grim realization. "We cut back, or we close down," Biancotti summarizes. "We took a 40% cut in the manpower—four out of every 10 were just let go."

Over the following years, the cutbacks at Gary were replicated at manufacturers all through the Rust Belt as jobs moved south or overseas. By 2000, the Rust Belt accounted for only 27% of the US workforce.

The subsequent history of the US Midwest shows just how great a challenge China will face rejuvenating the *Dongbei* economy. Many parts of the Rust Belt never fully recovered from the closures of the 1980s. Detroit is the most notable example. It lost 29% of its population between 2000 and 2016 and was forced to declare bankruptcy in 2013—the largest US city ever to do so.

The Detroit bankruptcy highlights a clear difference between the US and China. In China, the government has never allowed any local government to go bankrupt, and only a handful of state-owned enterprises have ever done so—and then only in highly-controlled circumstances.

A "Revitalization" plan for the Northeast in 2003 largely became a means of pumping funds into the region's debt-laden state-owned firms to keep them afloat. The problem was that, until recently, the companies and officials in the Northeast knew that the central government would not allow them to go bankrupt, so there was little incentive for them to fix the underlying problems.

This is not to say that shock therapy would cure all of *Dongbei*'s ills. Even today, the US Rust Belt region has an unemployment rate of 15%, far higher than the national average of 6%. As many analysts have noted, it was precisely these left-behind Midwestern communities that propelled Donald Trump to the White House in 2016.

> **The decline of the economy in northeast China is… mainly because of the planned economy**
>
> Jason Lee
> Analyst
> China Market Research Group

Yet, there are examples of cities that have managed to turn their fortunes around, not least the home of US Steel. The people of Pittsburgh suffered terribly after Steel City's famous mills stopped belching smoke, with unemployment hitting 17% in 1983. Today, the city that writer James Parton once described as "hell with the lid taken off" is almost unrecognizable, according to John Mauro, a local business owner.

Turning Pittsburgh into a pleasant place to live was at the heart of Mayor Richard Caliguiri's Renaissance II program, which has been widely credited with transforming the city into a burgeoning tech hub. "It was about rejuvenating the city—tearing down the old dilapidated buildings, putting up new buildings, resurfacing the streets, bringing new businesses to the city," says Mauro.

When Mauro was a child in the 1960s, he remembers barely being able to see Pittsburgh from the top of Mount Washington on the city's outskirts due to all the smoke rising from the steel mills. "But now, you look at the city and it's fantastic, beautiful buildings," he enthuses. "We have parks, recreation centers—it's a wonderful city to look at."

This improvement of the city's urban environment helped it take advantage of its traditional strengths in areas such as research, where Carnegie Mellon University's robotics institute was world famous. "University of Pittsburgh, Duquesne, Carnegie Mellon, they… brought in a lot of the technology and things like that that really have ramped up the city over time," recalls Mauro.

Among the Fortune 500 companies to set up shop in Steel City were Google, FedEx Ground, Heinz, PNC Financial Services and Westinghouse, while the University of Pittsburgh Medical Center now employs 40,000 people. The influx of high-paying jobs also helped revive the city's downtown area, where the population has increased 40% between 2000 and 2014.

Clear skies have returned to Pittsburgh, but remain rare in smog-choked Shenyang

The question is whether the model that worked for a city of 300,000 in the US Midwest could be applied in a region of over 100 million people on the other side of the world.

East Meets West

Whether *Dongbei* can transform into a modern high-tech hub remains to be seen. The region does have one major advantage over the US Rust Belt, Matthews Asia's Rothman points out. "Fortunately, one of the main differences is that the Chinese government has more resources at its disposal to throw at the problem," he says.

In 2016, Beijing announced that it planned to invest RMB 1.6 trillion ($232 billion) in the Northeastern provinces over the next three years. Unlike previous cash injections, which were usually used for little more than propping up struggling state-owned companies, the government has stressed that this latest tranche will be used to promote reform and investment in the private sector.

But if this money is to be put to good use, *Dongbei* first needs to fix a problem that the US Rust Belt cities never faced—the corruption, inefficiency and unfairness caused by its overbearing state sector. "Unlike the Rust Belt region, the decline of the economy in northeast China is… mainly because of the planned economy," observes Jason Lee, analyst at China Market Research Group. "The planned economy assigned too much power to government, causing corruption between government and enterprises."

Even Qu, the Fushun official, blames *Dongbei*'s local governments for the region's problems. "The governments' work style is poor. As a result, many businesspeople do not trust the local governments in northeast China," he says.

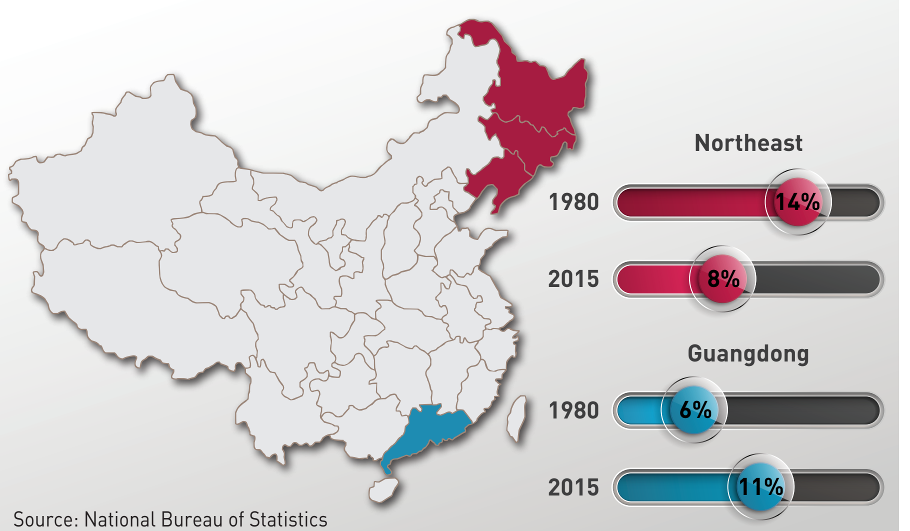
The region also urgently needs to develop a clear strategy for how it plans to replace the millions of jobs being lost in the primary sector. Pittsburgh prospered by identifying five industries it wished to target and rallying government, business and community groups around a common goal, but this kind of planning appears absent in *Dongbei*.

"Although they are talking about promoting new industries, the plans are still very vague," says Sabrina Wei, Head of North China Research at real estate services firm Cushman & Wakefield.

According to Wei, *Dongbei*'s provincial governments are currently focusing on linking up with two national strategies—the Belt and Road Initiative and the integration of Beijing, Tianjin and Hebei province. "But, so far, we haven't seen any major initiatives happen regarding those two strategies," she adds.

Declining Fortunes

The Northeast's contribution to China's GDP continues to fall



Source: National Bureau of Statistics

Polk is also skeptical about the potential benefits of the two strategies, particularly the idea of creating an economic belt linking *Dongbei*, Mongolia and Russia. "The Belt and Road is not a macroeconomic panacea, whether for China or *Dongbei*," he says. "They can't invest enough in eastern Russia to make a difference for the *Dongbei* economy. The macro numbers don't make sense."

Another lingering question is how to stop the region's brightest young talents from fleeing south in search of opportunities. Andrew Batson, Research Director at consulting firm Gavekal Dragonomics, has suggested encouraging China's top universities to set up schools in the Northeast, though others have pointed out that the region is already home to three of the country's top 25 colleges and it has not stopped the brain drain.

Alternatively, *Dongbei* could take inspiration from Pittsburgh, and focus simply on making itself a more pleasant place to spend time. "The only real way I can see things growing again is by making the cities into really cool places to live," says Jacob Gunter, a policy coordinator at the European Union Chamber of Commerce in China, who stressed that he was speaking in a personal capacity. "As the middle class rises in China, young people might value quality of life and creativity over higher salaries in the overworked south."

Polk makes a similar point. "One untapped potential in the Northeast is tourism," he observes. "It's a beautiful area."

Fortunately, the region is likely to become a nicer place naturally as industry recedes. "Shutting down excess capacity means that you can deal with the debt issue and the pollution issue at the same time," points out Rothman.

If *Dongbei* can solve its governance and environmental problems, it may just stand a chance of convincing more companies and talent to give the Northeast a try. As Rothman observes, "That's not necessarily going to create an opportunity for a 50-year-old laid-off steel worker, but it may be an opportunity for his kid."

European Dreams, Chinese Realities

Ioana Kraft, General Manager of the European Union Chamber of Commerce in Shanghai, explains the challenges and opportunities European businesses face in China

By Alex Wilson

Ioana Kraft began her career in international law, and moved to China 14 years ago. Since 2009, she has been the General Manager of the European Union Chamber of Commerce's Shanghai chapter, working tirelessly to promote the interests of European businesses operating in eastern China.

As she tells *CKGSB Knowledge*, this role has never been more important.

Q: You've been working with the EU Chamber of Commerce in Shanghai for a decade. How has the business environment for European businesses changed during your time here?

A: In 2014, we made headlines internationally when almost half of our members stated in our annual Business Confidence Survey that the golden age for multinationals in China was over, and this is a sentiment that hasn't really been reversed since. In our Business Confidence Survey 2017, nearly 50% of member companies report that conducting business in China became more difficult in 2016. You also have external findings like the World Bank's ranking of China, which puts it at around 78th place out of 183 countries in terms of ease of doing business. This reflects the reality of doing business in China and how it ranks globally.

Q: There has been a big drop in European investment in China over the last 18 months. What are the biggest factors causing this, and do you think this trend will continue?

A: I think that European businesses are responding to a mix of challenges and opportunities that the Chinese market still has, and one of the most significant ways they're reacting to it is they're investing less. Chinese investment into the EU leaped 77% to about €35 billion in 2016; at the same time, European investment into China dropped 23% to €8 billion only.

We're always asked 'is it the general trend that European companies don't invest?' But if you look at the EU investment into the United States, it was $277 billion in 2016, so this indicates that there's not a loss of appetite in global markets in the EU. The main issues we're always stressing are market access and reciprocal treatment—that's what is needed for this trend to change.

Q: A big part of this is the Made in China 2025 or the China Manufacturing 2025 strategy. What impact is that having on European businesses now and what do you think the impact will be over the next 10 years?

A: I think there's lots of issues with this policy, and I think that if we look at European businesses, we have recommended that they have to align with the long-term plans and with China's industrial upgrade, and they have to keep innovating to stay ahead and continue to monitor the state of mergers and acquisitions.

Q: Which sectors are currently offering the best opportunities for European companies in China, and in which sectors are foreign businesses struggling the most?

A: Some sectors are better than others, and I have go back to our Business Confidence Survey again. Half or more of the respondents in both the hospitality and environment sectors report either significant or some opening. This shows that major improvements are possible when authorities make them a priority.

At the end of this scale, the operational challenges faced by law firms are plain to see, where only 15% report some opening. It is also not a surprise that members in financial services, which face severe market access restrictions, are particularly hard hit. Others are transportation, logistics and distribution.

There are industries where there are opportunities, but again, regulatory challenges lead to companies missing out on these opportunities.

If we look at the survey, overall there are three top barriers that European business face, which are administrative issues, rules and regulations and the unpredictability of the environment. They are not a mere inconvenience: they are real hurdles. We had 45% of respondents say that they had missed out on business opportunities as a result of regulatory obstacles.

Q: How do you view China's role in globalization today?

A: President Xi Jinping has made several big speeches saying that China wants to take a larger role in leading the next phase of globalization. Obviously, we welcome these statements, but we will still have to see how this plan will unfold in reality. China's the world's second biggest economy and it's really time for China to step up and assume its role as a responsible stakeholder on the global stage.

China's doing that through its own initiatives like the Belt and Road Initiative and the multilateral development banks like the Asian Infrastructure Investment Bank and the New Development Bank. But I think we would also like China to work more in established fora on which the global trading system is built, rather than creating new initiatives.

Q: How reciprocal do you think China is at the moment in its dealings with Europe on trade and investment?

A: Over the past few years, we've seen more and more European stakeholders come forward with demands for reciprocal treatment for companies in the Chinese market. We think that's an appropriate demand and something that should be taken into consideration in negotiating the new Comprehensive Agreement on Investment. The treatment is obviously not reciprocal and I think more and more voices are saying that. A few years ago, people didn't dare to use this word, as it has kind of a negative connotation, saying: 'Well, if you don't open, we close.' But that's not what we say. We want, basically, reciprocity in openness.

Q: Europe is currently considering tightening oversight of Chinese investment into Europe based on national security concerns. How much should this concern European businesses?

A: I think you're talking about the national security of EU member states and their sovereign territory, and that's a crucial point. The foreign direct investment screening mechanism that EU Commission President Juncker proposed in his State of the Union address is something that has come as a reaction to many acquisitions by foreign state-affiliated corporate groups in Europe in recent years.

A proposed screening mechanism like that would be impartial to any non-EU nation investment, it's not directed against China, and it will also rest on the subsidiarity principle which says that the ultimate decision on whether or not an investment can take place is in the hands of the sovereign member state government. We think that such a screening mechanism is important and we agree with the European Commission in this respect, that it should be impartial and transparent.

Q: The US also recently begun placing more emphasis on scrutinizing investments. Why hasn't this kind of screening mechanism been introduced before? Is it because China's behavior has changed?

A: Well, America has blocked quite a few acquisitions and Europe did not have that… It existed at a member-state level. The nature of the acquisitions has changed. Before, we had a few big-name acquisitions like Volvo, but these were commercial acquisitions that made commercial sense. But some of the acquisitions in the recent two years were really very strategic—it was clear that they were going after the technology, which is much more worrying. And there was the assumption that there were state-led or state-affiliated groups who were acquiring technology. So that ties into China Manufacturing 2025.

Q: What are the Chamber's biggest priorities in its discussions with China in 2018?

A: Our biggest and overarching priority is to continue our advocacy for a timely conclusion of the EU-China Comprehensive Agreement on Investment negotiations. We think that this is the biggest trade-related opportunity for Europe on the table right now. A successfully concluded agreement would be a win for European businesses, and we are looking to advocate for the pace of negotiations to be increased.

The Fintech Uprising

China's innovative internet finance companies are putting traditional banks on the defensive

By Matt Fulco

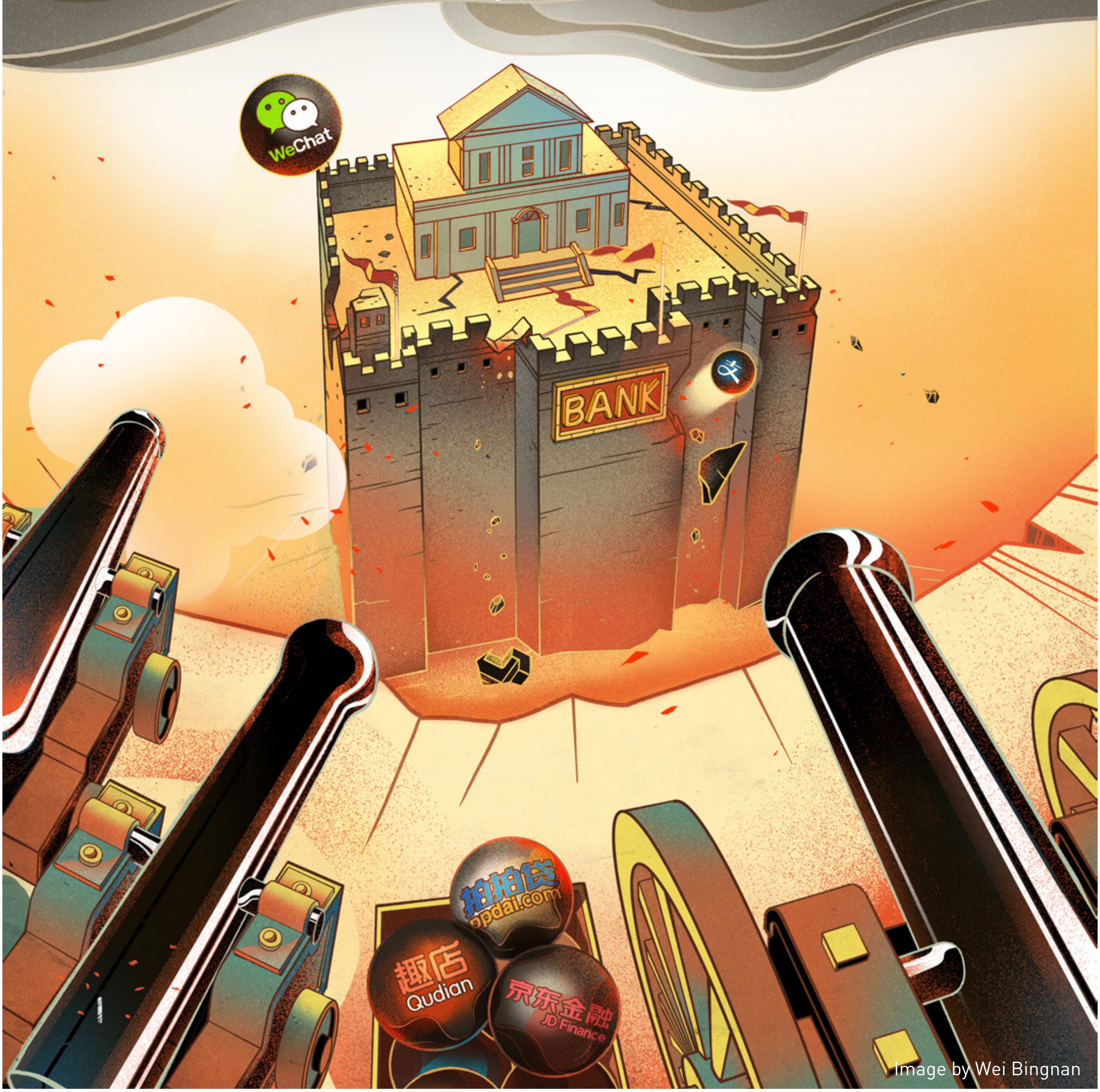


Image by Wei Bingnan

A new wave of dynamic internet finance companies is taking on China's lumbering state-run banks. But will tightening regulation nip this revolution in the bud?

China's financial sector used to be famous for its poor service and imperviousness to innovation. Even today, when customers go to make a transaction at one of the country's big state-run banks, they often take a bag of snacks with them—they know they're in for a long wait.

But things are changing fast in the Middle Kingdom. A new generation of digital finance firms is taking the country—and the global markets—by storm in everything from digital payments and micro-lending to insurance and wealth management.

Nothing illustrated the arrival of China's innovative financial technology—or fintech—industry on the world stage better than the initial public offering (IPO) of online insurer ZhongAn in September. The listing was not only the first ever worldwide by a digital-only insurance provider; it was also the second-largest Hong Kong IPO of the year at a hefty $1.5 billion, behind only the $2.2 billion raised by Guotai Junan Securities, an investment bank, in March.

Backed by internet heavyweights Alibaba and Tencent, as well as insurance juggernaut Ping An, ZhongAn's high-tech approach is leaving its analog rivals in China's insurance market in the dust. The company has sold 5.8 billion policies to 460 million customers in just three years, according to a September report by the *Financial Times*.

"ZhongAn has developed a capability for agile development and deployment of products to many different ecosystem players," says Hugh Terry, a Singapore-based actuary and founder of The Digital Insurer website. "They can launch and test quickly according to consumer feedback and the low-cost nature of the platforms allows them to serve a large market segment."

ZhongAn's IPO looks likely to be just the beginning as fintech revolutionizes the once-staid Chinese financial system. With a tech-savvy populace, heavy investment from China's internet giants and ample government support, China provides the perfect breeding ground for fintech and the country already leads the world in digital payments and peer-to-peer (P2P) lending. The world's three most innovative fintech firms are Chinese, according to a new report by KPMG.

"There's an openness in China to fintech that we don't see in a lot of developed markets," says Jamie Lin, a venture capitalist and co-founder of the Taipei-based AppWorks, Asia's largest startup accelerator. "In the United States, many people are still writing checks."

The pace of China's fintech growth has been dizzying. China's fintech venture-capital investment reached $6.4 billion in 2016, surpassing the US and comprising 47% of global fintech investment, according to an August report by management consultancy Oliver Wyman. In a March report, Barron's Asia forecast that fintech in China could generate $65 billion in sales by 2020.

"One of the reasons that fintech in China has grown rapidly is a general lack of regulations, so they can take what might be hard to do in the US and expand quickly," says Carl Wegner, APAC head of R3, an enterprise software firm that works with the finance sector. Additionally, "due to the size of the market, a small idea can have millions of users and profitability."

Oliver Wyman suggests that China could play a transformative global role in fintech. That would stand in stark contrast to the technological travails China has experienced in recent decades, when it has been seen as "a follower of the developed economies." Instead, with its rapid adoption of disruptive technologies and big-ticket investments, China already is playing a vanguard role in fintech and has "the potential to shape the global fintech landscape," the report says.

A Perfect Storm

At first blush, it seems odd that fintech would develop faster in China than developed economies. After all, China is not known for financial innovation. But that's precisely the point: the shortcomings of the Chinese banking system have allowed fintech to grow much faster than in wealthy countries with mature finance sectors.

Given China's limited credit infrastructure, its banks have historically preferred lending to large firms. That has left many small- and medium-sized enterprises

(SMEs) and retail customers unserved. Oliver Wyman points out that just 10% of SMEs can properly access credit in China. Globally that figure is 31%. In 2016, unsecured consumer loan penetration in China only accounted for 9% of GDP. In the US, it was 15%.

Meanwhile, surging smartphone penetration has made the mobile internet ubiquitous in China. According to the China Internet Network Information Center (CNNIC), 95.1% of Chinese internet users—695.3 million people—accessed the internet on a mobile device in 2016, up from 69.3% five years earlier.

A survey cited by the Communist Party newspaper *The People's Daily* in June points out that Chinese people spend more than three hours a day on their smartphones. Only Brazilians are more attached to their handsets, the report said.

Given Chinese consumers' preference for accessing the internet with their smartphones, "it becomes easy for them to use their phones to take out a loan or invest in a wealth management product," says Zennon Kapron, founder of the Shanghai-based financial technology research firm Kapronasia. "It's a natural extension of how they're already using the device."

Of course, fintech could never have grown so quickly if Beijing didn't want it to. "It's been a wait-and-see-approach," says Kapron. "They take their time to regulate new technologies that are beneficial to the financial industry." Digital payments increase transparency; P2P loans provide credit access to individuals and companies that can't get it from a traditional bank, he adds.

"The Chinese government will only intervene when the market is near maturity and malpractices are growing out of control," says Lee Cheng-hwa, a senior industry analyst at the Taipei-based Market Intelligence & Consulting Institute (MIC). "This will both foster the development of new fintech applications and speed up market expansion."

Pre-eminent Platforms

Among fintech applications in China, mobile payments are the most widespread. The market grew 381% year-on-year to RMB 58.8 trillion ($8.89 trillion) last year, and is expected to grow at a 68% annual clip through 2019, according to a June report by Beijing-based iResearch. Mobile payments comprise nearly 75% of China's total online transactions, iResearch says.

For Jennifer Wang, an advertising sales manager based in Wuhan, the most populous city in central China, her smartphone has become her wallet. "Paying with my phone is fast and safe," she says. "It's more convenient than using cash." With her handset, Wang pays for everything from groceries and taxi rides to movie tickets and clothing. Within the WeChat app, she pays with WeChat Wallet. To buy goods on Alibaba's Taobao and TMall marketplaces, she uses the company's Alipay payment service.

Alibaba and Tencent dominate China's mobile payments market. In the quarter ended June 2017, Alibaba's Alipay service held a 53% market share based on payment value while Tencent's Tenpay (which includes WeChat Wallet) had a 39% share, according to research firm Analysys International.

With market capitalizations around half a trillion dollars each (Alibaba's is at $450 billion while Tencent is $540 billion), the two Chinese tech juggernauts have easy access to ample inexpensive capital. That's allowing them to diversify far beyond their original businesses of e-commerce and PC games and messaging, respectively.

"In China, the biggest tech companies tend to buy out most of the smaller companies," says AppWorks' Lin. "They may try to crush you first, and if that doesn't work, then they will make you an offer."

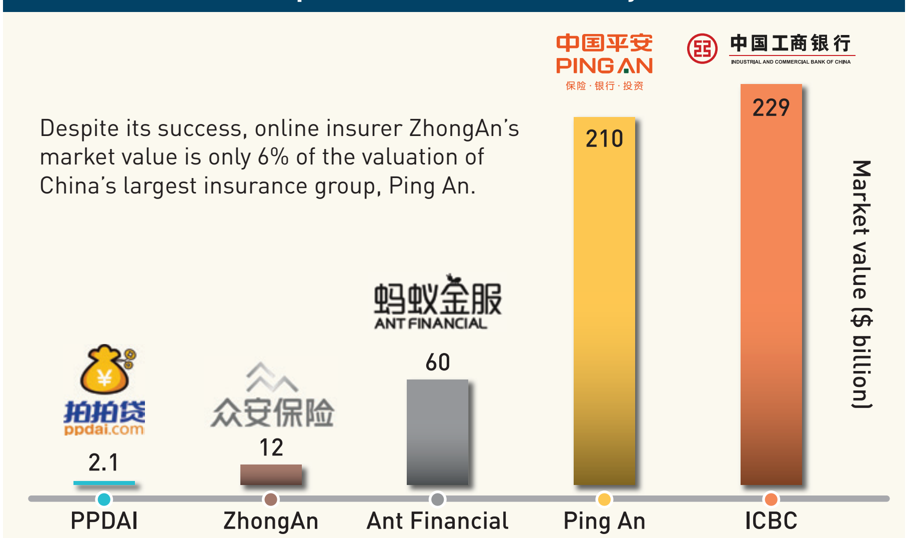
"The big guys are doing very well in China—it's actually like the situation in the US," he says, noting the expansive reach of Amazon, Facebook and Google.

In online lending, another ascendant fintech segment in China, the nation's internet giants have also taken a leading role. In January 2015, Tencent created WeBank, China's first online-only bank. Alibaba followed suit with MyBank, which focuses on rural consumers, internet startups and sellers on Taobao and TMall. In August, China's financial regulator gave the green light to Baidu's joint banking venture with Citic Bank: Baixin Bank, which will offer exclusively online services.

WeBank and MyBank are data-driven banks, focusing on unsecured loans, notes Kapronasia's Kapron. "They take advantage of the data and technology from their shareholders Tencent and Ant Financial," he says. The data allows them to evaluate a borrower's creditworthiness and decide the

David vs Goliath

China's fintech companies are still dwarfed by traditional rivals



Source: Financial Times, Google, Bloomberg amount of a loan in minutes or even seconds, he adds.

The online banks have released little official guidance regarding their financial performance. A February report by *The South China Morning Post* notes that WeBank had extended RMB 160 billion via its non-collateral Weilidai platform through the end of November 2016. WeBank expected to breakeven or make a small profit last year, the report says. Meanwhile, Alibaba's MyBank had loaned RMB 45 billion to customers and served about 800,000 SMEs as of February 2016.

> In China, the biggest tech companies... may try to crush you first, and if that doesn't work, then they will make you an offer
>
> Jamie Lin
> Co-founder
> AppWorks

Peer-to-peer Pressure

Within China's online lending segment, peer-to-peer lending (P2P) or micro-lending has grown explosively, outstripping the growth of the internet giants' online banks. Online micro-lending platforms are not bound by the same capital requirements as traditional banks. They connect retail borrowers with investors; the former gets direct financing and the latter attractive investment products.

In a July interview with the Federal Reserve Bank of San Francisco, Ning Tang, founder and CEO of CreditEase, a trailblazing Chinese fintech firm, said that the company launched P2P lending in China in 2006 to meet the needs of an underserved market segment.

"I couldn't find banks willing to lend to a group of vocational school students for their tuition," even though each student only needed $1,000, he said. Chinese banks "were not in a position to do that." CreditEase developed the peer-to-peer model so that individuals could extend credit to each other, he added. The company has since become one of the world's leading fintech players, expanding from P2P lending into wealth management and robo-advisors, as well as a major backer of fintech startups.

In its August fintech report Oliver Wyman notes that private asset securitization helped facilitate China's online lending boom. "Securitization provides a mechanism to grade private credit assets for risk and match them with investors seeking the same level of risk," the report says.

By the end of 2016, China's P2P lending market had grown to RMB 2.16 trillion ($324 billion), comprising 16% of total RMB new loans, nearly double the amount a year earlier, according to a March report by EY (formerly Ernst & Young).

With regulation in China often lax, it should come as no surprise that some malfeasance has occurred along the way. The most notable case uncovered thus far is the Ponzi scheme operated by Ezubao, based in the eastern province of Anhui, which was once China's largest P2P lending platform.

Launched in July 2014, Ezubao attracted investors rapidly by offering an eye-catching 9-15% rate of return. Before its collapse in early 2016, Ezubao defrauded 900,000 investors out of RMB 59.8 billion ($9.14 billion). In September, a Beijing court jailed Ezubao founder Ding Ning for life and handed down prison sentences to 26 others involved in the Ponzi scheme.

In some cases, lenders made risky bets on unreliable borrowers. Hongling Capital, one of China's earliest P2P lenders, financed large-scale projects—sometimes exceeding RMB 100 million—while matching investor money. The projects were often subprime, which is why banks had refused finance. The Huishan Dairy Company, which received a RMB 50 million loan from Hongling Capital, defaulted on its debt in March.

In September, Hongling Capital announced it would exit the P2P lending business within three years. At the time, it had RMB 20 billion in assets to settle, including RMB 5 billion of non-performing assets and RMB 800 million of bad debt.

The Hammer Falls

The trouble-ridden online lending business has prompted Beijing to heighten regulation of internet finance. In August 2016, the banking regulator forbade P2P firms from taking deposits as well as selling wealth management products and asset-backed securities. The new regulations also require that P2P platforms use third-party banks as custodians of investor funds.

Further, the regulations restrict individuals from borrowing more than RMB 200,000 (roughly $30,000) from a single online lender and RMB 1 million overall from various P2P platforms. Companies are limited to borrowing RMB 1 million from one platform or RMB 5 million in total.

In November, Beijing widened the crackdown, outlawing unlicensed lending and putting a cap on borrower costs. China has more than 2,000 P2P platforms, but just a few hundred have government licenses.

Heightened scrutiny of China's online micro-lending sector follows the recent IPOs of Ant Financial-backed Jianpu Technology, PPDAI Group and Qudian in the US. In China, many netizens have criticized the predatory lending practices of micro-lenders on social media, according to *Bloomberg View*.

While she is comfortable with digital payments, advertising sales manager Wang is wary of using internet finance to

Even local fruit stalls now allow customers to pay using mobile payment apps Alipay and WeChat Pay in China

get a loan or store her savings. "I prefer traditional banks," she says. "They're more reliable."

In China's online micro-lending sector, "things have gotten a little out of hand," says Kapronasia's Kapron. Beijing is clamping down to protect consumers from predatory lenders, he says, adding: "They want to keep the people happy."

Frank Fang, a senior research manager at International Data Corporation (IDC) in Beijing, expects Beijing will continue to tighten supervision over digital finance in the future. "Internet finance must be included in the scope of financial regulation—just like the traditional industry," he says. "It can be expected that future [internet finance] regulation will certainly become more standardized and strict."

Consolidate and Conquer

Despite tightening regulations on China's internet finance sector, investor enthusiasm remains high. In December, *The Wall Street Journal* reported that online lender Dianrong is planning to list on the Hong Kong Stock Exchange in 2018, in a flotation that could raise a minimum of $500 million. The report also mentioned Chinese P2P lender Lufax, one the world's biggest internet finance firms, is mulling a 2018 IPO.

Beijing's decision to more strictly regulate internet finance shouldn't be misinterpreted as opposition to the sector's development, says AppWorks' Lin. "The way things work in China is that there's a period of openness followed by a period when the authorities tighten their grip and we're seeing that with internet finance now," says Lin.

On the whole, fintech provides the Chinese authorities with tools to solve social problems, he observes. "It's providing liquidity for SMEs and lots of services for retail consumers, filling gaps in the market."

And to what degree will fintech disrupt China's traditional banking sector? Kapronasia's Kapron says that the traditional industry has already "lost out" on third-party payments. That's largely because credit cards never gained a strong foothold in China. Instead, Chinese consumers have moved directly from cash to digital wallets.

In its fintech report, EY notes that traditional Chinese banks are becoming less relevant to their customers—especially people under 40. In the company's Bank Relevance Index, China's score of 69.5% was the third lowest in the world, against a global average of 75.1%. An increasing number of young Chinese consumers access financial services for the first time through fintech-developed platforms, the report says.

Leona Wang, 31, who works for a global media company in Shanghai, uses both traditional banks and fintech applications, but prefers to keep her savings with online finance providers. "You get a higher interest rate with online platforms," she says.

Cognizant of the challenges posed by fintech, China's traditional banks are looking to tie-ups with its internet giants to co-develop digital finance platforms. Kapron notes that Alibaba, Tencent, Baidu and JD.com all formed strategic partnerships with large state banks this year—with China Construction Bank, Bank of China, Agricultural Bank of China, and Industrial and Commercial Bank of China, respectively.

"The banks all see the potential growth in artificial intelligence and cloud computing," he says. "Developing this segment will mean a long-term boost to the economy, and possible improved financial security systems."

As China's banking and tech giants join hands, consolidation across different segments of the internet finance sector will continue, says AppWorks' Lin. "There's going to be less room for the smaller guys," he says.

And there is another good reason this is likely to happen. "The Chinese leadership wants the [internet finance] industry to be more consolidated," Lin adds. "It's easier to control that way and that means it's good for social stability."

THE RACE FOR 5G

Why China is determined to dominate the next generation of wireless internet

By Jens Kastner

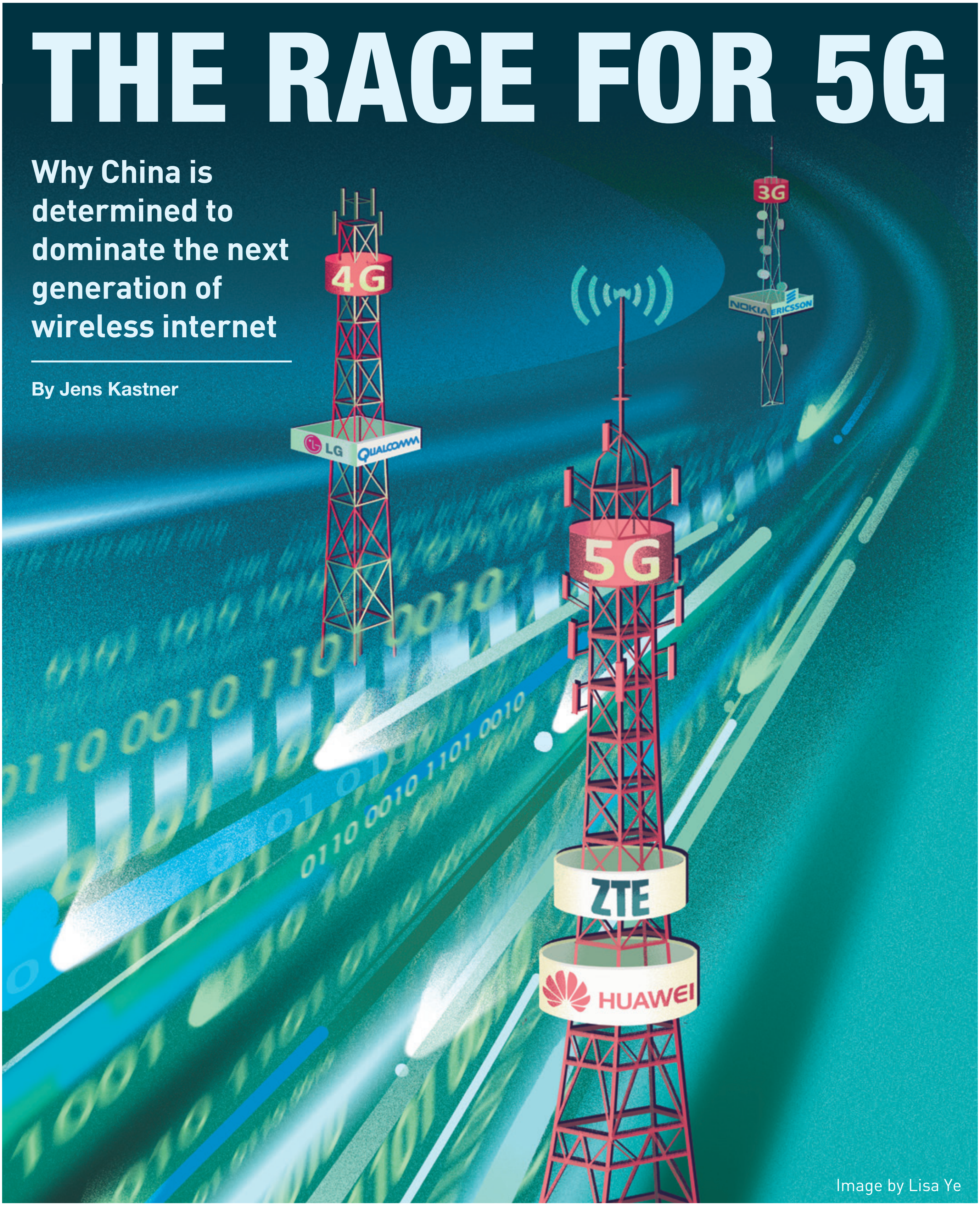


Image by Lisa Ye

China and the US are locked in a furious battle for control of the next generation of wireless internet networks. The winner will gain a big economic advantage for years to come

Imagine a city of the future, a city where commuters are chauffeured to work by self-driving cars and where artificial intelligence systems control every power plant, traffic light and light bulb, making road accidents, power cuts and even traffic jams a thing of the past. Where you can spend as much time in a virtual reality as you do in the physical world.

Thanks to 5G, the latest protocol for mobile communications, this vision may be realized much sooner than you think. The world's leading telecoms companies are already testing the next generation of wireless internet and the first 5G services could be rolled out as early as 2019.

The new networks are expected to be 100 times more efficient and many times faster than 4G, according to UN telecoms body the International Telecommunication Union. This will open a vista of new technological possibilities.

The gains in network speed and reliability will enable billions of internet-enabled devices to connect and coordinate themselves seamlessly in real time. On the roads, self-driving cars will be able to sense each other's movements and adjust their speed and direction to avoid collisions. Beneath the asphalt a vast network of smart sensors will control cities' water, power, waste and transport systems, unlocking vast gains in efficiency.

However, the transition to 5G not only promises to improve public services and people's quality of life; it could also be a game-changer for businesses and governments across the world. By 2035, more than $12 trillion of economic output will depend on 5G worldwide, analysts IHS predict, and the 5G value chain alone will support 22 million jobs. With key emerging industries like the Internet of Things (IoT), virtual reality and autonomous vehicles all relying on the rollout of 5G, the countries and operators that take the lead in mastering and deploying these next-generation networks are likely to gain significant financial and competitive advantages.

Like the transitions to 3G and 4G, the battle for 5G supremacy is being fought mainly by the leading telecoms players including European companies Ericsson and Nokia, Samsung of South Korea and the US's Qualcomm. But this time, China's Huawei and ZTE have also emerged as forces to be reckoned with. And they may have a decisive impact on the outcome.

China's 5G Dream

China's telecoms firms were little more than also-rans during the transitions to 3G and 4G—and paid the price for it. Both they and the Chinese government appear determined not to let that happen this time.

The government is keenly aware of the potential opportunities offered by the transfer to 5G and has been preparing for it for years. It founded the IMT-2020 (5G) Promotion Group as early as 2013. This government body is responsible for coordinating the government agencies, operators, vendors, universities and research institutes working on new wireless internet technology.

Making China the global leader in 5G is also one of the cornerstones of *Made in China 2025*, the ambitious industrial strategy launched by the Chinese government in 2015 that aims to make the country the world's leading high-tech manufacturing power. As the factories of the future are sure to depend on 5G connections to function, the government knows that leading and shaping this technology will bring enormous benefits.

A recent report by the China Academy of Information and Communication Technology (CAICT) made clear what is at stake for China. It predicted that the rollout of 5G infrastructure would drive RMB 6.3 trillion ($947 billion) of economic output in the country by 2030.

The country's telecoms groups have answered the call and are expected to spend a combined RMB 2.8 trillion ($420 billion) on building out 5G mobile networks between 2020 and 2030, according to a study from the CAICT published in June. Such vast investment is understandable given the scale of China's internal market—the Asian superpower had 950 million 4G network users as of the end of September, almost triple the entire US population.

The Chinese government's planning is

Xu Zhijun, Huawei's rotating CEO, introduces the company's 3GPP 5G Pre-commercial System at the World Internet Conference in Wuzhen, Zhejiang province in December

starting to pay off, as China nudges ahead of the pack in the race to make the 5G world a reality. In November, the Ministry of Industry and Information Technology announced it had officially launched the third stage of trials for 5G networks and that the country's three major wireless carriers—China Mobile, China Unicom and China Telecom—would begin installing an initial commercial version of 5G networks in 2018.

Huawei and ZTE, already well positioned to become major global players in 5G due to the wide adoption of their mobile equipment across Asia and Europe, have also shocked their rivals by the speed at which they have developed new network technology. At the PT Expo China 2017 in September, Huawei became the first company worldwide to demonstrate a new device combining several key 5G technologies, which is capable of transferring data at 32Gbps—a speed one German newspaper called "crazily fast."

"Huawei demonstrated one big thing: they are ready for the next generation of mobile telecoms, not only in theory, but also in practice," read a report by German online publication teltarif.de.

What the report added was even more important: "Huawei has presented a major contribution for an industrywide standard for 5G key technologies and their interoperability."

Setting New Standards

It is crucial that Chinese companies leverage China's pole position in the 5G race to shape the global standards in their favor. If they fail to do so and the standards stray too far from what they have been working on, there is a real risk that large chunks of the massive investment—in the billions of dollars—Chinese companies have already spent on R&D for pre-commercial 5G products could be lost.

"It will be strategically important for all equipment vendors, Chinese and otherwise, to get ahead of 5G standardization because 5G will require a more complex ecosystem of partners to enable services than previous generations of mobile networks," says Malcom Rogers, a telecom market analyst at UK-based market intelligence provider GlobalData

"Working early to shape 5G standards will cut down on future R&D costs, establish valuable partnerships with operator customers and reduce time to market once 5G is ready for commercialization."

According to Rogers, equipment vendors, by working with partners can ensure that their early investments in trial 5G equipment will be able to be deployed without any major overhaul once 5G has been fully standardized. Such partners include mobile network operators, handset chipset manufacturers, cloud integrators and IoT platform providers, as well as standardization and regulatory bodies. Their early investments include antennas, base stations, core networks, backhaul and data centers.

Shobhit Srivastava, an analyst with India-based technology market researcher Counterpoint Research, points out another key reason why China is so committed to shaping the development of 5G. Intellectual property rights (IPRs) related to 3G and 4G, Srivastava says, are mostly owned by Ericsson, Nokia and Qualcomm.

The result of this is that Chinese companies pay huge amounts to the foreign players in royalties. Exactly how much this amounts to is difficult to estimate due to the complex cross-licensing deals between the companies, but is almost certainly in the billions of dollars.

"So, they are in a real rush to get many IPRs that are going to be essential for the future 5G standards. This is not only to save on 5G-related royalties but also to cross-license their 5G IPRs against IPRs in the conventional telecom technologies," he says.

Fifth Time Lucky

When it comes to the importance of setting global standards, the Chinese players have learned from bitter experience. China played virtually no role in the development of 1G and 2G networks in the 1980s and 1990s, with the technology being dominated by Ericsson, Nokia and Qualcomm.

In the 2000s, when the rest of the world started to move onto 3G, which allowed mobile users access to the internet, China decided that it would shun dependence on Western technology. Instead, it developed its own 3G standard, TD-SCDMA, rather than adopting the standards—CDMA2000 and WCDMA—being used elsewhere. But TD-SCDMA was not adopted by any telecoms operator other than China Mobile even though it was recognized by ITU as a 3G standard.

"As the TD-SCDMA handsets only worked on the China Mobile network and therefore couldn't be used for roaming, consumers were reluctant to sign up. Chinese planners had envisioned that the sheer economics of scale of the Chinese supply chain would convince the rest of the world to sign on [to TD-SCDMA], but it didn't," says Edison Lee, an equity research analyst at Jefferies Hong Kong Limited.

"Qualcomm managed to stay ahead of the pack during the migration from 3G to 4G, but when in 2012 the ITU started thinking about 5G, China realized that 5G is going to be a single global standard that will no longer be built on legacy technology. This gave China a big, brand new opportunity to own a certain share of crucial IPRs," he adds.

The Chinese players are doing everything they can to seize this opportunity. At the Mobile World Congress 2017 last February, Huawei, Intel and their telecom operator partners announced they would work together to drive globally-unified 5G standards. They also said they would create a unified 5G industry chain, from chips and terminals to network infrastructure and test equipment.

But before Huawei has any chance of doing this, the Chinese will first need to win a much bigger battle against their US rivals.

What's the Frequency?

Lee notes that besides the race for 5G IPRs, there's also fierce competition between Chinese and US interests in terms of what frequencies the eventual global 5G networks will be working on. Whereas China is enthusiastic about the medium frequency, which offers wide coverage, the US supports the super high frequency. This makes it easier for operators to find big chunks of unused spectrum, but offers shorter transmission distances and is more vulnerable to blockage by objects such as trees or houses.

"US academia believes they have achieved a breakthrough to overcome this, so that they can use super high frequency instead of the lower frequencies that are heavily contested in the US by both commercial and military uses," Lee explains.

"The Chinese, in turn, fear that a turn to super high frequency will once again allow the Americans to outmaneuver them in terms of core telecom technology. The Chinese will thus try to push for 5G at medium frequency and scale up the industry in order to reduce the cost, so that the rest of the world will not lean toward adopting super high frequency," he adds.

> China realized that 5G... [provided] a big, brand new opportunity to own a certain share of crucial IPRs
>
> Edison Lee
> Equity Research Analyst
> Jefferies Hong Kong Limited

So serious are the struggles taking place behind the scenes, it is expected that the first 5G networks will go live in 2019 without any agreement on standards being reached. The battlefield on which this regulatory fight will play out is a task force under the ITU called the third Generation Partnership Project (3GPP), which is meant to broker agreements on what performance requirements 5G will have to achieve.

The 3GPP breaks the project down into working groups. Each working group will come up with engineering solutions for each component backed up with trial data in order to reach consensus as to which proposal is the best. These will ultimately be combined into a standard.

"It is a consensus building group and supposed to be democratic, but if you rely on consensus building, it will take forever," comments Lee. "So, they narrow down to the two or three best solutions and if the group can still not agree, they go for a vote."

According to Lee, China started participating in these groups in 2012. It has since been "pretty aggressively" increasing the number of its people in the committees and sub-committees, so that by now many of them have Chinese chairmen and vice chairmen.

"Theoretically, these chairmen would not have extra weight and are supposed to be just administrators, but in organizations like the UN where lots of countries participate, there are many countries that will never submit actual proposals," Lee says. "So, when China needs support on one solution that is not dramatically inferior to the other solutions on the table, of course, China will try get support from their smaller country friends for the vote."

China scored an early victory in the working groups in November 2016 when the 3GPP decided to make China's Polar Code error correction technology part of a 5G global standard. The decision was hailed throughout China as proof that the country is a contender in the race to define and develop 5G, but set teeth gnashing in the US.

The US Federal Communications Commission (FCC), which can barely hide its deep dissatisfaction with the 3GPP's standard-setting process, put out a terse statement in the wake of the decision. Though the statement did not name China, it hinted darkly that some countries were seeking to control how global standards were being set.

Western Headwinds

The battle over standards is not the only area where the Chinese players are encountering strong opposition from the US. Huawei and ZTE have been banned from America's telecom infrastructure market since 2012 on national security grounds.

The companies have responded by focusing on other key markets such as Australia, India, Japan, Latin America and the EU. There they are giving Ericsson and Nokia a run for their money on their home turf, according to Neil Wang, Greater China President of researchers Frost & Sullivan. However, even in these markets the Chinese groups risk being shut out due to their lack of close partners within the industry.

"The challenge remains that the major rivals like Ericsson, Nokia, Qualcomm, Samsung and Verizon own many more patents than Huawei and that market and technical alliances are made between those competitors. Examples are Verizon's association with Samsung and Ericsson, and AT&T's partnership with Nokia," says Wang. "Chinese players still have a certain distance from them in the eyes of the outside."

Huawei is working closely with 5G consortiums that include US companies like AT&T and Verizon. But, according to Rogers from GlobalData, this pales into insignificance compared to the massive amount of collaboration occurring between Japan, Korea and the US as these markets aim to be the first to launch commercial 5G services.

"Huawei should continue to track what the US is doing, as it will likely influence the markets into which it can sell," Rogers warns.

Unclear Signals

With the race for 5G entering the final furlong, the eventual outcome still looks far from clear. According to Lee, there is a high likelihood the fight over patents will eventually end up in the courts. However, Lee believes it is a safe bet that China's initial share of 5G patents will be somewhere around the 10% mark.

"While I think they are targeting a 20-25% share, 15% is certainly achievable in the intermediate term, which would put them in a much stronger position in the competitive landscape than during 4G," he says.

The outcome of the battle over frequencies looks equally uncertain. The US government currently appears to be digging its heels in, as the FCC has already allocated super high frequency for 5G. But US industry does not appear totally confident that the US will win this battle. In June, *Fierce Wireless* reported that US telecom operators have been pressing the FCC to revisit medium-band frequency to make sure US technology can be aligned with the frequency range if necessary.

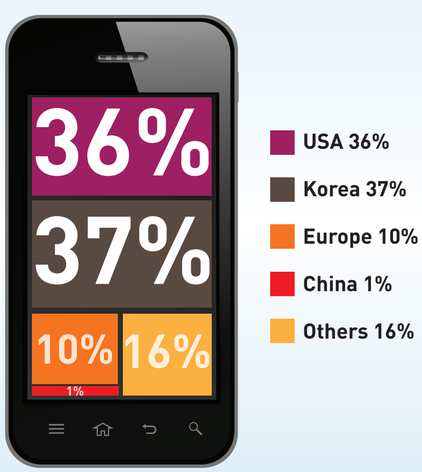
Given that the availability of free spectrum is a very big factor for telecom operators, Lee believes that a compromise may be reached, in which the world settles for medium-to-low frequency with super high frequency being used as a supplement in densely-populated city centers.

The 5G world may not run on Chinese rules, but there is no doubt that the balance of power is tilting eastward. And the race for 6G is about to begin.

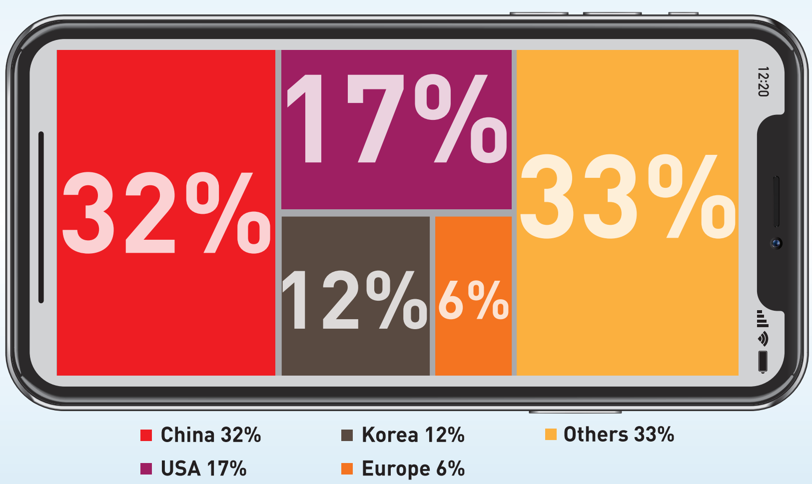
5G Patents War Heats Up

China is a frontrunner in the race to secure 5G patent rights

Holders of 4G essential IPRs



Holders of 5G patent families, as of November 2017



Source: Investor Village, Netscribes

OUT OF REACH

Why China is worried about the finances of its rising middle class

By Douglas Bulloch

Image by Lisa Ye

China's growing middle class is spending more and more each year, helping the country transition to a consumer-driven economy. But how much of this extra consumption is being fuelled by debt?

At first glance, Bonnie Cao and her husband look like cookie-cutter examples of China's newly prosperous middle class. Cao works in public relations for an investment company in Beijing; her husband is an officer in the People's Liberation Army. For years, the couple put half their income into a savings account each month, until finally, early last year, they achieved their dream of buying an apartment in the Chinese capital.

But as Cao told the *South China Morning Post* in August, things aren't quite so simple. To purchase the small studio, the pair had to take on a nearly $500,000 mortgage, leaving them needing to make $3,000 monthly payments for the next 30 years. This is too much for them to afford, so they have rented out the apartment for $900 per month while living frugally at the husband's army barracks.

Similar stories are widespread in China, complicating the wider picture of a rapidly-expanding middle class and an economy shifting away from exports and investment toward domestic consumption. Average yearly wages in China more than doubled between 2009 to 2016, from RMB 32,700 ($4,900) to RMB 67,600 ($10,100). McKinsey predicted in a 2013 report that rising income levels will help China's middle class grow from 174 million people in 2012 to 264 million people by 2022.

The hope is that this enormous new cohort of middle-class earners will help drive consumption levels higher, providing a new source of economic growth that will help China escape the "middle income trap." Catherine Wang, a project manager from Zhejiang province now based in Hong Kong, describes the middle class as "the key contributor to Chinese economic growth and China's future."

Yet some are worrying that the rise of China's middle class will be derailed by the country's runaway property market. Since 2010, Chinese consumers' assets have risen in value by $12 trillion, thanks largely to the country's booming property market. But this rise has been accompanied by a $2.4 trillion increase in household debt since 2012, with mortgage debt growing particularly quickly.

On paper, China's level of household debt—estimated at 44% of gross domestic product (GDP)—is low by international standards. But the speed at which it is growing has a lot of people concerned. Citi Analyst Liu Ligang called the rise "alarming" in an October 10 note, and even the governor of the People's Bank of China (PBOC), Zhou Xiaochuan, has warned that the "pace of growth [in household debt levels] has picked up in the last few years."

Will the middle class be the source of China's next phase of economic growth, or its next crash? The implications of that question for China—and for the global economy—could not be greater.

Great Expectations

The increased spending power of Chinese consumers is already having an impact—not only in China, but all over the world. The number of Chinese tourists visiting Italy, for example, has more than doubled since 2014, and stores are adapting by hiring Chinese-speaking staff and allowing customers to pay using Alipay and WeChat Pay, the popular Chinese digital payment apps.

In China, overall consumer spending increased by 10.5% from 2015 to 2016, much faster than the country's GDP growth rate. This has led some excitable analysts to predict an "explosion" in demand for luxury brands and services from Chinese consumers over the coming years.

But this rise in spending looks less impressive when set against the nearly 30% rise in consumer debt and 23% rise in mortgages in the year to September 2017. Christopher Balding, an associate professor at the HSBC Business School, believes that there is a direct link between the two sets of figures. "There is pretty good evidence there is a not insignificant amount of consumption that comes through some form of debt financing," he says.

Some see the rise in debt as simply a sensible way to facilitate consumer spending, a necessary part of creating a consumerist economy in China. "Most people see this as a positive development," comments one Shanghai-based academic, who wishes to remain anonymous. "As long as China keeps growing, the middle-class club will grow bigger."

This optimism is also fueled by an observable generational divide between a frugal and conservative older generation and a much more liberal post-1980s generation. These Chinese millennials live up to economist Milton Friedman's notion of "wealth expectations," in which expenditure habits are governed less by available means than by the expectation of future wealth. "People are not afraid to borrow money because they have a stable job and income," says Wang.

In Search of the Middle Class

But there is a problem with the picture often painted of a rising generation of affluent young Chinese borrowing small amounts to spend on Louis Vuitton bags, expensive vacations and the latest smartphone, points out Andrew Collier, Managing Director of Orient Capital Research in Hong Kong.

"There is a funny thing about the middle class," says Collier. "When I walk around China, I never see a middle class. What I see are wealthy people in a couple of big cities."

McKinsey's widely-cited forecast defines anyone with an income between $9,000 and $34,000 as middle class. But a large proportion of China's consumers are at the low end of this spectrum, without the kind of disposable wealth that allows luxury purchases. What's more, the report does not mention the elephant in the room—consumer debt.

For Collier, the steady rise in consumer spending is not necessarily evidence of a growing middle class, but rather the rapidly increasing wealth of a small elite. "You could argue that there is no middle class, or that it's quite restricted. That it's basically Bei-Shang-Guang," says Collier, referring to the triumvirate of top-tier cities—Beijing, Shanghai and Guangzhou—where conspicuous consumption is readily visible. If you go to smaller Chinese cities such as Jinan, in China's eastern coastal province of Shandong, by contrast, "you don't get a sense of tremendous wealth, you get a sense of a few people who have some wealth," he adds.

The concentration of wealth in the hands of a small minority is even clearer in the wealth management products market, where a lot of China's middle class park their money. "Some data suggests that the rich control at least half the savings," comments Collier. "Literally 1 or 2 or 3% [control] half the assets in the banking system. So, if you try to bring this stuff to bear, the whole notion of the growth of China's middle class goes out the window."

So how big is China's middle class in reality? Balding says the answer depends on who is using the phrase 'middle class.' "If you're talking about Victoria's Secret, what percentage of people are going to be buying their products, that's a very different number than the policymakers in Beijing consider to be middle class based on, say, a PPP calculation for the International Monetary Fund," he says.

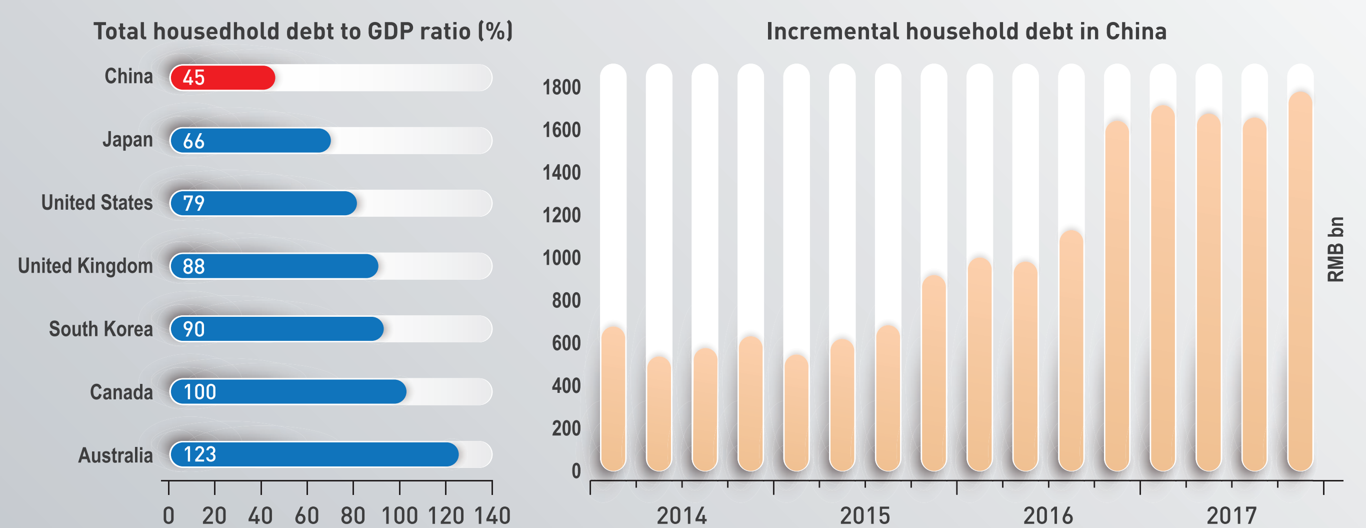
Millionaire Security Guards

Things become even more complicated when you take into account the effect of China's red-hot property market, as Balding explains. "You cannot make assumptions in China," he says. "Somebody dressed in Louis Vuitton might just be trying to show off and have no money, and somebody that is a security guard might be a millionaire." He adds that the security guards at a university he knows are likely to be millionaires because they once owned the property on which the school is built.

Housing prices in China have skyrocketed in recent years, with annual growth

The Debt Debate

China's household debt is low by international standards, but rising rapidly



Source: Statista, CEIC, People's Bank of China, Citi Research

> Chinese households have generally been short on liquidity
>
> Huang Xiaodong
> Executive Vice President,
> Institute for Advanced Research
> Shanghai University of Finance and Economics

rates in some cities at times reaching 40%. At the peak of the price spike in 2016, one Shanghai resident reported buying a property for RMB 2 million, and seeing it gain another RMB 1 million in value within five months.

This growth has been fueled by a widespread feeling among Chinese consumers that property is the most—or perhaps the only—truly secure investment. "It's part of the culture to own property," says the Shanghai academic. "In fact, it's a natural choice for people to buy property if they have the money."

This impulse to invest in property is best demonstrated by consumers' habit of buying multiple homes if they can afford it. "If you have spare money, you buy more properties," says the academic. Collier remembers being startled when he asked a group of students in Jinan whether they owned a house. "Everyone said three or four, and then one girl said two, and the other girls laughed and said 'yeah, but two big ones!'" he recalls.

For those who already own a home, this situation has worked out just fine, as the anecdote of the wealthy security guard suggests. But it is creating problems for others, especially young people who are finding it increasingly difficult to get onto the property ladder.

"If you bought even five years ago, you might have been able to reasonably afford it and have made good money," says Balding. "[But] if you are trying to buy now in Shenzhen, you are buying upward of $1,000 a square foot... In Hong Kong that might not be crazy, but by any global standard that is a crazy number."

However, the pressure to buy is extraordinarily strong for young adults in China, partly because there is universal expectation that prices will continue to rise. This implies that any delay will only mean paying even more later. There is also added cultural pressure in a society that considers buying a home a rite of passage, especially for young men. "Everyone, everyone, everyone, thinks in terms of property ownership," says Balding. "People don't get married until they buy an apartment."

These twin pressures are tempting an increasing number of young Chinese to take on troubling amounts of debt in order to make that all-important purchase. "There are kids that are getting their parents to chip in and right out of school buying half-a-million-dollar apartments," relates Balding. "I can ballpark what they make but it's not remotely enough. They must be living on bread and water to be able to afford that."

Collier has noticed a related but equally concerning trend, which is that a growing number of people "are taking their mortgage loan and using it for their equity down payment." Aside from raising the risk of a property crash, Collier believes that the increasing speculation on property is harming consumer spending. "[Consumers are] starting to get significantly leveraged mainly to property, which means that they are going to have less income available for other kinds of expenditure," he notes. "The data does support that. It's very clear on trend."

According to the Shanghai academic, the connection between soaring mortgages and falling spending couldn't be clearer. "[The] rising value of property actually suppresses consumption," he says. "People have to cut other costs in order to pay mortgages." He shares that this phenomenon has even led to the coining of a new term in Chinese cities. "We jokingly refer to ourselves as *fang nu*, or 'housing slaves'," he says wryly.

This phenomenon is already harming China's transition to a consumption-driven economy, according to Huang Xiaodong, Executive Vice President of Shanghai University of Finance and Economics' Institute for Advanced Research. "Chinese households have generally been short on liquidity… in other words, the soaring mortgages have inhibited China's economic growth to a certain extent," said Huang in a recent speech.

But an even greater worry is that the country's overleveraged homeowners may default on their payments, causing the country's swelling mortgage market to pop in a similar manner to the US during the subprime crisis of 2007. It was just this kind of situation that PBOC Governor Zhou had in mind in October when he raised the prospect of a "Minsky moment" for the Chinese economy. He was referring to a phrase named after economist Hyman Minsky who believed periods of stability encourage risk taking, which can lead to a moment when there is a major collapse of asset values.

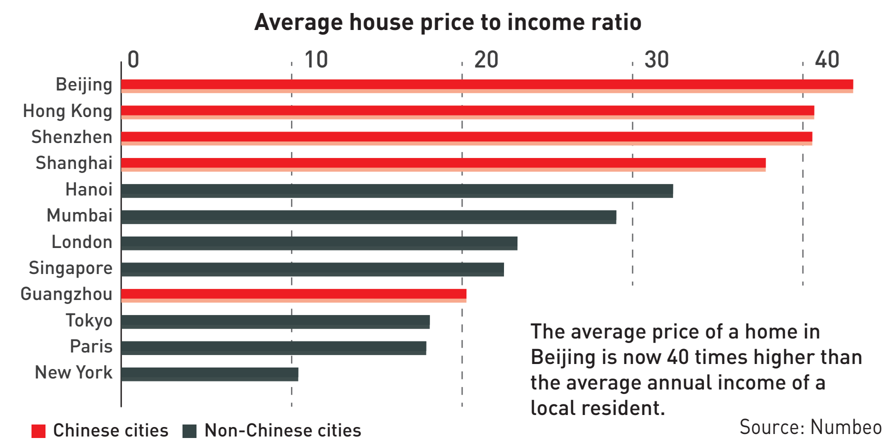
Debt Stress

Comparing China today with the US 10 years ago seems a stretch considering its household debt to GDP ratio is less than half the level America reached on the eve of the credit crunch. But Balding believes that China's property market is reaching the stage where it is comparable to the Western economies. "New buyers are buying with Western normal levels of borrowing," he says. "They might be buying with a 75% loan and a 25% down-payment."

There is also anecdotal evidence of

Sky-high Housing

Chinese real estate is the most unaffordable in the world



Source: Numbeo

more corrosive practices, such as "people taking out loans, buying an apartment, going out and buying more apartments, borrowing off those apartments, buying more apartments," relates Balding. But it is difficult to know how widespread this practice is, he concedes.

On the other hand, high mortgage-to-value ratios are a relatively recent feature of property transactions in China, meaning that any risk may be easily contained. "There is so little debt in previous generations," says Balding. "[So, there's] reason to think that the debt stress associated with apartments is concentrated among newer buyers."

Another mitigating factor is that many young Chinese—even if they cannot easily afford their own home—have strong expectations of inheriting property from their parents and grandparents. This could underwrite the huge liabilities associated with the purchase of a new property.

Yet there is no doubt that the Chinese government is concerned about a housing crash. President Xi Jinping warned repeatedly throughout 2017 that "houses are built for inhabiting, not for speculation." Cities across the country have also introduced restrictions on second home ownership in a bid to curb speculation.

But unlike other governments, which might lower interest rates to keep a lid on monthly mortgage payments, China is also attempting to ward off a crash by buying up large amounts of unsold units, according to a *Wall Street Journal* report. "Sixteen percent of all property purchases in 2016 were made by government entities," says Collier. "That's a lot of money they're putting in. So, while they are trying to restrict mortgage loans, they are also jacking up the property market."

Collier believes local governments are pursuing this approach because they need to bail out insolvent developers and shore up their own finances. "The bigger issue is that property supports local government revenues," he says. "[If property prices] decline that would lead to that whole source of income dropping, which would be a huge problem for local governments across the country."

The problem is that Chinese consumers also know this. This means that there is a widespread perception that the country's property market has become "too big to fail," further fueling the rush to buy.

Treating the Symptom

As 2018 gets underway, the Chinese government appears finally ready to tackle the country's debt problem head-on. 'Deleveraging' has been the buzzword since the 19th Party Congress in October, with regulators releasing new guidelines and slapping record fines on misbehaving banks.

There are also signs that the government is trying to tackle skyrocketing house prices in major cities like Shanghai and Beijing. "The government is already changing this," says Lu Ming, Professor of Economics at Shanghai Jiao Tong University. "Recently, they announced that… starting now, they are supplying more land for rental housing."

The hope is that building more affordable homes will cool the rise in property prices, while encouraging renting will enable more people to pour their growing incomes into the real economy, rather than the financial black hole of the mortgage market.

But if the country is really going to rein in the real estate market and unleash the spending power of its middle class, there is much more work to do. "China has a great ability to organize politically to overcome challenges," observes Collier. "But I do think that you can't sustain leverage forever."

> **New buyers are buying with Western normal levels of borrowing**
>
> Christopher Balding
> Associate Professor
> HSBC Business School

CKGSB BUSINESS CONDITIONS INDEX

China Economy Charges into 2018

China's economy looks set to continue growing strongly in 2018, the CKGSB Business Conditions Index (BCI) for December suggests.

Key findings
- Firms' profits are at a four-year high
- Executives are also feeling bullish on recruitment and investment
- But costs continue to rise quickly

The BCI rose to 62.8 in December. This was a slight increase on the previous month's result of 59.1 and the second-highest score of 2017.

Of the four main sub-indexes included in the BCI, executives reported feeling more positive than a month previously on three of them, with financing the only exception. Firms are feeling particularly confident about their corporate profits: the score rose to 75.6 from 67.7 in November.

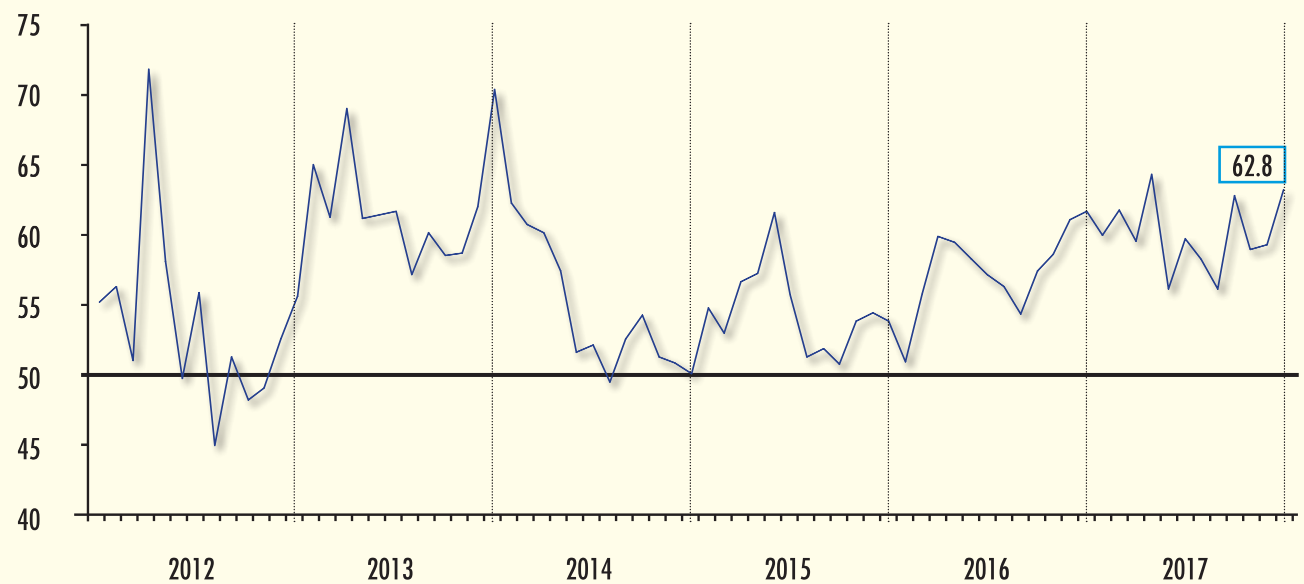
Because the BCI is a predictive index, we expect that China will continue to grow strongly in 2018. The World Bank's 2018 forecast of 6.4% growth seems reasonable.

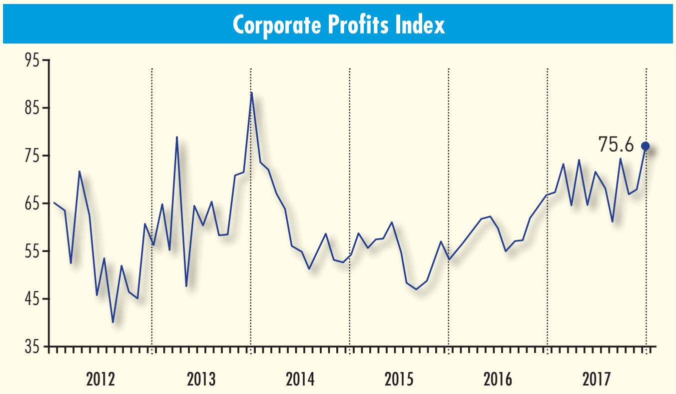
The BCI is directed by Li Wei, Professor of Economics at the Cheung Kong Graduate School of Business

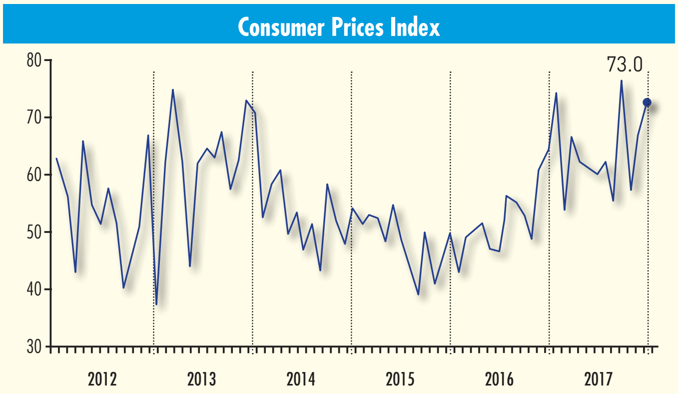
How the BCI is compiled

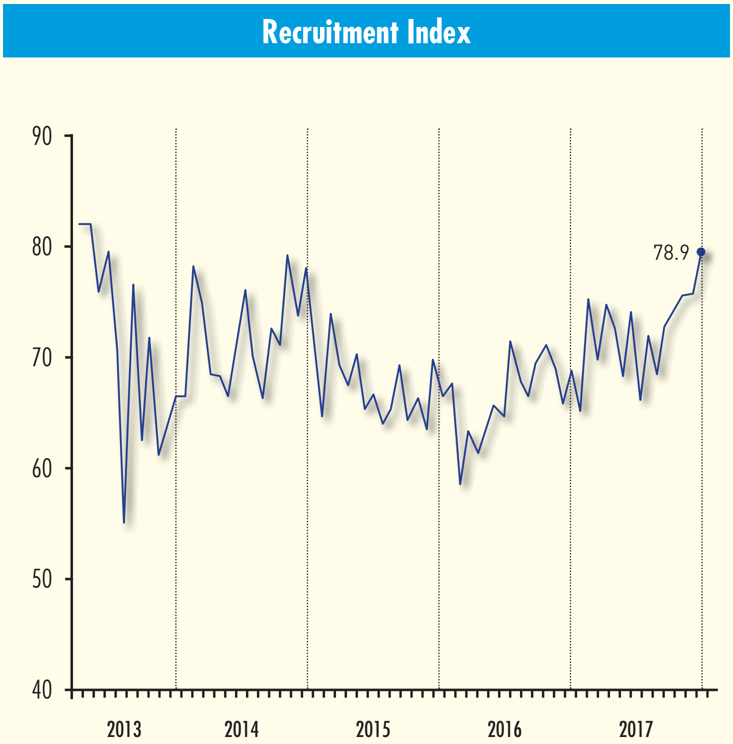
The CKGSB BCI is a monthly survey of senior executives at both industrial and consumer-facing businesses in China. Participants are asked about the outlook for their companies over the next six months in terms of sales, profits, financing and inventory. This is then combined into an overall score.

CKGSB Business Conditions Index





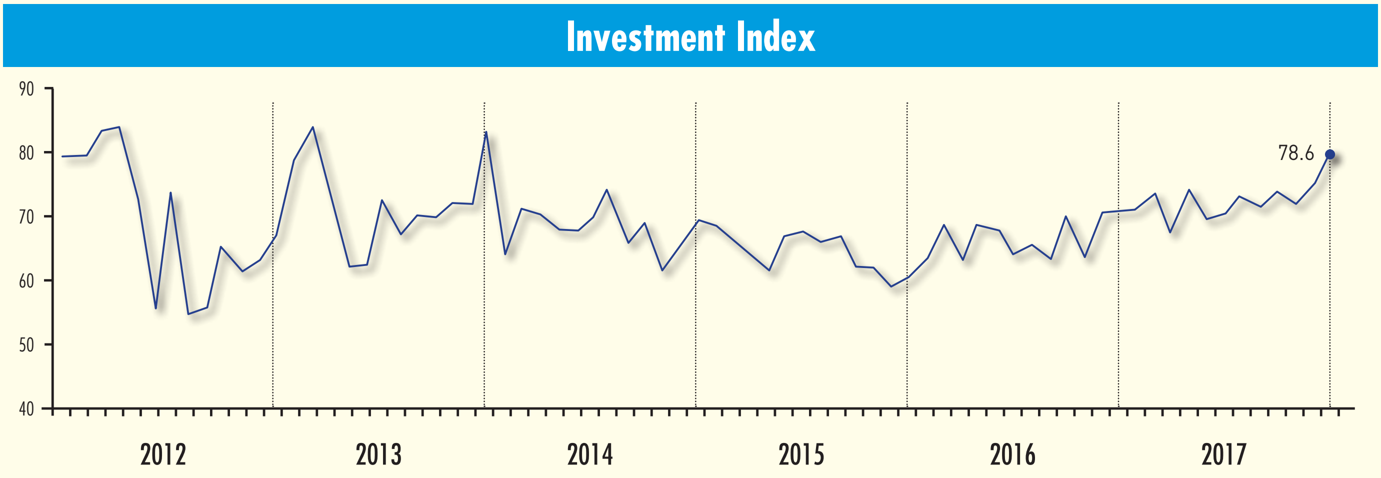




One potential risk the government will need to keep an eye on in 2018 is inflation. Both producer and consumer prices rose significantly in December, the BCI suggests. If the inflationary trend continues, China may have to choose between maintaining economic growth and stabilizing the price rises.

Another trend to watch out for in 2018 is interest rate hikes. The healthy state of the global economy, increasing prices and strong performance of the job market make it a good time to do so. The US may raise interest rates by 75 basis points this year, which could make RMB assets less attractive, increasing the impetus for capital flight.

Policymakers will need to maintain a long-term outlook and act decisively to nip these risks in the bud.



CKGSB BUSINESS SENTIMENT INDEX

On the Road to Recovery

The darkest hour is just before dawn. That could be the lesson of the CKGSB Business Sentiment Index for the third quarter of 2017, which brought mixed news for China's industrial economy.

Key findings

- Weak demand remains the biggest challenge facing the industrial economy
- Production at private firms is growing for the first time since Q4 2016
- Nearly 50% of firms saw costs rise in Q3, up from 32% in Q2

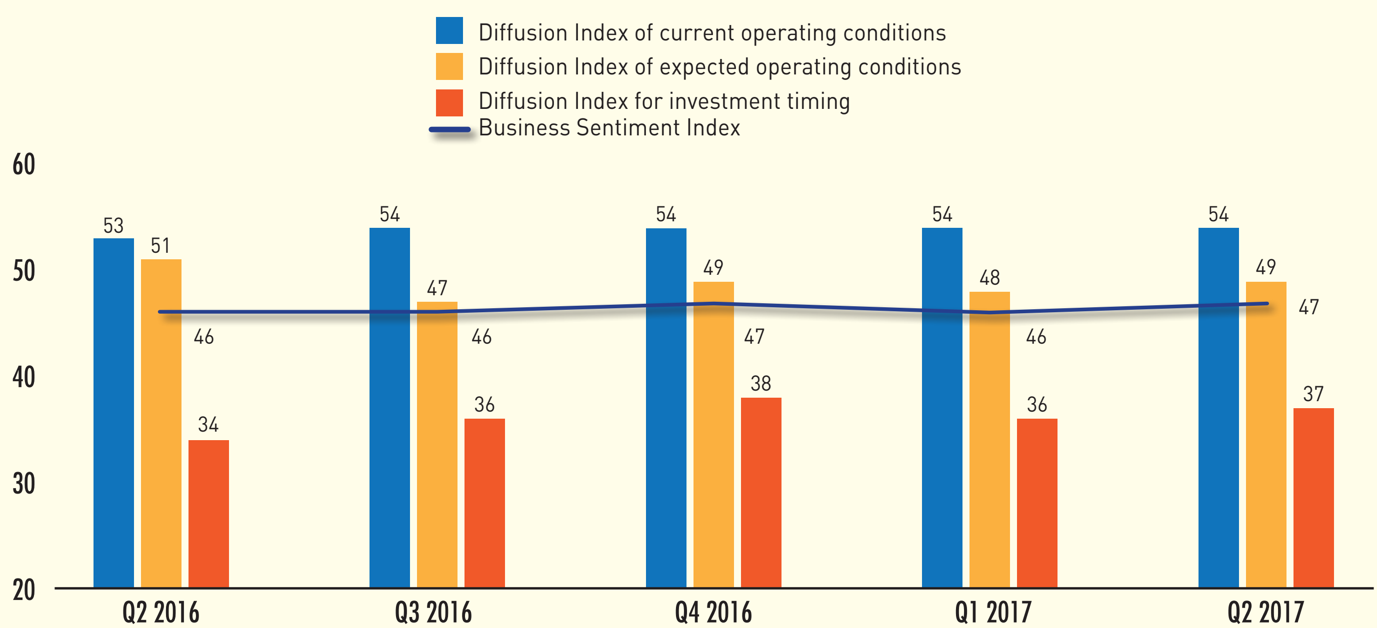
The CKGSB BSI for Q3 was 47, indicating a slight contraction for the fourth consecutive quarter. But there are also signs that the economy's underlying structural problems are becoming less severe. Overcapacity, though high, is now falling, and capacity utilization and gross margins have increased.

What is the CKGSB BSI?

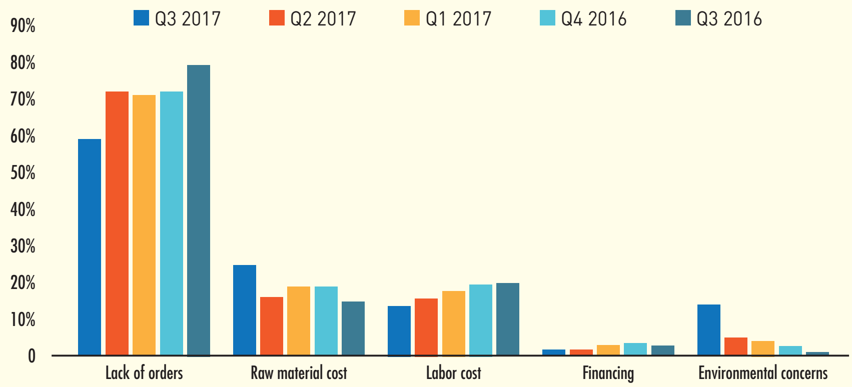
The Business Sentiment Index estimates the outlook for China's industrial economy. It is based on CKGSB's quarterly surveys of around 2,000 industrial firms in China. The surveys are weighted by industry, region and company size to ensure they reflect the wider economy.

The BSI is directed by Gan Jie, Professor of Finance at the Cheung Kong Graduate School of Business

Business Sentiment Index



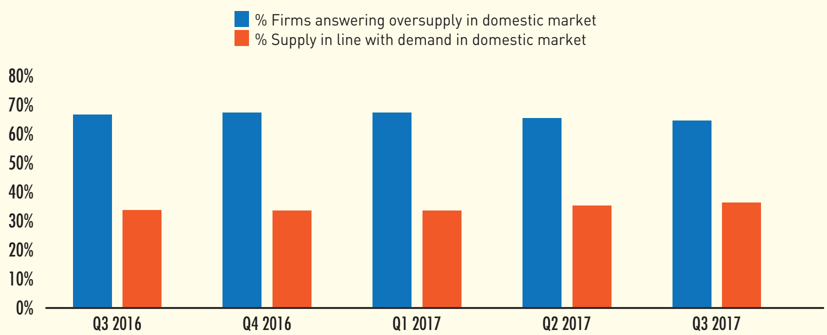
Factors Constraining Production in Q1 2018



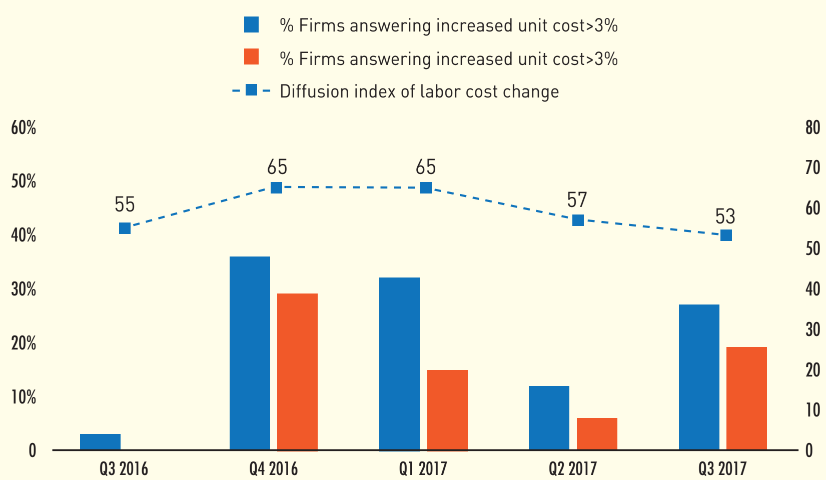
- Lack of demand is still by far the biggest challenge facing China's industrial firms, but the situation is improving
- Tougher environmental inspections are having an impact on businesses
- The number of firms citing environmental concerns nearly tripled in Q3 2017

Excess Capacity

- Supply-side reforms appear to be reducing the overcapacity problem in China's industrial economy
- Firms' sentiment regarding the supply situation improved for a third consecutive quarter



Costs



- There was a big rise in the number of firms reporting significant increases in both unit costs and raw materials costs in Q3
- But labor costs are now rising more slowly than before

Conclusion

- Though the CKGSB BSI was still under 50 in Q3 2017, there are clear signs of recovery in China's industrial economy
- Continuing to cut overcapacity must be an economic priority for the government in 2018
- Given the government's strong commitment to supply-side reform, we remain positive about the long-term outlook for China's economy

Mad Men in the Middle Kingdom

Chris Reitermann, CEO of Ogilvy China, discusses the art of advertising to Chinese consumers

By Mei Xinlei

What makes Chinese consumers tick? That's the question Chris Reitermann has been puzzling over for the last two decades.

Reitermann began his career at advertising giant Ogilvy & Mather in the 1990s, moving to Beijing in 2000 to set up the digital agency OgilvyInteractive. Since then, he has risen to head up the company's entire operations in China.

In this interview, he discusses the dramatic changes that have taken place in China advertising during his time here, why China has much to learn from India on running a great campaign, and what the industry may look like by 2027.

Q: Ogilvy is currently undergoing a big restructuring called the Next Chapter strategy. What is the purpose of this strategy?

A: There are a couple of forces behind this. From a broader industry perspective, there's a big push for integration and consolidation. Integration driven by clients, because in a more and more fragmented world, they want more simplicity. And there's an increased push by the investor community for them not to just buy more companies but to extract maximum value from the assets that they have. It's also a chance for us to re-focus on our core business. As a company in a growing environment, you sometimes forget what you're all about. And Ogilvy, from the first day that David Ogilvy founded the company, has been about building brands.

Q: Ogilvy's parent company WPP and the other members of the global advertising industry's "big five"—Omnicom, Publicis, Interpublic and Dentsu—faced headwinds in 2017. Was this also the case in China?

A: Well, let me first talk a bit more broadly. Our business is always a reflection of our clients' business. So, if our big clients struggle, we will struggle, because marketing and advertising spending is usually the first thing that companies cut. Also, what has affected the industry is a lot of the new forces that are developing in a more digital world. Ten years ago, we were really competing with the other four holding companies; now, we're competing with consultancies, with the platforms—Facebook, Google and so on—so the competitive setup has changed.

Coming back to the China question, in China we have felt it less. We had a tougher year in 2016, because the whole market cooled down a little bit. But this year (2017), after Q1, China started to rebound a little and we have felt it, our clients have felt it, so this year has been a fairly good year for us. And a lot of the forces that I've talked about, like the consultancies, they're less of a threat here. The platforms are also less of a threat here, because if you look at Facebook and Google and the percentage of their revenue that comes from advertising versus Tencent and Alibaba, it's a huge gap. But they will get into that, so we are aware and prepared.

Q: Since the launch of the Belt and Road Initiative, we're seeing more Chinese brands going abroad. How is that affecting Ogilvy?

A: I think it's very good for us, obviously, but I would also say it's a bit over-hyped. Obviously, there are now many Chinese companies going abroad, investing abroad, building businesses abroad, but it's not yet at a stage where these companies invest significant amounts of money in brand building abroad. I think Huawei is the only company in China that actually has a larger share of business outside of China than in China.

But that said, there's definitely a big trend and a huge opportunity to build on that trend, and I'm absolutely convinced that in the next 10 years we'll see some major Chinese companies becoming big global forces in their industries. We just had a meeting for the 2018 budget, where we showed our US colleagues how much I believe China will become a global force in many categories. China is making such big leaps domestically. So, on the back of that, they have huge cash reserves, massive amounts of technology, accelerating innovation, which they will eventually bring to other places. It will become very big for us.

Q: Could you expand on that? How big is very big?

A: I haven't quantified it yet in a dollar amount, but I gave them some examples. For example, everyone's talking about Alibaba, huge e-commerce player, but what I showed them is how that company or that phenomenon will drive a lot of other things.

Because of the sheer size of its e-commerce market, China will become a huge leader in cloud computing. This is already happening: Alibaba, Tencent and Baidu are investing massively outside of China, and companies like IBM are seeing huge threats from them.

That's how these companies will go global. It won't necessarily be the traditional route followed by FMCG (fast-moving consumer goods) companies. It's through technology, innovation, that they'll accelerate their development outside China.

And I showed them, because of cloud computing, they will be a world leader in autonomous driving, and because of that in artificial intelligence. It drives a lot of things, and at the end you have 10 different categories, all of which will be emerging industries where China will become a world leader. Take automotive as an example. In 10-20 years, I think China will be a leader in automotive. Not necessarily in engine, fossil-fuel driving, but electric cars, autonomous driving.

In the next 10 years, we'll see some major Chinese companies becoming big global forces in their industries

Q: In a recent report, Nielsen suggested that e-commerce shopping festivals are becoming less effective in China because consumers are becoming less price-focused and less impulsive. Have you noticed that trend, and how would you compare a middle-class Chinese consumer to someone in the US?

A: That's a big question… I don't think I would generally say they've become less price-driven or price-conscious. I think that shopping behavior overall has completely changed, and in many categories the existing retail setup has basically exploded. Hypermarkets in China are increasingly going out of business because it's all done through e-commerce. There are all these neighborhood 7-Elevens and little stores popping up, because that's how people shop now.

In terms of price sensitivity, I don't think it'll ever change. Chinese people like a good deal, that's very Chinese, but in different categories it has changed. Firstly, everything is much more transparent now, you always know where you can get the best deal, any day of the week. So, people, the way they shop now, especially for bigger ticket items, is they go to a shop, look it up, and then go online and find the best deal.

Because of all this, people wait for the shopping festivals. What people never talk about when you look at the Single's Day (Double-11) festival: a lot of people stop shopping three months before. They just basically wait for November 11 for anything they want to buy. So, people say, 'Oh, Alibaba made $25 billion in sales on Double-11,' but they never talk about the $25 billion of goods not sold the three months before when people were waiting.

Q: Some marketers have suggested that in China, brands over-spend on digital marketing. What's your opinion on this?

A: I wouldn't say they're over-spending. I think, like with every

A 1990s billboard advertises the then-new VW Santana 2000. Ogilvy's campaign for the sedan was hugely successful

new thing, you learn as you go. Not every dollar that is spent on digital is spent in the most effective way, but the same happened with TV and other things 50 years ago. And I think it's actually better for clients to over-spend, and then adjust and learn, than to not spend.

This is one of the great things about China, because people here just do it—they optimize and learn. In Japan, the mentality is, 'It's difficult, let's just continue to do what we've always done, so that we don't screw anything up.' Whereas here, it's, 'Let's forget everything we've done and do something new, and if it doesn't work, we'll do something else.'

But the problem is, a lot of what clients have done in the past doesn't really apply anymore in the same way, and nobody knows what the right answer is. If you're a marketing director today and you have $100 million to spend, where do you spend it? It's a very difficult question. Ten years ago, you would say, 'OK, 80% on CCTV and a few billboards and everything will be fine.' Now we have WeChat, Alibaba, e-commerce, mobile, programmatic, unlimited options. I actually think on WeChat or Alibaba, clients don't spend enough yet.

Q: Do you think that the way brands use these digital platforms will change?

A: Yeah, that's the thing, because a lot of clients still think about WeChat as an advertising channel. Increasingly, we're going with our clients to these platforms not with the intent to just buy advertising, but to form strategic partnerships, to do something much more long-term that provides customer value rather than to just do advertising.

Q: Could you give me an example of that kind of project?

A: One client we work with that I always think is probably the most advanced in China as a modern marketer is Yum!—KFC—a very big client of ours. It's amazing how they work across the whole digital ecosystem in China. And how for them marketing has changed over the last… not even five years. Five years ago, they were the most traditional marketer in the space—they did 15-second TV commercials for every new promotion, and that's it. Now, they are one of the biggest home delivery providers in China, they have a big investment by Alibaba, and they're one of the largest mobile-payment providers in China.

Q: How do you stay ahead of the game in a market as fast-moving as China?

A: The thing is, with things changing so fast, I also think people have the tendency to just jump on every fad. I always try to educate our clients in China. When you look at advertising in India or Thailand, for example, I think it's much better than in China—better in that it connects more to really basic human insights. Because when you talk to consumers, the way you reach consumers or create an emotional bond with them, it's very basic things: family, love, boy-

> The thing is, with things changing so fast, I also think people have the tendency to just jump on every fad

In China, you're always trying to find the next great, crazy, new thing that comes up

friend, girlfriend, stuff like that. But in China, you're always trying to find the next great, crazy, new thing that comes up. So people forget the basics of creating empathy and human emotions in advertising, and that's why a lot of the advertising we see in China… How do I say it in a nice way? It's very functional and very much driven by what's the latest thing, rather than really emotional stories that connect.

Q: Is this pressure for the "new thing" coming mainly from the clients?

A: It's the nature of the market. Number one, it's a fairly young market, at least in marketing or brand terms. Twenty-five years ago, there basically was no advertising, so it has been a fast-changing market and environment. When you operate in an environment like that, you get used to the fact that you can't possibly do the same thing again that you did last week.

That's something I often have discussions about with our clients. Last year, we did a campaign for a client—hugely successful, great insight, great campaign. So you'd think you would do the same thing this year. No, they don't want it. If someone in the West stumbled upon that, they would use it for the next 15 years. But no, they can't possibly do the same thing twice.

Q: We've talked a lot about change. What things have stayed the same over the last 20 years?

A: So many things… One thing that has been a mystery to me ever since I came here is why China hasn't become a force in our business as much as in many other places. Because advertising in China, at least from a creative point of view, hasn't developed as much as it could or should have.

It's complicated. People always say China is very different, and the regions and people are all very different, but I always say that's the case for India, but still they're managing to do great advertising. In China, good advertising is just about doing something different, but most people don't want to do something different. We often talk to clients, for example in the auto industry, and we tell them, 'Look, every other company in China is also doing exactly the same thing.' And they say, 'Yeah, I want that too.' There isn't this ambition to stand out from the crowd, to do something different.

Q: Has this attitude changed at all over the years?

A: Actually, I think that 20 years ago you saw better advertising than now. In the early days, there wasn't a lot to benchmark against, so clients just did something. We launched [the Volkswagen] Santana here in China, the first car that we'd ever launched. The ad that we did 20 years ago for the Santana would still look pretty good compared to everything else we do. But that was very emotional, it was different and people today don't want to do it, or want to do it to a lesser extent.

What has happened in advertising is, because people have gained more experience over the years, people say that in certain channels things have to be done in a certain way. And if you look at TV, for example, it has basically become a 15-second format on CCTV—that's not a lot of time to do something creative. So what most clients do now is say that on TV they'll just provide a very functional message so people get what the product is all about, and then they use digital or online to do something more emotional. But often whatever is done online doesn't have the same impact as what you do on TV.

But obviously over the last 20 years, talent has developed much more. In our industry there are better, more creative people, and clients are becoming more sophisticated, so we are getting there, but with slow, baby steps.

Q: What do you think will be the biggest changes in China's advertising industry over the next decade?

A: I think the market will get more local. At the same time, Chinese companies will become more international, so it will be an interesting time in terms of figuring out what's the right setup to do that. We see that a lot with our clients, the people that you need to do work on Chinese brands in Chinese and on Chinese brands outside of China—they are very different, and also the composition of these teams is very different.

We went through that experience with several of our local clients, because when they want to go abroad, they say, 'I only want global experts.' So we fly in people from New York or London, and they have no idea what they're talking about. There is a big cultural gap, and to get that right you need a good mix of people that understand how these Chinese companies work, that can actually interact with them and understand them. And then, mix that with people who have experience in building global businesses, global brands, which is not easy.

But I do think digital will definitely be by far the most disruptive force for the next 10 years. And I think what is very important to us is that we continue to stay true to what our business is all about, and that's building brands, because the basic principles of building brands is not going to change. But how that manifests itself—that will definitely change. That is going to be a big challenge for us to figure out.

When Branding Meets Politics

Shaun Rein, Managing Director of the China Market Research Group, talks about his new book, *The War for China's Wallet*

By Dominic Morgan

One of the world's most high-profile China experts, Shaun Rein made his name by highlighting new trends in the Chinese economy years before the Western media caught on.

In 2012, his first book, *The End of Cheap China,* highlighted that China's low-cost manufacturing miracle was coming to an end. Two years later, he correctly predicted the rise of a new generation of innovation-led Chinese companies in *The End of Copycat China*.

Now, the founder of the China Market Research Group is back with his third book, *The War for China's Wallet*. As he tells *CKGSB Knowledge*, the overarching message of this latest work is that it has never been more critical for brands to understand the Chinese market.

Q: What advice would you give to a business that is coming to the Chinese market for the first time?

A: What I would say is, understand the local consumer or local potential client. Really understand that your products and services might need to be localized. You want to keep your core brand DNA, but make it relevant for the Chinese consumer. Ralph Lauren is not relevant. When they have blonde-haired, blue-eyed models summering in the Hamptons—that's not an image that Chinese can live up to. Have a nice lifestyle like Gucci, where the models have the same body shape as the Chinese, they tend to be a lot more petite.

Second, you've got to hire a China country head that lives in China, understands the China market and has a track record of success. It can be a mainlander or a foreigner, but it's got to be someone who succeeded here. I mean, I had drinks last night with people from a huge company, where the CEO of China lives in Hong Kong. You can't do that; you have to live in Mainland China. To me, that's like running your American operations from Puerto Rico.

Foreign brands such as McDonald's face more challenges in China than ever

Q: Are you surprised how many foreign brands come to China and do very little localization?

A: I talked to [British department store operator] Marks & Spencer and they said, 'We're Marks & Spencer, we cater to the suburban British housewife. That's what we're going to do here.' I'm like, 'There is no suburban housewife!' And then the guy told me (this was the first or second year): 'We can't localize our sizes for Chinese. We have to bring the same clothes from the UK into China.' It was ridiculous. They brought the same clothes, they didn't even bring zeroes or twos or fours, it's all size 16, 18, 20. It was shocking.

But, you know, I have to say: Asian countries make the same mistake. When I was at the Fifth Avenue store in New York for UNIQLO recently, they all had XS and S. You wonder, 'Don't they know Americans are like dinosaurs compared to Japanese?' You need to get bigger clothes. So, it works both ways. Shocking.

Q: One of the key arguments in your book, The War for China's Wallet, is that Chinese consumers can be mobilized to reward or punish brands based on a country's relationship with China. The most striking example recently has been South Korea. How worried should brands be about this trend?

A: Brands need to be very worried. They need to understand the geo-political situation better now than at any time before. Five, ten years ago, you basically had to understand: what did the Chinese consumer want, what types of products or services, what's the right marketing communications strategy? But now, it's very clear that China is using its economic wallet and its muscle to reward and punish other countries—and, increasingly, companies—to ensure that they adhere to its political wants.

Q: What practical measures can brands take to protect themselves from this?

A: It's not easy, frankly. I think there are a couple of things. They can, first and foremost, show from the very beginning that they're friends of China. In the book, I used the example of Yum! Brands—KFC. They have always shown the everyday Chinese people that they respect the culture, respect the people. And they have done it by creating egg-and-milk food programs for poor schoolchildren throughout the country. That's really important, because when there was South China Sea tension a year ago, sales in some parts of China for KFC dropped dramatically. But they rebounded after a month or two, because at the end of the day, the consumer realized KFC is a friend of China, and that's a really important thing.

Secondly, you probably need to join associations. No single company can push back against the Chinese government, so you need to form blocks of 20, 100, 200 companies. Then, if one of them gets attacked, they can unify together and say: 'Hey, wait a minute. This is not this company's problem, this might be a government issue, don't punish us.'

Q: How can brands from countries that generally enjoy a positive image among Chinese consumers take advantage of this without making themselves vulnerable?

A: It's tough. I think iconic brands that represent a country are dangerous. It's better to be affiliated, but not too representative. For example, Costa Coffee customers don't always know it's British. Right now, Harrods is doing fabulously well, because for Chinese, when they go [to London], it's a destination. If you go to the UK, you have to shop at Harrods. The risk though, for Harrods especially, is that if there ever is tension between China and the UK, Harrods will be the first thing to get hit. Costa Coffee won't be. It's Toyota, it's KFC, it's Starbucks, it's Apple… It's good to show you're from a certain country, but it's also not good to emphasize it too much.

Q: Is there a chance this approach will become less effective if used too often?

A: That's a great question. I think Chinese consumers don't view it as propaganda, but rather as pride in the country. I think it's a strategy that they can employ over the next 10-20 years, and it's not going to make a difference. Even when we interview Chinese who were educated abroad and they come back, they still get really worked up.

The bigger risk is: will China go too far and cause too much worry for other governments, to the extent that that they do band together and they push back? Maybe they don't band together in ASEAN, but maybe they band together in TPP. There are all these new organizations that are popping up. China needs to worry about that, that they don't oversell their economic power.

Q: What role should governments play in terms of helping their own domestic brands position themselves in China?

A: I'm not sure they need to help position brands. What they need to do is help lobby governments more. I agree with Trump for pushing for more market access for financial services firms, and for beef. You need to take a respectful but strong line with China. And that's why I liked Trump's meetings here [in November]. He said (not a direct quote): 'You've taken advantage of us, business-wise, but I don't blame you.' I think that's a good way of doing it, because it's saying, 'You're smart; you're not evil. I'm not demeaning you, but now it's got to stop. We now need to have a more equitable playing field.'

I expect [Chinese] outbound M&A will not grow as fast, but it will grow slowly but steadily over the next three to five years

I think that's what national governments need to do when it comes to technology, when it comes to financial services, because protectionism in China isn't increasing—it's always been there. It needs to stop. There are a lot of barriers that the government has put in place for foreign companies that might have made sense 20 years ago, when the country was just developing and needed "infant protection," but now I think that the competition would only help China.

Q: Chinese outbound investment boomed in 2016, but then the government pulled it back in 2017. What do you expect for 2018?

A: I think that crackdown is a slight blip. I expect the outbound M&A will not grow as fast, but it will grow slowly but steadily over the next three to five years. I think the government wanted to stop companies where there wasn't a lot of transparency. Were these companies just trying to get money offshore and untaxable? Were they trying to convert and do capital outflow in order to evade capital controls? Were they causing a systemic threat? If it's the state-owned banks that are lending them all the money, if these things blow up, then what happens to the banking system? And that's why the government is saying, 'You can't borrow money from state-owned banks or private Chinese banks; you can go to the HSBCs and Citigroups of this world and use their compliance and credit-risk officers.' And if they blow up, it hits the UK; it doesn't hit Bank of China.

Q: Will there also be a shift in the focus of outbound investment?

A: It's going to be more Belt and Road-oriented, it's going to be more technology-oriented. It's more about bringing brands back into China, bringing technology back into China. Belt and Road especially—I think people are underestimating the potential for that. I think a lot Western journalists are poo-pooing it and saying, 'Oh, this isn't going to work, these are previously announced ventures.' It doesn't matter, because it's now a systematic, methodical initiative that can rally all of these different nations, all of these different governments to China's side. I think it's brilliant. The question is, can they do it? But, even if they don't do it as well as they hope, it's still going to help them. But there are a lot of minefields, like between Qatar and Saudi Arabia. How do you support and take sides when you're trying to be partners with both? That's a fundamental issue: I think China can't always run everything by saying they're not going to get involved.

Q: How worried should Chinese companies be about the European Union and US strengthening oversight of Chinese investment?

A: It's definitely a concern, and this comes down to the blocks that I was talking about—the [Chinese] government might overstep by punishing. You know, there's a feeling that they can

> The Chinese, very often, will put the money in and say: 'You're foreign and I respect you. You've got good management, teach us!'

punish the Asians or the Africans and get away with it. Will the Europeans allow it? Probably not, because I think there's a little bit more truculence, belligerence.

Q: As you describe in the book, many potential merger-and-acquisition deals go awry because of a culture clash between Chinese companies and their global counterparts. What are the main features of this clash?

A: I think there are a couple differences: Chinese companies, private ones, still tend to be controlled by the founder, entrepreneur, chairman. And he makes decisions quickly, he makes them himself and doesn't delegate. So, it's one man at the top: this is very different from American or British companies that have been around for 100-200 years and have layers of middle management. What you hear time after time from Western companies is that the Chinese aren't trying to create long-term relationships—they want to maximize their profits this year, and they don't care if you don't like them because they don't expect to do business with you ever again. But the reality you have to learn is that you probably will do business together again, so there has to be a little bit more gentlemanly civility when doing business.

Q: How much of that culture clash is a result of the economic conditions in China right now?

A: For sure, it's about China's conditions right now. Think short-term for profit, because you never know if the opportunity is going to be there in the future. And I find the Chinese don't care about other people; they care about people within their own *guanxi* (personal network) circle. Everything else is a war. So, if you're trying to negotiate with a shopkeeper on the street, they'll try to extract every last penny from you. But once you become a friend with them and you're in that *guanxi* circle, they're the best people of all time.

Q: Do you expect China's big companies to start resembling global companies more in the future?

A: Yes, much more. You're already starting to see that as companies like Tencent hire foreigners and Chinese who have worked in foreign companies. It's not an easy process, it's not like you can work in a foreign company for three years and bring it back. We're talking decades. It's going to be a generational thing. And you'll understand that the world's not a zero-sum game. I'm a firm believer that everybody can make money together, you've got to share the pot.

Q: If a company in Europe or America is approached by a Chinese investor, what issues do they need to consider?

A: They need to know how legitimate it is—don't open your kimono too wide. You can tell them you're interested, but you don't want to share too much detail, because, frankly, they might just be trying to steal information from you. We've had big companies call us and say, 'Shaun, we want you to do our strategy for us, so we want you day-by-day to write a plan for six months, of what we should do.' I'm like, 'Wait a minute, that's the proposal? You're just going to take it and run the marketing campaign! You need to hire us first.'

Second, don't salivate that you've got a big money guy coming in—it's better to try to go slowly. If you're a good business, the Chinese will still come.

Third, understand the culture. That's a big one. Don't be overly scared, actually, with speed. Sometimes, they do move truly fast, and it's not necessarily because they have bad intentions. You should be more fearful of the Japanese. Because the Japanese, in the 1980s, when they made acquisitions, they fired the top layers and they put in bamboo ceilings for non-Japanese managers. The Chinese, very often, will put the money in and say: 'You're foreign and I respect you. You've got good management, teach us!'

Q: Foreign direct investment in China, particularly from Europe, has stalled in the past year. Why do you think this is?

A: You know, China's a great market, but there are a lot of other markets now. Ten years ago, if you wanted to sell to a billion consumers, where would you go? You could only go to China. Now, India is coming up, Indonesia is very strong, Malaysia, Thailand and Africa… so it's not the only game in town. I would recommend that the Chinese government tries to be seen as more pro-foreign investment. Right now, they're not. With the new visa situation—it seems like they don't want foreigners.

It's also that the economy is weak. I think it's weaker than people realize. I've always been one of the biggest bulls [on China]. I'm now not one of the big bulls. I would be investing in Vietnam right now. That's the place to be. Southeast Asia is where the really fast growth is going to be over the next five-ten years.

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- 2017 Global Traveling Restaurant - One-star Restaurant - Made in China 《Ctrip Mei Shi Lin》
- 2017 Forbes Travel Guide Four-Star Award 《Forbes Travel Guide》
- 2017 Best Restaurants in Beijing & Shanghai - Reader's Choice - Made in China 《TATLER》
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Champion Spirit

How China's favorite alcohol brand became the world's most valuable liquor company

By Wynne Wang

Image by AMAO

The Chinese government's 2013 anti-corruption campaign was a sucker punch for liquor maker Kweichow Moutai, which saw its share price halve over the next 12 months. But in 2017, the company pulled off an amazing fightback

It's a comeback story worthy of a Hollywood blockbuster. Three years ago, China's once all-powerful liquor maker Kweichow Moutai looked to be on the ropes. President Xi Jinping's anti-corruption campaign had dealt a vicious blow to the country's most famous spirit brand—for years a staple on every government banquet table—and the company's profits and share price had taken a hammering. By January 2014, Moutai's shares were worth just over RMB 119 ($18.31) per share—a fall of 50% in 14 months. With no end to the crackdown in sight, some questioned whether the legendary distiller would ever recover.

Yet last April, Moutai completed an extraordinary rally by knocking Diageo—owner of many famous brands, including Johnnie Walker—off its perch as the world's most valuable liquor company. By mid-December, the Chinese brand's share price had surpassed RMB 650 ($100), making it the most expensive stock on the Shanghai board.

The company's renaissance has not been without controversy. For some, Moutai's recovery was a sign that Wang Qishan, the Chinese Communist Party's anti-corruption czar, was taking his foot off the gas. Others painted the company's success as a triumph of smart rebranding born of necessity with Moutai tapping China's rising middle class. In November, the country's state newswire, Xinhua News Agency, even took the unusual step of warning investors that the spirit brand's skyrocketing shares were "liquid gold," suggesting that the rise was being fuelled at least in part by speculation.

How did Moutai pull off its amazing fight-back? As with so much in China, there is more to this story than meets the eye.

National Spirit

Moutai's fall from grace was even more dramatic given its unique status as the country's number one brand of *baijiu*, the strong spirit made from sorghum. Famous US reporter Dan Rather once described *baijiu* as tasting like "liquid razor blades."

"Moutai's brand is very strong," says Derek Sandhaus, author of the book *Baijiu: The Essential Guide to Chinese Spirits*. "There's not a good comparison in the US, because we don't have state-owned enterprises or a spirits market that is so dominated by one category of spirits as China is by *baijiu*."

Chinese drinkers' love for *baijiu* almost cannot be overstated. In 2016, the Chinese drank an incredible 1.21 billion cases of "national spirits," according to beverage market analysts IWSR. This gave all national spirit brands, including Moutai, a 99.6% market share in the country's liquor market.

The term "national spirits" encompasses many traditional Chinese alcoholic beverages including *huangjiu*, which is the main drink in many parts of southern China. But *baijiu* is the most popular nationally. The reason for this lies in China's modern history, Sandhaus explains.

"[*Baijiu*] was much more potent than what preceded it, *huangjiu*, and it was… much cheaper. Both factors endeared it to the Chinese peasantry, while the aristocracy continued to prefer *huangjiu*," says Sandhaus. "After the establishment of the People's Republic in 1949, the proletariat's elevated status lifted the fortunes of their favorite drink."

No *baijiu* brew was elevated quite as high as Moutai. The Communist leader Zhou Enlai is said to have acquired a taste for the drink in the 1930s during the Long March, as the Red Army was traipsing across Guizhou province in China's southwest to escape Chiang Kai-shek's forces. After the Communists won the Civil War and Zhou became China's premier, he insisted that Moutai be served at every state dinner.

Later, when China entered its era of rapid economic growth, demand for Moutai began to soar among ordinary consumers, who wanted a taste of their leaders' preferred drink. "As a college student I used the money from my first internship to buy a bottle of Moutai for my father as a [Chinese] New Year's gift," says Wang Wenjian, a Shanghai-based media worker. "My father took a long time to finish the bottle, as if he wanted to enjoy every drop of the national spirit."

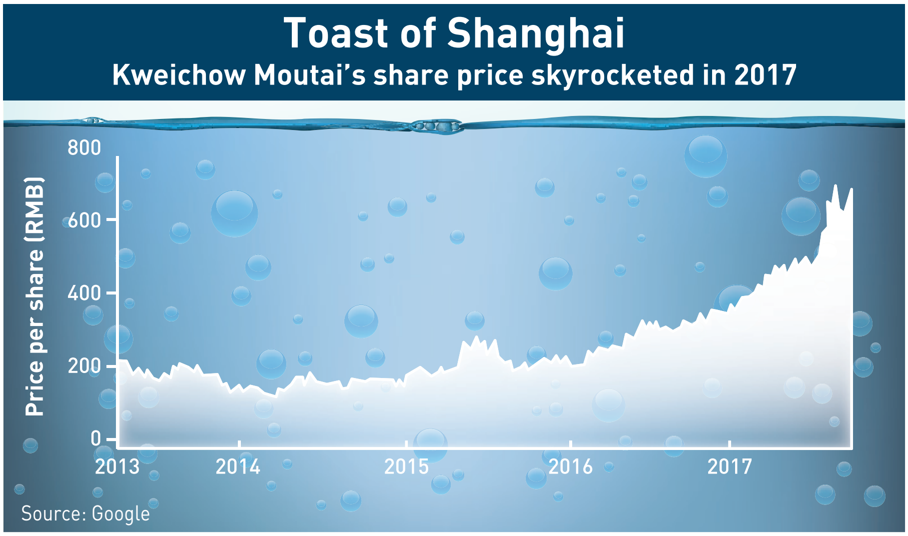
By 2012, Moutai was unable to keep up with the rising demand. The price of one bottle of the spirit rose to above RMB 2,000 ($300), and the company posted year-on-year net profit growth above 50%.

Though an expanding middle class contributed to this trend, a large number of the famous white-and-red bottles were still ending up on government banquet tables. Some analysts estimate that Chinese government entities were responsible for 50% of all Moutai sales at this point.

As a result, when Xi Jinping came to power in late 2012 and launched his famous anti-corruption campaign, demand for Moutai plummeted. One distributor who acts as a middleman between Moutai and retailers in Guizhou province, who wished only to give his surname, Huang, says that he was under tremendous pressure from 2013 to 2015.

"The wholesale price at one point dropped to RMB 830, while the price we get from Moutai is RMB 819," says Huang, adding that the wholesale price has since recovered to RMB 1,530.

Moutai felt the pinch too. Its net profit growth rate languished at around just 1% throughout 2014 and 2015.



Reinvention or Relapse?

But what looked to be a lasting blow turned out to be only a glancing one. In October, the company announced that its net profits for the first nine months of 2017 were up over 60% year-on-year, sending investors into frenzy. The company has been quick to paint its recovery as the result of a deliberate reinvention.

"Over the past few years, we have taken measures to shift Moutai from government consumption to business occasions, family, casual and personal uses," said Yuan Renguo, Chairman of Kweichow Moutai Co Ltd in a recent statement on the company's website.

Moutai has invested heavily to make its brand more visible. The national spirit has become the national timekeeper, shelling out a huge amount for a premium ad slot just before the start of Chinese state broadcaster CCTV's flagship news program. As the clock ticks down to 7 p.m. each evening, a booming voice announces, "National *baijiu* Moutai broadcasts the time for you."

This autumn, the distiller even opened its own college and airport in its home province of Guizhou. The group also plans to build a luxury hotel in Sanya, the popular tourist resort in sub-tropical Hainan province, as well as launch *baijiu* tasting and "story telling" events to spread *baijiu* culture.

How effective these ventures have been in branding terms is open to question, but there is no doubt that there has been a change in Moutai's customer base since 2012. "Corporate demand now accounts for more than 50% of Moutai's consumption, according to our interviews with distributors," comments a Shanghai-based fund manager, who declined to be named in this article due to the sensitivity of the topic, adding that demand from the government has fallen to around 20%.

According to one distributor quoted by a China Merchants Securities report, this shift toward private consumption may simply be a natural result of the increased spending power of Chinese consumers. "The middle class is expanding faster and faster with the addition of 10 million people ever year, and they are demanding more Moutai," the distributor says.

But others doubt whether this is the whole story. "Moutai is still playing a major role in government banquets," says Tony Zhu, a well-known Chinese food and beverage industry analyst. "Demand from private banquets is rising but it's not enough to support the recovery of Moutai."

The Shanghai-based fund manager also expressed skepticism that middle-class consumers were solely responsible for Moutai's return to bumper profits, speculating that government officials may simply have started drinking *baijiu* on their own time. "According to what we have learned from distributors, government officials can't pay the bills [directly any more]," he says. "Before, they could purchase it and claim it as expenses. Now, they seldom do that. But drinkers, they don't just disappear, so they get to the spirit in another way."

The fund manager added that he believed Moutai's recent investments in Guizhou were more about currying favor with the government than about rebranding. "Moutai doesn't need to promote itself at all. I look at all these things it has done as its way to support the local economy and contribute to CCTV," he says.

On the other hand, Moutai's sales and profits have continued to grow strongly since late-2015 even as local governments have introduced even tighter restrictions on officials' behavior.

Boom and Bust

Another factor that made the boom, crash and subsequent recovery in demand for

Moutai look even more extreme was that in the run-up to 2013, the premium liquor essentially became an investment, a true "liquid gold."

"There was clearly a bubble in 2012, as many people were just buying [Moutai] to hoard and speculate," notes distributor Huang. As a result, when the price of Moutai crashed in 2013, there was a huge glut of *baijiu* sloshing around the market, which applied further downward pressure on prices and demand.

Moutai's price has always been unusually volatile because of its long, complex production process. Unlike other brands of *baijiu*, Moutai takes at least five years to make, needing to be distilled nine times and aged three years. This means that it is difficult for Moutai to react to market changes as it takes years for any drop in production to filter through to the market.

Now that inventory levels have declined and demand has increased, the company's lack of flexibility is likely to keep prices high. "Moutai will at least stay robust for another three years, as Moutai's production can hardly meet market demand and it's unable to expand production quickly," says Huang.

The liquor's price is expected to rise to around RMB 1,800 as Chinese New Year approaches, when Moutai will be served at family reunions and banquets across the country. But Huang does not expect another bubble to form, at this point at least. "I don't see many people hoarding Moutai as there isn't a big profit you can expect," he says. "You buy it from a supermarket at around RMB 1,700 and I don't expect it to rise back to the 2012 peak of RMB 2,000."

Keeping China's Glasses Filled

With demand at a healthy level, Moutai looks set to continue growing its revenues and sales for some time. In November, the company announced that it planned to sell 28,000 tons of Moutai in 2018, up from 26,000 tons for 2017. But China Merchants Securities has estimated that Moutai is on track to sell more than 30,000 tons in 2017.

Whether the company can continue that kind of growth long-term is another question. Sales are still overwhelmingly going to Moutai's core market of mainly men over 40, according to Ben Cavender, Principal at China Market Research Group. "Younger consumers do not place the same cachet in the Moutai brand that previous generations have," he believes. "There is a lot of competition now from a wider range of imported wines and spirits."

> Chinese consumers are redefining their understanding of *baijiu*. Drink less and drink better is their new motto
>
> Tony Zhu
> Senior Food Industry Analyst
> China Brand Research Institute

China imported 254 million liters of wine during the first half of 2017, a 13.9% year-on-year increase, according to *The Drinks Business*. Though this number is still small compared to the consumption figures for *baijiu*, there are signs that the drinking culture is changing in China. Where once most banquets involved downing shot after shot of hangover-inducing liquor, many Chinese drinkers now prefer a more relaxed approach.

"We don't drink too much *baijiu* during business banquets anymore," says Alex Li, a Shanghai-based entrepreneur. "It is too expensive and unhealthy. We prefer wine now—you can buy quality wine at just a few hundred yuan."

On the other hand, there are also signs that Moutai is benefiting from this move away from banquet binge drinking as consumers consider the premium brand to be a healthier, more refined option. "I won't mind enjoying a bottle [of Moutai] with my friends," says Li Rui, a businesswoman from Shanghai. "Unlike poor-quality *baijiu*, the good *baijiu* won't give you a headache."

Tony Zhu has noticed a similar trend. "Chinese consumers are redefining their understanding of *baijiu*," he says. "Drink less and drink better is their new motto."

What's more, Moutai's core demographic—Chinese over-40s—are becoming wealthier and more numerous every year. "Younger generations drink less *baijiu*, but it's unclear how great the long-term impact of this will be," observes Sandhaus. "Drinking consumption has always been tied to professional success in China, thus those at the beginning of their professional careers now may drink more *baijiu* as their careers advance."

All this suggests that Moutai's sky-high share price is largely justified, although its high price-to-earnings ratio, 34.1 as of December 12, 2017, is making some analysts jittery. "I don't think it's smart to buy into Moutai stock at this level," warns another fund manager in Shanghai, who also wished to remain anonymous. "There might be space for gains in the stock, but I see more risks in buying such an expensive stock."

Cavender has a similar view. "I think we may see share prices continue to go up over the course of the next 12 months," he comments. "But gains will probably be because of overall retail investor confidence in the market and because more foreign investors are likely to invest in a broad range of stocks as they become included in the MSCI index."

If this view proves correct, Moutai could continue its reign as undisputed champion of the global liquor market for some time to come.

Serious Child's Play

Playtime in China is more about learning than fun and games

By Helen Roxburgh

Image by Yu Mu

Ke Chenyi laughs when she compares her childhood toy box with that of her six-month-old daughter. "As a baby, I had no toys," she remembers. "Later I had a box of fake Barbies and a stuffed monkey. Apart from those, we kids used to make up games by ourselves using simple, everyday things."

Ke lives in Shanghai with her daughter, Ina, who has more toys in her room than her mother ever had throughout her entire childhood. During the 1990s, when China's per capita gross domestic product (GDP) level was less than one-sixth of today, buying toys was not high on most Chinese parents' priorities. But as income levels have soared, so has the amount of money that they are willing to spend to put a smile on their children's faces.

Retail sales of toys and games in China leaped over 250% between 2011 and 2016, from RMB 89.7 billion ($13.8 billion) to RMB 232.17 ($35.73) billion, according to Euromonitor, a market research firm. Yet playtime remains very different for children in China compared to children in Europe or North America.

Play With a Purpose

Like many of China's new generation of modern, highly-educated parents, Ke places a high value on her daughter's playtime. But she expects a return on her investment.

"These days we have a lot of play choices for our children, but almost all have some educational function," Ke says. "In China, we always say that you need to win from the beginning. We Asians are very competitive and in this intense society, parents want their kids to be the best from the start."

For parents in China, play should be constructive. Patty Wu, Mattel's Vice President of China Growth, wrote in a recent blog post that mainland parents buy fewer toys for their children than parents in some other countries. She explained it is because they fear idle play distracts their offspring from homework, which will hurt their academic performance. Many parents see the purpose of toys as being to help children learn mathematics, English and writing Chinese, core skills essential throughout

A Disney store greets tourists visiting the Oriental Pearl Tower in central Shanghai

their education.

"There is pressure for children to start acquiring these important skills very young," says Elisabeth de Gramont, Managing Director of customer engagement consultancy C Space Jigsaw in Shanghai. "Whether that's math, learning characters or learning English—this starts well before primary school."

Educational toys that help children to learn to count or to repeat English words, for example, have become popular with urban parents. But increasingly the requirements of parents born in the 1980s or 1990s is shifting demand for educational toys beyond the core skills demanded by the traditional Chinese education system.

"More and more parents have broader ideas about how they want to cultivate their child's creativity, sociability and other abilities not learned in school," adds de Gramont. "They understand play is an important way to do that."

Both traditional and new digital toys reflect this emphasis on learning. An example is the pre-school toy Code-A-Piller from Fisher-Price, a developmental toy that launched in China in 2016, which allows children to do basic computer programming and problem-solving. At the same time, building blocks and other traditional toys have enjoyed a return to popularity.

"Chinese parents prefer toys with intelligent exploitation functions," says Carol Lv, analyst at Euromonitor. "Toys with educational functions are popular—construction toys remain the standout category in the market, and enjoyed the most dynamic value growth amongst traditional toys and games."

Lv explains that parents are willing to buy construction toys for children to develop creativity and concentration. What is particularly important for Chinese parents, aside from the safety of the toy, is not whether it is digital or analog, but its content.

"When talking about toys and play, the primary motivation for parents, I think, is still about having toys that have learning value," reflects de Gramont. "You could call it purposeful play or directive play. They don't want their children to be wasting time playing, they want play to have purpose."

Where this is changing, she explains, is that learning used to be all focused on English or numbers. Now this has expanded to exercises that will help develop children's logical thinking, or something that helps them learn to interact and socialize with others.

Playtime Is Money

For toy brands, the biggest challenge in China is no longer families' lack of disposable income, but rather children's lack of time. With parents feeling under pressure to make sure their children can compete in the education system, finding time for play at all is becoming a challenge.

The schedules of Chinese children are grueling. A recent study by the *Australian Financial Review* found that the average child in China spent 77 hours a week studying.

In Shanghai, more than 70% of children aged between four and six years old attend extra-curricular classes, according to the Shanghai Association for Quality. The average family spend on such classes is RMB 17,832 ($2,744) annually, around a third of a typical Shanghai household's annual disposable income.

With so many young Chinese in classes all day, toy brands are attempting to combine their products with a learning center or school. These branded ventures meet the demand of purposeful play in a structured environment and can help boost revenues as toymakers struggle to compete for a child's time.

Disney has been one of the earliest movers in this area. Its network of English-language schools, which it established in 2008 and now found throughout China joins together play and learning with retail and brand awareness. This year, it also announced plans to expand its presence into China's third- and fourth-tier cities.

Mattel, the owner of Fisher-Price, is also moving aggressively into the space. The company has formed three partnerships in China to push its brand. This year it announced plans with the Chinese platform Babytree to develop a network of learning centers across China to teach lessons such as Mattel's Hot Wheels Speedometry. These play-based lessons teach children about subjects such as measurement, distance and kinetic energy through building miniature race tracks. Mattel expects this new venture to help quadruple its market share in China by 2020.

However, the champion of this approach has been Danish brand Lego, which was the most popular foreign brand in China by market share in 2016. Lego has made great efforts to position itself as a leader in educational play, investing heavily in research focusing on the cognitive benefits of play. It has also partnered with a leading Chinese university "to support creativity and play in Chinese schools" and launched a series of innovative education programs in Chinese kindergartens and schools.

These efforts complement Lego's investment in other projects such as its giant Legoland Discovery center in Shanghai and its expanding range of apps and mobile games. Together, these helped the company achieve double-digit sales growth in China in 2016.

"If there's one brand all mothers want, it must be Lego," laughs Ke Chenyi. "It's genderless, it's very creative, it has high aesthetic and it's good quality. I care very much about the creativity of the toys and want something active rather than passive, that Ina can use to create and discover for herself."

Cluttered Toy Boxes

Foreign brands are far from dominant in China. Overall, China's toy market remains extremely fragmented and foreign brands face tough competition from domestic brands. According to Euromonitor's Carol Lv, although consumers generally consider foreign toys to be higher-quality, domestic companies still lead the market "with price advantages and wider sales distribution across the country."

"If there's a comparable domestic toy, it could be half the price and still decent quality," agrees de Gramont. "There are a lot of fakes and counterfeits in big cities, particularly for iconic characters that are easily replicable like Barbie and My Little Pony. Parents and girls don't know the difference or really care if they are fake, as long as they are cheaper."

Domestic brands are starting to gain ground in the innovation stakes too. Toymakers are transforming their business models and paying more attention to R&D to compete with their international rivals, rather than just copying them.

Of Euromonitor's top five brands by China market share, three were domestic brands. Yet, no player—foreign or domestic—had more than a 6% value share in 2016, reflecting the difficulty of designing toys to appeal across China's broad wealth and social differences. The most popular toy manufacturer last year was innovative domestic company Alpha Group, which makes action figures, animations, remote-controlled toys and baby products, taking 5.3% of the market.

The toy market will continue to grow rapidly in China and the sheer size of the market makes the opportunity unique. Together with growing disposable incomes, there are 222 million children in China under the age of 14. The new two-child policy is expected to result in an additional 2.4 million babies born in China each year, contributing an extra RMB 75 billion ($11.5 billion) to the toy industry.

More growth is also expected in toys and play centers that help to build primary motor skills, creative and social skills, and core educational skills. There is certainly no sign of a fall in demand from mothers like Ke. "I think it's important to activate their curiosity to try different things—building, music, art—that can stimulate the interest of the child and motivate them to study by themselves," she says.

CHINA data

The stats you need to know

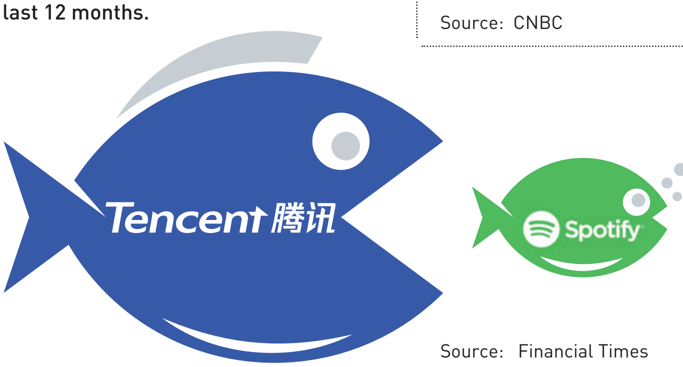
More than it can chew

China has amassed a vast stockpile of **230 million tons** of corn—more than the entire 2017 national output—due to a government subsidy policy. The government plans to reduce the corn planting area by **1.3 million** hectares in 2018 to lower its giant inventory.

Source: Financial Times

Spotting a good deal

WeChat owners Tencent made headlines by buying up minority stakes in foreign companies including Spotify, Snap and Tesla in 2017. Tencent and Alibaba have spent more than **$60 billion** on M&A in total over the last 12 months.

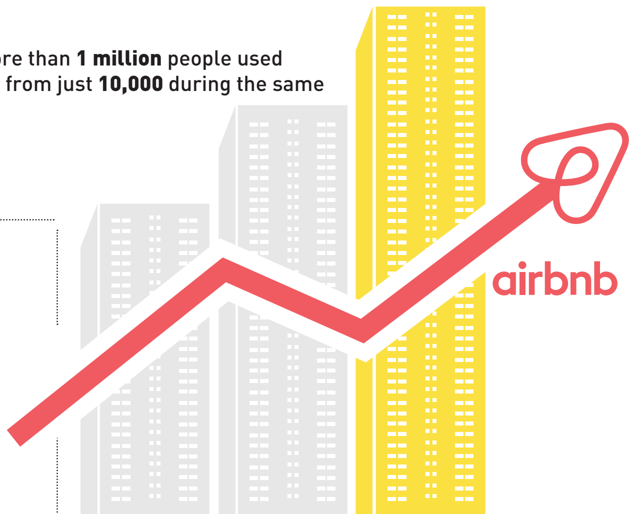


Source: Financial Times

Bedding in

Airbnb is thriving in China. More than **1 million** people used Airbnb in China in Q3 2017, up from just **10,000** during the same period in 2014.

Source: CNBC



Full steel ahead

State-owned enterprises' profits rose **49%** year-on-year in 2017, compared to just **10%** in the rest of the corporate sector. In 2015, just **5%** of state-owned steel companies made a profit; in 2017, **85%** were forecast to do so.

Source: Financial Times

Spend, spend, spend

The Chinese government predicts consumption will hit **$6 trillion** in 2020, up from **$4 trillion** in 2017.

Source: South China Morning Post, People's Daily

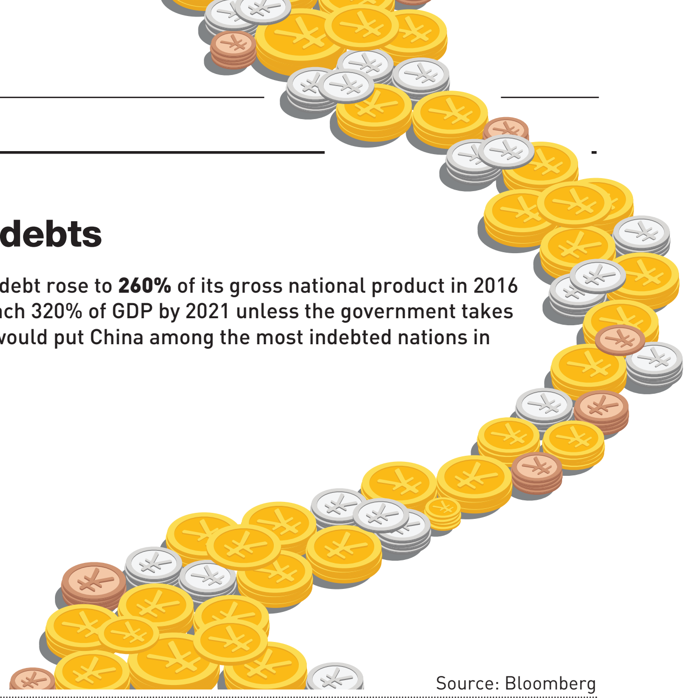
Box mountain

Chinese shoppers ordered **331 million** packages during the Single's Day e-commerce festival on November 11. These deliveries will produce **160,000 tons** of packaging waste. Next year, China's courier firms are expected to deliver 50 billion packages, **30 billion** more than in 2015.

Source: Reuters

Rising debts

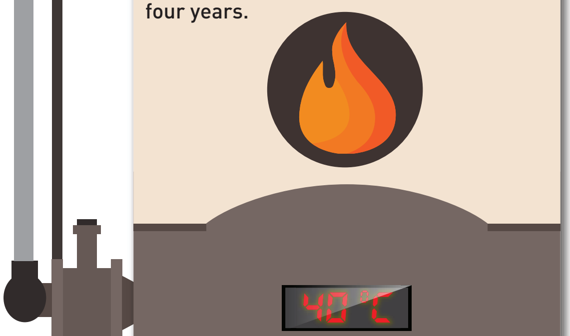
China's total debt rose to **260%** of its gross national product in 2016 and could reach 320% of GDP by 2021 unless the government takes action. That would put China among the most indebted nations in the world.



Source: Bloomberg

Cooking on gas

Demand for natural gas in Hebei province has increased **134%** this winter as local governments replace coal with cleaner fuel to reduce pollution. Northern Chinese cities must reduce coal use by **150 million** metric tons in total within four years.



Source: Caixin, Xinhua

Bike capital of the world

There are now **450,000** share-bikes on the streets of Shanghai, making the city comfortably the capital of the global bike-sharing industry. By comparison, London's public share-bike scheme has just 13,600 bikes.

Source: Financial Times

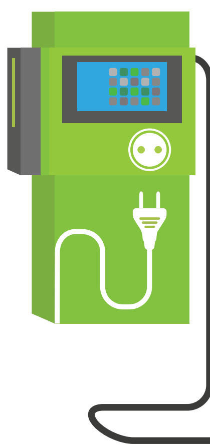
Young jet-setters

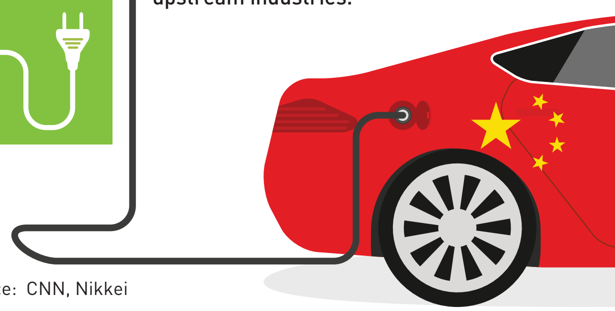
Chinese millennials made **82 million** trips abroad in 2016, more than the total number of international journeys made by Americans of all ages. Chinese outbound tourism is predicted to grow **8.5%** per year through 2021.

Source: Bloomberg, Mastercard

Charging ahead

More than **two-thirds** of the world's electric vehicle batteries are made by Chinese companies, and China also dominates most key upstream industries.





Source: CNN, Nikkei

VENTURE CAPITAL IN CHINA

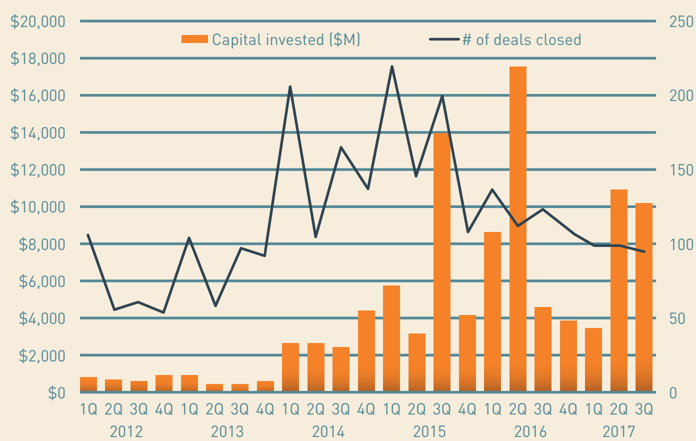
THE RISE AND RISE OF CHINA'S VC MARKET

China has grown from a minnow to a major player in the global venture capital market in the past five years. Chinese startups now attract more funding from investors than their rivals in any other country, except for the United States. China also produces one-third of the world's unicorns—startups with a valuation of over $1 billion.

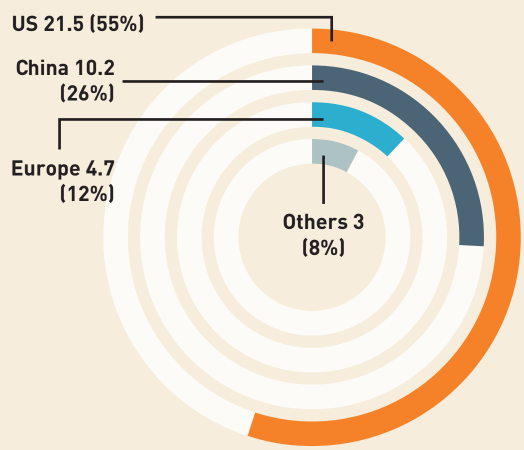
How Big Is China's VC Market?

Venture capital flows in China have increased massively since 2012. China now dominates the Asian VC market

VC Financing in China, 2012-Q3 2017



Global VC Financing in Q3 2017 ($ Billion)



Who Are The Biggest Investors?

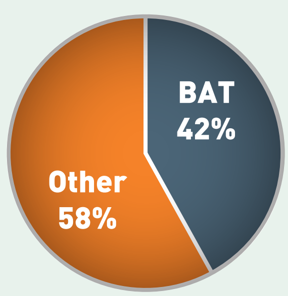
VC FUNDS

New Chinese funds are challenging the big US players

Company	Origin	Number of Deals
Matrix Partners	US	74
Zhen Fund	China	70
Sequoia Capital	US	57
IDG Capital	US	55
Qiming Venture Partners	China	46
Shunwei Capital	China	38
Legend Capital	China	32
Shenzhen Capital Group	China	30
Sinovation Ventures	US/China	30
GSR Ventures	China	28

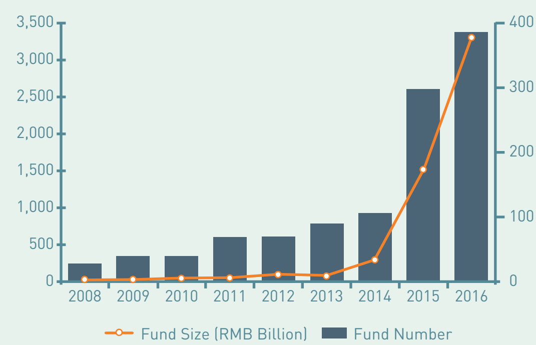
BAT

Baidu, Alibaba and Tencent accounted for 42% of VC funding in China in 2016



GOVERNMENT FUNDS

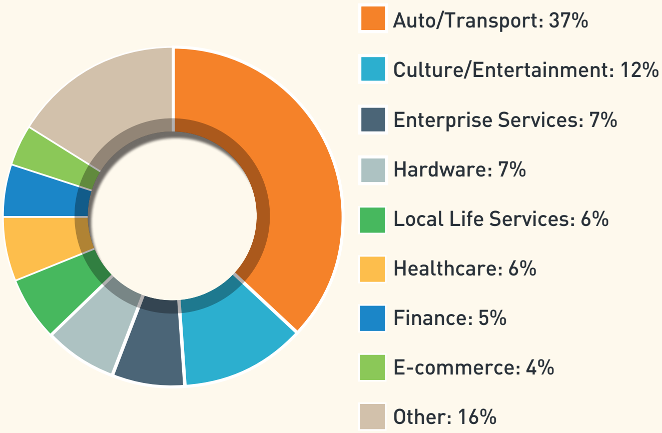
There has been a spike in the number of government-backed VC funds



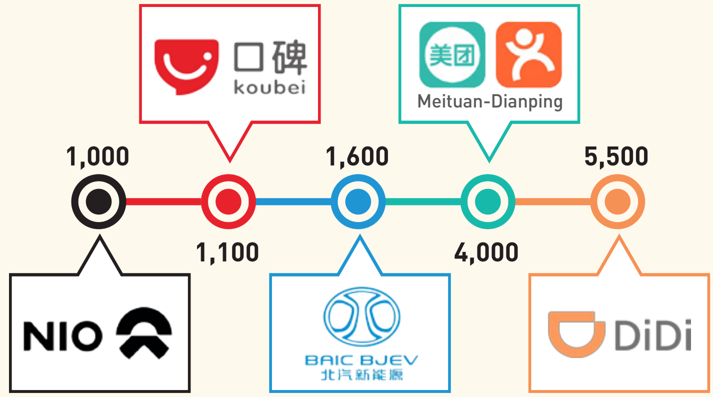
Source: PitchBook, KPMG Venture Pulse; China Money Network; McKinsey; Zero2IPO

Where Are VCs Investing?

VCs poured billions particularly into bike-share, car-share and electric car projects in China in 2017



VC Funding in China in H1 2017 by Sector

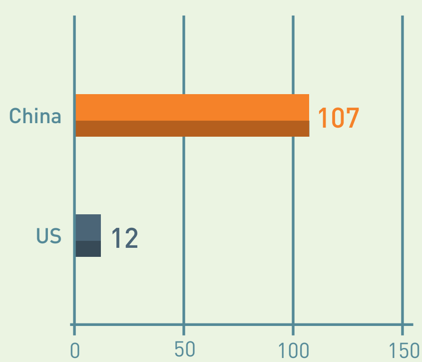


Largest Funding Rounds in China in 2017 ($ Million)

Mega Deals

The average deal size in China is 10 times larger than in the US

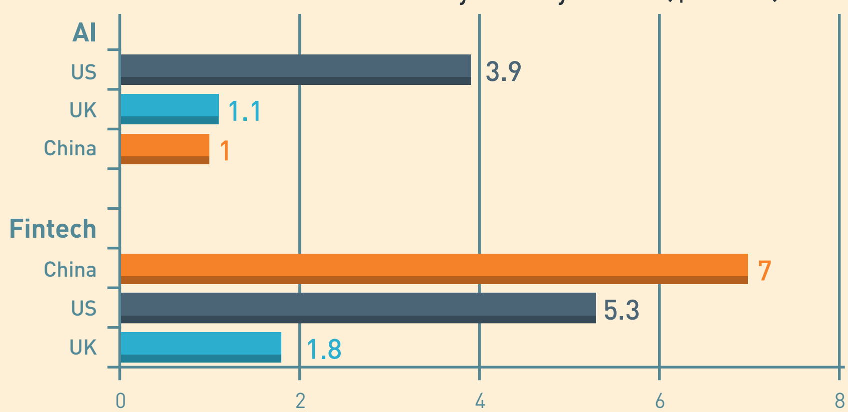
Average Deal Size in Q3 2017 ($ Million)



American AI/Chinese Fintech

Chinese VCs invest nearly four times more in US artificial intelligence projects than in Chinese ones

Chinese VC Investment by Country in 2016 ($ Billion)



What's Next?

Early Investing

A lot of us are investing earlier and earlier. When the right time comes, Alibaba or Tencent ends up investing in that company to help it grow faster

- *Hans Tung, Managing Partner at GGV Capital*

Source: Bloomberg

Beyond Mobile

What we are looking for is from mobile internet toward the next big platform

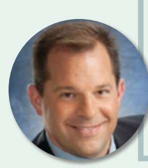
- *Neil Shen, Co-founder of Sequoia Capital*

Source: East West Bank

Health and Pharma

Beijing wants to create medical technologies in China, by China, for China. This is leading to massive investment opportunities

- *Larry Gerrans, CEO of US life sciences company Sanovas*



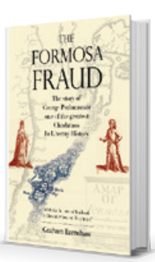
Source: Fortune

Source: China Tech Insights; KPMG Venture Pulse; McKinsey

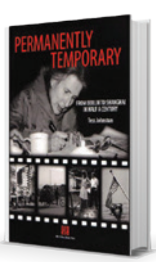
History With Cocktails

Disney's Murray King pairs his favorite China books with some classic recipes

Murray King is Vice President of Public Affairs at Walt Disney Parks and Resorts in Shanghai. He joined Disney in 2011 to help oversee the launch of the Shanghai Disney Resort project, and since then the resort team's presence in the city has grown from a handful of people to more than 12,000 full-time employees. Previously, he was Managing Director, Greater China at APCO and a China specialist in the Canadian Foreign Service. He has lived in Shanghai since 2001.

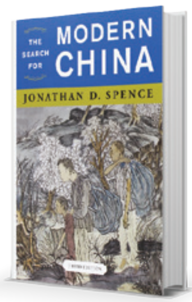


The Formosa Fraud
by Graham Earnshaw



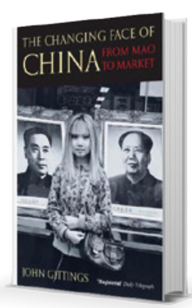
Permanently Temporary: From Berlin to Shanghai in Half a Century
by Tess Johnston

The Search for Modern China was the first book I read when I first came to China in 1993, and I still consider it the foundational book everyone should read before they move here. There are so many books on China, but most only cover the last 10 or 20 years. Jonathan Spence does a masterful job of comprehensively taking people from the Ming Dynasty right through to 1989.



My second recommendation—**Mr China**—neatly follows on from the first from a time period perspective. It's a must-read if you come to China with any intent to do business or build a career. Although not everything Tim Clissold experienced is as relevant today if you're based in Shanghai or Beijing, it still completely resonates if you're going to the hinterlands of China. Clissold also does a great job of bringing humor to cultural nuances that are relevant to businesspeople working in China.

John Gittings was the Guardian China correspondent for a long time, and if I were to pick a third book that could bring a reader—particularly a businessperson—to an understanding of modern China, it would be **The Changing Face of Modern China**. John does a great job describing China's political system and how that interacts with the rest of society, and how that's changed over the years.



Harry Craddock was a bartender who worked at the Savoy in the 1930s, and he wrote the bible of making cocktails based on his experience. I'm lucky enough to have a first edition of **The Savoy Cocktail Book**, and whenever life's pressures build up it's always nice to open the book and try a new recipe!