CKGSB KNOWLEDGE

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Is China Running Out of Policy Tricks?

China in recent years has reached again and again for the same policy tools to support the economy. A look at the current options

- After centuries of stagnation, China is once again becoming a global science leader
- What can China do about overcapacity now reaching massive proportions?
- A revolution is underway in online private finance—how far will it go?

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China Faces Old Problems and Pushes into New Frontiers

China's growth is slowing down—the country is expanding at the slowest rate in 25 years.

What can China possibly do? As our cover story explains, "…the problems China now faces are not seen as merely cyclical, but structural, and stimulus is not the obvious answer."

So has China exhausted all the policy tricks in its economic playbook? Or is there hope still? I won't give anything away here. Please read our analysis on page 20.

China now has, to put it simply, too much of steel, cement, aluminum, concrete, coal, etc. Overcapacity is harmful for China—not just for its industry, whose profitability is being hurt, but also for its global reputation as more and more countries are joining the 'anti-dumping' chorus against China. Once again, what should China do to tackle this thorny problem? For answers, please turn to page 10.

The big three internet giants of Baidu, Alibaba and Tencent (BAT, for short) are throwing their weight behind their online banking ventures, including China's first online-only banks. Just what is the potential of these new ventures? Can they succeed in China's highly-regulated banking industry that is dominated by big state-owned banks? Also, is the current regulation capable of governing online banks? For more on this, please read our story titled 'The People's Banking' on page 15.

In our interviews section, we bring you an eclectic mix of subjects. London School of Economics professor Tony Atkinson addresses another troubling issue of our time: rising inequality (page 61), while futurist and author Robert Tercek talks about the implications of moving to a software-defined society (page 64). In The Thinker Interview, renowned behavioral economist Dan Ariely explains why human beings behave illogically—or to borrow a phrase from him—in 'predictably irrational' ways (page 54). Ariely's work has had profound impact on the decision-making sciences and he explains in his usual conversational manner how our decision-making capabilities are out of sync with today's realities. In another interview, respected economist Willem Buiter explains how China should confront many of the challenges facing its economy (page 59).

I hope you enjoy reading this issue. I look forward to your comments and suggestions. Please email me at *lzhou@ckgsb.edu.cn* or *ckgsb.knowledge@ckgsb.edu.cn*.

Yours Sincerely,

Zhou Li
Assistant Dean, CKGSB

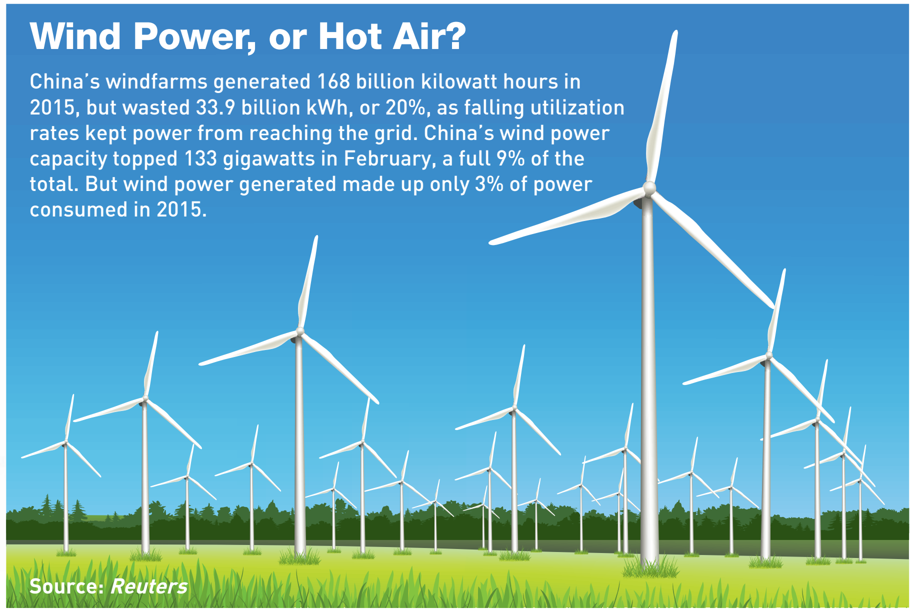
For more insights on the Chinese economy and business, please visit the CKGSB Knowledge site: http://knowledge.ckgsb.edu.cn/

China Data

The stats you need to know

Wind Power, or Hot Air?

China's windfarms generated 168 billion kilowatt hours in 2015, but wasted 33.9 billion kWh, or 20%, as falling utilization rates kept power from reaching the grid. China's wind power capacity topped 133 gigawatts in February, a full 9% of the total. But wind power generated made up only 3% of power consumed in 2015.



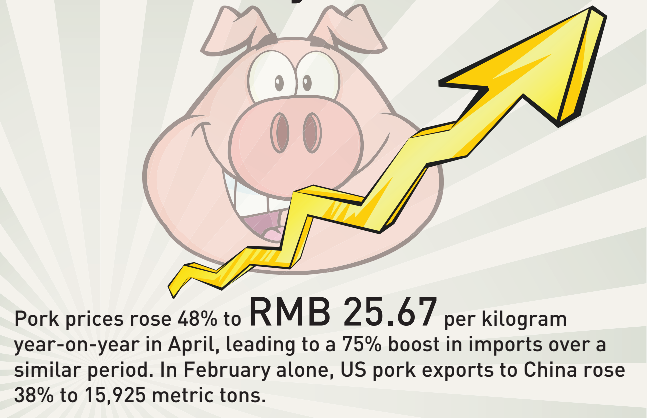
Source: *Reuters*

Hungry for Investment

Alibaba and Ant Financial, which was spun off from Alibaba, invested $1.25 billion in Ele.me, a third-party food delivery service that works through an app. The Chinese name reads: "Hungry?"

Source: *The Wall Street Journal*

When Prices Fly



Pork prices rose 48% to RMB 25.67 per kilogram year-on-year in April, leading to a 75% boost in imports over a similar period. In February alone, US pork exports to China rose 38% to 15,925 metric tons.

Source: *The Wall Street Journal*

Safety Net

The government set aside RMB 100 billion, or $15.4 billion, in funds to support 1.8 million planned layoffs from state-owned enterprises, including the troubled steel industry. The funds will be used to provide retraining for workers to enter the service sector.

Source: *The Financial Times*

State Angels

Government-backed venture capital funds in China tripled in 2015 to **$338 billion**. That's almost five times the rest of the world's 2015 venture capital combined.

Source: *Bloomberg*

Cop Out

China consumes 11 million tons of copper per year, but only supplies 1.7 million tons from domestic mining, leading it on a global search for copper mines to acquire.

Source: *The Financial Times*

Border Cro$$ing

Chinese investment in the US reached a record **$15 billion** in 2015, and is expected to double this year. More than 1,900 Chinese-affiliated companies were operating across 80% of US congressional districts and employing some 90,000 people by the end of last year.

Source: *The Financial Times*

They're Lovin' It

McDonald's plans to open 1,250 new restaurants in China over the next five years, which will make it the largest market for the Golden Arches outside the US. There are already more than 2,200 outlets in China, while the US has more than 15,000.

Source: *BBC*

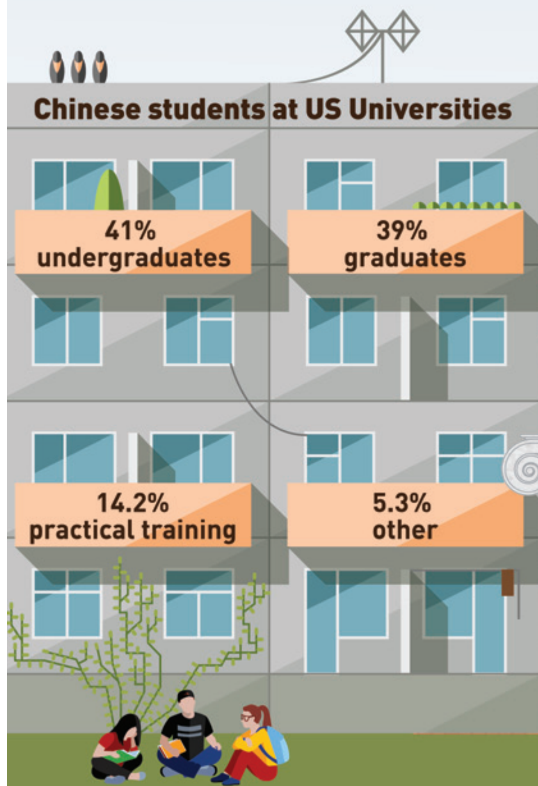
Superpower on the Pitch

In an effort to become a soccer superpower by 2050, China has targeted **20,000** training centers, **70,000** pitches and **50** million players in next four years. Officials hope to raise China's FIFA ranking, which was **81st** in April at the time of the announcement.

Source: *Time*

Out to the World

More Chinese students are studying abroad than ever before



Percentage of Chinese students in US & UK
US: 31.2% of international students, 1.5% of total
UK: 20.5% of international students, 3.9% of total

Hello! 459,800 Chinese students went abroad in 2014

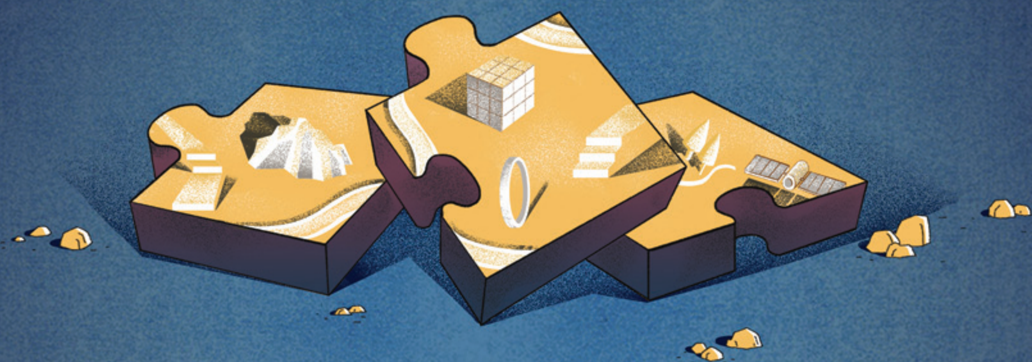
Source: Institute of International Education, US Dept. of Commerce, Chinese Ministry of Education, Australian Dept. of Education, Canadian Bureau for International Education, UK Council for International Student Affairs, Japan Student Service Organization, New Oriental, UK Higher Education Statistics Agency

86% of students returning to China find a job within six months, but 77% report lower-than-expected salaries
Chinese students added $9.8 bn to the US economy in the 2014-15 academic year
Goodbye! 364,800 students returned home in 2014

Capacity for Change

How can China solve its massive industrial overcapacity problem now that fiscal measures are becoming increasingly ineffective?

By Matthew Fulco



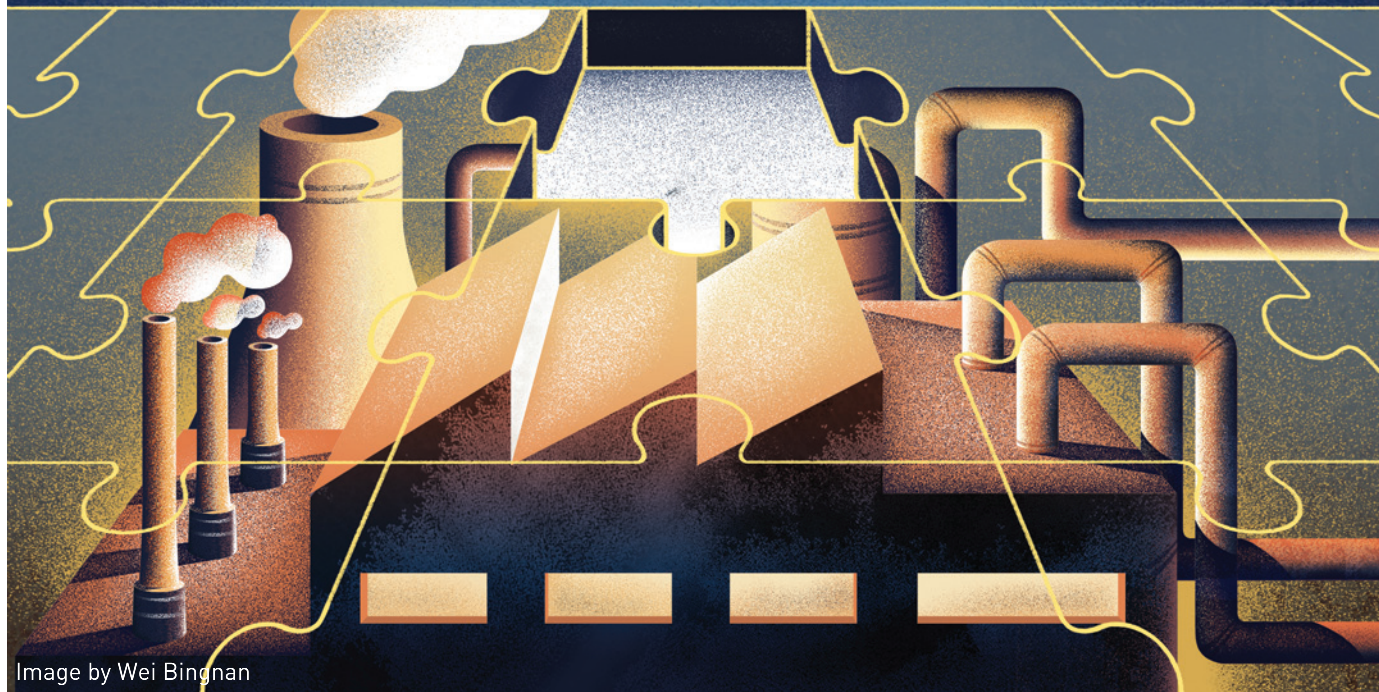


Image by Wei Bingnan

For more than a decade, Chinese policymakers have promised to rebalance the world's second-largest economy. The objective has been to transition to a new growth model fueled by services and consumption instead of fixed-asset investment. At the National People's Congress in March 2007, then-Premier Wen Jiabao warned: "The biggest problem with China's economy is that the growth is unstable, unbalanced, uncoordinated and unsustainable."

Wen's words have proven prescient. In 2007 China's GDP growth peaked at 13%. It then began a long deceleration in 2008. That was interrupted only by a massive fiscal stimulus package that shielded China from the worst effects of the global financial crisis but aggravated imbalances in the economy as wasteful spending ballooned.

Having delayed serious structural reforms, China faces eye-watering overcapacity in heavy industries. Steel production volume is more than double that of the next four leading producers combined: Japan, India, the United States and Russia. Aluminum production capacity reached 40 million tons last year, exceeding global consumption by 9 million tons, according to Chinese think tank Antaike. Most remarkably, between 2011 and 2013 China produced more cement than the US did during the entire 20th century—6.6 gigatons, compared to the US's 4.5—according to data from China's National Bureau of Statistics and the US Geological Survey.

That excess capacity is weighing on the balance sheets of debt-ridden firms reeling from China's economic slowdown. China's producer price index fell continually during the 45 months up to December 2015. Non-performing loans reached a 10-year high of RMB 1.27 trillion ($195.63 billion) at the end of last year.

At the same time, tensions between China and its biggest western trading partners are rising as the European Union and United States move to curb cheap Chinese steel imports.

"Investment-driven growth has worked for China in the past," says Gan Jie, a professor of finance at the Cheung Kong Graduate School of Business (CKGSB). "The manufacturing sector was pretty much developed by firms blindly pursuing short-term profits. But one day demand just wasn't there anymore."

To absorb the excess supply of steel, more steel mills are built

Yongding Yu
Director
Institute of World Economics and Politics, Chinese Academy of Social Sciences

Measures to contain overcapacity have been ineffective thus far. Local governments have growth targets that rely heavily on tax revenue from overcapacity industries and chafe at the idea of mass layoffs. "When things go sour, these firms would like to exit, but local governments look at that as destabilizing," says Li Wei, an economics professor at CKGSB. "If all these workers are laid off, what are you going to do with them?"

Still, China has vowed to address its overcapacity problem with aggressive supply-side reform. Beijing says closing down debt-ridden "zombie" firms—bankrupt companies kept alive by loans from state banks and other government support—is a key policy priority for 2016. "For those 'zombie enterprises' with absolute overcapacity, we must ruthlessly bring down the knife," Premier Li Keqiang said at a meeting of economic advisors in December.

But experts say Beijing's planned measures are likely insufficient. "The government has announced concrete action to reduce overcapacity in coal mining and steel and I expect the authorities to make progress in this regard," says Louis Kuijs, head of Asia economics at the research firm Oxford Economics. "However, compared to the problems, the plans are relatively timid and overcapacity is unlikely to be reduced sufficiently in the coming two years."

A Legacy of Overcapacity

The origins of China's industrial overcapacity are deep-rooted, a legacy of the nation's planned economy that existed from 1949 to 1979. In a planned economy, the production of capital goods can continue regardless of whether there is demand for the goods they are used to manufacturing, notes Yongding Yu, director of the Institute of World Economics and Politics at the Chinese Academy of Social Sciences, in a 2013 proposal addressing China's overcapacity problem. "It is common in China that when there is no strong demand for consumer goods that use steel as input, steel will be used to produce capital goods. In other words, to absorb the excess supply of steel, more steel mills are built," he wrote.

While China has undertaken major economic reforms since 1978, state-owned enterprises (SOEs) retain an outsized role in the economy. Many of the largest SOEs dominate heavy industries like steel, coal and cement. SOEs have thrived on access to easy credit from state banks and government-set rules that limit competition from private companies.

Beijing launched aggressive SOE reforms in the late 1990s as surging non-performing loans rocked the banking system. The reforms, which saw the worst-performing SOEs closed down or privatized, were a success: a banking crisis was averted and the pared-down SOEs posted better results in the early years of the 21st century.

Then the US investment bank Lehman Brothers tanked in September 2008, set-

ting off the worst financial crisis since the Great Depression. Alarmed by the breadth of the crisis, the Chinese authorities responded with a mammoth $586 billion stimulus package.

That expansionary fiscal policy helped China escape the Great Recession relatively unscathed, but the ensuing credit explosion worsened industrial overcapacity. "The gap in return on assets was not very big in the heyday of China's industrialization, just before the global financial crisis, but it has risen materially since then, because of continued large investment by SOEs in heavy industry at a time when demand has started to slow," says Oxford Economics' Kuijs.

In a February report on China's overcapacity, the European Union Chamber of Commerce in China notes that prior to the 2008 financial crisis, Chinese producers were able to export goods to the US and Europe in overcapacity industries when domestic demand was insufficient. The report likens that strategy to "a safety valve on a pressure cooker." Flagging demand from the US and Europe after the financial crisis made that strategy no longer feasible—at least not without provoking considerable backlash.

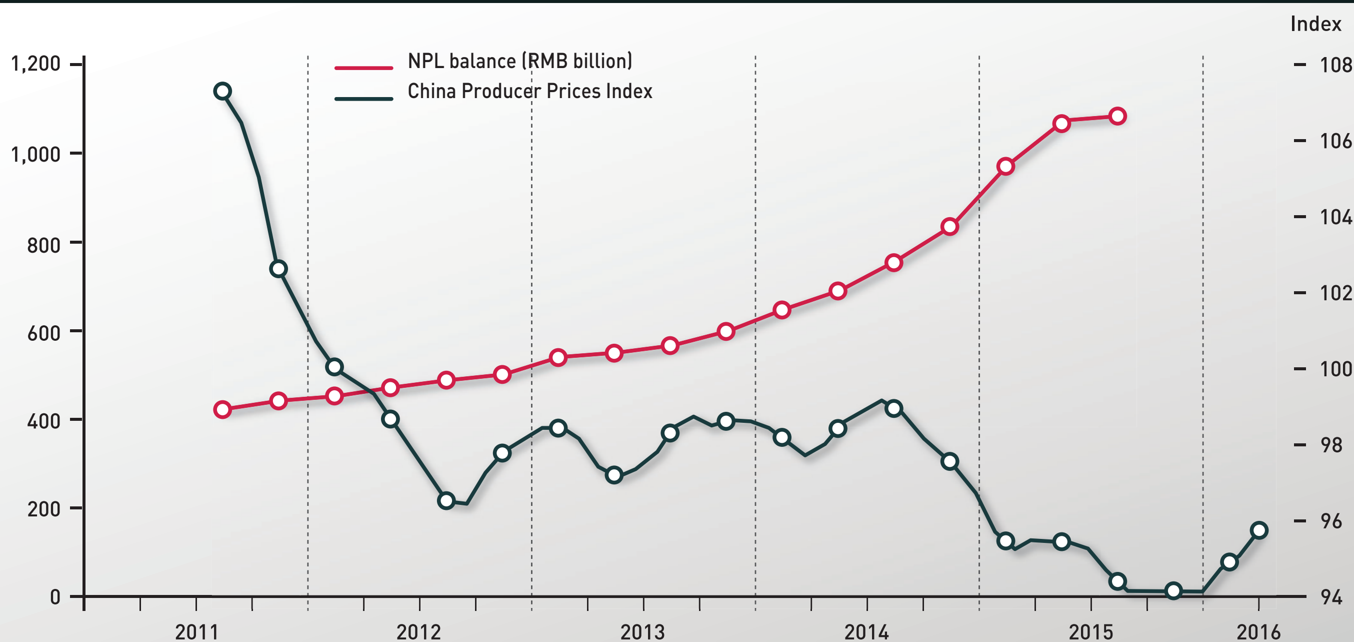
Over the Top

Meanwhile, local governments, flush with cash from Beijing's rescue package, went on a construction binge. Infrastructure, housing and factories sprang up at a torrid rate, irrespective of demand. The share of investment in China's GDP jumped to near 50% from 40% before the financial crisis. Within five years to 2014, China's total debt-to-GDP ratio rose from 150% to 282%, the highest among all emerging-market economies.

Now the hangover from China's construction bender is biting. To begin, resources are wasted as utilization rates fall. For instance, by 2015, China was the world's leader in wind power capacity with more than 145 gigawatts installed. Yet many wind turbines across China have been abandoned. According to an April report in the *People's Daily*, the official newspaper of China's Communist Party, wind power plants have been ordered to run well below full capacity in Inner Mongolia (82%) Xinjiang and Jilin (68%) and Gansu (61%). China's National Energy Administration reckons leaving the wind turbines idle has cost China RMB 16 billion ($2.47 billion).

In heavily polluting industries, the effects of overcapacity on the environment can be devastating given the enormous scale of production. In the case of steel mills, pollution remains a health risk even after the mills close because steelmakers dump toxic wastewater filled with acids and heavy metals into ponds or dry river beds. From there, it seeps into ground water and eventually sources of drinking water.

Overcapacity stymies innovation too, as cash-strapped firms have less money to invest in research and development. In its February report, the European Chamber of Commerce in China notes China's Made in China 2025 initiative could be compromised by overcapacity. The report cites the supply glut in China's ship-building industry as a major impediment to the government's goal of Chinese-made high-tech



ships reaching 40% of the global market by 2020.

Furthermore, the thin margins of companies in overcapacity industries means it is difficult for them to repay their loans. Gan of CKGSB estimates three-fourths of the firms in the manufacturing sector have margins below 15%. That has forced steelmakers to cut corners and costs to try to maintain profit margins. China's major steelmakers lost RMB 53.1 billion ($8.07 billion) from January to November 2015.

As a large amount of bank lending is flowing to these capital-intensive industries, non-performing loans (NPLs) are on the rise, more than doubling in 2015 from the previous year to RMB 1.95 trillion ($296.8 billion). If NPLs continue to rise, Chinese regulators will be obliged to recapitalize the smaller and regional banks.

"It's got to be a big worry for the Chinese authorities," says Tim Condon, chief Asia economist of ING Bank in Singapore. To boost bank profits, "they may relax the provisioning requirement from 150% to 120%."

Global Fallout

In some sectors, China continues to try to alleviate overcapacity by exporting goods to Europe and the US. That has unsurprisingly irked its Western trading partners. The European Union's steel industry, which has lost 20% of its workforce since 2008, is lobbying to deny China market economy status this year as doing so would make it harder to impose tariffs on dumped Chinese steel. Beijing insists that the WTO must automatically accept China as a market economy at the end of this year because of the expiry of a provision in Article 15.

Some analysts say granting China market economy status could cost millions of jobs across the European Union. A September 2015 study by the Economic Policy Institute in Washington, DC, found that granting China market economy status would threaten 1.7 million to 3.5 million EU jobs.

Research by the Berlin-based Mercator Institute for China Studies suggests that Chinese imports in sectors with current anti-dumping measures will rise 17% to 27%, while layoffs will be "significant" but less severe than what some industry lobbyists claim.

> We certainly see a willingness from the authorities to address the overcapacity problem, but not a consistent set of policies
>
> Gan Jie
> Professor of Finance
> CKGSB

"We want to see solutions that work for everyone," says Lance Noble, manager for policy and communications at the European Union Chamber of Commerce in China. He notes that just 2% of China's trade is subject to trade remediation measures under the WTO. "That 2% is of great importance, but then there is the 98% that isn't affected," he adds.

For its part, the US does not seem willing to grant market economy status to China anytime soon. Experts say Washington sees it as one of the last remaining issues that provides leverage to push China to accept global economic standards.

Nor is Washington easing up on anti-dumping duties for Chinese steel. The US currently has imposed punitive tariffs on 19 categories of Chinese steel. In March, the US Department of Commerce imposed preliminary duties on Chinese cold-rolled steel imports (used in the manufacturing of auto parts and shipping containers) of 265.79%.

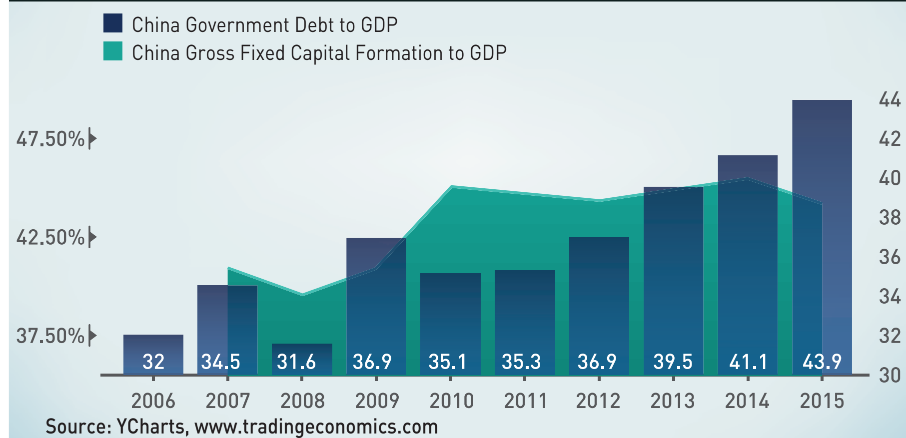
Damage Control

To alleviate overcapacity, Beijing announced last December that it would cut 6 million SOE jobs, including 1.3 million coal jobs and 500,000 steel jobs. The Chinese authorities estimate the cuts in the steel sector will reduce annual crude steel capacity by between 100 million and 150 million metric tons by 2020. That's equivalent to about 13% of the existing capacity of 1.2 billion tons estimated by the China Iron & Steel Association. To cushion the blow for workers in the steel and coal sectors, China is setting up a fund worth RMB 100 billion ($15.3 billion).

Chinese policymakers "are averse to unemployment, but they can't square that circle: they will have to swallow some job losses," says Condon of ING. "They will try to get away with as few closures as possible."

In a March research note, BMI Research points out 1.8 million workers comprise roughly 23.3% of overall workers in the steel and coal sectors, while the 6 million SOE workers account for just 0.7% of China's estimated total workforce of 807 million. By contrast, about 30 million jobs were cut in the hard-hitting SOE reforms led by former Premier Zhu Rongji from 1998-2003.

"The problem is that China's investment levels are still very high, relative to both output (value added) and current capacity," says Kuijs of Oxford Economics. He notes that industrial capacity largely grew in line with actual industrial production (value added) until 2007. But since then, capacity has grown faster than production while demand has ebbed. "That means that, even



as investment falls, capacity is still growing significantly," he says, adding that Oxford Economics found China's industrial capacity rose by 7.4% last year, compared to the official figure of 6%.

Additionally, BMI notes that worker "reallocations and/or retrenchments in 'zombie' firms" will not address the companies' debt travails, but only serve as compensation to those who lose their jobs. Firms must still repay their debts to avoid saddling state banks with more NPLs.

Some Chinese officials have suggested exporting China's industrial overcapacity to countries in the developing world to build infrastructure. One of the main proponents of this scheme is Vice Minister of Foreign Affairs He Yafei, who notes ASEAN countries are projected to spend $1.5 trillion on infrastructure projects between 2011 and 2020.

Many countries may not be willing to accept high amounts of Chinese debt (lending from the Asian Infrastructure Investment Bank), production and labor, especially countries which have geopolitical disputes with China; in emerging Asia, they include India, Vietnam, the Philippines and to a lesser degree Malaysia and Indonesia. States willing to accept it are likely to be weaker, such as Cambodia, Laos or Pakistan, and more likely to default on their loans, notes the European Chamber.

In July 2015, Huang Libin, an official from the MIIT, said: "For us there is overcapacity, but for the countries along the 'One Road One Belt' (OBOR) route, or for other BRIC nations, they don't have enough and if we shift it out, it will be a win-win situation."

No Easy Solution

Some analysts agree with Huang. In a study conducted last year, the Hong Kong-based brokerage CLSA and China Citic Bank found OBOR would enable China to export its overcapacity in steel, cement and aluminum as it created a massive new free-trade zone. "One Belt, One Road could have as much impact on China's internal economy as it will have internationally," wrote CLSA Head of China-HK strategy Francis Cheung and Head of China Industrial Research Alexious Lee. "China's top priority is to stimulate the domestic economy via exports from industries with major overcapacity such as steel, cement and aluminum…. Large SOEs will lead the way, but smaller companies will follow."

But according to David Dollar, a senior fellow in Foreign Policy, Global Economy and Development at the Brookings Institution in Washington, OBOR markets are not large enough to absorb China's excess capacity in sufficient amounts. "In steel alone, China would need $60 billion per year of extra demand to absorb excess capacity…. The economies of Central Asia are not that large," he wrote in a July 2015 paper.

"From an economic standpoint, China has been exporting excess capacity all along," says Gan of CKGSB. If it were possible to boost exports in overcapacity industries to the developing world, "it certainly would help, but to rely on that as a solution [to the overcapacity problem] could be a bit of a stretch."

She adds: "We certainly see a willingness from the authorities to address the overcapacity problem, but not a consistent set of policies."

Why has Beijing let the problem fester? To be sure, the Chinese authorities fear the effect a massive wave of layoffs would have on social stability: They will not take that risk. But that alone does not explain the glacial pace of reform.

Rather, Chinese policymakers have hesitated to tackle overcapacity head on because to do so requires rethinking China's model of state capitalism. As long as local governments are evaluated primarily on the basis of meeting a GDP growth target set in Beijing, they will be loath to slash industrial output.

In a 2015 report on China's overcapacity, Ji Zhihong, Director General of the Financial Market Department at the People's Bank of China, notes local governments eager to inflate GDP growth try "to boost investment at all costs" by keeping prices for land, water and energy artificially low while "implicitly guaranteeing loans in overcapacity industries." That results not only in worse overcapacity, but also heavy pollution as "environmental costs are often not assessed on polluters."

Ji urges Beijing to let markets play a larger role in resource allocation. He recommends introducing market pricing for land, water and energy, reducing or eliminating subsidies, and liberalizing interest rates to reflect the real cost of borrowing.

Yet few analysts expect this kind of drastic reform to come anytime soon. Reducing China's industrial overcapacity "is going to be a process, not an event," says ING's Condon. "Chinese policymakers feel they have the fiscal wherewithal to draw it out and avoid sharp short-term pain."

He concludes: "There is going to be burden sharing. The rest of the world is going to help China absorb the problem."

The People's Banking

A revolution is underway in private online financial services

By Tom Nunlist

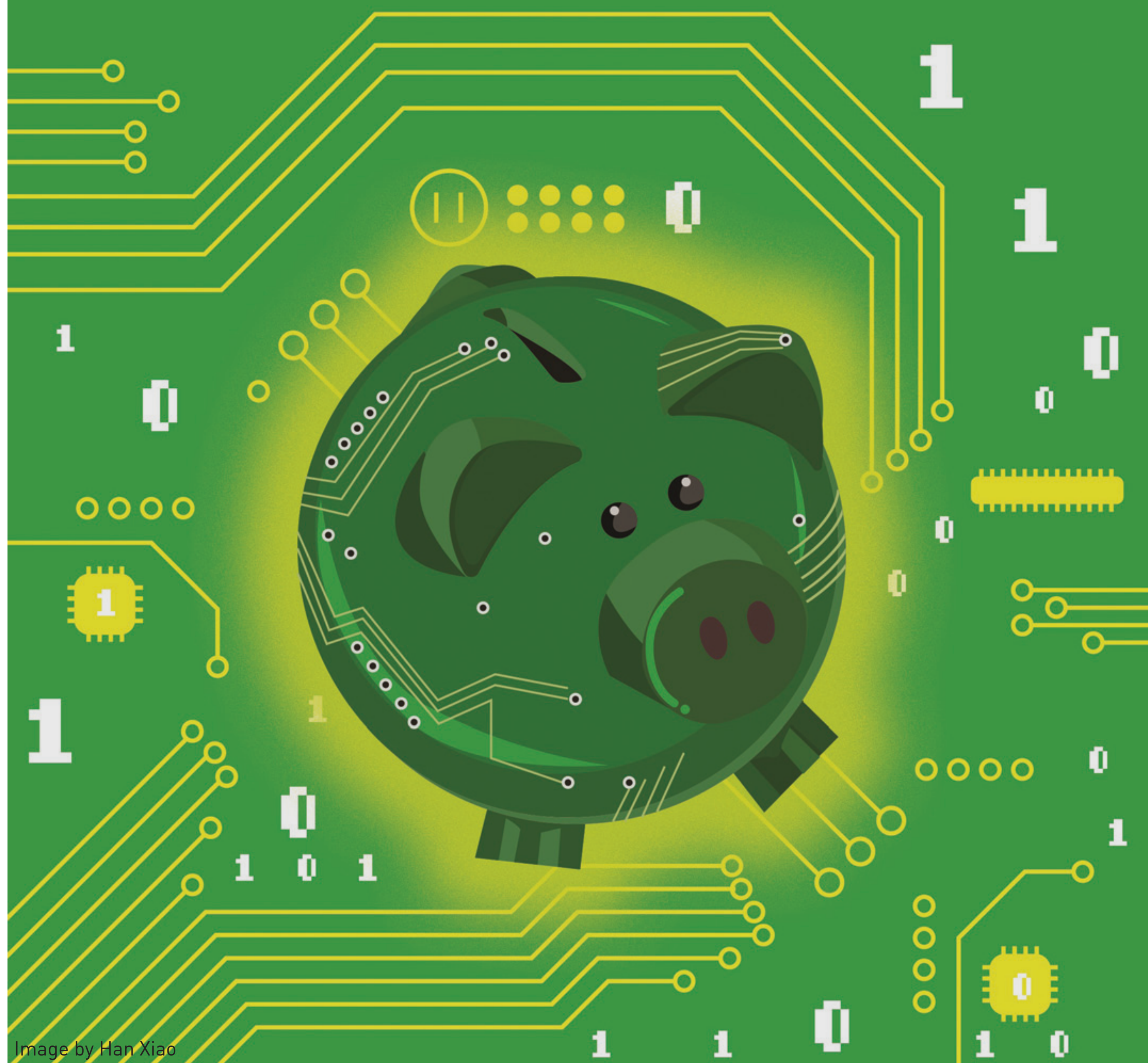


Image by Han Xiao

Teng Teng, a 29-year-old professional illustrator living in Shanghai, first began using Alibaba's online transaction service Alipay when she was still an undergraduate student in 2009. But she says she was very slow in trusting it.

"I thought it was dangerous, somebody would take my money," she says, explaining how she would load the account with just RMB 200 or so at a time. "But I really wanted to try it. It was new stuff."

These days she uses Alipay, as well as Tencent's newer WeChat transaction service, all about town. KFC, hotels, grocery stores, they all accept it. She uses it with her friends when they split the bill at a restaurant by sending each other money on WeChat. It's even become an integral part of her freelance business.

"When I do a [freelance] job, my clients pay me on WeChat," she says. This is the biggest reason she finally took the leap to link her card—clients demand the speed and convenience. "If I didn't link it with my card, then I couldn't accept many clients."

Teng Teng is one of 200 million people who have already linked their bank cards to the WeChat payment system, out of 650 million WeChat users. The WeChat mobile payment system was only launched in late 2012, and is only second place in the mobile payments marketplace with roughly a 20% share—Alipay boasts 400 million users and a 70% share.

The upsurge in mobile transaction services used through now-ubiquitous smartphones is at the heart of a sudden expansion of the online financial services industry in China. This is a diverse and dynamic marketplace with investment, small-lending companies, P2P lending, and most recently the emergence of the first online-only banks: MYbank, 30% owned by Ant Financial (founded by Alibaba), and WeBank, which is 30% owned by Tencent. The tech rivals each control the largest share of their respective banks, with the remainder divided among investment companies, conglomerates and small government stakes below 10%.

These new services provide a much-needed expansion of financial access for Chinese consumers and small and medium-

The potential [for] innovation in the [Chinese] financial industry is huge

Huang Chen
Partner
Shanghai-based private financial services company

sized enterprises (SMEs), that have long been underserved by the state-dominated banking system.

"[In China] we have non-banked and underbanked in some circumstances. Services cannot get to the right people," says James McKeogh, a management consulting partner at KPMG in Hong Kong, specializing in emerging technologies. "There wouldn't be so many [private banking and credit] organizations unless there was a real need in the market to provide lending to a populace which aren't being served by the traditional banking establishment."

Just how many underserved people are there to be reached? Around 500 million, according to *Caixin*, a top business news magazine in China. The consumer finance market alone, which excludes small businesses, was estimated to amount to $4 trillion in transactions in 2015, and iResearch predicts it will reach $5.75 trillion by 2019, of which $518 billion will be online..

But it is more than just a potential market. Getting more liquidity to companies outside the state-owned sector is part of the economic transition that Beijing talks about, the demand is there, and the new online financial platforms provide new and efficient tools to do it.

"Entrepreneurship is not an issue in China, it's more like 'formal entrepreneurship'," says Christophe Uzureau, a banking and investment services analyst at Gartner, a technology research and advisory firm. The need is to develop people and "move away from infrastructure investment."

Perhaps nobody agrees with this more than the Chinese government itself—Premier Li Keqiang personally pressed the "approve" button issuing WeBank's very first loan on January 4th, 2015. The RMB 35,000 ($5,600) loan allowed truck driver Xu Jun to buy a truck.

But there's still much work to be done before the revolution can begin in earnest. The business model needs to be further developed, regulations need to be dealt with, and consumers need to be educated—each of which is a tall order in their own right.

A New World of Transaction

The online financial transformation began in 2004 when Alibaba launched Alipay (controversially spun off under Ant Financial Services Group in 2015), which is roughly equivalent to PayPal. By far the biggest player in China's online and mobile transactions scene, Alipay hosts some 80 million transactions per day on average. Last November 11th on Alibaba's record-breaking Single's Day (China's Black Friday) however, Alipay processed 710 million payments worth $14.3 billion, 85,900 per second at peak sales. Tencent's Tenpay, which powers WeChat's payment service, launched in 2005 is second with about 19.2% of the market.

The speed at which online/mobile transactions have taken hold is astounding. In 2006 when these services were just getting off the ground, transaction volume amounted to less than $1 billion. By 2014 it was $1.66 trillion, and this is just the beginning.

"Payment is only the foundation," says Huang Chen, partner of a private financial information service company in Shanghai. Huang's company provides loans in the RMB 10,000 range for consumers to make relatively big-ticket purchases, like computers or for dental work. "The potential [for] innovation in the financial industry is huge."

This established base is allowing for the emergence of services beyond payments. Alibaba and Tencent, as the two biggest players, are naturally dominating here as well. Leveraging Alipay and its e-commerce business, Alibaba established Alifinance in 2011 to provide microloans to vendors on Taobao, Alibaba's online platform for mom-and-pop shops—by mid-2014 the company had dispersed over $30 billion in loans. And in 2013 it set up Yu'e Bao, a money market fund that allows people to invest the unused balance stored on their Alipay account—the name literally means "leftover treasure." By the end of 2015, Yu'e Bao had RMB 4.4 trillion under management, more than half the industry total. Zhao Cai Bao, launched in 2014, provides a peer-to-peer (P2P) lending service, where individuals solicit loans from other individuals, in what has become a crowded and troubled industry.

Tencent, perennial competitor of Alibaba, launched a me-too money market fund, Li Cai Tong, in January 2014 after the Yu'e Bao instant hit—in one year it gained 10 million users and RMB 100 billion in funds.

These quickly-mushrooming services are invading China's long-neglected retail banking space that has customers starving for basic financial products—there are few places to store and invest one's money, and it is very difficult to secure a bank loan. The money market funds were a direct shot at the state-banking system, at one time offering annual returns of over 8%, far outstripping state-bank deposit rates that can be as low as 0.35%.

AliFinance aimed to solve the credit issue among its own vendors—a move that did not require a banking license, but limits the customer base. P2P finance similarly offers a solution to the credit gap without a banking license, but is very risky and difficult to regulate.

In other words, these services can be seen as workarounds for a system that is fundamentally insufficient. Traditional banks in China generally do not provide credit service to anything but the safest bets—in other words, state-owned enterprises (SOEs) and real estate purchases where the property is the collateral for the loan.

The Need for Innovation

In rough terms, state-owned banks suffer from two related problems—lack of appetite for risk, and lack of impetus to increase profitability. It is for both of these reasons that the government is willing to encourage the development of a limited private financial system.

The banks preferentially lend to SOEs because they are required by official departments to do so and because such loans are less risky as SOEs are ultimately backed by the government. Unfortunately, this habit helps perpetuate the long-standing problem of SOE inefficiency.

"Traditional banks are quite lazy. They can just lend to state-owned companies," says Huang. "When these companies get money, they create oversized productivity."

Tightly wrapped up with this is the problem of insufficient measurement techniques for risk and loan performance. For example, as a development bank, it is the Agricultural Bank of China's (ABC) job to lend to agricultural businesses first, and be profitable second. Again, loaning to SOEs helps mitigate risk, and then because profitability is not the primary mission, there's little pressure to keep expanding the business by doing something difficult such as figuring out how to eke profit from small-time farmers that need small-time loans. Thus, without the pressure, methodology hasn't been fully developed. This has led to a predictable contradiction.

"ABC stopped writing financial service to small village people because they don't have any way to manage risk," says Huang.

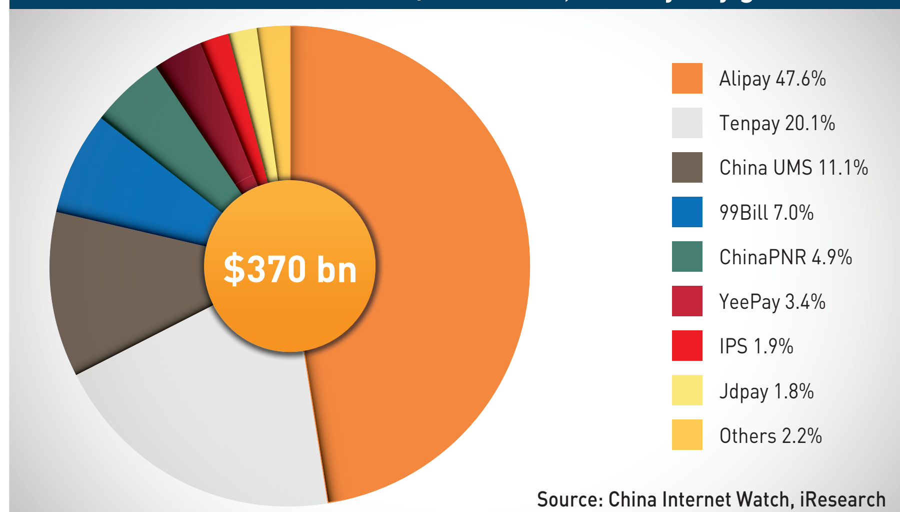
The net result is that big, inefficient state companies are funded at the direct expense of smaller, scrappier, hungrier players that can make a positive impact on the economy. The problem is recognized by the highest levels of government.

"The real economy is like the body, and the finance sector is like the blood," said Premier Li Keqiang at a meeting with the presidents of major banks in April 2015. "The problem with the Chinese finance sector is not anemia, but poor circulation of the blood."

At the same meeting, the Premier confirmed that this poor circulation is the exact reason the state supports the establishment of private banks—SMEs just cannot get the credit they need.

"At the end of the day when we look at the Chinese economy, it is driven by the SMEs," says McKeogh. "It is the Chinese entrepreneur, it is the Chinese manufacturer, [it] is where the wealth of China has come from."

Neither Tencent nor Alibaba took early funding from Chinese banks. But when they founded WeBank and MYbank, respectively, last year, they took aim at pro-



viding a service that they didn't have access to, armed with the very tools that the state banks are lacking.

Data Can Save the Day

Li Keqiang's analogy of circulation is right on the money, but solving the problem is tricky. The two-fold question is 'who needs credit' and more importantly, of those in need, 'who deserves credit'—the problem of measuring creditworthiness. And one reason that state-owned banks have trouble figuring this out is that underneath the measurement problem is a data problem.

"That's one of the challenges in the Chinese market," says Uzureau. "You have a large pool of small-medium businesses that haven't been tracked because there was a lack of interest from the big banks."

Luckily, data is exactly what tech and e-commerce companies such as Alibaba and Tencent traffic in.

"The data they have is very good," says Uzureau. "[They] have an understanding of not only the creditworthiness of those individuals, but also how they interact with clients, and even the feedback from the clients, so you get some ideas of business viability."

Indeed, WeBank offered some of its first loans to customers pre-approved, based on user data—and that's more than simply leveraging the payment platform. What both banks are doing is building out an ecosystem, one that is based on data, into the credit market. According to Uzureau, the key competitive advantage is being able to contextualize financial products for customers—give them products their businesses need based on knowledge about the customers.

But the reality is still very challenging, even if they do have an important edge. "You may have some very good data," says Uzureau, "but at the end of the day it's a market where there is still a lack of data."

On top of that, the likely best customers, the ones with the most data on them are also probably those who have access to liquidity in some form or another. And so there is a need to go down the value chain where the risks are higher. There the rival tech companies face the danger of getting away from their core competencies where things can more easily go wrong.

For WeBank and MYbank to be successful, they are going to have to become a bit more traditional from a banking perspective

Christophe Uzureau
Banking and investment services analyst, Gartner

When it comes to financial services, however, responsibility is not limited to the institution. But so far the regulations have been as murky as the market itself.

Haphazard Oversight

Although the government openly supports financial innovation for small-scale customers by private companies with digital tools, it is still quite apprehensive. With so many new things appearing, regulators are caught between the twin tasks of opening the market and controlling it—both for customer safety, and political need.

The recent history of the peer-to-peer lending space in China is a perfect example of this. Zennon Kapron, founder of financial technology research firm Kapronasia, points out that lending between individuals has existed for thousands of years in China—it's only been online since about 2010, and largely free of any regulation until very recently. There's an interesting contrast with another new digital spin on an age old financial instrument: Bitcoin.

"It is only now that we are seeing regulation [in P2P]. Why did it take so long? Bitcoin was immediate," Kapron says. "It was because it was solving an issue within the industry. It provided funding to SMEs." Bitcoin, on the other hand, didn't solve such a problem, and so the government was far less willing to tolerate it.

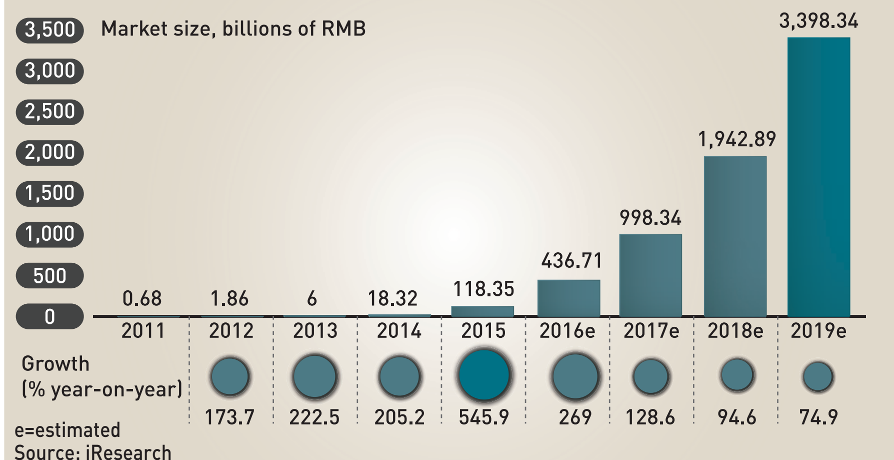
The regulations that are finally coming down for P2P are in response to what amounts to a public crisis. Massive defaults of online platforms, of which there are surely more to come, have triggered civil unrest and mobilization of police. And although Alibaba's Zhao Cai Bao has so far avoided its own P2P defaults, the lack of any transparency is worrisome.

Money market funds, such Yu'e Bao and Li Cai Tong, are also coming under increased scrutiny after a period of lax oversight. But the intervention here seems more geared to protecting banks than consumers. At one time Yu'e Bao offered annual returns of 8-10%, which prompted a flood of people to move money out of their low-interest bank accounts.

"Of course government won't let [Yu'e Bao] keep doing that," says a Chinese banker that wished to remain anonymous. The problem was people moving their money out of state-owned banks with low returns. "It was forced to reduce the accrual from 2015 [and] finally now has similar accrual with traditional banks."

For WeBank and MYbank, the government was forthcoming with banking licenses, but appears to be hung up on the key concept of 'online only'. With the no physical branches, the expectation is that no in-person interaction is required, but that hasn't fully materialized.

"At the beginning of this year [regulators] allowed facial recognition to do remote account opening," says Kapron. Facial recognition, an emerging firm of



bio-identification, has been the source of significant excitement in this field. "But we think they are geographically limited."

Kapron allows that he does not know for certain, but notes that these remote openings seem to only have been in second-tier cities, such as Hangzhou, and nowhere else.

Huang agrees the banks are hamstrung.

"The problem is the regulation of online banks is still the regulation for local banks," she says. "They want to lend some money to people remotely, but they cannot do it. They have to have a person face-to-face sign a contract."

Meanwhile, in the midst of these external roadblocks, internal tension has emerged between bankers and techies. When WeBank president Cao Tong resigned last September after a mere 10 months on the job, there was speculation that the former vice-president of the state-owned Import-Export Bank of China just could not handle running a disruptive internet company. The departure of vice-president Zheng Xinlin shortly thereafter further raised suspicions.

Uzureau agrees it might be an uncomfortable marriage: "One of the challenges is the concept of 'ego management'," he says. The high-octane tech business might not be right for the buttoned-up world of banking.

"For WeBank and MYbank to be successful, they are going to have to become a bit more traditional from a banking perspective," says Uzureau. "It may sound boring, but it's banking."

How Transformative is It?

Just how long it will take to get the regulations right and egos in line is an open question, but the companies seem to believe it is worth the effort. The promise is a commanding lead in a transformed market—but there's room for doubt.

"When they initially announced [online banking], we were very bullish. This will change the way consumers do their banking," says Kapron. "What we have seen over the past year is that it hasn't really changed much. The start and growth has been really limited." By February this year, MYbank had loaned out RMB 45 billion to 800,000 borrowers—that's about 1% of the estimated market in RMB terms, and 0.16% in terms of people.

Problems with regulations and the business model aside, it may just be the demand is smaller than expected.

"The other part seems to be the consumers themselves," says Kapron. "There just doesn't seem to be a real push to do it."

He notes that money can already be easily moved between transaction platforms and traditional banks. Unless the sums are very large, more than RMB 50,000 per month, it's not a big problem. For consumers in particular, the differentiation doesn't seem to be that great, Kapron says.

And for those who do need the next level of service—loans—there is the issue of trust and familiarity. According to Uzureau, these two elements are essential.

"It's not only a question of giving access to liquidity, you need to go through a process of customer [learning]," says Uzureau. "To put it simply, they still use tier-1 banks because they know they will not fail."

Indeed, Teng Teng, who relies on online payments to work with customers, echoes that exactly: "If someday I had a lot of money and I wanted to invest… I would not use any of these services. I would go to a [traditional] bank," she says.

Even so, Uzureau thinks the transformative potential is there because the business is more than just transfers and loans. It's contextualizing banking services within the scope of customer business, and threading trust all the way through it. This is both the key advantage and the biggest challenge.

"It's trying to achieve what has been done from a supply chain perspective [but in banking]. And that is extremely complex," he says. "We have to look at how the ecosystem evolves. I think today there is too much focus on MYbank and WeBank and the distribution of loans, which is [only a] component of that ecosystem".

But if they can pull it off, it won't simply be picking up the slack of the state-owned banking system, but creating something that's truly new. In that sense, what has been widely seen as slow movement in the development of these banks may really be the result of too much hoopla.

Alipay and WeChat Pay have transformed the way people pay for goods and services in just a few years. Yu'e Bao and its slightly less famous counterpart Li Cai Tong then piggybacked on those systems and have become instant blockbusters. P2P finance had a similar explosion.

WeBank and MYbank could have an even deeper impact, but given the drastically larger scope of the undertaking, it is unreasonable to expect the same speed.

"Going slowly at the beginning… is a good thing," says Uzureau. "I think we need to give them some time to fine-tune."

Wanted: A Miracle

Buffeted by economic forces, does China still have the wherewithal to face strong winds?

By Douglas Bulloch

Image by Wei Bingnan

Concealed behind a still impressive official growth rate, China's economy is in danger of stalling. Doubts are multiplying over whether outward appearances tell the whole story. Slow growth around the world, little progress fostering domestic demand, and a change in the direction of China's capital flow are beginning to invite questions over China's long-term prospects. Add to this increasing skepticism about the official statistics, continuing disappointment over the results of the 2008/9 stimulus program and an overcapacity problem that raises the prospect of protectionism around the world, and China's reform path looks in need of a rethink.

Perhaps the most important change between China's robust response to the financial crisis in 2008 and the present uncertainty is that the problems China now faces are not seen as merely cyclical, but structural, and stimulus is not the obvious answer. Different analysts have different explanations, but most agree that China is at a turning point, where easy catch-up growth is exhausted, and difficult choices are multiplying.

Whether China's leaders take the hard decisions over structural reform, or continue to stimulate their way along the path of least resistance, building up bigger problems in the future, remains uncertain. According to Andrew Collier, Managing Director of Orient Capital Research in Hong Kong, "China has to make an adjustment at a time when the stimulus package has created a worse bubble than normal."

Structural Challenges

Structural shifts come in many forms: demographic, technological or simply in terms of resource constraints. For example, a recent reportage film published online by the *Financial Times* placed great emphasis on what is known as the 'Lewis Turning Point', where the growth benefits of rural-to-urban migration dry up and wage costs start to escalate. Some economists believe China reached this point around 2010. But there is no consensus about this, and others identify different structural challenges.

Salvatore Babones, Associate Professor of Sociology and China specialist at University of Sydney, offers an alternative structural critique: "China has reached what I call the 'fiscal crisis of the state'. At low income levels, government revenues tend to grow in line with GDP growth and government expenses don't." He goes on to explain that "so far, no developing country has voluntarily increased revenues in line with expenses…. They all end up hitting a fiscal wall, [and] China is hitting that brick wall now."

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> Salvatore Babones
> Associate Professor of Sociology and China specialist
> University of Sydney

While these are two of many possible explanations for what is often referred to as the 'middle income trap' where an economy's growth is restrained by the exhaustion of its particular competitive advantage—in China's case, labor—it nevertheless neatly reflects wider concerns about China's ballooning deficit and the solvency of its state-run banks.

Similarly, Arthur Kroeber, Head of Research at Gavekal Dragonomics, describes in his recently-published book *China's Economy: What Everyone Needs to Know*, how China must now move from a model where growth comes from 'resource mobilization' to one where growth accompanies the maximization of 'resource efficiency', which is an altogether more difficult proposition.

But none of this is unexpected. All economic textbooks acknowledge different phases of growth in developing and transitioning economies, even if they differ in their precise explanations. So it has long been understood that China would arrive at this juncture, and amazingly some people even managed to get the date right. Collier makes this point plainly: "China has come to the end of the period of easy gains in GDP." He adds for emphasis: "People were predicting in 2004 that the movement of labor to more productive uses with capital… meant that [high growth] cannot be sustained past 2016. At that point the growth rate would be 6-8% maximum… [which was] absolutely right."

Simply put, China faces a choice that would be recognized by the humblest Buddhist pilgrim when faced with two paths ahead: the hard road—of structural reform and painful consolidation—and the easy road—of fiscal and monetary stimulus, leading inevitably to further problems along the way.

What's in the Toolbox?

Li Keqiang, China's Premier, has made few speeches so far this year. But when he spoke at a press conference on March 16th,

he said two interesting things while discussing China's declining growth rate. First, he said of China that "we still have tools in the toolbox" while prefacing this with the assertion that "in the past couple of years we did not resort to massive stimulus measures for economic growth."

A quick glance at the China headlines for the last year, however, suggests that such assertions should be treated with caution. Early 2015 saw talk of $1.1 trillion in accelerated infrastructure investment, and in September a further $188 billion was earmarked as the fiscal component of what was called 'growth stabilization' efforts by the China International Capital Corp (CICC)—a leading Chinese investment firm.

This partly reveals a definitional quandary concerning what counts as 'stimulus' in China, with an economy with such a high degree of state direction. This is particularly the case as capital investment is a key component of China's Five Year Planning (FYP) cycle and not something that simply happens spontaneously, to be augmented by occasional government adjustments as might be the case in a Western economy.

> "Triple R cuts at this point are not a stimulus tool
>
> Song Gao
> Managing Partner
> PRC Macro Advisors in Beijing

As Collier says, "There is a widespread misbelief that China has been withdrawing stimulus and is [now] ready to inject more money into the economy, and that's not true." He goes on "there has been quite a bit of stimulus since the RMB 4 trillion in 2009, through the banking system."

When it comes to structural reform, Collier says that those that "they have announced are quite significant." This may be necessary and long-heralded, but it has yet to really arrive. Indeed, "reforms at the margin are going to be difficult because you've got a lot of political battles between provincial governors and the state council," and when growth begins to slow, what appetite does China really have to shut down factories?

Old Tricks

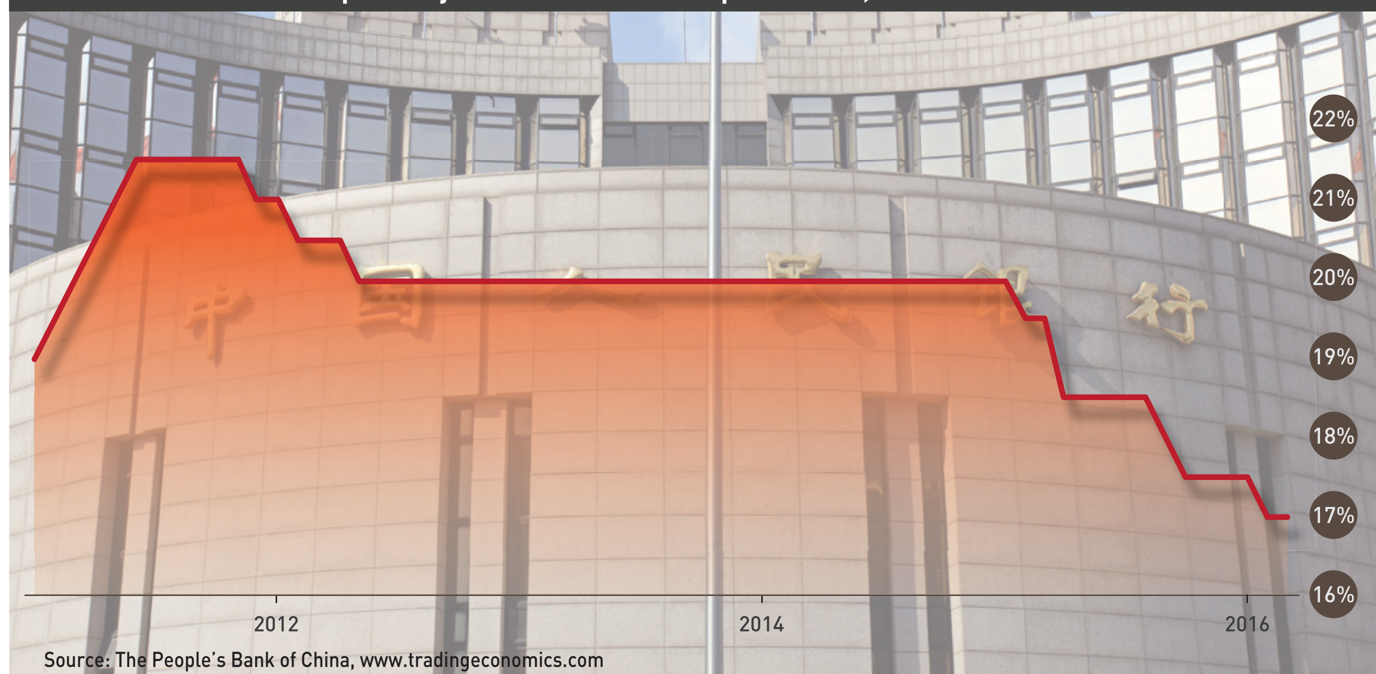
One widespread concern is that when it comes to sustaining growth, China keeps doing more of the same thing.

"What started as stimulus spending in 2008 was a Keynesian response to a crisis, which was entirely appropriate," says Salvatore Babones. "[But] what we're talking about now is not a temporary economic downturn, we're talking about a structural deficit." And for all Li Keqiang's disavowals of fiscal stimulus "the current FYP assumes that it's going to go on forever," which is "clearly not sustainable."

Equally, on the monetary stimulus front, the habit of adjusting interest rates and the 'reserve rate requirement'—the so-

Money in the Bank

China has repeatedly cut bank reserve requirements, but it cannot do so forever



Source: The People's Bank of China, www.tradingeconomics.com

called 'Triple-R'—is generating diminishing returns. "There is a lot of evidence now that credit is less effective. We've certainly seen that in the declining GDP but the figures for return on equity (ROE) [are also] declining," says Collier.

Collier goes on to say "it's not clear how much more they can do. The main area that people are expecting is cuts in the 'Triple R'… now that's a huge pool of money, but that's basically their last big basket of money."

Song Gao, Managing Partner at PRC Macro Advisors in Beijing, cautions against viewing changes in the 'Triple R' as monetary stimulus at all. "Triple R cuts at this point are not a stimulus tool," he says. "It is more about liquidity withdrawal from China's domestic market due to capital outflows." Meaning that the Triple R works like an emergency stabilizer during periods of capital withdrawal.

"There's a real concern about balancing the need to stimulate the economy and just throwing the money overseas," says Collier, adding that Chinese policymakers are "stuck between a rock and a hard place."

All of which neatly clarifies the policy trade-offs at stake. "The biggest limit… from the monetary policy side is the exchange rate. If there is more easing by the PBOC, that should lead to more depreciative pressure on the RMB," says Song, and "at this point the PBOC's policy priority is to stabilize the exchange rate."

New Tricks?

With fiscal stimulus pinched by rising deficits and corporate debts, and monetary stimulus undermined by diminishing returns and downward pressure on the exchange rate, what's left?

Setting aside Keynesian stimulus, China's growth has been driven for decades by massive infrastructure investment, and this shows no sign of slowing under the latest FYP. Babones, however, remains optimistic about the detail. "The 13th FYP has absolutely the right priorities for China… [which] has to build the infrastructure for its tomorrow economy." He picks out details for specific praise: "Expanding high speed rail by 50%, building 50 new civilian airports, building expressways, building mass transits, connecting rural villages."

"I strongly endorse the 13th FYP," he adds. "I think China has the most ambitious and positive social policy agenda of any developing country and maybe of any country in the world." The only drawback being "if they can fund it."

Capital expenditure is coming under greater scrutiny. Enthusiasm for overseas investments on the "One Belt One Road" initiative, for example, has cooled, resulting in "the pace of lending overseas… [being] substantially slower than people previously thought, including policy makers," says Song. And when even Zhou Xiaochuan, Governor of the PBOC, publicly warns about rising corporate indebtedness, then something surely has to give.

> "There is a widespread misbelief that China has been withdrawing stimulus and is [now] ready to inject more money into the economy, and that's not true
>
> Andrew Collier
> Managing Director
> Orient Capital Research

On the domestic level, however, "the central government still considers infrastructure investment as a major policy tool to prevent the economy from a hard-landing scenario," says Song.

Andrew Collier raises the prospect of stalled SOE reforms in this capital-constrained context, adding that, "there's going to be de-facto restructuring of industry in China because of a shortage of capital, and a lot of this is going to happen at a local level." Indeed, he also believes that the recent announcement of up to six million redundancies across the state sector was really a form of signaling, or "the center telling the provinces 'well, we're willing to take the pain, so we think you should be too.'"

The difficulties of SOE reforms are hard to overstate. For Song, "SOEs are central to the power structure of the Communist Party, so any missteps or radical reforms of the SOEs will have a lot of political consequences," adding that "naturally… they will… be cautious."

Finally, it should be noted that none of these are really 'new tricks', so much as long-awaited structural adjustments aimed at limiting China's enormous overcapacity problems and generating growth through greater efficiency.

Failure of Expectations

When faced with all the constraints and difficult choices China has to make, it is tempting to ask whether the most difficult adjustment does not involve policy. Having moved from a period of high growth, where superlatives bred overconfidence, to a period of slower growth which obliges recognition of limits, could growth targets themselves be part of the problem?

The official growth target for 2016 to 2020 is now set at between 6.5% and 7% and the number for 2015 came in slightly below expectations at 6.9%. But there is

The sun is setting on the old ways of managing the economy

tremendous skepticism concerning both of these numbers. On the one hand, the target implies that the government will always step in to make up any shortfall, regardless of its impact on aggregate leverage, and on the other hand, the reported figure for last year is not widely believed, not least because the Ministry of Finance does not reveal its methodology.

On the first issue, Collier says, "there is a lot of evidence that rising debt levels can lead to crises. Everyone tries to argue that China is immune to that, but there's really no reason why China should be," thus implying that it may be counterproductive to prioritize a growth target over long-term progress towards efficiency gains.

Babones believes that "the growth rate in the taxable portion of the economy is zero. All the growth is coming from the government spending and you can't tax government spending." That is a problem which exacerbates the growing government deficits, and reinforces the negative impact of excessive leverage.

Song considers that one answer to this problem is simply to "tolerate slower growth and more credit defaults in the near term, which… will pay off in the long run." In advocating this he acknowledges that the more important objective would be long-term economic growth rather than the short-term fix of hitting a target. But ultimately, "because of the constraint of growth, the government has to pay more attention to short-term stimulus."

Babones, on the other hand, believes that the gains from efficiency are still a long way off, and the answer is to keep infrastructure investment high but to raise taxes to cover the deficit. "The only place where I seriously disagree with the 13th FYP is that they plan to cut taxes." He adds that "funding [infrastructure expenditure] will require somebody to start paying something. And that somebody is China's wealthy and profitable corporations."

In contrast, Song outlines a continuing role for fiscal measures. "According to international norms, the sovereign debt over GDP ratio can be raised to 50% of GDP, so there is room for another RMB 10 trillion fiscal borrowing by the central government." He adds that "China is shifting leverage from private corporations to central government and household leverage," and that therefore "this stimulus can last a little

bit longer and will probably impose less financial risk to the over-leveraged, over-burdened banking sector."

But Collier has a more pessimistic view, suggesting that much of the recent funds made available for infrastructure investment have ended up servicing existing property development debt. He also doubts "that money is going to create a very significant source of new demand, particularly as there is already a huge property bubble in the tier-3 and 4 cities."

"I'm not optimistic," he adds.

All Hat - No Rabbit

As might be expected, discussing China's next steps provokes many different responses. Both Collier and Song believe China needs to accept a period of lower growth, but the political atmosphere makes such an adjustment complicated. In any event, the transition from 'resource mobilization' to 'resource efficiency' will be difficult. Aside from fiscal and monetary measures, which have become almost knee-jerk responses despite growing doubts over their effectiveness, and supply-side reform now deferred in search of short-term growth, other measures are conceivable.

For example, the Lewis Turning Point, if it is not already upon China, might be deferred or ameliorated by advancing China's proposed rural reforms and extending the gains from rural to urban labor mobility. An ambition that would complement SOE reforms towards the "[privatization of] all of these provincial state-owned firms… because… provincial governments are running out of revenue from land sales," according to Babones. But this involves a complicated, multi-year reform agenda.

Equally, improving transparency, as recently called for by Ben Bernanke, Former Chairman of the Federal Reserve, should improve the reliability of the published statistics, which would in turn increase confidence in investment in China, provided the more-true numbers are not too far from market expectations.

But again, it may all come down to attitude. "The government keeps thinking it can use these [policy tricks] to jump start economic growth and that's really not the way to do it," says Collier. "You've got to restructure the banks so capital is allocated according to returns. For a lot of very complicated reasons, there is a huge reluctance to do that."

Then Babones hints at the wider difficulties of improving efficiencies. "We all talk about China becoming more efficient, but nobody has any concrete advice about how to become more efficient." On the other hand, "they do know how to make a road, and that's at least at start."

Lastly, Song Gao reasserts that "what the Chinese government is doing is not innovative… China is just late to the game."

For all the current anxiety over falling long-term growth rate expectations, China has not yet run out of options. But it has still to convincingly demonstrate the ability and/or willingness to carry out necessary reforms. This coincides with the long-anticipated structural shift away from easier 'resource mobilization' growth to 'resource efficiency' growth, which makes for pretty bad timing.

What is clear is that China's path ahead is no longer an easy one, and will involve painful reforms more than clever tricks. As Andrew Collier says, China faces a "tsunami of negative events," leaving them "in a difficult place."

For Buddhist pilgrims, the choice is forever a simple one: 'If there are two ways before you, always choose the harder way.'

China's Capital Fright

What caused China's forex reserves plunge and will it happen again?

By Christopher Aston

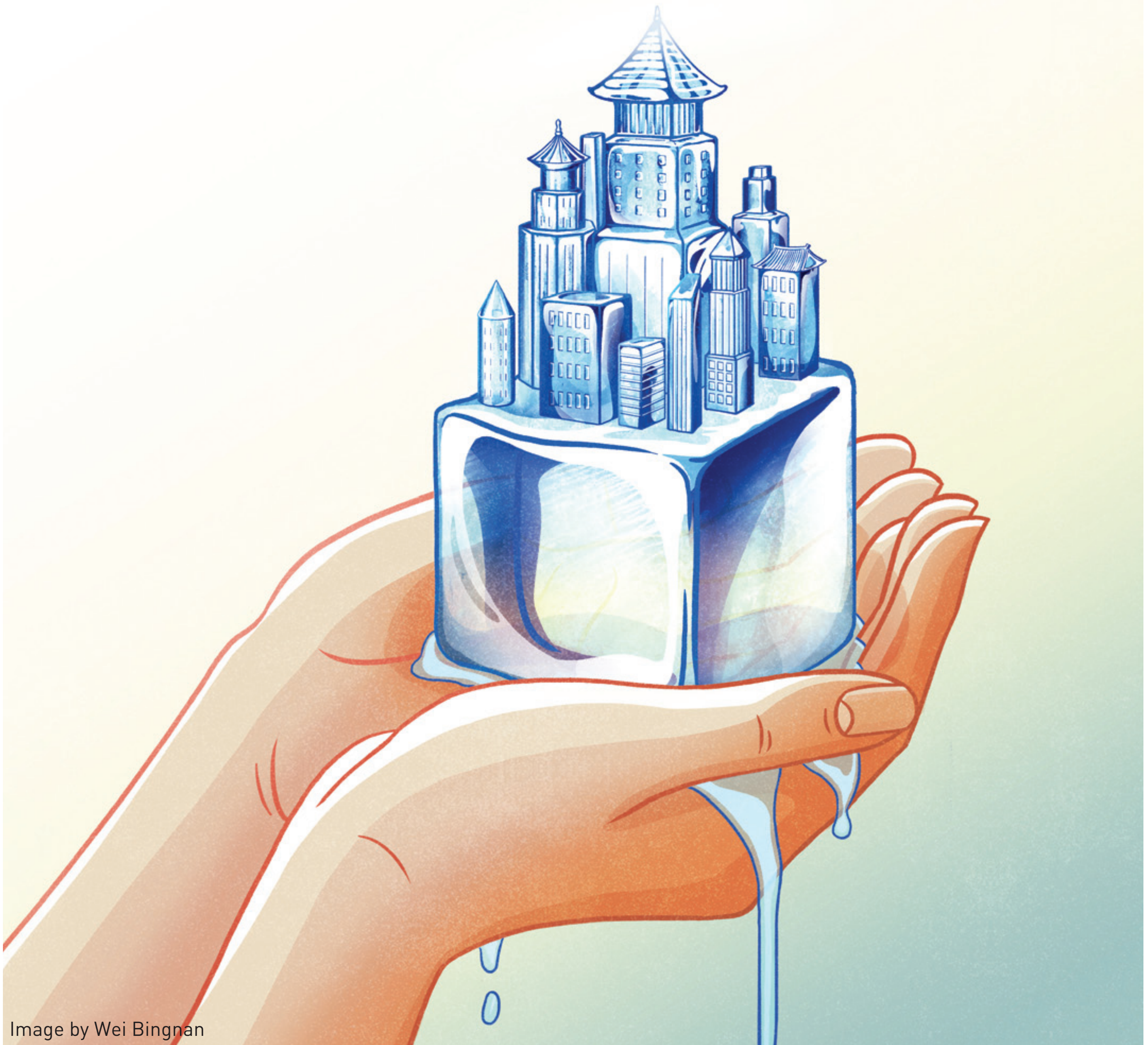


Image by Wei Bingnan

On August 11th last year, China suddenly cut the RMB reference rate by 1.9%, the biggest one-day drop since 1994. The move sent shockwaves through world markets and raised questions for Chinese people and investors around the globe about not only the currency, but also the direction of the Chinese economy and even the system.

The impact of the devaluation was hugely significant for China's foreign exchange reserves, which peaked in 2014 at a recording-breaking level just shy of $4 trillion. In 2015, those reserves dropped $512.66 billion, or more than 13%, to end the year at $3.33 trillion. Capital flight, partly caused by concern about a weakening RMB, was one issue pulling down the reserves, with official efforts to support the currency surely another.

"The surprising depreciation on August 11th worked as a wake-up call to the markets on risk toward the RMB," says Larry Hu, head of China economics at Macquarie Group. "The markets even started to worry that the PBOC (People's Bank of China) might be forced to let the RMB float due to the cost of intervention."

Exchange rate reform may have been the intention, but the move was interpreted by the markets as a deliberate devaluation, and dragged down many other currencies on the same day.

Understandably, the pundits went wild, with much of the cataclysmic coverage warning that China's foreign reserve stockpile could be depleted in next to no time with dire consequences, including the possibility of China lacking enough foreign reserves to defend its currency in the face of attacks and relaxations of capital controls.

But China is never that simple. Behind scaremongering headlines is a story of the world's largest trading economy in transition from investment and export-led growth to rising domestic consumption. In a period of slowing economic growth, Chinese policymakers face the new challenge of defending a currency under devaluation pressure. To handle it and stabilize the reserves, the government needs to stem illicit capital flows while developing domestic investment channels and keeping citizen wealth within its borders by choice.

> The surprising depreciation on August 11th worked as a wake-up call to the markets
>
> Larry Hu
> Head of China economics
> Macquarie Group

While the outflow has slowed for now, keeping the reserves in proper order is still a difficult task, although by no means impossible.

Outgoing Tide

The drop in China's reserves is the result of a complex combination of factors reflecting an economy transitioning from export-driven growth to growth through domestic consumption. But to understand it, one must first understand how the reserves got so big in the first place.

Throughout China's decades-long reign as the 'world's factory,' booming exports meant Chinese banks received excess foreign currency from their clients, exchanged at state banks for RMB, leading to a buildup in foreign exchange reserves. Decades of rocketing growth meant the pot grew very large. At its peak, it even became a liability–in mid-2014, Premier Li Keqiang acknowledged the nation's reserves had "become a big burden for us, because such reserves translate into the base money, which could affect inflation."

But the recent economic slowdown has fundamentally changed the dynamic. Exports are flagging, the domestic economy is weak in many areas, and state-owned enterprises (SOEs) saw profits drop by 21.9% last year. One government counter-strategy is to encourage large SOEs to expand overseas operations, particularly in infrastructure projects, which helps utilize excess capacity. But this also increases demand for the foreign currency in China's foreign exchange holdings.

At the same time, many Chinese firms are switching out of US-dollar debt. SOEs and large private firms with stable credit ratings previously enjoyed low-cost overseas borrowing in US dollars, funds which were then invested in China for higher returns. But in anticipation of a declining RMB, these firms have been switching to borrowing onshore. A Bank of International Settlements report revealed that during Q3 2015, firms onshore in China reduced their US dollar borrowings by $175 billion. Larry Hu estimates that "52% of the $674 billion capital account outflows in 2015 were due to the unwinding of the carry trade."

Weaker Renminbi

But these factors fail to fully explain the sudden bleeding of foreign exchange reserves since last year. Another big factor is that the comparatively sullen state of the economy has led to a weaker RMB.

"The strong appreciation of the Renminbi during the boom in the early to late 2000s reflected China's high pace of growth and high payments inflows," says Luke Deer, a political economy professor at the University of Sydney and specialist in Chinese finance. "The lower growth today and excess capacity in key sectors, and more neutral payment position is accompanied by depreciation pressure on the Renminbi."

This downward pressure has been exacerbated by loose domestic monetary policy. Since November 2014, each successive cut in interest rates and bank reserve requirements weakened the Renminbi more, triggering a further wave of selling in Renminbi-denominated assets. The irony is that

following the rise in property prices over the past 10 years, Chinese households and firms are now wealthier, meaning they can afford to buy overseas assets with proceeds from asset sales in China, creating more capital flight.

"Given the vast overcapacity and declining investment opportunities, this was likely Chinese seeing the declining opportunities taking some of their money off the table for better destinations," says Christopher Balding, Associate Professor of political economics at Peking University.

For China's rich, moving assets abroad has become a means of diversifying risk and the anti-graft campaign of the past few years has provided another strong incentive for wealthy Chinese, corrupt or not, to move their assets, and perhaps even themselves, abroad.

"People are concerned about the cost of real estate, complete lack of the rule of law, the environment, getting caught up even tangentially in a corruption case, or so many other things," says Balding.

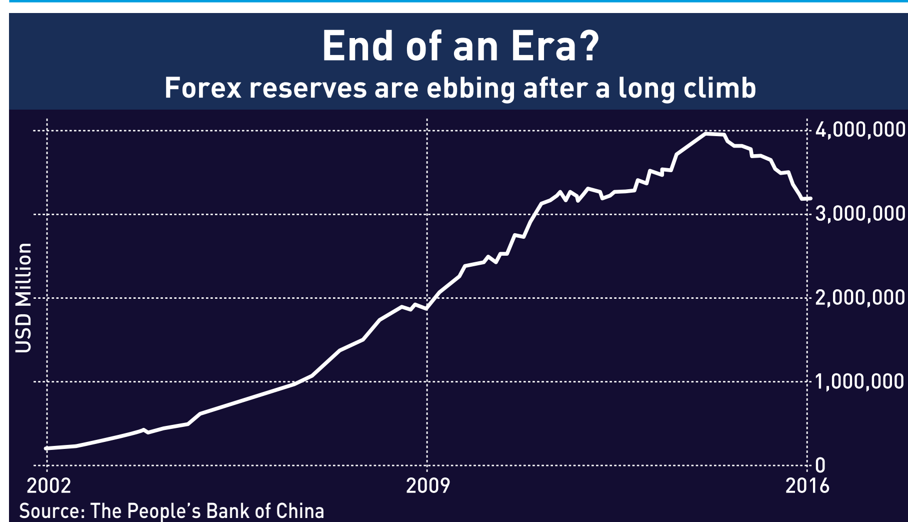
This fairly recent slide in faith in the Renminbi as a 'storage of value' accelerated last August following the authorities' attempts at exchange rate reform, widely viewed as botched. The central bank, the People's Bank of China, announced it was switching the Renminbi reference rate from just the US dollar to a basket of currencies including the Euro, Japanese Yen, and the Korean Won. But the question in most Chinese investors' minds was still 'how many dollars can I exchange for my RMB?'

Thus, the aggressive devaluation of the Renminbi in August, when investor confidence was already bruised by an ailing stock market, sped up capital outflows–two-thirds of last year's total reserve fall occurred after the August devaluation. In September, a statement on the PBOC website confirmed that the record $93.9 billion drop was partly due to its own market intervention.

A Real Trilemma

The jump in outflows creates policy headaches for the Chinese government, as falling forex reserves lead to domestic monetary policy restrictions, requiring efforts to stimulate economic growth. A February research report from Mizuho considered this conundrum, also known as the 'impossible trinity' or trilemma. Put simply, a country cannot have a stable exchange rate, free capital movement and independent monetary policy all simultaneously.

The theory helps explain China's current predicament. If the PBOC lowers interest rates to support industry during a period of slowing economic growth, it creates depreciation pressure on the Renminbi as domestic investors will want to move to currencies with higher yields. If the PBOC also wants free capital flows, the only way to prevent Renminbi depreciation is to sell its foreign reserves in the market. But while China has large foreign exchange reserves, they are not unlimited, meaning the depreciation would happen anyway when they run dry.



"As policymakers once again prioritize a stable RMB, while retaining control on China's liquidity condition through the use of monetary policy, relinquishing free capital movement appears inevitable," Jianguang Shen, China economist at Mizuho, said in a research note.

Consequently, he continued, the PBOC stepped up capital controls to stem outflows by tightening approval for capital export, reducing RMB liquidity to dampen speculation, restricting some business operations, encouraging inflows and cracking down on illegal exchange.

Although potentially viable as a whole, stemming illicit capital outflows in a huge export country such as China is difficult to implement. One common runaround involves Chinese companies overpaying for imported goods and services. A report from Deutsche Bank reveals that according to official banking statistics, importers "in China paid $2.2 trillion for goods imports in 2015, yet customs recorded only $1.7 trillion of such imports." The report also noted the discrepancy widens when the RMB depreciates.

An additional complication in controlling cross-border flows arises now that the Renminbi is freely tradable in offshore financial centers such as Hong Kong and London, providing an opportunity for currency speculators to bet against the Chinese government by shorting offshore Renminbi. This tends to push the Renminbi to be weaker offshore, forcing a gap between onshore and offshore valuations, increasing depreciation pressure on the daily official Renminbi rate fix.

To counteract long-term depreciation pressures, the PBOC is forced to keep buying more Renminbi in the market, further draining foreign reserves. Shrinking foreign reserves then makes the Chinese economy more vulnerable to external shocks, while government purchases of Renminbi in the market tightens money supply at a time when the government is trying to stimulate the economy with more credit.

Running Low on Ammo?

Although the slide in forex reserves has slowed in recent months, some fear that

China does not have time on its side in solving the problem.

The controversial US hedge fund manager Kyle Bass, the founder of Hayman Capital Management who became rich by spotting the US subprime mortgage crisis early, took a short position on the Renminbi earlier this year, writing that China would need a minimum of $2.7 trillion in reserves in order to maintain normal economic operations. Based on his calculations, Bass said he feels China's reserves are "already below a critical level of minimum reserve adequacy." He also argued that not all of the reserves are liquid, for example tied up in overseas investments.

In response, Yi Gang, PBOC deputy governor who until January was also head of the State Administration of Foreign Exchange (SAFE), assured the market that all the assets calculated as part of the $3.2 trillion reserves "meet liquidity standards."

The debate highlights perennial concerns on the lack of transparency surrounding the composition of China's foreign assets, and the government's actions in the foreign exchange market. For instance, there are mismatches between SAFE figures and the PBOC balance sheet. In February, figures on the forex purchase positions were no longer included in a monthly PBOC report, data that could shed light on the extent of capital outflows. Similarly, a Goldman Sachs report suggested that the PBOC is using the balance sheets of Chinese banks in the spot and forwards markets to hide the true extent of its falls in forex reserves.

For reserves to be considered safe at a level below $2 trillion, China would need to curb speculation through more capital controls. Thus in March China was rumored to be mulling the introduction of a Tobin tax to quell speculation. This would entail placing a tax on all spot RMB conversions, levying a financial penalty on short term round trip trades into foreign currencies.

Honesty is the Best Policy

The actions of Chinese regulators indicate the Chinese government remains unwilling to cede control over the Renminbi's value in the market, which means more depletion of reserves. That begs the question of what they should do.

The PBOC is likely to resist a long term [RMB depreciation]

Damian Tobin
China finance specialist
SOAS London

The central bank scaled back intervention to support the yuan in January and February as comments from the PBOC governor Zhou Xiaochuan clarified central bank policy on the daily renminbi fixing, ruling out a devaluation, which allayed fears of greater capital flight. Combined with tighter capital controls, the Renminbi recovered 0.3% in February against the dollar, while the fall in forex reserves narrowed to just $29 billion the same month, and actually increased consecutively in March and April, by $17.33 billion overall. Macquarie's Larry Hu cites the "the dovish stance adopted by the Fed… and thereby a weak dollar, has helped lower the depreciation pressure on RMB and China's capital outflows."

Another option could be a one-off large devaluation to reduce pressure from RMB short sellers, and provide a boost for Chinese exporters. But another research report from Mizuho pointed out that such a move by other countries in the past "did not satisfy the market. Instead, it created expectations for further depreciation, which eventually triggered a full-blown crisis."

Damian Tobin, China finance specialist at the School of Oriental and African studies in London argues, "The PBOC is likely to resist a long term slide, since such a move would give the impression that China is seeking to obtain a strategic advantage."

Long Haul

But these measures fail to address the underlying causes of Renminbi weakness and capital flight. Tobin argues the PBOC could "cut reserve ratios further as a means of limiting the negative effects of capital outflow" which "may carry more long-term appeal then trying to plug the holes in capital account restrictions."

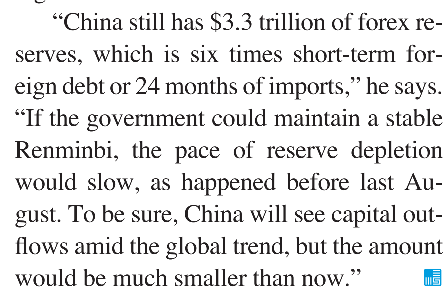
A deeper long term strategy is to provide more attractive domestic investment opportunities for investors, which can discourage carry trade unwinding and capital flight. However, opportunities other than property investment, which has been restricted due to fears of another bubble, are few.

The most feasible option may be to relax inward foreign investment restrictions, similar to the recent opening of domestic bond markets to more foreign investors, which helps offset capital outflows. For this reason Mizuho's Shen cautions against China adopting draconian short-term capital controls, which could scare away foreign direct investment.

Instead, "the government should continue to open up China's capital account, while blocking illicit channels such as underground money changers. The government should also consider macro-prudent tools such as a Tobin tax to reduce the pressure on capital outflows and stabilize market expectations," Shen says.

Implemented in a decisive manner, and clearly signposted to the market, China could slow the bleeding of its reserves this year. As for the possibility of running the reserves dry, Larry Hu sees this fear as being overblown.

"China still has $3.3 trillion of forex reserves, which is six times short-term foreign debt or 24 months of imports," he says. "If the government could maintain a stable Renminbi, the pace of reserve depletion would slow, as happened before last August. To be sure, China will see capital outflows amid the global trend, but the amount would be much smaller than now."



Big China, Big Science

China is poised to regain its global prominence as a science leader

By Tom Nunlist

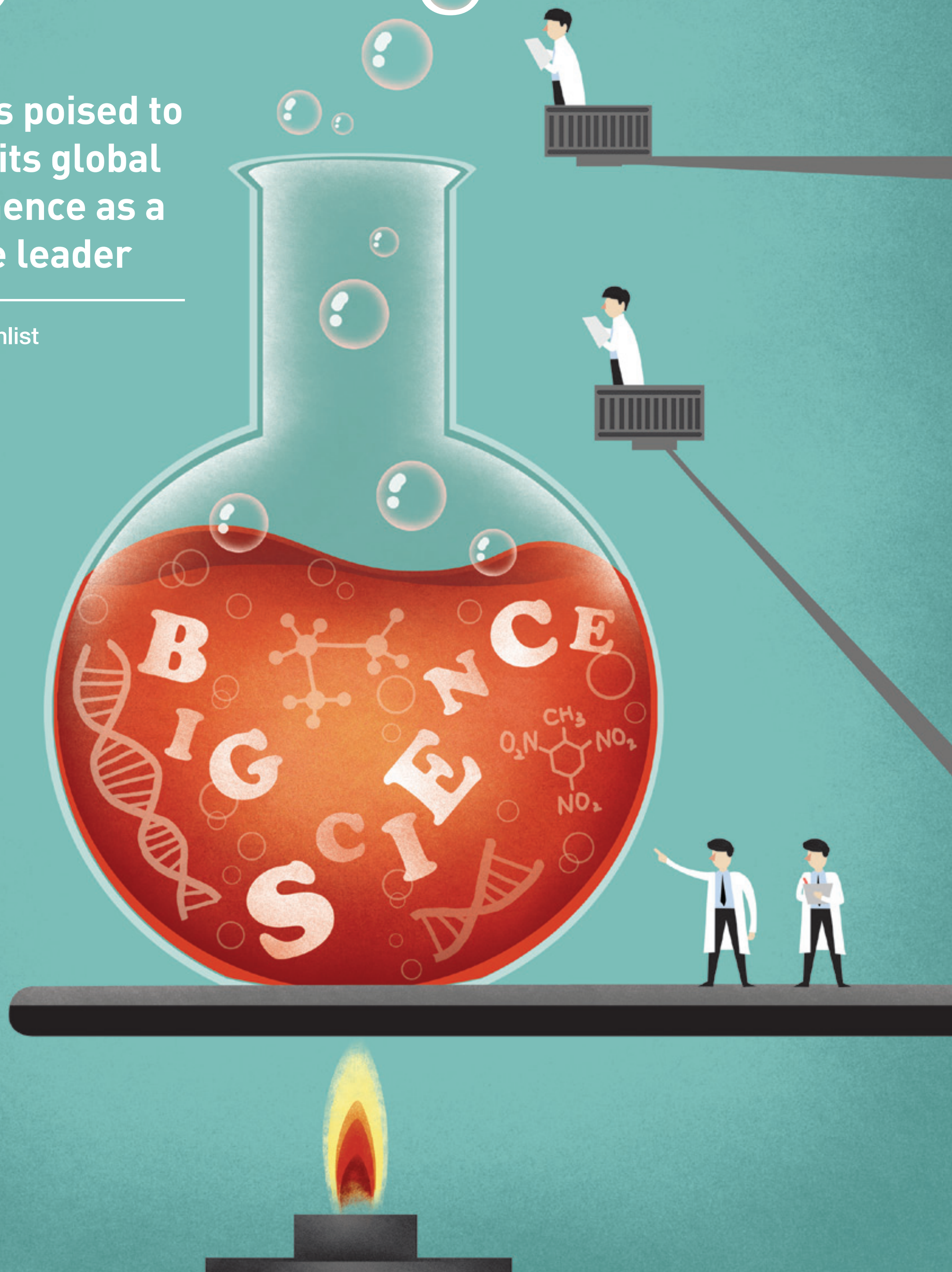


Image by Beibei Nie

In the countryside of Guizhou, a remote province in China's southwest, life is slow. Farmer's work what level land they can find amid the crumpled limestone geography, terracing the hillsides if possible. But recently they've made way for a new neighbor—enormous, rounded and glittering like a spaceship. This object, the Five-hundred-meter Aperture Spherical Telescope (FAST), is set to turn on this September and begin peering into the most remote parts of the cosmos, extending the field of mankind's vision over new horizons.

The monster telescope, costing RMB 1.2 billion ($185 million), will be arguably the most powerful in the world when it opens, but it is soon to be joined by an even bigger instrument. FAST's sister project, the Square Kilometer Array (SKA), is slated to begin construction in 2018 in the desert hinterlands of South Africa and Australia. SKA is an order of magnitude more complex and challenging than FAST, and on the frontier of what is possible.

China is one of 10 key players in the SKA project, which is of such proportions and requirements that no single nation could shoulder it. And as such, the project is a milestone in China's entrance to the global stage of Big Science, and return to scientific glory.

"Over the past 200 years, Chinese civilization has been in decline," says Chi Maoyen, Asia CEO for Cold Spring Harbor Asia in Suzhou, the first international branch of the famed New York institution where DNA was discovered. The nation, he says, is craving resurgence, and becoming a scientific power once again will help "regain the ancient glory shared by this country for more than 1,000 years." Cold Spring Harbor Asia hosts symposia connecting top global scientists with each other, and to Suzhou's emerging biotech industry.

Other "Big Science" projects being undertaken by China, either solely or in international partnerships, include the Shanghai Synchrotron Radiation Facility that provides high-energy radiation for various research projects, the Experimental Advanced Superconducting Tokamak in Hefei that researches fusion power, the Beijing Electron-Positron Collider, a type of particle accelerator, and the Daya Bay Reactor Neutrino Experiment near Hong Kong that researches one of the most elusive particles in the universe.

China before was doing… what we call 'catch-up' strategy

Wang Qiming
Head of Policy Development
SKAO

These projects are almost completely state-funded, and are always extremely expensive. They are part of the reason China's total R&D spending (both public and private) has grown at an annual rate of 20% over the last decade, reaching RMB 1,330 billion ($204 trillion) in 2014—and why the OECD predicts that China will overtake the US in research spending by 2020.

The reasons for investment in projects of this scale are multifaceted. In addition to the scientific desire to push the limits of understanding and the nationalistic desire for renewed glory, there is the practical need to foster new industries and the knowledge economy. Big Science projects are often daring creations, drawing as much on faith in the future as the resources available. The fact that facilities such as FAST even exist at all is a powerful testament to the resurgence of the Chinese economy over the past few decades.

But becoming a global leader in large-scale research is not as simple as just spending vast amounts of money and building huge facilities. In order to become the innovative global research hub it longs to be, China still has to face down serious problems in bureaucratic organization, corruption, education and a research culture that may not best serve the cause of scientific advancement.

"I think a successful research and innovation system is really critical to moving [to the next stage of development], but the larger political and economic obstacles, the institutional obstacles, are pretty daunting," says Richard Suttmeier, professor emeritus at the University of Oregon, and expert of Chinese science policy and US-China science relations.

Big History

The new global era of "Big Science" began around World War II with the Manhattan Project, the enormous US project to build the first atomic bomb in the early 1940s. In contrast to traditional science, with smaller labs and a limited number of researchers, the resources of the state were brought to bear, huge facilities were created with the organization of many thousands of people across different disciplines, long-haul commitment, and of course deep wells of money.

Those basic characteristics are the marks of Big Science, and they can readily be seen in many other projects of the latter 20th century that helped give Big Science its big reputation. NASA's space programs are an obvious example, as is CERN's Large Hadron Collider (LHC), the $9 billion, 21-nation, 10,000-scientist particle smasher straddling the border between France and Switzerland.

Mustering the resources for projects of such a caliber requires nations to have already achieved a high degree of industrialization and development. While China was a world scientific leader in the past—being the first to develop, amongst many other things, the compass, the printing press and gunpowder—it went into decline before industrialization began.

For most of the 20th century, China was in turmoil and by the time of Deng Xiaoping's return to power in 1978, the West was already decades into the era of Big Science.

But the rapid economic development that followed set the stage for a new act in the early 21st century. Today's China is industrialized, technologically advanced, economically huge and hungry to move ahead.

"The government now has the money [and] is willing to spend money on research, and on science and technology," says Cao Cong, professor of Chinese Studies at The University of Nottingham Ningbo, and an expert on Chinese science and technology policy.

The broad economic changes scientific development can help deliver could be even bigger than the changes that preceded it—and the pursuit thereof is a necessity. The 13th Five-Year Plan declared that China's future development "must rest on the basis of innovation," announcing aims to set up several national laboratories in the next five years.

"In a practical sense, for a country to survive in today's ever-competitive world, you have to have a strong science and technology [base]," Cold Spring Harbor's Chi says. "To make Chinese civilization [have a] renaissance, the government and the country realize that science is an absolutely important part."

Deep Impact ROI

While "big" is the most obvious characteristic of any of these projects, the second hallmark is the lack of any direct commercial or economic goal, despite the outlay of what can easily be billions of dollars in funding. That does not, however, mean that there isn't any ROI (return on investment), or that governments and institutions don't expect a bang commensurate to the buck in some way and at some point.

The expectation is that undertaking such boundary-pushing projects can and should lead to boundary-pushing developments that have uses far afield from the original goal. Indeed, work at CERN's LHC resulted in researchers inventing the World Wide Web portion of the internet that dominates all our lives. It also gave us the MRI machine, magnetic resonance imaging, the donut-shaped apparatus in hospitals that delivers high-resolution images of our insides.

Although inherently unpredictable, the consistency of game-changing spin-offs has become an integral part of the Big Science pitch. The partners working at SKA, which will be built in two phases, are particularly excited about this.

"Just phase one will generate so much data [that] it will be larger than today's internet," says Wang Qiming, Head of Policy Development at SKA Organisation. That volume of data, matched with the remoteness of the instrumentation will necessitate new means of data distribution and analysis techniques. "[It] will change the future of handling data."

And by being a key player in the project, China will be on the crest of the wave of developments as they occur, with all the obvious advantages that will accrue.

But the timeline for the payoffs from such massive Big Science projects can be as distant as decades. To balance that, the near-term holds a different kind of reward altogether: prestige and influence.

"I think the Chinese are really trying to make a statement about scientific capabilities by building a lot of these things. And you know, other places are budget-constrained, and seeing the Chinese do it I think is welcome," says Suttmeier.

Just the fact of having a world-class facility makes China an attractive destination for many scientists around the globe. But such facilities are far from being mere centerpieces of soft-power discussion, or far-future dreaming. They have a real impact on the much sought-after economic transition—that is the need to construct an economy that revolves around technology and innovation rather than low value-added production.

"The returns will not be immediate in terms of technologies… but these big activities are very important for building skills, building capacity," says Carthage Smith, lead co-coordinator of the OECD Global Science Forum. "In the short term, it's probably more about national prestige and country building than immediate economic [benefit]… But in the longer term it will underpin the innovation of the future."

The Chinese government was aware of this reality at least as far back as 10 years ago. Back in 2006, when the annual GDP growth rate was knocking on 13%, China launched the National Medium- and Long-term Plan for the Development of Science and Technology. The 15-year plan empha-

Big Science projects in China cover many fields, from nuclear physics to astronomy

sized "indigenous innovation" and set the goal of becoming a global "scientific powerhouse" by the year 2020. Although what exactly constitutes a scientific powerhouse may be unclear, the central government has left no doubt about its willingness to aggressively pursue technological development on everything from aircraft engines to quantum physics.

"Pursuing these projects will help China break free from external dominance in these strategic areas, and create new directions and areas for development and growth," President Xi Jinping stated last year, elaborating on the Communist Party's proposal for the 13th Five-Year Plan.

But in some fields the future has already arrived, and it is bringing tangible benefits. Perhaps the best example is BGI, formerly the Beijing Genomics Institute. BGI played a small role in the Human Genome Project of the 1990s and early 2000s, which mapped the basic human genetic code in its entirety—it was a first for China to be involved in such a project, and despite the bit part, then President Bill Clinton made a point to thank China publically.

Following the completion of the project in 2003, BGI found itself with state-of-the-art equipment, highly-trained staff, and mature gene sequencing techniques. It went on to become the world's largest gene sequencer, partnering in multiple marquee projects as well as offering private services. The lab has spent periods as both an independent and state-funded operation, but is currently planning an IPO.

While there is no 'ideal' outcome for a Big Science project, the continuing success of BGI hits the main targets: historic scientific achievement, world-changing technology, development of a private industry, and last but not least, recognition.

"Initially there was some skepticism, even ignorance of what China could do in that field, and China quickly demonstrated that actually it could contribute at a very high level," says OECD's Smith. "There's no longer that sort of skepticism [in genetics]."

FAST is similar to BGI in that it is less a statement about the future than it is about the past and present. Headlines heralding

China quickly demonstrated that it could actually contribute [to genetics research] at a very high level

Carthage Smith
Lead Co-coordinator
OECD Global Science Forum

the opening of a "new" telescope belie the fact that the project is already some 22 years old, a totally ordinary Big Science timeline. FAST is still a visionary project, but when it was proposed in 1994, it have been considered a moonshot.

"China before was doing… what we call 'catch-up' strategy," says Wang. "In the new century the strategy has been changed to encourage China to join together along with the mega international research projects."

Colossal Challenges

But despite the achievements so far, Big Science in China is at a crossroads, one that mirrors many of the problems China faces in the wider spectrums of economics, government and society. Like problems in these other areas, the issues in the scientific community cannot be wholly solved with redbacks and good intentions—the two things of which China has the most ready supply.

The first problem is familiar to even the most casual of China watchers: bureaucracy. The state science system is a maze of institutions and programs grown together in a tangle.

"Various government agencies have their own kind of mission… [their] own kind of national science program," says Cao. "They are often overlapping, and there is redundancy, in terms of organization, and even in terms of the grantees of some of these programs."

Like many other issues, China is not at all blind to this. Since 2014, China has undertaken a massive reform program in the sprawling Chinese Academy of Sciences, which supports state science funding. It's taken hundreds of different projects and recategorized them into a streamlined system of five channels. But the problem of messy organization continues to result in waste, subverting the money being spent.

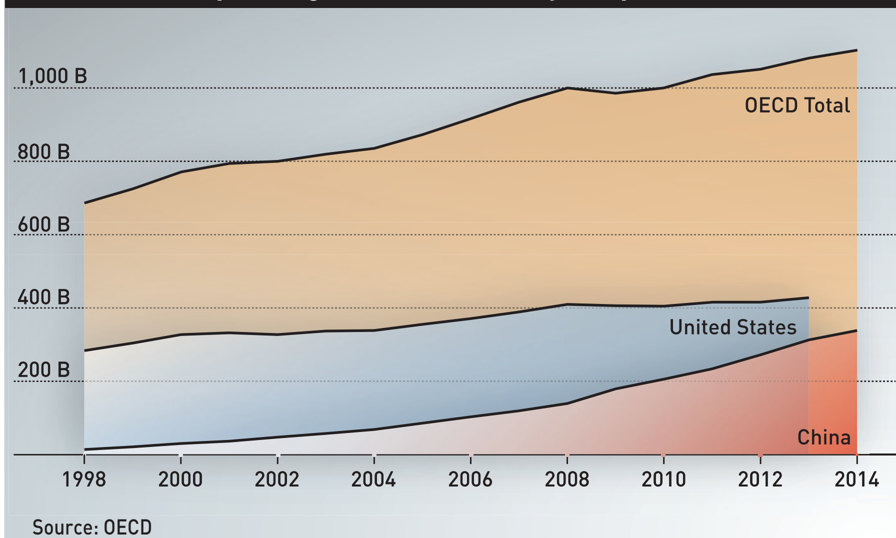
"Since the year 2000 or so, you've seen very steady increases in R&D spending, but I think that the spending has outpaced institutional design," says Suttmeier. "I don't think they had everything in place to make the most use of all the money that was being spent. And so that has resulted in waste and misconduct and fraud and so on."

The waste here is an interesting case as it is not, as Suttmeier puts it, the result of "sins of commission," but rather the result of a clunky, knotted system of doing things. According to him, it is bad project selection, duplication of projects, hot topics that result in wasteful science land rushes of everybody pushing into the same territory and so on.

As far as outright corruption, a good portion of this stems from how scientists are paid. Unless you become famous, base salaries can be very low, sometimes just $20,000 per year, and so for a long time researchers filled in their financial gaps with grant money.

"They are poorly paid. So for a period of time, the government has tolerated scientists using part of the grant to pay their salary," says Cao.

Such a system can invite abuse, and of course there are cases where it has been



abused. It naturally follows that abuse demands a crackdown, which already happened as part of reform measures. But in an ironic twist, although many of the channels for this type of corruption have been closed off, the antecedent issue of low pay remains, according to Cao.

A related problem is China's culture of research, stemming largely from how scientists are evaluated and promoted. Success in the academic science system hinges on researchers publishing papers—and what matters most is being the lead author with your name at the top. As Cao explains, if you are the second guy, or third guy on the list, you don't get a lot of credit for your contributions.

"It basically discourages scientists from working with their peers," Cao says.

Similarly, there's an issue of access across different institutions, which can be a vital need, especially if research is interdisciplinary. According to Suttmeier, the central authorities have been pushing for a more open system to ensure that big facilities are not monopolized by the organization in which they are housed.

Cold Spring Harbor's Chi, however, points out that this is far from a uniquely Chinese problem. "That also happens in the states, or elsewhere in the world, because scientists all have a community by themselves, and scientists have their rivals working in different camps, or working in different fields that compete with them," he says. "I think this is a challenge for every government."

A more pressing problem is the issue of the quality and quantity of the researchers themselves—which relates to China's so-called 'brain drain' problem. However, the tide has to some extent been turning, following concerted efforts by the government to attract top scientists, both Chinese who have left as well as foreigners.

"In recent years China has seen a significant amount of people returning from overseas. Some of them are excellent scientists, many of them are probably still mediocre," says Cao. "In the first-class labs you see second-class people working."

The SKA telescope, because of its size and cutting-edge technologies, faces a similar personnel obstacle in finding enough qualified researchers.

"Chinese astronomers are not enough, there are only a few people," says Peng Bo, the Chinese Science Director on the SKA Board, deputy project manager of FAST, and member of China's National Astronomical Observatory. "We also need to attract people from overseas, Chinese and foreigners…. [We] also need to train the younger generation."

The biggest challenge, however, may be the one thing that is least likely to change: strong government control of society and the economy.

"[Some things] really seem to work against the building of a truly innovative society, starting with the internet craziness," said Suttmeier, in reference to the so-called 'Great Firewall.'

Standing Level With the West

But no matter how serious the issues are, when it comes to the goal of matching Western developed nations in terms of scientific development, it is important to remember a few things. The first is resource advantage.

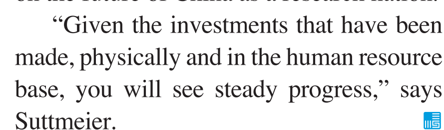
"China now is sending rockets into space to look at dark matter," says the OECD's Smith, referring to China's Dark Matter Particle Explorer. "Other countries don't have the resources to do that. Even the US is struggling to do that sort of thing."

Attendant to that resource advantage is just how projects get developed and money gets spent. As both Cao and Suttmeier point out, if the government decides it wants to do something, fund a particular project and pull out all the stops, it can do that. There is no debate about it. In terms of mobilizing enormous resources very quickly, China is probably unmatched.

Another advantage, although intangible, cannot be discounted: raw desire for a resurgent China. It exists at the highest levels of government, with the people who make the big decisions. And this literally reach-for-the-stars attitude is of course a key feature of the people directly involved in SKA. They ooze an almost gladiatorial optimism.

"We want to achieve our ambition of building the largest telescope ever, in the history of the world," says Wang, whose been working on SKA for some two decades.

For such insiders, there is no obstacle too great. Outside observers, meanwhile, tend to opt instead for cautious optimism on the future of China as a research nation.



"Given the investments that have been made, physically and in the human resource base, you will see steady progress," says Suttmeier.

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Once known as China's Netflix, LeEco has far outgrown its origins. Will its diversification plans succeed?

By Chris Russell

Image by Han Xiao

China is no stranger to sprawling internet companies, with the likes of Alibaba, Tencent and Baidu—collectively known as BAT—having extended their reach into everything from mobile payments, to online video and beyond. But even in this climate, the company once called LeTV—LeEco rebranded in January—stands out for the sheer range of its acquisitions, investments, new ventures and the unorthodox style of company founder Jia Yueting.

That has increasingly put the company on the radar of industry observers outside of Greater China—after this year's Mobile World Congress, UK tech website Alphr named LeEco as the event's most innovative company. And the company generated international headlines once again when it unveiled its electric self-driving car, the LeSEE, in April, with the vehicle being summoned on to the stage by Jia using a mobile app.

"I can't hold back my tears," he said after the car had emerged from a container and gingerly made its way down a catwalk. "Everyone was questioning us and laughing at us, but we're still presenting this car here today."

LeEco, which did not reply to *CKGSB Knowledge's* request for comment, was founded in 2004 as an online video website (once known as 'China's Netflix') and is now a dizzyingly diversified entity, with ventures spanning from internet TV and mobile phones to virtual reality and the aforementioned electric cars, all of which underpin its attempts to join the internet big leagues, and which are ostensibly paying off—last year revenue grew 90.89% to RMB 13 billion ($2 billion).

The company's rhetoric matches its ambition, with LeEco routinely comparing itself favorably to the likes of Apple and Tesla—Jia called the former "outdated." Speaking at an IT summit in Shenzhen alongside the CEOs of Tencent and Baidu, Jia said, "We think the internet industry has already reached its peak. BAT and Apple have already peaked, and the next step is entering the internet ecosystem age."

But in doing so, LeEco is venturing into markets that are by turns mature and ultra-competitive or nascent and unproven. With a growing brand reputation on one hand, and a multitude of challenges on the other, is LeEco ready to vault into the top tier of tech giants? Or will it come to be remembered more for its hubris? Underlining this challenge is the fact that, for all the impressive headline figures, many of LeEco's subsidiaries are hemorrhaging money.

LeEco has been trying to diversify its applications to include smartphones and virtual reality and automobiles

Chien-Hsun Lee
Senior industry analyst
MIC

"There is a real shift," says Thibaud Andre, a research associate at Daxue Consulting. "They have new branding, a new logo, they've changed everything. They're not starting from scratch of course... but it's a risk."

Rights Move

Founded in 2004 and listed on the Shenzhen stock exchange in 2010, LeEco initially made its name as an online video website—internet ranking firm Comscore ranked it the number one video website in China by unique visitors in December. And in contrast to many of its rivals, it has remained profitable, largely due to early efforts to buy content rights when they were still relatively cheap.

But the company's content strategy has not just been about acquiring now costly rights—like many of its rivals, LeEco is attempting to save money and win viewers with original content creation. To that end, LeEco acquired award-winning TV production studio Flower TV for RMB 1.6 billion in October 2013, and the company also has LeVision Pictures, founded in 2011, a film studio engaging in US-China co-productions, including *The Expendables 2*.

Indeed, such ventures are essential to maintaining LeEco's top position in China's online video marketplace. "Chinese online users seem to focus more on content not platform and therefore when it comes to platform selection, viewer loyalty is relatively low," says Chien-Hsun Lee, a senior industry analyst at MIC, a market intelligence and consulting firm in Taipei.

Not Content with Content

But what has really raised eyebrows is LeEco's moves into hardware.

In 2013, LeEco launched its first line of Smart TVs, and according to the company's annual report for 2015, it successfully hit its global sales target of 3 million units last year, powering much of the company's impressive revenue growth.

Then in April 2015 LeEco debuted its smartphones, which are sold through its LeMall online store, as well as brick-and-mortar shops in major cities. Making clear its ambitions in this area, in July last year LeEco acquired an 18% stake in mobile device manufacturer Coolpad through its Hong Kong-based smartphone subsidiary for HK$2.73 billion, making it the second-largest shareholder in Coolpad.

And in a sign of just who LeEco thinks they are competing with, the launch of their smartphones was accompanied by an anti-Apple campaign, one element of which controversially compared the Cupertino-based company to Adolf Hitler.

Jingwen Wang, an analyst at Canalys, notes that LeEco has already managed to

emerge as an important smartphone vendor despite its newcomer status—although the company remained outside China's top five vendors in of the first quarter of 2016. Despite that, the company themselves claimed that they have set new sales records with their handsets, reaching the one-million mark faster than its rivals.

This success is, at least in part, due to the company's competitive pricing. Wang points out that "they are actually selling the devices below the phone cost, but actually they will be able to make a profit through the content."

LeEco has further moved to round out its fledgling ecosystem with its range of smartbikes, competing with Baidu and one of Xiaomi's start-up partners, and into the nascent field of virtual reality with its LeVR Cool 1 smartphone headset. And in addition to its hardware offerings, LeEco also has its LeMall e-commerce platform, the cloud computing and data processing service LeCloud (which recently received RMB 1 billion in series A funding), an online-to-offline wine selling website, and a stake in the car-hailing app Yidao Yongche.

While LeEco has enjoyed a banner year in 2015 financially, the same can't be said for many of its subsidiaries. Despite greatly increased revenues compared to 2014, losses have also accelerated. In the case of LeCloud, revenue jumped from RMB 130 million to RMB 562 million, while losses increased from RMB 33 million to RMB 100 million. Similarly, Leshi Zhixin, which amongst other things produces the company's set top boxes, saw its losses hit RMB 730 million, an 89% increase on the year before.

And these losses come on top of concerns about how LeEco is financing its expansion—last year Jia used 85% of his shares in the company, equivalent to a one-third stake, as collateral for personal lines of credit that have then been used to fund the company's various new ventures. Previously Jia extended interest-free loans to the company after selling over RMB 2 billion worth of shares.

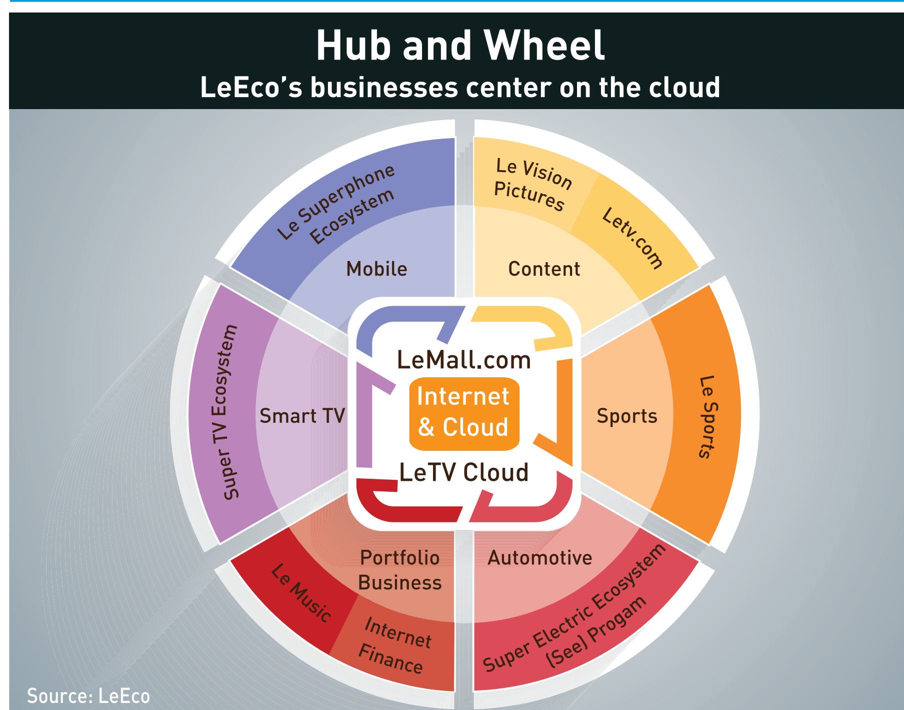
Trading in the company's shares has been suspended since December while the company incorporates its film business. But when trading resumes, any fall in the company's share price could have severe implications for LeEco's finances. Adding to the complexity are rumours around Jia's connections to those caught up in China's ongoing corruption crackdown.

Compounding the uncertainty is LeEco's most far out venture: electric cars. Long shrouded in mystery, LeEco's plans have become clearer with the debut of the LeSEE concept car. As with the company's other hardware, the company plans to price the vehicle aggressively, and Jia has even gone as far as to suggest that one day the cars will be free.

Previously LeEco had developed an "Internet of the Vehicle" system, which was used as part of a collaboration with Aston Martin in the car maker's Rapide S, released in January. Under a new memorandum of understanding between the two companies in February, the two companies will collaborate on the all-electric RapidE—featuring a LeEco battery and drive system—which is intended to rival Tesla by 2018.

As incongruous as it might seem, LeEco founder Jia has form in the field of electric vehicles—he was an early backer of Faraday Future, a Silicon Valley electric vehicle start-up that now plans to manufacture the LeSEE. While separate from the Aston Martin venture, three-way collaborations have not been ruled out. But no stone unturned: LeEco also invested in Atieva, another electric car venture.

But although ostensibly far removed LeEco's other concerns, the company views it as another conduit for content. In an April interview with *Reuters* Jia said, "We consider the car a smart mobile device on four wheels, essentially no different to a cellphone or tablet."



Smart World

For a company that has quickly amassed such seemingly disparate interests, the question naturally arises of how the different elements fit together.

"I would say to move into different industries, actually most of the devices are part of the smart home," says Wang at Canalys. "It's a way to increase user stickiness, to find more areas to make the business more profitable. If it focuses only on content, it has many competitors like large internet giants as well."

That may provide the initial motivation for expansion and diversification, but once a move into different industries is under-

way, a whole new mindset is required. Lee notes that "LeEco used to focus on vertically integration of industry supply chains... Since the ecosystem now involves various ventures from different industries, it is no longer just about vertical integration."

With rivals such as Apple using a combination of its iOS operating system, iPhones and Appstore to move into new sectors, it has become necessary for LeEco to do the same, lest it be left behind. "[It] is not hard to understand why LeEco has been trying to diversify its applications to include smartphones and virtual reality and automobiles," says Lee.

Andre of Daxue Consulting also points to big data as being another driver behind LeEco's expansion, harnessing the data it has, and expanding the data it can collect—motivations underlying LeCloud.

But such diversification isn't without its drawbacks. Lee points out that such moves can adversely affect brand perception and positioning, and such a wide range of offerings can be of limited value if there aren't proper synergies between the different industries and segments.

Further complicating the picture is LeEco's rapid efforts to go global, both in operations and sales.

LeEco has adopted what it calls a 'Beijing, Los Angeles, San Francisco' ('BLS') strategy—the company has offices in both US cities, to which it added a new US headquarters in San Jose at the end of April. Under this rubric, Beijing stands in as the market for consumers, while LA and San Francisco are viewed as a factory for content and as a center for innovation and technology, respectively. While implying a continued focus on China, LeEco has also begun selling smart TVs and accessories in the US through LeMall, and in January LeEco began selling its products in India through Flipkart's e-commerce platform, with more products expected to go on sale in June.

But seriously pursuing markets outside of China is no easy feat. "Going international is probably the main risk," says Andre, noting they will be "competing with Samsung, with Apple, basically losing all the advantage of being in their domestic market."

Going international is probably the main risk

Thibaud Andre
Research Associate
Daxue Consulting

The other issue relates to what has hitherto been LeEco's prime concern: content. "First, LeEco's advantage lies on content and since most of content is in Chinese language, it is affecting the global expansion of LeEco," says Lee. "Second, entering the overseas markets requires copyrighted content and CDN (content delivery network) construction and therefore LeEco is unable to speedily replicate in other markets its success in China." And these issues come in addition to the competition in Western markets.

"LeEco is surely to face huge challenges when entering these local markets," Lee continues. "Even if it wishes to replicate the bundled service with a low price plan, it still needs time to foster brand awareness, distribution channels and sales," although Lee notes that LeEco has taken steps to engage with local content providers in other markets.

Race to the Finish

But for all LeEco's grand ambitions, China will inevitably define its success or failure. There the company finds itself not only competing with well-established brands in various product segments, such as Huawei, but also companies with ecosystems of their own, varying from a top-tier brand such as Apple through to China's other tech upstart, Xiaomi. And here the strengths and weaknesses of LeEco are the inverse of its competitors.

"Xiaomi and Apple have advantages in hardware and applications whereas LeEco has a large collection of copyrighted content and intellectual property resources. When it comes to building an ecosystem, it is always difficult to build up a large collection of IP resources correlated to high profit margins and therefore this has put LeEco at an advantage," says Damien Chin, an industry analyst also at MIC. "Xiaomi and Apple have already had their own ecosystem built around their own-developed devices and the expansion to other services seems to be more effortless."

And despite all the activity, LeEco still has some way to go. "In terms of performance and quality, I think they are pushing very hard, and that's a point where we can say they are competing... they are very innovative," says Andre. "But they are behind in terms of brand recognition, behind in terms of activity to integrate more with... additions to their ecosystem." Andre also notes that LeEco thus far hasn't matched Xiaomi's activity in the world of start-ups.

As one of China's top internet companies, LeEco won't be going anywhere soon. But with the advantages in hardware manufacturing and just the current overall state of their ecosystem that the likes of Xiaomi enjoy, LeEco's rush into so many segments begins to resemble not so much folly as sheer necessity lest the gap grow even larger. And with the company experiencing what Lee terms a "financial crisis," due to the losses experienced by several of its subsidiaries, despite having received investments from the capital market, getting it right, and as soon as possible, becomes even more important.

With its ecosystem still in something of a nascent stage, it is hard to say quite where this enigmatic company will end up in China's tech hierarchy, but with increased competition in its home field of online video, and ever more companies seeking to replicate an ecosystem model, the move from TV to Eco seems not only prudent, but also essential.

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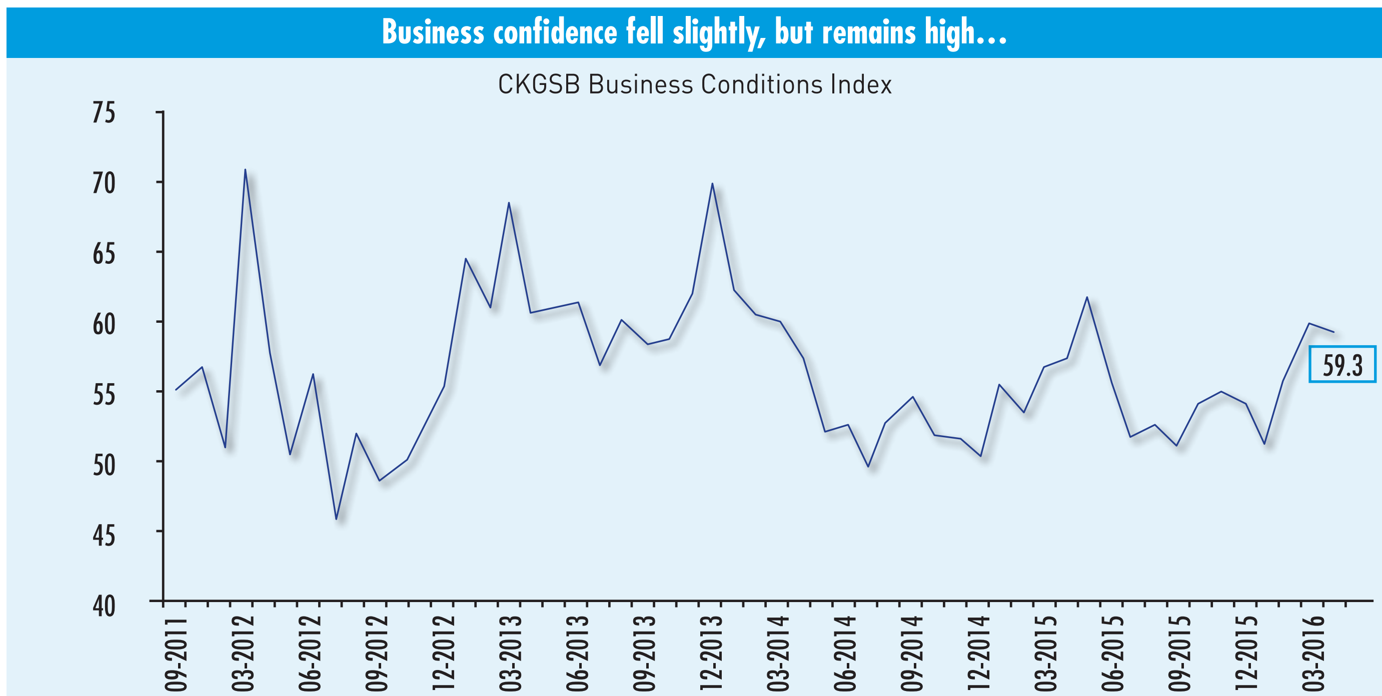
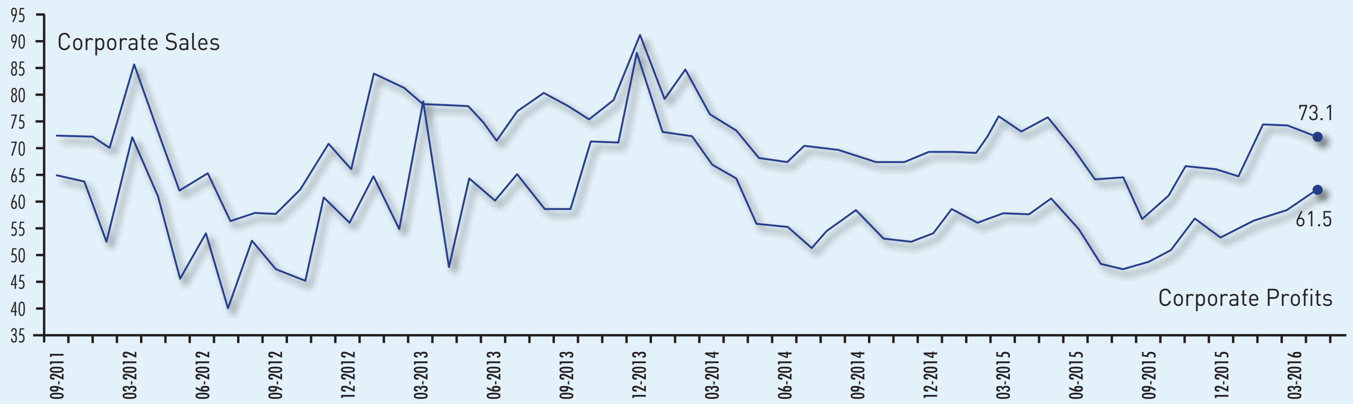
Reasons for Optimism

Sales are down, but profits are up

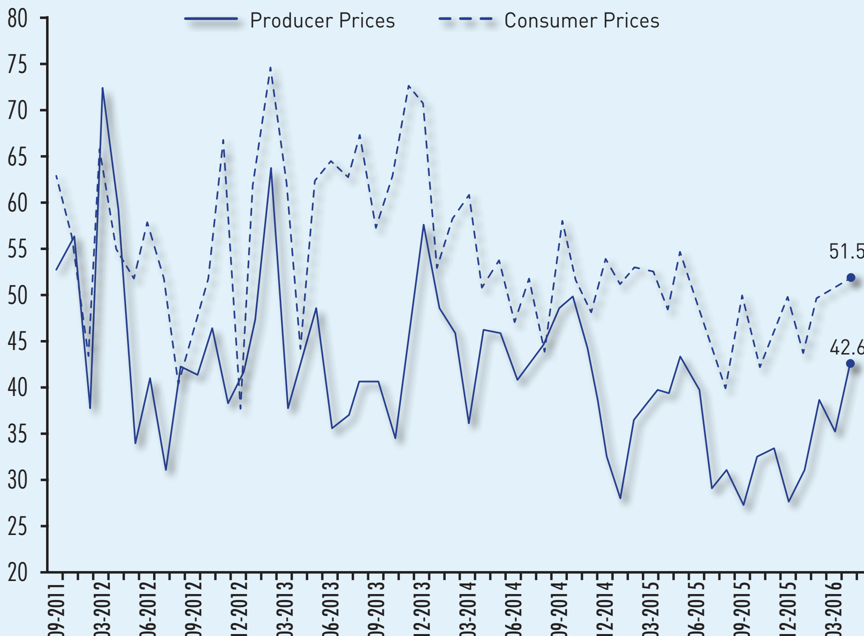
The CKGSB Business Conditions Index (BCI) registered 59.3 in April, falling slightly on March's overall index of 59.7. This shows that for CKGSB's sample firms, of which the majority are relatively successful in China, the next few months are being viewed with some optimism. The CKGSB BCI comprises four sub-indices for corporate sales, corporate profits, corporate financing and inventory levels. Corporate sales fell slightly from 74.5 to 73.1, while the profit index rose from 58.9 in March to 61.5 in April. With the sales forecast falling and the profit rising, this shows that cost expectations are improving. The BCI, directed by Li Wei, Professor of Economics at the Cheung Kong Graduate School of Business, asks respondents to indicate whether their firm is more, the same, or less competitive than the industry average (50), and from this we derive a sample competitiveness index (see Industry Competitiveness Index). As our sample firms are in a relatively strong competitive position in their respective industries, the CKGSB BCI indices tend to be higher than government and industry PMI indices.



…with corporate profits on the rise

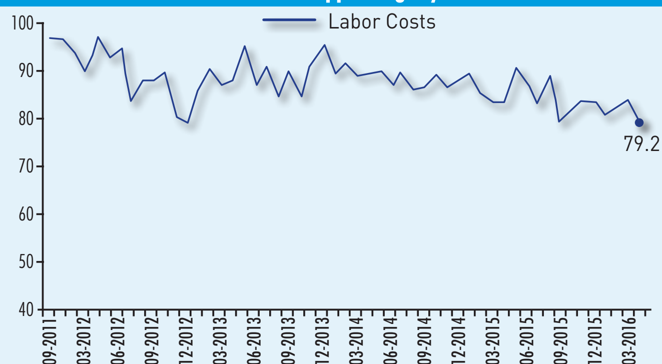


The producer/consumer price spread indicates overcapacity

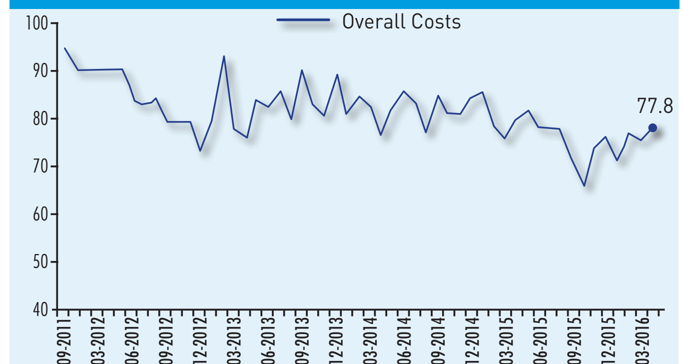


On the price side, the consumer prices index rose slightly this month to 51.5. Producer prices also rose, from 35.5 to 42.6. From our data, the "high costs, low prices" combination means that companies cannot increase prices to consumers or downstream producers to steer their way out of cost pressures. We believe this reflects one of the biggest structural problems facing the Chinese economy—manufacturing overcapacity. The labor costs index fell from from 83.6 to 79.2, while overall costs rose from 76.2 to 77.8. From September 2011 when this survey began, labor costs have been high, only once previously falling below 80. The fact that labor costs have remained at that high level over the long term indicates that high labor costs in China are structural rather than cyclical.

Labor costs dipped slightly…



…while overall costs rose a bit



Home Comforts

Chinese companies listed on Western exchanges work to return home

By Matthias Lomas

Image by Beibei Nie

Since early 2015, 47 Chinese companies have received combined offers of $43 billion in funding from private equity houses and Chinese internet giants to delist from American exchanges and make a run for the domestic stock markets. But so far only 14 of them have delisted and precisely none of them have managed to complete the journey and re-emerge on a Chinese exchange.

The sudden desire to rush for the exit represents a swift reversal of a quarter-of a-century flow of Chinese companies to the West. At its most broad, it is the result of two factors: the poor performance of many Chinese companies on US and other western exchanges, and the much higher valuations that companies can command on Chinese exchanges.

The prospect of riches in China is more attractive than the credibility of a US listing, but when the dream hits the reality of actually figuring out how to go private and then relist, things get messy.

"The bottom line is it's hard," says Michael Feldman, an independent analyst in Boston. "First they might need to do some corporate restructuring and then as we all know the [China] domestic IPO queue is years long."

The China Securities Regulatory Commission (CSRC) was once keen to lure these companies home, but it has recently changed tack. It announced on May 6th that it was concerned about the huge valuation gap between domestic and overseas stocks.

Fraser Howie, an independent analyst and co-author of *Red Capitalism: The Fragile Financial Foundation of China's Extraordinary Rise*, said that in his view, the regulator "doesn't know what it wants and it's trying to please a number of audiences at the same time."

Shares in companies which have received go-private offers have fallen on concerns following the CSRC statement. Shares of the Nasdaq-listed Chinese dating app Momo Inc, for example, fell 8% after the CSRC's comments.

The relisting frenzy began with a company called Focus Media, which sells advertisements on LCD displays. It delisted from Nasdaq in 2013, at which point it was

Chinese companies don't think they're fairly treated

Guo Chengang
Shanghai-based stock analyst

valued at $2.6 billion. When it relisted on the Shenzhen Stock Exchange in December 2015 in a backdoor merger with an already-listed company, its market valuation more than doubled to $7.4 billion. In May 2016, its market cap was $22.3 billion.

These are very attractive numbers, especially for Chinese companies languishing in more rigorously regulated parts of the world like Wall Street. Deep issues of trust and problems of regulation and transparency have been wearing on the relationship for years, largely accounting for these companies' lacklustre performance on US boards.

"Chinese companies don't think they're fairly treated. Financially and mentally these companies are suffering in the American market," says Guo Chengang, a stock analyst in Shanghai who until recently worked in New York covering Chinese internet companies for Investment Technology Group. "There needs to be better understanding from investors."

But the often opaque nature of Chinese companies is off-putting for many investors and the warm glow of business plans based on China's huge population and endlessly hyper-fast growth do not resonate like they once did. Added to that are the suspicions generated by the many fraud cases involving Chinese companies that have been brought to light. One memorable example was Sino-Forest Corporation, a Canadian-listed tree supplier that was found to possess zero trees.

"No one should trust [these] companies," says Howie. "There has to be a discount factor with Chinese companies."

Money Talks

China's stock markets last year were an extraordinary rollercoaster ride of boom and bust, but in early 2016, there was a spate of successful China IPOs. According to Bloomberg data, six companies on China's stock exchanges took bids from IPO investors in orders worth RMB 7.1 trillion ($1.1 trillion) in January this year alone, but only because the regulator changed the rules and allowed bids with no money upfront, making it in effect a lottery with free tickets.

Currently, there are 147 Chinese companies listed on American exchanges with a combined market cap of almost $800 billion. Among the biggest are internet giants like Alibaba and Baidu and state-owned enterprises (SOEs) such as PetroChina and Sinopec. According to a McKinsey analysis in 2011, they came to America in three distinct waves.

The first wave in the 1990s consisted of major SOEs such as Shandong Huaneng Power and China Eastern Airlines. The second wave in the early 2000s included more massive SOEs like China Telecom and China Life and also some private companies. Together they totalled about 200 companies.

The third wave in the late 2000s was much larger, at around 500 firms. These companies were typically private and smaller, coming to US exchanges because they were unable to list on domestic markets due to the domination by SOEs.

Third-wave companies have had relatively short tenures on exchanges. Focus Media, whose Shenzhen relisting brought so much value, listed on Nasdaq in 2005. Qihoo 360, a Chinese information security provider, which inked a $9.3 billion privatization deal in March this year, listed on Nasdaq in March 2011. Bona Film Group listed on Nasdaq in 2010 and completed a roughly $1 billion buyout in April.

These companies are among many that have been tempted by higher valuations to go back home, although the trend has also included Hong Kong, which for decades has been a key destination for Chinese companies, even more so than New York. Alibaba, for instance, originally wanted a Hong Kong listing, but went to New York only after local authorities refused to change the rules to meet the company's requirements. According to UBS research, over two-thirds of shares listed in both Hong Kong and China have a 50% higher valuation on the mainland.

"The story is a relatively simple one," says Howie. "It's all short-term moves to maximise profits at a particular point in time—at each stage it has made logical sense in terms of market dynamics."

When Focus Media announced its Shenzhen backdoor listing plan last June, the average price-to-earnings (P/E) ratio on the ChiNext index, a technology-heavy exchange touted as China's Nasdaq, was a 126-times multiple, eventually reaching 144 later in the year—Nasdaq's P/E ratio was around 13 during the same period. Even after the Chinese stock market bubble burst in July, there was still more "bang for the buck" on Chinese exchanges compared with American ones, according to Guo. On May 8th this year, the ChiNext average P/E was still 70.

"Credibility Gap"

But as big as the pull toward domestic markets is, the push is just as strong, with many if not most Chinese companies facing the cold shoulder on Wall Street.

"American investors don't believe the figures coming out of Chinese companies," says Guo. He points to the fact that Facebook had an average P/E ratio of 76.58 during 2015 while Alibaba averaged 56.05 over the same period, despite Alibaba's higher earnings performance.

Explaining the discrepancy, Howie sees reason to be doubtful. "Alibaba is dependent on a lot of independent merchants," Howie says. These merchants are often accused of faking sales, meaning "there is genuine concern about the quality of the numbers."

Compounding the issue is that many Chinese companies, Alibaba included, use a variable interest entity (VIE) structure to list in the US. VIE is a complicated mechanism that allows foreigners to invest in restricted industries in China by buying into an offshore company. Tencent and Baidu and many other foreign-listed companies have taken this route. But the gain in the ability to float stock overseas comes at the price of trust. "[Investors feel that] I, as a shareholder, have very little rights in this business," says Howie.

An even bigger problem may be poor corporate governance and fraud—a problem common to reverse-merger companies. Research last year by Wang Zigan, Assistant Professor of Finance at The University of Hong Kong, found that of the 48 Chinese companies that were forced to delist by US regulators between 1998 and 2013, 85% were reverse merger cases. His research revealed a network of factors supporting malpractice in these firms.

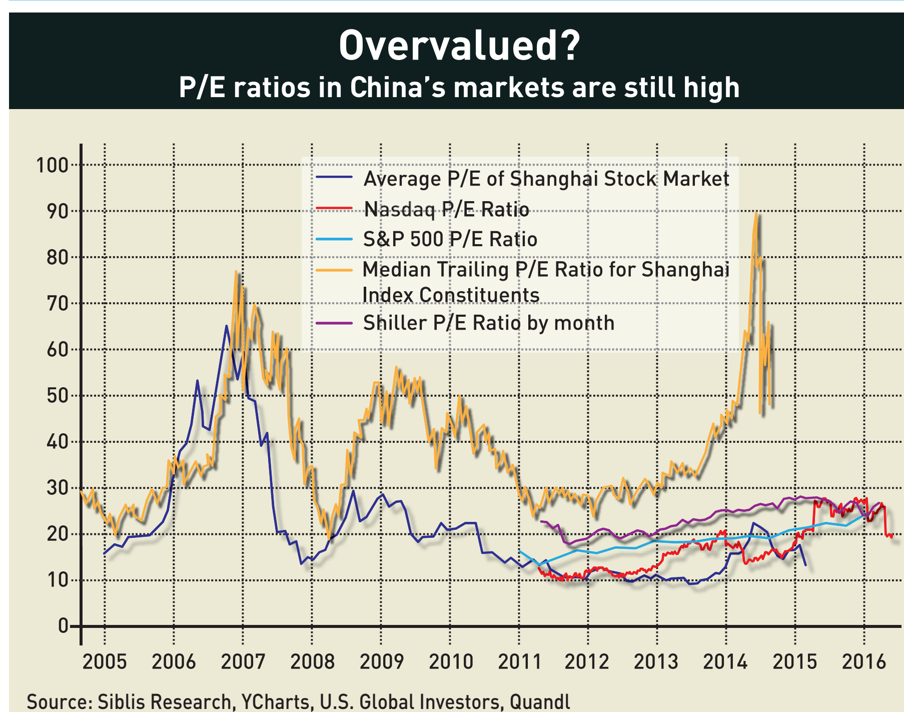
"I find that the firms are assisted by professionals to help them circumvent the US regulations," Wang wrote. "Further, I find that the social network of the linked directors facilitates the spread of their misconduct."

Raman Chitkara, Partner and Global Leader in the Technology Practice of PricewaterhouseCoopers, also sees a direct link between backdoor listings, lack of information and stock price.

"Reverse-merger companies are ill-prepared to deal with being a public company. It's not surprising that many of these companies have failed expectations," says Chitkara. "If you have got that credibility gap, investors will get shy." The problems go "hand in hand" with a lower stock price, he adds.

Although Focus Media made it back to China via reverse merger, its relisting looks less like a total success story when the full circumstances are considered. In 2011, the company came under pressure from short-sellers Muddy Waters Research, which claimed it was overstating the number of advertising displays it had in China. The company's shares tumbled by 40% before it went private in 2013.

While the claims were not proven, Focus Media was ordered to pay $55 million by the US Securities and Exchange Commission for failing to disclose details of a sale of one of its subsidiaries to another part of the company. The price was six times lower than it was when sold a few months later to an external buyer. The case



compounded doubts about the company's credibility.

The problem extends beyond just the North American exchanges as well. The London Stock Exchange (LSE) has attracted 80 Chinese companies since 2005, including many on AIM, the small-cap market run by the LSE. But AIM has suspended many for insufficient due diligence. Similarly, since 2007 the German stock exchange Deutsche Boerse has attracted 23 Chinese companies, but a third have since delisted amid corporate governance concerns.

Many Chinese companies seem to list overseas without understanding the importance of transparency. Analyst Michael Feldman, who has helped many Chinese companies list in the US, believes there is a basic difference in management culture.

"A lot of smaller ones feel 'why do investors need to know this [information]? It's not important,'" Feldman says.

Charmed by the Government

Alongside the difficulties that are encouraging Chinese companies to leave foreign shores, the Chinese government and securities regulators have, until recently, been making various moves to draw companies back home.

In December last year, the State Council announced its intention to allow the Shanghai Stock Exchange to create a strategic emerging industries listings board to promote the relisting of companies in sectors such as internet services, biotechnology, IT and new energy. Crucially, the new board would lower the profitability requirements of companies wanting to list. (US exchanges lack a profitability requirement.) Howie, however, sees this proposed board as "having little influence" pointing out that China already has the ChiNext, its equivalent of the Nasdaq.

The government last year also announced the removal of the 50% cap on foreign investment in e-commerce companies operating in China, and encouraged financial institutions to get behind technology companies. Investment bank China Renaissance has partnered with Citic Securities to raise funds to assist companies looking to

It's all short-term moves to maximize profits

Fraser Howie
Co-author of *Red Capitalism*

return home and Shengjing Management Consulting has also launched a fund of funds to bring Chinese companies home.

All it's Cracked Up to Be?

Would-be returning companies that manage to get all their ducks in a row still have to make it through the Chinese listing process, which is by no means straightforward.

"It sounds like a good idea if you could do it all in one day," says Howie. There were 675 applications pending at the end of 2015, most of which will have to wait at least two years to list. And all IPOs were stopped in the immediate aftermath of last year's Shanghai stock meltdown, which could conceivably have an encore.

To solve this problem, the government announced last December that it intended to introduce a US-style market where companies could list if they meet certain financial conditions, removing politics and speeding up the process.

"You have this problem that you need government approval, however good a company you are. You've got to remove this moral hazard," says Howie. But he believes the change won't happen anytime soon. "[That] reform has been talked about for over a decade."

Liu Shiyu, head of the CSRC, said in March that the reform would take time. Meanwhile, many US-listed China companies are getting anxious.

"Everyone thought China was going to welcome these companies with open arms, but there are a lot of structural issues these companies have to work out," says Feldman.

Crucially, alongside all the structural issues with China's stock markets, is the CSRC's apparent change of heart.

According to Howie, whilst once the regulator was "encouraging these companies coming home to help capital markets," now "the regulatory environment in China has got substantially worse, to the extent that the regulator may ban [these] reverse takeovers. They're concerned about domestic investors in China due to companies that are not doing that well in the US being dumped on Asian markets. This is a regulator that's paranoid about small investors being on the street. It's trying to regulate the market and trying to ensure people don't lose money."

The fear is that local investors will be in line for losing money if these companies return home on sky-high valuations which then subsequently fall when the market corrects.

The mooted strategic emerging industries board also now seems to be on the backburner, with mention of the new board not included in the government's 13th Five Year Plan, released in March.

More broadly, Chitkara believes some of the companies may be reconsidering their decision to delist. "The initial reasons for listing in the US—publicity, marketing value, liquid markets and better valuations if you can deliver on growth promises and flexibility in corporate governance structure such as multi-voting stocks—are still valid."

One possible bellwether was a decision by an investor group including the founder of smartphone maker Xiaomi, Lei Jun, in May to pull out of a $2.5 billion deal to take private the Nasdaq-listed Chinese karaoke company YY.

Just how many Chinese companies return home from US exchanges is unknown at this point.

"They may find China is not the rosy market they expected," says Feldman.

Ringing up Success

Lenovo—giant among Chinese companies—struggles to find its footing in smartphones

By Xin En Lee

Image by Beibei Nie

For as long as people have been talking about Chinese brands, Lenovo—one of China's first global tech companies—has been a star brighter than almost any other, and a symbol of national pride. It has dominated the domestic PC market since the 90s, became the first ever Chinese company to take over an American firm with its stunning 2005 IBM acquisition, and became the world's top PC manufacturer in 2013, shipping over 53 million units that year.

When in 2014 Lenovo—according to International Data Corporation (IDC)—ousted longtime champion Samsung to take the seat as China's top smartphone seller, it seemed poised for yet another market hegemony.

But by the end of last year, Lenovo's fortunes in mobile had shifted dramatically as it plunged to number eight in China's fast-changing smartphone rankings, according to Counterpoint Technology Market Research. Younger and nimbler entrants such as Huawei and Xiaomi proved too fast for the giant. Huawei took the top spot with eye-popping annual growth of 70%, and 108 million smartphones sold in China during the year.

Clearly, Lenovo got something wrong, and the proof came in February this year when it reported its first quarterly net loss in more than six years. With the hyper-competitive China smartphone market slated to grow just 1% this year and a global downward trend in PC shipments, the company is going to be hard-pressed to reclaim its glory.

"It's not impossible for Lenovo to regain its market share in China," says Counterpoint Technology Market Research Director, James Yan. "But it faces many challenges, it may take some time and a clear execution strategy before we see it back in the lead."

Going Phones

The company began life as Legend Computers in 1984. Starting off as a distributor of imported computers, it built up a formidable distribution network and close relationships with its suppliers—still a strong suit today. It launched its first PC in 1990 and became China's top PC maker by 1996.

The PC giant became a truly global tech player in 2005, when it bought IBM's legendary PC unit for $1.75 billion. The deal made Lenovo the third-largest PC maker in the world, and marked the first Chinese takeover of an American company.

Lenovo entered the burgeoning smartphone market in 2011, after building its own manufacturing facility in Wuhan with a capacity to make 40 million smartphones. By late 2012, they had captured 14.2% of the China market, with 46 smartphone models covering all price points.

In late 2014, it sent shockwaves again by acquiring Motorola from Google for $2.91 billion, gaining 17,000 patents, 7,500 pending patents and the brand name. While the market reacted badly, sending Lenovo's stock down 2%, chief executive Yang Yuanqing insisted in an interview that "this will be a good start to challenge the big players in smartphones. We want to become a global player."

Indeed, by the second quarter of 2014, Lenovo appeared to have cracked the formula as it overtook Samsung to become the top smartphone maker in China.

Knocked from the Horse

But Lenovo's rosy fortunes wilted in just one year. Its smartphone shipments plunged 53% in China, leaving it with a mere 3% market share by 2015 Q4, according to Canalys. Globally, it ranked a distant fifth in smartphone market share at 5.7%, after Samsung's 25% and Apple's 17.5%.

The domestic market upset was particularly painful for Lenovo even though it wasn't the only one affected. China's smartphone sales fell for the first time in six years last year, and even titans like Samsung tied for fifth place with mid-tier local brand Oppo in the face of stiff competition. As Lenovo's COO Gianfranco Lanci put it, it was an even more bitter pill for Lenovo to swallow because "We are Chinese, and Samsung is not Chinese."

But unexpected as it may have been, Lenovo's poor performance was partially the result of baked-in weaknesses.

Among the biggest of these is Lenovo's reliance on phone operators' subsidies—a factor that Lanci publicly highlighted. In good times, carriers like China Mobile doled out subsidies to the tune of RMB 34 billion a year to attract consumers. But last year when the government ordered state-run carriers to reduce spending, subsidies were cut by at least a third—Lenovo was hit hard, with reports that consumers were paying double what they had paid before.

James Yan agrees that Lenovo has been "overly reliant on operators and operators' subsidies," noting that about 50% to 60% of Lenovo's sales were still made through operators even as the market rapidly switched to no-contract models.

"Traditionally, Lenovo has been very strong in sales channels, but in 2015, it did not have a good strategy at all in working out how to best utilize sales channels," Yan says.

But beyond the sales wallop itself, the operator model also restricted the juggernaut's ability to maneuver, worsening competitive pressure from the likes of Huawei and Xiaomi, who were busy upending the entire marketplace.

"Due to its reliance of selling through operators, Lenovo never paid that much attention to its branding," says Xiaohan Tay, a Singapore-based senior market analyst with IDC. This put the company at great disadvantage to Xiaomi and Huawei's strong branding efforts. Lenovo just could not adapt quickly enough.

The root cause for the rout is not single-source, however. Alberto Moel, an analyst with Sanford C Bernstein in Hong Kong, and Marc Einstein, director of ICT research, Japan at Frost and Sullivan, cite Motorola as a chief cause for the company's poor performance.

"They overestimated how much they would get out of Motorola, and underestimated the competition," Moel says. While Motorola was an entry point into a strategy of better pricing for Lenovo, he says that the company miscalculated the cost structure needed for better revenues.

Einstein believes it was all around poor execution of the acquisition that allowed competitors to upstage them.

"They have not integrated particularly well with Motorola and the longer they wait, the harder it will be," he says. The merger "didn't quite happen the way they hoped it would."

How can Lenovo Dust It Off?

China's economic slowdown is expected to further affect smartphone sales growth, with IDC predicting just 1% sales growth this year, down from 20% last year, making it a saturated, replacement-driven market.

As a result, Lenovo chief executive Yang Yuanqing said in an interview last November that the company is now betting on emerging-market smartphone buyers and enterprise-server clients to help it get out of its current rout. The bet has paid off so far, with 2015 Q4 sales up 70% year on year in India, and 160% in Russia.

Yang also said he plans to focus on the company's strength in traditional smartphone sales channels rather than battling Xiaomi in the fiercely competitive low-cost online selling space.

Analysts say that these strategies are steps in the right direction.

"In the lower-end segment and online space, competition is too fierce and profit margins are too small," says Jessie Ding, a research analyst at Canalys. In contrast, she points out that Lenovo is already a top-3 smartphone seller in India.

Moel agrees that Lenovo is ahead of the curve in venturing into emerging markets.

"They went in early into those markets 2-3 years ago, because they realized that the Chinese market was going to slow down," he said. "They are very competitive in these emerging markets."

But these markets don't match China's size. Yan points out that even despite its poor performance, Lenovo still shipped 16.2 million smartphones in China in the first quarter of 2016. In comparison, Lenovo sold 8 million units in India in all of last year, which was considered outstanding.

Branded a Winner

But regardless of how one views the performance in India so far, future success hinges on brand, and Lenovo hasn't mastered that yet.

Einstein says that Lenovo is currently in a "very grey, very unstable segment of the market" where its product offerings are neither low-end nor high-end. Changing this situation is a priority.

"In emerging markets, the smartphone is going to be one of the consumers' most expensive purchases," says Einstein. "Identity, social status, aspirations are communicated through the device which you own—which makes marketing and branding your product crucial."

To that end, Apple and Samsung are familiar names—Lenovo not so much.

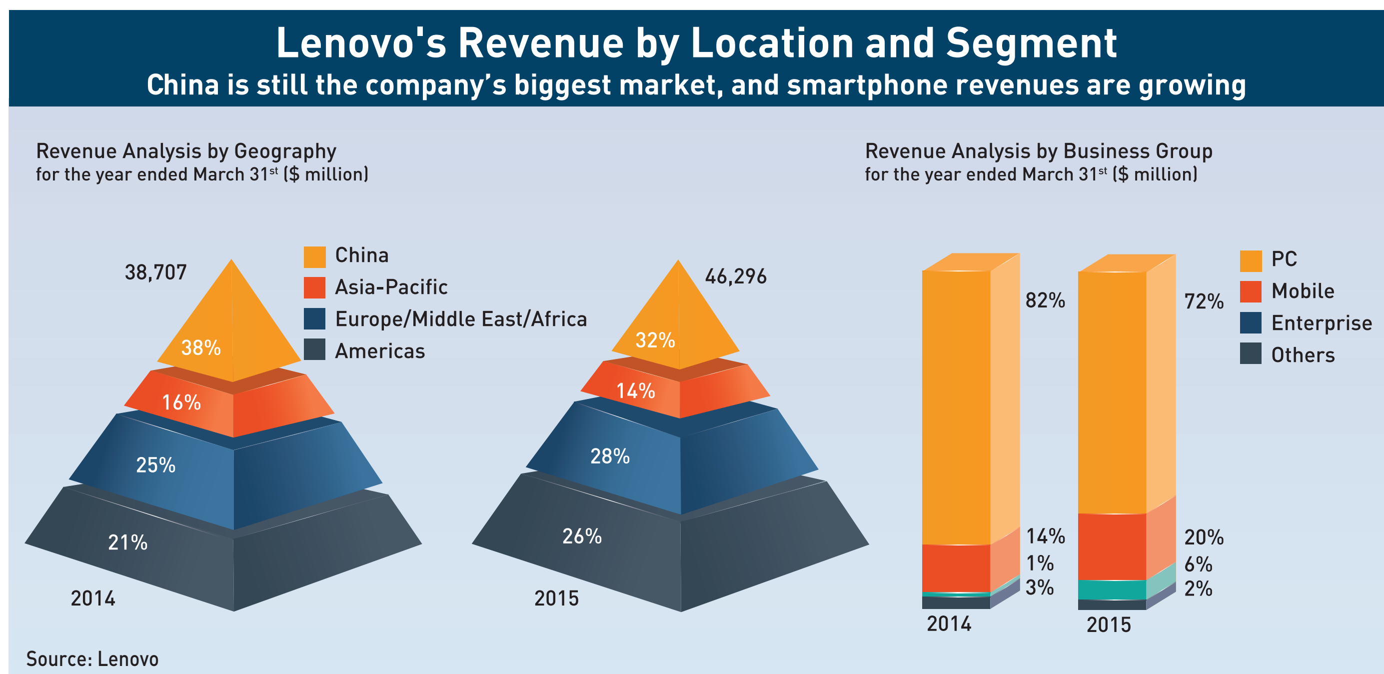
Leo Liu, a Chinese civil servant, and smartphone owner says: "It's a little strange since Lenovo is a big Chinese brand but I don't remember any Lenovo smartphone advertisement and by extension, what their phones look like."

Ding of Canalys says that having a "clear brand strategy" would be a key factor for Lenovo to regain market share. The company's recent streamlining of products is a smart move in that direction, she believes.

In China, where profits have been low and experienced consumers are moving upmarket, solid branding is even more crucial. The need to leverage Motorola is obvious, but there is work to do.

"Motorola used to be a good brand in the high-end segment, but it will take some time for Chinese people to gain recognition of it," says Ding.

Lenovo is hedging its bets, though. Last May, it followed in the footsteps of Xiao-



mi, launching the consumer-driven internet brand Zuk Mobile, also known as ShenQi in Chinese. It was set up as a separate entity from Lenovo, in a bid to help it go head-to-head with nimble local rivals and to allow the company to experiment with internet strategies.

But Bryan Ma, VP of devices research at IDC says that it is "still early days" to determine if Zuk would help with Lenovo's online strategies and brand image. Instead, he highlights the need for the company to focus on branding, particularly outside of the low-end segment.

"Lenovo's phone sales have suffered in China largely because it was focused on the low-end, where heavy price competition from the likes of Xiaomi made it hard for Lenovo to compete. Lenovo will need to rebuild its brand not just to compete with the likes to Huawei, but also players like Oppo, Vivo and LeTV," he says.

A Shrinking Kingdom

Meanwhile, Lenovo appears to be firmly ensconced in its PC throne, but being king isn't what it used to be.

While Lenovo increased its market share in PCs to 21.4% and has enjoyed growth for at least 14 quarters, industry-wide PC shipments fell 10.6% in the fourth quarter of last year, reaching the lowest level since 2008. It is expected to drop another 3.1% this year.

One key reason is the ongoing slow sales in emerging markets, showing that consumers with PCs are not buying new ones, and those without are choosing cheap tablets. PC makers may also be victims of their own success, as they have created better, long-lasting products, pushing back the replacement horizon.

So while Lenovo is likely to maintain its computer dominance, it must wean itself off its reliance on PCs, which comprise about 80% of its total profits. Some analysts have floated the idea of tablets making up for PC decline—but so far, tablets have not proven to be a moneymaking enterprise.

Einstein points out that Apple's iPad shipments have declined every quarter in recent years, and that consumers replace

Competition is too fierce and profit margins are too small

Jessie Ding
Research analyst
Canalys

tablets far less frequently than smartphones.

However, he adds that "the tablet market has tons of potential" but it will be tricky for Lenovo, which would not "want to push tablets too hard."

Jean-Louis Lafayeedney, director of equity research at Haitong Securities International Securities says that "Lenovo's tablet sales held up reasonably well in 2016, compared to the overall market" but adds that he did not see much growth in the segment.

He says to do well, Lenovo needed to use the same strategy as it did with PCs over the 2005-09 period.

"Stripping down operating cost, streamlining operations and growing market share by being price competitive will help Lenovo achieve success in China, " he offers, but adds that this would "take some years to get right."

Just a Bump in the Road

But despite the current difficulties, most analysts are optimistic about Lenovo's overall outlook, highlighting Lenovo's emerging market performance and strong business nous. Another consideration is Lenovo's strong intellectual property portfolio, which puts it in good stead to further grow in the West, where its rivals Huawei and Xiaomi are not be able to compete.

But on the homefront, Lenovo will struggle to claw back its market share in the short-term.

"The main difficulty is that Lenovo will need a long time to figure out their retail channels, which is its traditional strength. Furthermore, Lenovo is a big company—it will find it hard to compete based on product with players like Xiaomi, who can receive user feedback and adapt quickly," says Yan.

To move into the premium segment of the large China smartphone market, where larger profit margins can be made, analysts highlight the need for Lenovo to integrate well with Motorola, so as to improve on branding—and that is doable.

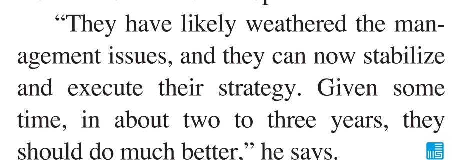
Despite his skepticism of the Motorola deal, Moel says that he sees Lenovo in the process of stabilizing their market share, and that the company had a good track record of "creating strong synergies."

Lenovo "has what it takes to successfully integrate Motorola," he says, adding that he believes that Lenovo would return to profitability by the end of 2017.

Yan adds that he sees recent management changes as a sign of improving integration with Motorola, ending potential conflicts which usually occur at the beginning of mergers. Rick Osterloh, formerly president of Motorola, resigned from the company on March 18th, and the mobile business is now run by senior vice-president of Lenovo and president of Lenovo China Chen Xudong and former head of Lenovo North America Aymar de Lencquesaing. The company has not provided more information about plans for the Moto, but the management change signals an end to infighting about Motorola's role in the company.

Yan admits that he thinks it would take a fair amount of time for Lenovo to figure out sales channels and develop a strategy, but adds that it was not impossible for the PC titan to head to the top.

"They have likely weathered the management issues, and they can now stabilize and execute their strategy. Given some time, in about two to three years, they should do much better," he says.



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Conversations

"Irrationality is on the rise. Temptation is on the rise, and the consequences and the opportunities for us to make mistakes are higher"

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"As the country becomes richer, that poverty line, $1.90 a day, ceases to be so relevant"

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Understanding our Minds

Dan Ariely, author of *Predictably Irrational* and *The Honest Truth about Dishonesty*, discusses our mental frailties in the modern world

By Tom Nunlist

Each of us makes hundreds, if not thousands, of decisions every day. Most of them are small: Should I buy that nice shirt? Do I have five more minutes to spend playing my favorite app? Others demand more thought: How should I plan my retirement savings? Is marriage right for me? The common thread running between the lot of them is that we are, in some sense, unequipped to make sense of any of it. The world in which the human race came of age—one of ferocious predators and unforgiving nature—is no longer the world we live in. For the risks we face now, we are out of date.

Dan Ariely, James B. Duke Professor of Psychology and Behavioral Economics at Duke University, has built a career mapping the peculiarities of our innermost decision-making foibles, and offers insight in guarding against them. He is the author of *New York Times* best-selling books *Predictably Irrational*, *The Upside of Irrationality*, as well as *The Honest Truth About Dishonesty*—his numerous TED Talks have been watched over 1.5 million times. In this interview he discusses the roots of our condition, differences between biology and culture when it comes to our behavior, as well as the pernicious effects of dishonesty.

Q. Why are human beings hardwired to be predictably irrational?

A. So, there's a few potential answers for this, but here is one general idea. So if you think about it, we were designed with a computation machine, a brain, to deal with all kinds of things… to deal with jungles and different types of risks. And the machinery that we got did not have to be perfect, but it had to be very accurate. For example, if you see a tiger, you want to run away very, very quickly. You don't want to stop and think about it. And if it's not a real tiger you still want to run away, why take the risk? Because if you run away when there is not

a tiger, nothing much happens, you just run away. But if you don't run away when there is a tiger, that could be really devastating.

So, we created this machinery to help us make decisions, and now the world has changed on us. We don't have many tigers, sadly actually, anymore. And now we deal with all kinds of other things, we deal with something like money. Very long term, we have to think, we have to plan. We have to deal with things like traffic. I mean, just think about the range of things that we deal with. They are very different from the things we evolved to deal with, and now we use our brain mechanism to deal with those things, but it's very far from perfect. So what do we do? We make mistakes. What kind of mistakes? All kinds of mistakes. We are basically trying to use the machinery that is not used to solving problems about healthcare and money and long-term relationships and mortgages. And we try to use them and we make mistakes.

Q. How does decision making vary across different places and different cultures?

A. So, here is what we find. Think about visual illusions. Visual illusions are basically the same the world over. If you can see, you have a visual illusion. It's something very basic in terms of how our brains work. Now, when we come to decision making, there is some very basic decision making. For example what happens when we're stressed, or what happens when we have too many options, or what happens when we have the default, and in those cases people don't seem to be too different from each other.

But, cultures do matter, because cultures can take up a domain and say, "In this domain, we care about X, Y or Z." So some cultures can say, "You know what? We care a lot about how you portray yourself to other people." Or some cultures can come and say, "We care a lot about how you stand in line" or something. Or some culture could come along and say, "We care a lot about the value of friendship." Whatever it is, cultures don't change the backbone of humanity, but they do change the way we view particular types of activities, kind of silos.

We created this machinery to help us make decisions, and now the world has changed on us

Q. So knowing something about the ways our brains work, and the way we are prone to make mistakes, can we build models to help people make better decisions?

A. Absolutely. Think about money. If we understand the kinds of mistakes people make when they think about money, we can help them. If we understand that people have conflicts of interests… you know I've done lots of research on conflicts of interest showing that when people are in conflicts of interest they make terrible decisions. So once we understand it, we just say, "Let's eliminate conflicts of interest." And so on, and so forth.

Q. How might insights into our hardwired flaws and the way to guard against them apply to business decisions? Can a CEO make use of it?

A. Of course [we can apply it here]. There are lots of ways in which we are rational. You can think about what motivates employees. Is it just salary? Is it gifts? Is it kind words? Lots of things motivate us. If you understand what things actually motivate people, rational, irrational, you can motivate people to a higher degree. If you understand what kinds of products people will be excited about, you can create those. So lots of things in the business domain as well.

Q. The world seems to be moving faster and faster, day by day, year by year. Does that translate to a greater urgency to pay attention to the way we make decisions?

A. Yes, absolutely. So, partially it is these days we have more temptations, right? So that's very important to realize. There's more things around us to tempt us. Partially we make more decisions without thinking. We are on the mobile device, thinking, making decisions on the go. We are also more stressed and have less time to consider all options. So I think, you know, irrationality is on the rise. Temptation is on the rise, and the consequences and the opportunities for us to make mistakes are higher.

Q. Your book The Honest Truth about Dishonesty described an experiment in which a fake student was planted among students taking a real exam. The plant, openly cheating on the exam, induced other students to cheat. Can this sort of thing happen on a larger scale? Say, if a CEO, or high-ranking political leader is perceived to be dishonest?

A. Yes. So what we find is that dishonesty is socially infectious. And if somebody in high power, let's say, a CEO, or an executive, or a movie star or somebody like this, cheats in an egregious way, people would look at it and change what they view as acceptable and not acceptable. Very, very distressing.

Q. Seeing as that is true, how do you go about fixing this problem once it has taken root in a large organization?

A. I actually think that this is something that is very interesting about China. So in China there have been attempts with the new government to reset things. So they say, "No more waste… we are not going to waste, we are not going to pile things on our plate and eat too much," and "no more corruption." It's not that corruption stops, or that waste stops, but you basically… to stop this slippery slope in that direction, you need to say, "Here is how we are going to act from now on" and basically make sure that everybody acts in that new way, and announce: "From now on, we are going to do things differently," and that's a very important direction.

"I think who wins is the Chinese consumer"

Torben Pheiffer, Managing Director of SapientNitro, China, on the changing Chinese consumer landscape

By Tom Nunlist

SapientNitro, a division of recently merged Publicis.Sapient, is one of the world's leading digital advertising agencies. Torben Pheiffer has been with Sapient for 18 years, through multiple mergers, and came to head the mainland China operation in 2013, which now comprises some 260 employees. Originally a traditional advertising agency, Pheiffer has led the branch beyond brand communication, making it a digital powerhouse, developing strategy, creative content and commerce capability for global multinational clients coming into the China market, and increasingly Chinese companies looking to expand abroad.

But the challenges in China's shifting consumer landscape never stop coming. Increasing exposure to international media and social media within China is fundamentally changing the expectations of Chinese consumers. On top of that, the broad economic slowdown and brand saturation in China has ratcheted up competition to new levels as the days of easy money disappear. Pheiffer explains what is happening, and how companies need to adapt their branding strategies.

Q. Chinese consumers have changed faster than consumers in probably any other market. What are some key trends right now and how are you keeping up?

A. I think the topline trend is there is definitely normalization in the market. There's a lot of conversations about what's happening in the economy, without a doubt there's some tightening. I think services growth remains relatively robust. There's some positive indications that have been coming through some recent reports. So from that perspective, I think that what's happening is that consumers are becoming

more demanding and sophisticated in what they want from brands. I think part of it is some of that economic headwind, but also the market saturation that's happened in the last five to 10 years of just inundated with international brands, and increasingly local brands, right, that are starting to vie at the same level as international brands for consumer's attention. So I think that the biggest shifts we are seeing are more selectiveness, higher expectation on experiences, which often manifests as a demand for personalized experience. So that's a big trend at the moment.

There's also a push for authenticity. So whereas five, 10 years ago there was a lot of focus on label, the brand, the foreignness, perhaps, of the brand, now there is a lot of desire, or interest, in boutique offerings, and richer storytelling, and the history of the product, and the values of the brand. A lot of curation through KOLs [Key Opinion Leaders] right now, is talking about smaller boutique industries, handscraftmanship etc. And I think that's a really interesting trend when you talk about how brands are positioning themselves. It's not just good… to flaunt the foreignness of the brand. That doesn't get you the equity. But it is about the story, and the heritage, if you like. So those two things around experience, increasing experiences manifesting as personalization, then also this idea of the richer story, the back story around a product.

Q. There are about a billion mobile users in China, and just over half of them use smartphones. How has this changed marketing in China?

A. I think there is probably another lens on that, which is social [media]. Clearly the prevalence of mobile devices as a primary access to the digital world is critical to any part of the strategy, so it has to be mobile first. So what that means is content needs to be consumable, features and functions need to be relevant in context on the go. So that's a clear repercussion.

But also what's connected is most people are on social channels—particularly WeChat—on their mobile phone. And the richness of the WeChat offering, and some of the other social networks in China is

You've got to look at the rise of mobile and social in China, and that's really challenging how marketers think

massive because its opening up connected pay options, online-to-offline, its opening up content delivery opportunities etc. You've got to look at both together. You've got to look at the rise of mobile and social in China, and that's really challenging how marketers think. Many, many of our briefs coming in, the priorities of our clients are all about "how do I make sense of social in China?" That is a big task. It's a big priority. But we also believe it's only a part of the puzzle. You've gotta think about your media, your content, your social and your commerce strategy in a cohesive way, because your customers are experiencing all of those three or four different things at the same time.

Q. When international clients launch a branding strategy, how do you rethink a brand to make it fit? For example IKEA in China is the same thing as IKEA in the West. Pizza Hut, an American fast food chain, on the other hand, occupies an entirely different space here—downscale versus a bit upscale.

A. Everything we do starts with understanding the consumer. So if you look at the target audience of an IKEA versus a Pizza Hut, it's a very different kind of demographic with a very different set of expectations. On the one hand you have folks that are looking for aspirational international experiences, maybe they've lived abroad, they want to see exactly what the folks in Europe and North America are experiencing with the IKEA and that's part of the value proposition. Whereas when you are talking about food for example, localization is far more important, of product, of service and of brand position. So it really depends on the consumer audience, and then what the brand is trying to do in the market.

We see a range though, and I don't think there is one rule book, there is a still a bit of trial and testing going on, where you know, you have brands that come in with very true international brand position with very little localization. So it's pretty much a copy and paste of the global campaign, story, proposition. And then you have brands that are very, very, very localized. We also have brands that have flipped back and forth. They try one and go back to the other. So I don't think that there is one answer to that, but for us it starts with understanding the customer, understanding what the brand stands for, articulating that connection, and then frankly we've got to listen and see how consumers respond. It's about test, learn, modify.

Q. Can you expand a bit on brands going back and forth?

A. We've got a client, and I won't name names right now, that from an organizational perspective was initially very much led by foreigners in China, to set up the brand. And in those situations, we've found that the collaboration between global and local is very strong—so you had a lot of the global assets being reused. And then what happened is as the brand grew, the hiring and investment in local talent started paying off, you started seeing a shift to saying: "Hey, the new set of leaders actually understand the market in a different way," for the next stage in the evolution of the brand they want to start staging far more localized campaigns, or localized positioning. So there's been a shift from say, 'global decision-making', a far more centralized

headquarter driving what China comms needs to look like and experience, versus once China's up and running, and you have a strong local team to take this over, then they are often given far more leeway to say: "Let's now customize and tune this to the China market."

Q. How has Publicis.Sapient localized?

A. We are about 70% from mainland China, 90% Chinese speaking, and then a few foreigners kicking around, like myself, just for good measure. So we are very much an agency that's founded in China, but international in orientation. So our clients are really two-fold. One is multinationals coming to China, which is quite common in our industry. But increasingly Chinese brands going global looking to us for help. They say, "Hey, we wanna be the next" pick-a-brand. They have global aspirations, and they are saying, "We need folks who can communicate in our language, and our culture and understand us," but then can connect to the power of Publicis.Sapient Group globally across different countries.

So we have two flavors of client segment, if you like. In the former, what we would typically do is act as a bridge and support for our Chinese clients to connect with headquarters. We help navigate some of that complexity, of how to actually bring global assets to the market and vice versa…

And then with the latter client, which is the Chinese brands going global, we've got a different role, where we are actually the headquarters, if you like. And then we are reaching out to our North American and our European teams, and we're saying, okay, here is what the client is trying to do from China, and help us make that happen, in Europe, North America etc.

Q. What is the balance between global clients coming here and local clients going global?

A. We are probably 70% multinational and 30% Chinese, I'd say, give or take. But I see Chinese brands going global is a big trend. I think that is the future for China. I think that as it moves from a fast follower to an innovation leader, there are some incredible products, some incredible leaders in the market. I am personally very excited to help in that next evolution.

> Where [brands] are in it for the long run, we are seeing traction. Where brands are maybe non-committal… they are challenged

Q. How is the ongoing economic slowdown affecting consumers?

A. There are many opinions out there. I don't think anybody has got the answer. I think the reality is that there is normalization happening. You don't shift from a manufacturing economy to a service economy without some wobbles and slowdown. So I think it shouldn't be a big surprise to anyone where we are right now.

But having said that, many brands are still doing really well (e.g. Nike) and I think that part of the reason they are doing that is that they are really focused on the fundamentals. It is about your brand story, and being connected to your customers. It is about delivering experience, delivering value and staying true to that. And so I think where brands are invested in the market, where they are in it for the long run, we are seeing traction. Where brands are maybe non-committal, maybe not taking the right strategy to the market, they are challenged. You are seeing that in the fast-moving consumer goods space, [which] is particularly challenged—partly because of saturation, partly because of local challenges.

So it is a mixed bag. We are still seeing demand come in. We are still seeing the investment there, but there's also an emphasis on return on investment. [Companies are] saying, "If I am going to do this in China, what am I going to get back? How do I validate these investments?" The days of "easy money" are challenged a little bit, we're not seeing the growth that we've had. And that's causing people to hunker down and really think about it in a more sophisticated way.

And I think who wins is the Chinese consumer. The real winner in this whole equation, is there's increased pressure to deliver more value, more sophistication, and the consumer wins. That's a great story.

Q. What does the future look like? When will there be a Chinese "Nike" crushing it the wider international market?

A. I think it's happening right in front of us right now. If you look at brands like Huawei, they are making a big push internationally right now, they just launched a new phone, you know really focusing on value and positioning. I think it will take a bit of time for the "made in China" stigma to completely dissipate globally. But I think it's gonna be through valuable products at a great price point, and then compelling brand stories and things that people that can get their heads around. And so I think it's happening. And my personal view is that in the next five years you are going to see that accelerate.

[For multinationals] the opportunity in China remains compelling. I think if agencies, but also brands, take the long-term view, I think there's a future here, without a doubt. How we do business, how brands do business is being challenged and changed, but I think that's good in the long term.

Photo credit: Lucy Thorn, *Reuters*

China and the Global Recession

Willem Buiter, Chief Economist at Citigroup, on preventing China from leading the world into recession

By Maurits Elen

China's boom times are over. With global investor sentiment continuing to slip, concerns are rising about spillover effects of a faltering Chinese economy on global markets and institutions. But although the facts of the problem are well known, fixing it is another issue—the reach and pace of fundamental economic policy choices have been subject to bustling debate. At the forefront of commentary has been Willem Buiter, Chief Economist at Citigroup.

After obtaining his Ph.D. from Yale University in 1975, Buiter lectured at universities such as Cambridge, Princeton, Columbia and the London School of Economics. He has been an advisor to the International Monetary Fund, the World Bank, and the European Commission. He coined the portmanteau 'Grexit,' is a former member of the Bank of England Monetary Policy Committee, and has been Citigroup's chief economist since 2010.

In September 2015, Buiter and his team published a research note stating that it was likely that the global economy would soon slip into recession, caused by sluggish growth in emerging markets, especially China. In this interview with *CKGSB Knowledge*, Buiter assesses Chinese economic growth and the potential for global recession.

Q. In 2015, you stated that the probability of some kind of global recession, moderate or severe, in 2016 and/or 2017, to be at 55%. Have the odds declined or increased?

A. We predict global growth at market exchange rates to be 2.4% for 2016, somewhat lower than the 2.6% realized in 2015. Correcting for the likely overstatement of China's growth in the official data, our predic-

tion for 2016 would be around 2.1%. This is very close to our definition of a global recession, which is global growth at market exchange rates below 2%. The credit explosion engineered by the Chinese authorities in the first quarter of 2016 and the model fiscal stimulus that was implemented may well be enough to prevent global growth from falling below 2% this year. Because I consider the credit stimulus to be unsustainable, and because I view the fiscal stimulus as too small and poorly targeted, I expect that the decline in China's growth rate will resume later this year and in 2017.

Q. To prevent a Chinese recession from happening, you have stated fiscal stimulus—targeted mainly at private and public consumption—had to be undertaken immediately. How do you assess the fiscal stimulus rolled out by China?

A. One, it is too small—about 2% of GDP additional stimulus for the rest of this year is required, in my view. Two, it is targeted poorly. Three, it should be funded by central government borrowing, not through additional bond issuance by local governments or SOEs (state-owned enterprises) or through borrowing from the banks. Four, the additional central government debt issued to fund the stimulus should be purchased by the People's Bank of China and monetized. Such 'helicopter money' makes sense for China as inflation is below target.

Q. You have stated that monetary and credit policy have limited power to boost aggregate demand in China, and neither can the construction sector, funding of small and medium enterprises (SMEs) and high-tech ventures, and even China's Silk Road initiatives. Why?

A. The construction sector certainly can boost aggregate demand. If the Chinese authorities were to fund or subsidize the construction of social housing and affordable housing generally, if there were additional investment in urbanization-supporting infrastructure, and if full urban *hukou* (China's household registration system) were given to the rural migrants now living on the margins of the tier 1 and tier 2 cities, this would help both short-run aggregate demand and the process of urbanization in China. Monetary and credit policies will remain largely powerless until serious corporate deleveraging has taken place and the balance sheets of the banks have been restored. Funding of SMEs and high-tech ventures represents supply-side policies that may have beneficial effects on potential output in the medium and long-term (if properly directed—not an easy task because the state is generally poor at picking winners in the emerging sectors) but do little to support aggregate demand this year and next. The One Belt One Road (OBOR) initiatives have not yet been translated to any significant extent into concrete investment projects in China or abroad. Even when OBOR leads to material capital expenditure, much of this will be spent outside China. The Chinese export content of OBOR projects outside China is an open question. If successful, OBOR could add to potential output both in China and in the other participating nations. If OBOR turns out to be driven more by geopolitics than by economic considerations, the benefits will be correspondingly smaller.

Q. When the Chinese economy opened up, it wanted its currency to be used in the international market to settle trade and financial transactions, however without fully liberalizing its capital account. As a result, there is an onshore renminbi market (CNY) and an offshore renminbi market (CNH). Which is a better reflection of China's economic condition?

A. Even fully efficient foreign exchange markets reflect a host of factors other than China's economic conditions. After all, an exchange rate is the relative price of two currencies, so the RMB-USD market (onshore or offshore) reflects directly both Chinese and US economic developments. Indirectly, events and developments outside both China and the US will influence these currency markets. With the CNY market affected by rather tight controls on capital outflows and rather weaker controls on capital inflows, both exchange rate movements and reserve flows are distorting mirrors of domestic and foreign developments. The CNH market is not really an offshore, parallel market, because it is subject to heavy intervention by the Chinese authorities. Price and quantity movements in neither market are particularly informative.

Q. What is the main challenge for the Chinese banking sector?

A. Clean up the banks' balance sheets after years of being used as a conduit for quasi-fiscal lending activities. Unrecognized non-performing loans and hidden bad assets in general mean that the central government will have to act to restore the banks to financial health. Once that has been achieved, the banks must be put in a position to raise funds, lend and invest using commercial criteria only. Government influence on the composition of lending and investment activities and on the terms and conditions that the banks set in their funding, lending and investment markets has to be eliminated.

Q. Growth in China has been slowing, but China's total debt has been accumulating in recent years. What is the possibility of a credit crisis occurring in China?

A. China's corporate debt burden is dangerously high and still rising fast. Even households are being tempted to take on excessive mortgage debt or to borrow in costly peer-to-peer markets. The banks have large unrecognized holes in their balance sheets. Local governments are now issuing bonds instead of borrowing through special purpose vehicles from the banks, but still don't have adequate recurrent revenue sources, for instance, a property tax or real estate tax. So unless the government intervenes through some combination of bailouts of the banks' debtors (local governments and SOEs) or recapitalization of the banks, a financial crisis is highly likely within the next year or two. I expect the government to intervene on a sufficient scale and fast enough to prevent a full-blown financial crisis. The authorities have the tools to handle the problem. The main risk is that they will not want to mount a large financial rescue/debt restructuring operation before the 19th Congress of the Politburo Standing Committee in November 2017. I doubt whether the forces of financial turmoil will wait that long.

Unequal, but in it Together

Tony Atkinson, author of *Inequality: What Can Be Done*, talks about facing up to one of the defining problems of our time

By Tom Nunlist

Since the beginning of the Industrial Revolution, and especially since the beginning of the 20th century, humanity has built a world of previously unimaginable prosperity. At the turn of the century, the United Nations set forth the Millennium Development Goals, which included a push to halve the world population living in extreme poverty by 2015—the goal was achieved in 2008, in large part due to China's growth. But meanwhile the problem of income inequality quietly grew into a staggering social program, becoming a source of tension in both developed and developing countries around the globe.

Tony Atkinson, Centennial Professor at the London School of Economics and author of *Inequality: What Can Be Done*?, has studied poverty and inequality for over four decades. He believes income inequality to be among the defining issues of our time, one that can only be solved through a concerted global effort. In this interview he discusses the roots of the problem, the challenges to solving it, and why he has hope.

Q. In the book you mentioned that for a long time inequality was ignored as a topic among economists. Why do you think that was the case, and why has it changed?

A. That's a good question. I suppose in the immediate post-war period, we felt, certainly in the advanced countries, that a combi-

nation of full employment, and expanding welfare states, that we had dealt with the problems certainly at the bottom of the scale. And that we had progressive taxes that were narrowing the gap between the rich and the poor. And so for quite a long time, there was a feeling that the problems of the interwar period and so on were gone. So economists tended to focus on growth and adding development and so on, and that was certainly reasonable. But they didn't realize that in fact we hadn't [resolved] the problems. And so there was a rediscovery of poverty, with the war on poverty, by the John F. Kennedy and Lyndon Johnson regime, and in other countries, too.

Around 1980, a more conservative ideology took over, and Ronald Reagan got rid of most of the war on poverty in America, and we saw Margaret Thatcher cutting back on the welfare state, and I feel that economists of that time didn't regard poverty as something they should bother about. Whereas classical economists thought that differences in income and wealth were important, but by the time they got to the 1970s and 80s, in most countries, it wasn't part of the economic curriculum. When my working life started in the 60s it was a point of interest, and then it died away, and then as you say in recent years it has resurfaced. I think that's partly because of course it has increased so much in many countries. So now [the issue] has come up from non-economists, from the general concern of politicians and the public, rather than academic professionals realizing it was something they ought to be looking at.

Q. Inequality is faced in many different kinds of countries. In China, of course, inequality has grown enormously since the Reform and Opening Up. Do you think there's much of a qualitative difference between the inequality faced in the developed world, like the US and the UK, and the inequality faced in developing nations, like China?

A. This is indeed the same phenomenon. There's no doubt that the effect of globalization means it is very different for China developing now than if it had been in the 50s or 60s. It's now much more of a shared phenomenon, one that's happening at the top of the scale… China is keenly aware of many of the issues that arise from the rural/urban differences and the extended engagement in the modern official/unofficial economy and so on. And it has taken steps to deal with that. But it's a very different situation, I think, across certain key differences with China and India, or China and Brazil. I think the differences are probably greater there, and depend on the political decisions being taken, as well as the country context.

> As the country [on the] whole becomes richer, that poverty line, $1.90 a day, ceases to be so relevant

Q. Do you think that the developing world should address the problem in a different way than the developed world?

A. I think you can't repeat history, necessarily. And I think one has to remember that of course the success, in terms of the western countries, has been largely due to the willingness to tax people…. [But we have] long-standing very well-off people in Brazil, or very recent, extremely rich people in China…. I think the problem of raising revenue to finance redistribution and public services is one of the serious problems that are faced by the rapidly developing countries.

Q. China's GINI coefficient is among the highest in the world right now. At the beginning of Reform and Opening Up in the 1970s it became a national policy that it was acceptable for some people to grow rich faster than others, that inequality was part of the process. But at what point does this acceptable difference become too much? Where is the limit? And is that limit possible to see?

A. The first thing, what you say, of course, is that China has over 10, 15, 20 years, made remarkable progress in terms of reducing the number of people in extreme poverty. And I think that without the Chinese contribution we would not have met the millennium development goal of halving extreme poverty in the world. I think the first thing to say is that [it was] of course a success. But it brings with it the next questions, which is as the country [on the] whole becomes richer, that poverty line, $1.90 a day (the World Bank's official international poverty line), ceases to be so relevant. And of course most countries move to some relative notion of people falling behind, and that's when, for example, the emphasis on the bottom 40%, which the World Bank now has as their second goal, and that then raises questions about how much, say a substantial fraction of the Chinese population are not, while they aren't worse off, but not sharing in the recent rapid growth. I think that's the issue which will arrive, and that's where it's moving, in terms of a different benchmark.

Q. Do you think then that now the focus should be strictly on inequality of income in China, and not so much on stamping out poverty? Because even given the massive strides forward that China has made, the very bottom in China is much, much poorer than you would see in a developed country. So how do you balance the two?

A. Indeed, as you rightly say, it's been a great success but there are still many, many people below $1.90 [a day], and that becomes harder and harder to deal with, in

the sense that there tend to be more and more different groups of people less easily reached in various ways, and you have multi-geographic and ethnic and other various factors come in. So I think indeed it becomes a harder problem… you now have to, in fact, balance [the goals], and not let the gap widen too much… I didn't think my book would sell well in the United States, but in fact it is getting a lot of coverage, and that's because people are aware the bottom half has not seen any improvement in 20 or 30 years.

Q. Poverty is often thought of on a global scale. When you think "inequality," you often think of a rich country and a poor country, the difference between living in the US or UK, and living in a more far-flung region of China, or living in a country in sub-Saharan Africa. But is that really how we address the problem in reality, as a global community? Or is it more individual countries fighting individual battles?

A. That's a very interesting question. I think the world has become more globally conscious. In the sense not just of threats, but also more awareness of that we are in it together. There's no doubt that the more thinking people, have [decided that issues like] climate change [are] not issues you can discuss other than by thinking about the planet as a whole. And I think to some extent that's fed into other areas. I think the agreement on sustainable development goals, and people say they're not too serious, but I think the fact that the world agreed to them is a very positive sign. Of course, what action there [may be] is another matter. But I think we are seeing, at both the governmental level and the private level, much more engagement. I think the difficulty is more knowing what it is that, for example, allows some countries to go faster than others, and what leads to some countries being better governed than others. It's more a difficulty of solving the problems than it is for the world to engage.

Q. That's a nice segue into my next question: how can a country like China, with such an opaque governmental system, work with other countries and organizations to alleviate inequality?

> I think that without the Chinese contribution we would not have met the millennium development goal of halving extreme poverty in the world

A. That's beyond my expertise, but I don't think that's probably the barrier. Because again in some ways I think although it's not been easy, we have seen some movement of greater understanding in terms of the climate change area, which is a change that's remarkable. I understand that [China] has been making contributions which are very positive in many respects. So I'm not sure it's that [aspect], although of course the unpredictability is an issue, but then of course how can you predict an American presidential election? The American system is very transparent, but not always easy to deal with. And I think if you were a neutral observer, you might think it would be easier to reach an agreement on climate change with China than with the United States. And certainly the European Union has been able to do many things which have transcended national disagreements. At the moment it isn't a good time to say, but on the whole it has been very successful. For example, they have the Europe 2020 agenda, to among other things reduce poverty substantially, and that was agreed by all the member states. But I think that countries can differ a lot, and provided there is a forum for dialogue. And that I think is perhaps the most worrying aspect of the global development, the growth of more regional centers, perhaps undermining the global ones. The United Nations is weaker than global blocs.

Q. And how do you see that reality playing out in the next five to 10 years?

A. I think that very much remains to be seen. Some of the regional blocs become, or [institutions] like investment banks, become quite powerful [and] might undermine the global institutions, some of which are pretty slow to be on the move, like the United Nations Security Council. So I think that is a threat, and that of course may raise issues about competition between regional blocs, which we haven't seen in a while. So, having lived through the Cold War, I wouldn't like to see a repeat of that.

Q. On balance, all things considered, are you more optimistic about solving the inequality problem, or pessimistic?

A. Well, in the short term it's hard to be optimistic, with all the difficulties there are in the world, and nationally. On the other hand, I've been very positively encouraged by the response to my book, and I've been speaking at events all around the UK and Europe…. A [lot] of young people have come to me really engaged in the discussion. …I've have had countless journalists from Korea and China ringing me up and asking me about it. I think there's a lot of interest, which I wouldn't have expected even two or three years ago… I think there's a sense that people may not be willing to go very far, but nonetheless they feel it is something that they have to take seriously.

Dealing with Vaporization

Futurist and author Robert Tercek on how we are moving towards a software-defined society

By Neelima Mahajan

When was the last time you listened to music on an actual CD? Or read the day's headlines in a physical newspaper? Chances are it has been years. Digital technology has replaced a lot of things in our lives.

According to media futurist Robert Tercek, going forward we'll see more of 'vaporization,' a term he has coined to refer to the process of replacing physical things with software that can be downloaded to any device. The apps on your phone have quietly replaced newspapers, books, music players, diaries and countless other things.

"We are moving from millions to billions, to trillions of connected devices, and the invisible world of software is growing at twice the rate of the normal economy," says Tercek. "So this process is gathering momentum right now." As more people connect to the network, the software of the network becomes more valuable and that drives even more people to connect, increasing the value of the network.

In this interview, Tercek, the former President of Digital Media at The Oprah Winfrey Network and author of the book *Vaporized*, talks about how software is disrupting society.

Q. You say we are moving to a software-defined society. How is that changing the way the economy functions?

A. The first rule that's important for the software world is this idea that the network is more valuable and the devices get cheaper—that changes the economics. It's very difficult for manufacturing companies to understand that in the future products will be cheaper, but also more valuable. Devices will get cheaper and smarter. Metcalfe's Law says the network will get more valuable over time. For the end users things cost less so they expect devices to be cheaper and smarter and they expect to get more value out of them. For companies that manufacture products, this is very difficult. Those companies are vulnerable to internet economics, the economics of Facebook or Google. That's a challenge that most companies haven't realized.

All companies will become software companies. The implication of that has not yet sunk in and many companies are still operating in old industrial styles. They seldom realize that software is far more important than the physical product. Auto manufacturers, for instance, don't see themselves as software companies, they see themselves as car makers. They think the value is in the metal, rubber and plastic. The value is very quickly moving to software. The companies that focus on software for auto are going to be most successful. We saw the same thing in personal computers, mobile phones and consumer electronics: software eventually became more important than the physical device.

Q. Which industries are most prone to vaporization? Are any immune?

A. No industry is immune. I also think that governments, education and healthcare will soon be affected, so this is a mega-

trend that will reshape the whole society. The industries that have been most affected so far are finance, media, consumer electronics and advertising. The next that will be transformed are healthcare, transportation, education and insurance. Everything that happened in infotech during the past 40 years will soon happen to every other industry in the world. So in a way you can see that any business that involves geography—transportation, logistics or shopping—will be transformed into information businesses. Biology is becoming an information science as well so agriculture, pharmaceuticals, healthcare and the food industry are going to change. We are now able to program biology in the same way we program a computer. Manufacturing is going to be transformed in a couple of ways. The first one is, of course, robotics. Robotics is the replacement of human labor with software, that's what software automation is. The other trends that are important as well are 3D printing and nanotechnology. There's already now a 3D printer from Revolution Medicine that will take any substance and break it down to its molecular parts, sort them out and then using software, recompose those molecules into new forms, including combinations that don't exist in nature… When things are replaced by software, it means that the barriers that constrain—time and space—are eliminated, because software can deliver instantly. China and Asia, the places that we have been outsourcing manufacturing for the US and Europe, [will] no longer have their big advantage. It will erode because now you'll be able to manufacture in any place using software.

Q. How are governments changing the way they function?

A. In the past, most governments used human labor to enforce regulation and process paper and handle information. In both cases software can do a better job. When you have sensors measuring everything, you don't need human regulators checking everything. You can simply do that with software and have better data than we get from human inspectors, so enforcement regulation will change tremendously. In future, we will be able to write the rule in software and encode in a bitcoin[-style] blockchain. All the sensors that are connected to the system will simply report the data and we will have software-defined regulation.

In a representative democracy, voting is also [going to be] encoded in the blockchain very soon. We've already seen some parties in Scandinavia use the blockchain for their own internal voting.

> The network is more valuable and the devices get cheaper—that changes the economics

Q. What's the future of big corporations like the GEs of the world?

A. The reason we have big corporations is because it's more efficient for a company to avoid transaction costs for managing a group of freelance suppliers. As long as it's cheaper to do a job internally within a corporation, the job will be done internally. But now the internet makes it very easy for companies to hire workers who aren't on the payroll, workers who are outside the corporation. You can use software to manage them. One way to look at Uber is that it has vaporized management—the management of the dispatcher is a software program so job functions have been turned into software. It suggests that we may not need corporations in the future. A company called Ethereum in Canada is trying to replace the entire corporation with software. They are trying to write a software robot program that has all the job functions in the corporation which is kind of a crazy idea, [but it is] actually quite possible.

Q. Do big corporations need to drastically change their business models?

A. In industry after industry, corporations move too slowly. They don't go out of business, they just become less relevant because they are not where the growth is. So if you choose not to participate, you choose not to turn your company into software or replace jobs with software, you won't disappear overnight. A future growth [driver] will emerge and your company will not be part of it. Automakers and watchmakers have a difficult choice to make: they can't stop making cars or watches, that's their business today. At the same time, they see that the future is going to be all about software, and cars or watches will be less important, but they are not good at making software. They certainly aren't good enough to compete with Google or other software giants. Should that company embark on a rapid course of action and try to become a software developer or should they partner with Google? If you partner with Google, that's not a great strategy because look at what happened to the smartphone companies. All the companies that manufacture smartphones don't make much money on smartphones: Google literally commoditizes these companies because it sucks the value out of the device and into the network. This is a very difficult challenge for every company that manufactures products: they must become a software company. The question is do they build it themselves, do they buy a company or do they partner with a giant company like Google and become part of their ecosystem? All difficult choices.

Q. In your book you talk about companies that are threatened by demand destruction due to vaporization. Have you come across companies that have come back to relevance?

A. We often talk about how film companies Kodak and Panavision were crushed

by digital, but it turned out that those companies have enormous amounts of intellectual property, trademarks and technology for digital. Actually they have quite a lot of digital technology. They haven't done a very good job of using that, that's why they went bankrupt. But now those companies still exist and are leaders in their field. They found a niche where they can survive. Many companies do everything they can to preserve the past at the expense of the future. [They] would rather preserve their old business because they understand it well and it's profitable. But the world is changing. If they resist this change, they will be stuck with this ever dwindling business.

Q. What do you see emerging as the new sources of competitive advantage in this new world?

A. The companies that understand they have a proprietary data asset will [succeed]. What I mean by proprietary data asset is any information asset that grows. In the case of Facebook that's the social graph. There are many other companies that are mapping the world right now, they are building a location graph. Google has a tremendous knowledge about where people are surfing and where they going so they have the interest graph. Each company can thereby define a graph. The idea is that each business has at its core, a unit of information, a body of information. When we move business to the network, that information asset should grow if you design your business in the right way. That will emerge as the most important thing for that company over time: an information asset that continues to grow as more people and more devices are connected. Companies that don't rush to embrace often lose their information advantage and someone else comes and steals that from them. So one way to look at all the struggles that are happening around the world right now, is there's a battle happening for control of data assets. You see this when Google is confronted by the European government about privacy, or when Apple is confronted by the FBI about secrecy and security. Most companies do not understand how to manage or protect their data assets. The successful companies make [data protection] a priority.

Many companies do everything they can to preserve the past at the expense of the future

Q. So what do you think the Fortune 500 list will look like 20 years from now? What kind of companies will you see there and which ones would be gone?

A. Big automotive makers will be replaced by big companies that provide transportation as a service. Banks will be replaced by companies that provide automatic, secure transactions using the blockchain or something similar… Today the businesses of pharmaceutical companies is a bit like Hollywood: they spend lots of money making drugs and they hope that one becomes a big hit and they make billions of dollars. In the future, you will have customized medical treatment designed for your genome. It will be individualized healthcare. So pharmaceutical [companies will] shift from mass manufacturing drugs to more of a service delivery model that will be customized to individuals. The companies themselves may stay and remain successful, but they will change into software companies that provide digital services.

Q. What other areas will feel the impact?

A. Education will be delivered in software in the future and this bothers a lot of people who feel very sentimental about college education. It's obvious that most people in the world can't afford to go to a private college, most university systems [cannot] take in millions of new students. There has to be an alternative. Software delivery education is the reality today. It's not as good as college education, but remember these are early days. We have to educate a billion people a year, there's no way we can do that within campus. Robotics will shift so many people out of jobs, everyone will have to retrained. Every worker will have to reskill and retrain consistently. One of the things we will have to do is learn how to work with machines, robots and software automation.

If you think about all the really big industries in the world—healthcare, food supply, transportation, energy—all these enormous systems have been designed to serve human beings. That worked well for the last 200 years, but here's the question: if you can vaporize everything, the ultimate expression is to replace the human body by software. Can we replace the human body with software? It seems preposterous, yet there are scientists working right now to model the human brain and replicate the human being in software. Some scientists are working on whole brain emulation. Why? One, there are a lot of places we can't explore: in the depths of the ocean, inside volcanoes, deep inside the earth and also in space. Human beings can't survive in those environments, machines can. If we travel to other stars or planets, the only way that's going to happen is if we can replace the human body, because too much of the weight of spacecraft cargo is life support for human bodies.

Q. Is everything about this good?

A. There's always danger with technology. Technology always makes something that we are familiar with obsolete. You can think of it as super power: it introduces new powers that can be used for good or bad. We shouldn't judge the technology, it's really how it is used we should judge, that is a human decision. People are worried about artificial intelligence. This is silly. It's artificial intelligence that's poorly written, [that is used in] the wrong way by human beings, those are things we should be concerned with.

Journey to the West

China’s quest for a global audience

By Jocelyn Richards

Image by Beibei Nie

When the unabashedly loveable Po returned to star in the movie *Kung Fu Panda 3* this January, he proved once again that charming the toughest critics can come as easily as a bumbling ball of fur. The film has so far grossed $140 million at the box office globally, elevating the animated trilogy's total earnings to over half a billion dollars.

The colorful spectacle of pandas, martial arts and valiant heroes is, of course, far from the reality in China today, but the version of a Chinese fantasy world in which the *Kung Fu Panda* movies live has proved very appealing to audiences both in China and globally. Even so, the inspiration and execution are almost all non-China.

"The story, the soul of [*Kung Fu Panda*] is all Hollywood," says Yi Han, a film and television series director based in Beijing. "They've merely added Chinese cultural elements on the surface."

So why hasn't China produced something similar?

"Our method of storytelling isn't at the same level yet," Yi Han says.

According to Yi, screenwriters, directors and producers on the mainland still face immense challenges, including content restrictions and a preference for commercial potential over quality that attracts viewers but ultimately limits the depth and breadth of Chinese television and motion pictures.

As one of the more influential components of the so-called "soft power" push, China's film industry reflects the overall weak cultural impact of the whole. Even as economic ties multiply between China and the outside world, the flow of cultural exchange remains imbalanced. Chinese works, traditional or modern, consistently struggle to find the same acceptance abroad as Western works enjoy on the mainland.

This September, in what some see as evidence of the overseas potential of Chinese culture, the San Francisco Opera House will host the world premier of an opera based on *Dream of the Red Chamber*, one of China's four literary classics. Yet the production was initiated and is funded by the Chinese Heritage Foundation based in Minnesota, lacks direct ties to the Mainland and targets California's Chinese population rather than a wider audience.

Chinese theatre, such as Beijing Opera, can be difficult for Westerners to get into

"China's main markets are still in Asia and in the diasporas of places like the US, Canada and Australia," says Michael Keane, professor of Chinese Media and Cultural Studies at Curtin University in Australia.

The Middle Kingdom's limited influence overseas is ironically viewed by some as a by-product of its official efforts to become a 'great cultural power', pursued since 2007. According to Sinologist David Shambaugh, the Chinese government spends roughly $10 billion per year on "external propaganda," which pays for Confucius Institutes around the globe, *Xinhua* news agency and *China Central Television (CCTV)*, and showy international events such as the 2008 Beijing Olympic Games. The skeptics, at least, tend to be unswayed.

"Confucius Institutes have a government brand association," says Keane. "China has achieved a cultural presence globally through its government-supported initiative, but it has not achieved a reputation as an innovative or creative nation, which is what many aspire to."

Successes Past and Present

Still, while China today is praised for its creativity, it has exported a number of well-received artistic ventures over the past century.

In the 1930s, Peking opera legend Mei Lanfang toured the world, befriending celebrities like Charlie Chaplin and filling theaters from Moscow to New York. Twenty years later, Hong Kong's Bruce Lee lit up the big screens, leaving a legacy of martial arts films that left a lasting impression on the West. Xi'an-born director Zhang Yimou, too, has won numerous international awards for his critically acclaimed pictures *Red Sorghum* (1987) and *Hero* (2002).

More recently, the breadth of Chinese artistic success abroad has expanded, with interest settling on modern, outspoken works. In 2012, author Mo Yan won the Nobel Prize in Literature for his politically-charged novels and short stories. A state

writer, Mo enjoyed unique resources and artistic direction early on within the People's Liberation Army.

Other industries, too, are starting to exhibit evidence of Chinese aesthetics. The Metropolitan Museum of Art in New York's exhibition 'China: Through the Looking Glass', which explored Chinese influence on Western fashion, attracted a record 670,000 visitors last summer. On the high-fashion runways, China-born designers like Masha Ma, Uma Wang, Xander Zhou and Haizhen Wang are helping reshape the way Chinese fashion is seen around the world.

There are also signs that the Chinese Ministry of Culture is interested in expanding China's repertoire overseas. Alison Friedman, founder of Ping Pong Productions—the only foreign-run company in China organizing tours by Chinese acts in North America and Europe—says that in 2012 a Chinese cultural minster sponsored rock 'n' roll bands from Beijing to perform at a German music festival to prove China had rock stars too.

"I definitely see an increasing effort and desire from members of the Chinese government to show a 'contemporary' image of China on the world stage," she says. "You're starting to see certain individuals in key positions recognize that need and interest, and make efforts to act on it."

Hurdles on the Mainland

Even so, the scene at home is still encumbered by pursuit of profit, content restrictions and structural deficiencies. China's 30-year sprint towards economic prosperity has left a muddled, materialistic society in its wake, which many blame for stifling artistic development.

"There's a mentality problem these days, people will write anything if they can squeeze a quick profit," says Wang Xiangming, a theater director at the Chinese Air Force Political Department Repertory Theater in Beijing. "So there's a huge gap between the quality of Chinese and foreign plays…. Why would the West invite us to perform? It would be pointless."

And the risk aversion in terms of politics and profit favors tried-and-tested formats, with guaranteed viewers, over artistic innovation.

"If a screenwriter or director has a script that's not commercial, no one will even read it, much less invest in it," laments Yi, who recently won a Gold Remi Award for his film *The Rising Star Kindergarten* at the 2016 Worldfest-Houston International Film Festival. "Only a film that promises box office success will be shown in theaters... but China's commercial films are all garbage."

Profitability isn't the only reason for cookie-cutter productions—the censorship regime must be reckoned with.

"Chinese films suffer from government intervention and a lack of genre diversity and this impacts the confidence of writers, investors and producers," says Keane.

Films must be passed by regulators, and there is little room to change a script after approval by the State Administration of Press, Publication, Radio, Film and Television (SAPPRFT). Then there are various systemic deficiencies, including a lack of infrastructure and mature channels for artists to find support.

"China is in the transition process from a planned to a market economy," says Friedman. "Before, all arts troupes and venues were government-run. Now that many arts organizations are privatizing, they still lack sufficient producers, managers and arts administrators—the management talent infrastructure that is needed to bring these artists abroad."

Even in Asia, China's reach is limited. Japan and Korea sometimes borrow ancient Chinese legends and mythology, but rarely import the Mainland's finished products.

China, on the other hand, frequently takes from its more developed neighbors. In March, Tencent bought the rights to more than 300 Japanese anime franchises, and K-pop stars and Korean flicks huge popularity, with TV series like *My Love from the Star* and *The Heirs* garnering tens of millions of views per month.

All Eyes on the Emerald City

Money remains at the heart of China's soft power push abroad, whether it be government expenditures on publicity or tycoons buying film studios abroad.

The Dalian Wanda Group, China's largest commercial property company led by billionaire Wang Jianlin, has made massive investments into Hollywood including Legendary Entertainment, AMC Theatres and Carmike Cinemas and there is probably more to come. At home, the group has invested $8.2 billion in the construction of the nation's largest movie park in the northern city of Qingdao, scheduled to be completed in 2017.

"China is becoming the new Hollywood," veteran film producer James Schamus, who produced *Crouching Tiger, Hidden Dragon*, said at a press conference in Beijing in April.

While China has the financial resources, and is learning from the influx of creative personnel from Hong Kong and cooperation with international studios, it is still far from fulfilling its creative potential.

"What we need is time—not money," concludes Yi Han. "It's going to be a long process towards change."

Reading with a Mission

Colin Bogar shares his interest in reading for improvement

I generally read mostly business books, with the goal of retaining as much of the knowledge as possible. So when I read I take notes—I used to physically take notes, but now with my iPhone and Kindle I can export them. About eight years ago, I also started tracking the books I've read and set a goal for myself of one book every two weeks. I don't think I've ever met that goal, but I've been close most years.

Colin Bogar is the Chairman of the Shanghai Canadian Chamber of Commerce and the President of Property Passbook

The best book I've ever read about China is *China's Superbank*. For someone interested in finance or economics in China, this book fills in some missing pieces, or at least it did for me. I work in real estate, and sometimes on a development project I would find myself asking, "Where does all the funding for that subway line come from?" The book really makes clear how things like infrastructure construction get paid for in China, which is very different compared to the West.

Business Leadership in China by Frank Gallo is also great. When I first came to China about eight years ago, nobody sat me down and explained how things worked here, how Chinese office politics works and so on. There is a certain amount of learning you have to do, and this book can help new people coming into the country prepare themselves for the inevitable culture clash.

For more strictly business books, *Crossing the Chasm*, by Geoffrey Moore is a must read, a classic from the early 1990s. It's a book on how to launch new products. It was written about hardware, but I think it can be applied to any B2C business. Essentially it stresses the concept that you really need to focus on a niche, but a niche that can grow bigger.

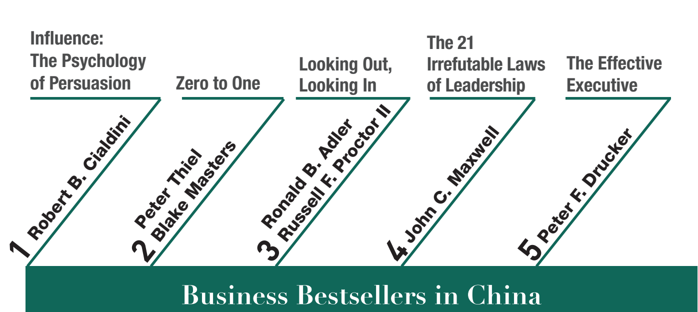
Simon Sinek's *Start with Why* is a business book that can be applied to parts of life beyond business. The lesson is the importance of working for something you believe in. When you really have the mission, if you really believe that you will go to the moon, and that's why you exist, the likelihood that you are going to achieve that mission and attract others to join you on your mission is much, much higher.

Other tech business books I like are John Mullins and Randy Komisar's *Getting to Plan B*, which I think is the Old Testament to *The Lean Startup*'s New Testament. *Zero to One* is also great. Peter Thiel has a very dogmatic view on the world, that there are winners and losers. Whether you agree with him or not, his strong opinions are good thinking material. Another favorite of mine is *Hooked: How to Build Habit-Forming Products*, by Nir Eyal and Ryan Hoover. It's written from the positive standpoint of how to build a product that people love to use, but you of course can't help but read it and feel manipulated by Facebook and other popular apps you use. It makes you see your connected life a bit differently.

Beyond business books, I really like biographies. Andre Agassi's autobiography *Open* is one that I really like. Often people are not willing to be that honest, but Agassi wrote about the darkest parts of his life, including his drug use on tour. It humanized him. Other biographies to mention are *The Snowball* about Warren Buffet, *Steve Jobs* and *Elon Musk*. I also have to recommend *The Short and Tragic Life of Robert Peace* by Jeff Hobbs. It's about a young black kid who makes it from the streets of Newark to Yale, where he was roommates with Hobbs, only to die in a drug-related murder back home in Newark 10 years later. It's a tragic story, but gripping.

My last recommendation, one that I've read twice, is *Getting Things Done*, by David Allen. It's a boring read, but it will teach you a lot about how to manage your time. Some of the ideas it suggests might be a little old-fashioned, but it's essential for anyone looking to be more productive.

Source: Amazon.com



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