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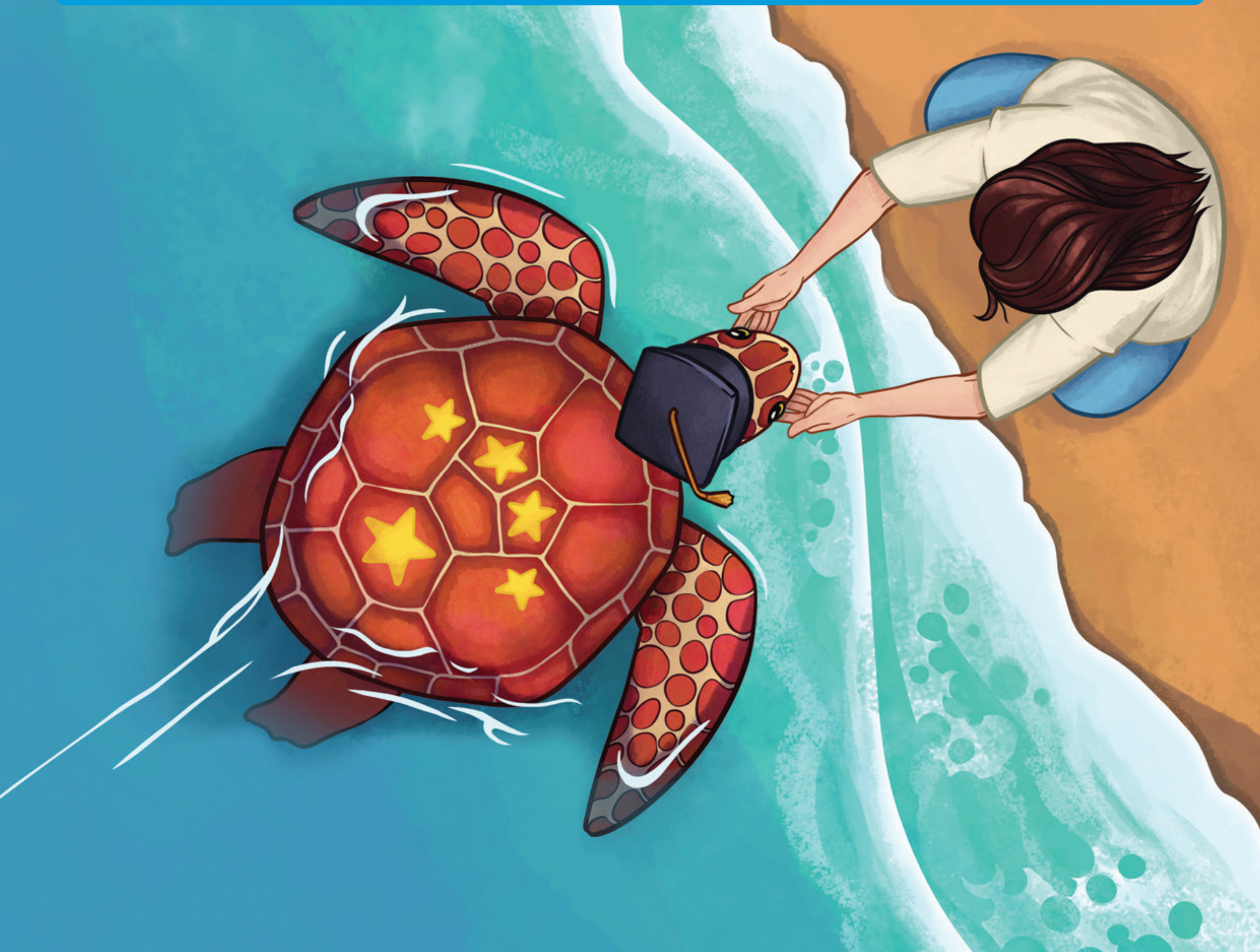

# CHINA'S GOT TALENT

**The ranks of returnees to China, commonly known as sea turtles, are swelling, but they face an increasingly saturated domestic job market**

- There are a number of governance challenges in the new digital world
- Michael Spence on the development of strategic competition and its potential benefits
- China's luxury market is increasingly catering to a younger demographic

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**Editor-in-Chief**
Zhou Li

**Managing Editor**
Patrick Body

**Executive Editors**
Cathy Chen
Albert Lam

**Design**
Jason Wong

**Cover**
José Luna

**Produced By**
SinoMedia

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CKGSB GLOBAL LIMITED
Suite 3203, 32/F, Champion Tower,
3 Garden Road,
Central, Hong Kong

For Letters to the Editor or reprint requests, please contact:
ckgsb.knowledge@ckgsb.edu.cn



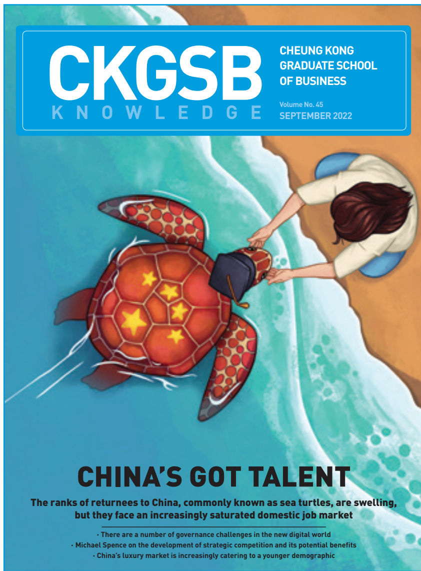






# Sticking Together

Solutions to intercultural or inter-country disputes have historically been reached through dialogue, diplomacy, war, education and trade, among many other things. But in recent years, thanks to increased digitalization and the explosion of data around the world, this is changing, and many areas of global development, such as information transfer and communications, have seen vast improvements in efficiency.




Digitalization is not a panacea for the world's problems however. At each level of governance, regional, national and corporate, there needs to be serious consideration of the growing number of problems caused by the digital world, and how these align with the politics and relationships of the physical world. We look at potential approaches to solving these problems in this issue's commentary, "**The splintered digital world needs to be reconnected**" on page 6.

One of the key factors in encouraging positive relationships between countries is person-to-person interaction, something that often includes the pursuit of education in a foreign country. Since the 1980s, China has strongly encouraged its citizens to attend foreign schools and universities, with many Chinese choosing to stay in their newfound homes. However, due to a rise in geopolitical tensions, anti-Asian sentiment and COVID-related restrictions there has been a rapid increase in the number of overseas graduates, commonly referred to as sea turtles, returning to China. What kind of future awaits them in China? We discuss this further in our cover story "**China's got talent**" on page 9.

As some may already know, China has the fastest growing luxury market in the world, and with that growth comes a shift away from traditional consumer demographics. A new generation of affluent young people are turning to luxury and luxury-lite products to feel good, ingratiate themselves with others or to get noticed. And brands are responding. There has been an explosion of domestic streetwear brands seeking to compete in the luxury-lite space, while the ever-dominant international luxury houses are also responding, utilizing things like collaborations with esports teams to access this new market. We take a deeper look in "**Diamonds are forever**" on page 17.

In this issue, we are lucky to be joined by Nobel Prize-winning economist Michael Spence, who discusses the escalating competition between China and the US, and the impact that this has on economic and technological progress around the world (page 14).

Elsewhere, we have the final installment of our digitalization series, looking at the adoption of technology by China's businesses (page 41). We hope you have enjoyed our in-depth reports on how digitalization is impacting various industry sectors in China.

We also look at a topic that concerns everyone in the post-COVID world: China's centrality to global shipping and supply chains and the impact the country's COVID-related restrictions have had (page 28). Another topic making waves globally is the rise of non-fungible tokens (NFTs). In China the NFT market is evolving a little differently, and we show you how (page 61). Complementing this piece we have an interview with Carson Sun, CEO of Lululand, a business that operates almost entirely within the metaverse. He enlightens us to the realities of just how this is possible (page 49).

We hope you find the topics addressed in this issue to be exciting and illuminating at this time of great change. As always, if you have any comments or opinions to contribute, please feel free to contact us at (lzhou@ckgsb.edu.cn or ckgsb.knowledge@ckgsb.edu.cn).

Yours Sincerely,

Zhou Li
Assistant Dean, CKGSB
Editor-in-Chief, *CKGSB Knowledge*

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

COMMENTARY

# The Splintered Digital World Needs to be Reconnected

**Digitalization is inevitable and with it comes a host of issues that need to be addressed at global, regional, national and business levels, just as in the real world**

***Zhou Li, Assistant Dean of the Cheung Kong Graduate School of Business, Editor-in-Chief of CKGSB Knowledge***

*All commentaries reflect the personal opinion of the author and are not necessarily the official position of the school and the magazine*

Over the past five issues of our magazine, we have run a series on the rapid digitalization of different aspects of China's economy. From this, it is clear that China is at the leading edge of technological adoption and the global race into the digital future. In this global digital future, however, there is a growing risk of a disconnect, as there is in the physical world, between the major economies, particularly China and the US, and their associated spheres of influence. Ironically, this comes at a time when digital technology has made connection easier than ever before.

As our series draws to a close, it feels pertinent to reflect on the challenges and opportunities that digitalization has created at all levels, from the global level, right down to individual businesses, and what we can do to maintain connections and bridge gaps regardless.

## Global choices

As it stands, the digital world has become something of a US and China duopoly. But unfortunately the relationship between these two digital powers is becoming increasingly hostile, with developments that are reminiscent of the first Cold War becoming more common place. This is evidenced by the ramping-up of the tech war, which has affected Chinese companies such as Huawei and ZTE, with a digital arms race now taking place in the form of sanctions on chips, 5G implementation and AI capabilities, among other things. The recent implementation of the US CHIPS act, another effort to boost America's competitiveness driven by concern over China's technological advances, is emblematic of the shift by the US, China and other countries, toward keeping technology production domestic.

The actions taken by the two countries may be effective at their own national levels, but they also risk creating blockages to market-related international data and technology transfer, encouraging nations to build stronger—and higher—walls.

What is really required to move the world forward into a unified digital future, is a multilateral global governance system that overseas greater interchange of data and the technologies supporting them between nations. Here, there is an opportunity for an organization such as the WTO to help develop a new system, based on the same free-trade principles it has employed since its inception.

Providing such a governance system for the digital economy would also present an opportunity to conduct necessary changes at institutions such as the United Nations and WTO. Organizations which successfully facilitated the last round of economic globalization after the Cold War ended in the 1990s. But they have in recent years, been struggling to maintain as productive a role, and require some fundamental changes in order to be relevant and efficient in an increasingly digitalized world.

The question that really needs to be answered is how to get the US and China to cooperate digitally to solve major global issues. Climate change requires a collaborative approach, so do pandemics, as does the future of space. There needs to be greater openness and exchange of data between countries and regions, and less hoarding and data siloes at the national level.

### Regional integration

On a regional level, Asia is at the forefront of the digital revolution thanks to a lack of the legacy issues that hold back the more developed economies. People in Asia are more open to e-commerce and this has facilitated the rapid expansion of mobile payments, which in the West still lag behind cash, credit and debit cards. Additionally, outside of Japan, Asian countries are seemingly more willing to give up some level of data privacy in return for the opportunities that digital technologies offer. The fast-developing economies of Asia, including India and Indonesia, provide a very strong foundation for faster growth of the digital economy.

While many parts of the world are now having to choose a side between China and the US, signs of hope may be found in Southeast Asia. Countries such as Singapore and Indonesia are championing digital integration amid threats of “bifurcation” in global technology, with a Singaporean minister recently saying, “instead of technology bifurcation, we are actually seeking to have more interoperable systems and standards.”

So far, the digital economy in Southeast Asia has been developing independently of geopolitical tensions between China and the US. Some of the region’s major digital companies, such as Gojek, an Indonesian unicorn, have even been able to raise capital from both US- and China-based venture capital firms.

> **The question that really needs to be answered is how to get the US and China to cooperate digitally to solve major global issues ”**

We certainly hope that Southeast Asia remains a region in which the digital economy continues to leverage the best from the world’s two largest economies and elsewhere. If successful, the region will demonstrate that the best way of moving up the global data value chain is to pursue your own development and avoid simply becoming a data source for some of the large global digital platforms and US- and China-based tech companies.

Given the opportunities presented by the digital economy, many policymakers across the Indo-Pacific region have already pushed to make sure that trade agreements include high-standard digital provisions. The Regional Comprehensive Economic Partnership (RCEP) and Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) both contain chapters on e-commerce, with the latter agreement being considerably more substantive on digital issues.

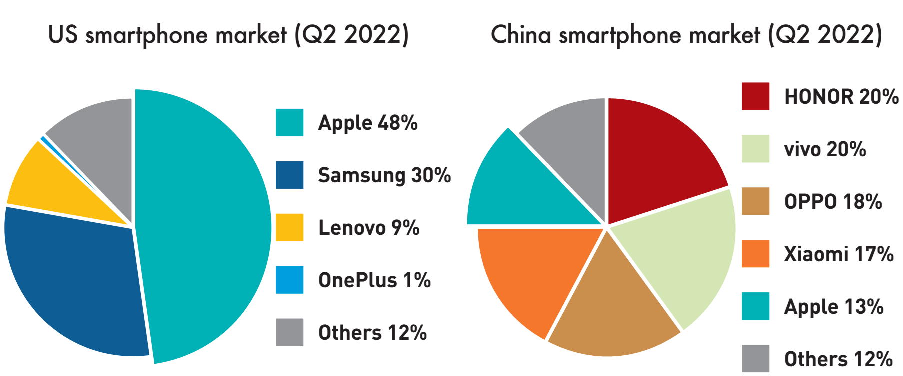
### National priorities

The role of governments in leading the digitalization process is an important one, and in many Asian countries, in particular China and South Korea, the government takes a more proactive role with good results. It is important for governments to have clear goals for digitalization as part of their national industrial strategy, related tax incentives for businesses, cutting-edge infrastructure such as fiber, and a greater focus on digitalization and STEM subjects in education and training.

The US government is becoming more active with regard to its own industrial policy, focusing particularly on AI and semiconductors. But for now, China holds an advantage over almost any other country in terms of its national digital

## CONNECTION PROBLEMS

Apple’s share of the US and China smartphone markets demonstrates the increasing digital divide

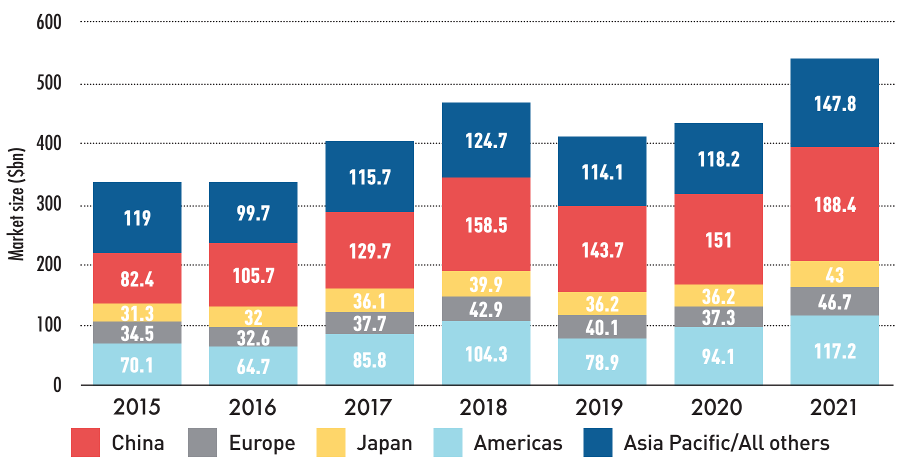



Source: Counterpoint

## SHARING CHIPS

Semiconductors are becoming an increasingly divisive technology, with many countries racing to secure their supply

Semiconductor sales worldwide




Sources: Statista

infrastructure. Internet access is virtually ubiquitous, 5G infrastructure is nationwide and technological adoption is the rule now for just about all businesses and individuals. China's development of the digital RMB is also a promising step towards national digitalization. Another advantage that China's unified domestic market has, is that it is large and multidimensional, better reflecting the new era of internet thinking, and an approach where all opportunities can conceivably be interconnected.

But while centralized guidance has helped China to get to where it is today, it has not all been plain sailing. The development of the country's semiconductor industry, for example, has been riddled with scandals, corruption and lots of wasted money, suggesting there is potential for a greater balance between a hands-on government approach and a more decentralized approach.

It is interesting to observe that the US has now come up with its own industrial policies specifically aimed at more effectively competing against China. As the White House stated bluntly, the CHIPS and Science Act will lower costs, create jobs, strengthen supply chains, and "counter China." But the lesson of globalization over the last 30 years has been that specialization within a country, which leads to lower costs and higher efficiency, can provide major benefits to all, as long as that country is an active part of the global system.

### Corporate quandaries

By definition, multinational corporations (MNCs) work across borders and that also applies to their digital operations. An increasingly divided digital world poses a real threat to a great number of businesses straddling the partition.

MNCs from China and the US need to be prepared to deal with a duplication of rule sets, policies and technical standards in order to stay up-to-date and relevant in all territories. Clearly, those who have already seen success in multiple markets will have a greater chance of coming out on top in the long run, but for companies yet to graduate to MNC status, it will become increasingly more difficult. What is clear however, is that all companies, new or old, will have to pay a higher price to meet the two sets of standards and acquire the requisite technologies for each market. This will certainly prove to be a drawback based on the world's recent experiences with the COVID-19 pandemic and subsequently the threat of hyper inflation.

Another problem shared by both China and the US is the threat that digitalization poses to small businesses. Large companies, especially large state-owned enterprises (SOEs) in China, which already have sufficient data and the funds to invest into digital development, tend to reach critical mass, pushing out SMEs which simply cannot compete. There is a winner-takes-all mentality present. China's recent crackdown on the tech industry has had a marked impact on this phenomenon, and while it may have gone too far in some areas, at least action has been taken at a critical time for shaping digital governance.

### The big questions

The new digital age is going to change everything, but not necessarily all for the worse. Historically, economies have been limited by supply, but data is limitless, and with a limitless supply comes limitless opportunity. A world with no shortages, properly governed, should surely be a significant improvement over what we have today.

The transformation brought about by the first Industrial Revolution encouraged many new ways of thinking. Of particular relevance here are theories of the "economic man," of rationality and self-interest, and what this means for people themselves.

Now, the current digital revolution calls for possibly even broader and deeper thinking about us as human beings, raising a series of interlinked philosophical questions. What is the role of humanity when almost everything is digitalized? How can digitalized products nourish our spiritual side as well as our material side? And by adding a digital identity to almost everyone and everything, how will our relationships with others and our environment change?

Instead of undertaking an arms race to accumulate digital power, China and the US should shift their focus to a more constructive competition and collaboration to address all the current global challenges. Preventing climate change, pandemics and new wars, especially nuclear conflicts, should be of the highest priority for both sides.

# CHINA'S GOT TALENT

**A greater proportion of Chinese students studying abroad are returning home, but how will they fare in a saturated job market?**

By Mable-Ann Chang

Image by José Luna

# Job opportunities, higher salaries and favorable government policies are contributing to the growing wave of Chinese returnees

When Yang Yuming left China for London in 2016, she was filled with excitement about starting a new chapter in her life studying marketing, with the intention of joining a corporate, very likely in Britain. But just over four years later, she was on a flight back home—for good.

She is just one of many Chinese people who went abroad to study with the original intention of building a life in another country but decided, largely due to a lack of job opportunities and later, COVID, to return. "I had a few good friends and felt quite settled in my life in London, but the job search was brutal," says Yang. "I received rejection after rejection, if they even responded to me at all."

After the pandemic left the world scrambling in early 2020, Yang's family expressed fear over the rising number of COVID-19 cases in the United Kingdom and urged their daughter to come home.

"I had been searching for a job for around five months at that stage and was feeling disheartened," says Yang. "And when COVID-19 hit, I felt like it was a sign that I needed to return home. Before the pandemic, I had heard from old classmates that some had already returned to China and secured entry-level jobs. I remember wondering if it would be possible for me too."

Although some of the best and brightest still choose to stay away, the promise of returning home is tantalizing for many international students, not just Chinese. And while the job market in China is becoming increasingly competitive, growing salaries, proximity to supply chains and family, and the pandemic have all made China a very attractive option for those that can return home.

## Back and forth

As China's economy has developed over the past 40 years, so has talent flow between China and the rest of the world. Many of those leaving China go abroad to study in the hopes of widening their social network, gaining foreign work experience and benefiting from intercultural experiences.

"Studying is the best way to invest in human capital," says Bingqin Li, professor at the Social Policy Research Centre of the University of New South Wales. "Chinese families and students regard education as a long-term investment. Besides gaining knowledge and skills, students say that studying abroad can increase their language skills and intercultural experience, and help them become open-minded and global citizens. Those students could also establish global social networks, which could be quite beneficial for their careers in the long term."

A staggering 6.56 million Chinese students studied abroad between 1978 and 2019, and a total of 4.9 million of them finished their studies, with 4.23 million of them returning to China. These post-study returnees are commonly referred to in China as *haigui*, or sea turtles, and the rate of return has been increasing in recent years. In 2001, just 14% of students who studied abroad returned, but since 2013, at least four out of five graduates have opted to come back.

"The starting point would be in 1978 when China's 'Reform and Opening Up' period began," says Li Sun, Sociology and Social Policy professor at Leeds University. "At that time, the Chinese leadership encouraged citizens to go abroad for training and education. Back then, a minimal percentage of people returned after studying overseas, which led to a brain drain. But by 2017 and 2018, the return rate had reached 78.5%."

There are also a smaller number students that choose to stay on after graduation. Often motivated by high salaries, potentially better working conditions and access to top-tier technologies and resources.

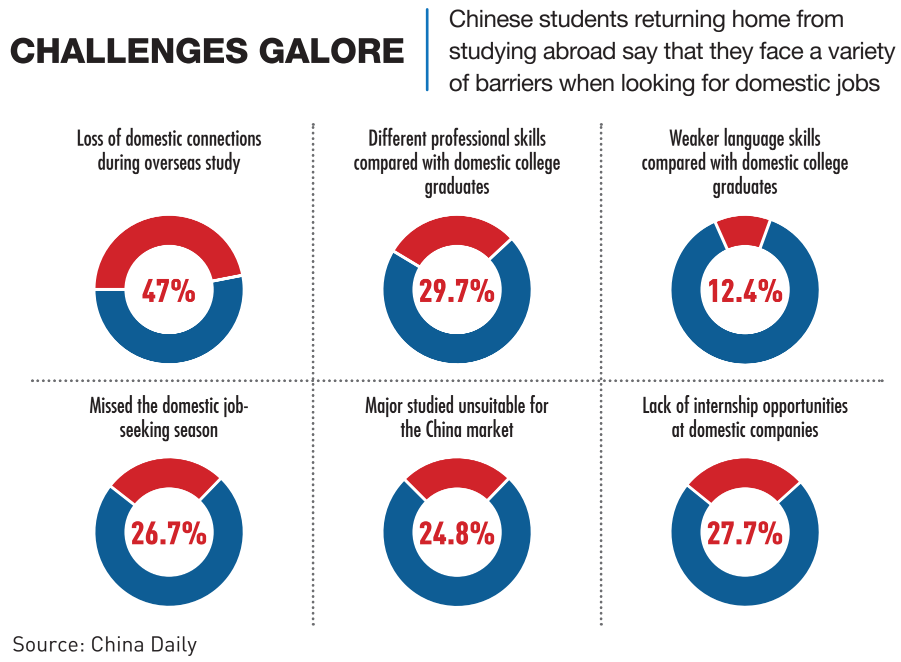
## Making waves

Returnees contribute to China's growth in many fields, particularly science, health, finance and education. They tend to maintain their networks abroad, keep up to date with global developments and integrate their skills learned in other countries with their work in China. In the education sector, 78% of the presidents, 635 Ph.D. advisors in Chinese universities and 72% of directors of critical laboratories at the national and provincial levels are returnees, according to Ministry of Education statistics.

In the social sciences and business, returnees have introduced new management concepts, pushed for education reforms and introduced new values to the workplace, while numerous others have become entrepreneurs and created their own startups.

Many of the enterprises started by Chinese returnees are in the high-tech sector or high-end services, leading to a boom in innovation and business expansion in China in recent years, with over 260 returnee entrepreneurial startup parks set up all over China.

"Many young Chinese people return and become entrepreneurs," says Li. "There has also been greater interest in doing so outside of the coastal megacities, which helps develop inland economies."




## Hi, *haigui!*

"My parents had a difficult time making their mind up to send me away, partially because of the financial burden," says Charissa Zheng, a 28-year-old content producer for a business accelerator in Shanghai. "But I insisted because I wanted to experience a different culture and an overseas education."

Zheng is a fairly typical *haigui*. She comes from a middle-class family that could just about afford the costs of an international education for their only child. She studied at New York University and then went on to do a Master's at Georgetown University, staying in the US for a total of eight years.

The reasons she gives for coming back home in 2020 are also echoed by many of China's returnees. "I think it was about 50% because of COVID," says Zheng. "I lost the job I had an offer for because of the virus, my visa was running out and my insurance had already run out, so it felt like the right time to return home."

Personal preferences and an increasingly unwelcoming environment also played a role. "I don't like to settle down anywhere for too long," adds Zheng. "But I was also starting to feel less safe, even in New York, which is fairly liberal. There was a growing amount of anti-Asian hate going around. I was worried I might not see my parents again."

Since her return to China she has held several different roles, ending up in her current job and is pleased with the outcome. "I didn't like my first few jobs back here," she says. "But I've ended up in a role I like, working with people I like. I'd definitely say I'm happy that I'm back."

There are also many notable names in the ranks of successful *haigui*, particularly in China's tech sector. Xiaohongshu, a Chinese social media and e-commerce app that helps its users shop internationally, was co-founded by Stanford MBA graduate and returnee Charlwin Mao. China's largest travel service provider, Trip.com Group, was also co-founded by returnee James Liang (author of the article on page 46). And perhaps the most notable tech executive that fits the *haigui* moniker is Li Yanhong, co-founder and CEO of Baidu, China's Google, who studied for a master's degree in computer science at the State University of New York.

Beyond the tech sector, some *haigui* have made forays into businesses far away from the corporate comforts of the West. Song Yiyuan, after studying and working in France as a translator, returned home to look after her mother. Then, in 2012, she decided to take the leap and set up an eco-farm, Huangzhou Guosheng Ecological Agriculture Development, that sells a variety of environmentally-conscious fresh produce and poultry across China.

For Song, the draw of China's natural environment trumped the amenities of the city, despite the lower potential for profits. "In a bustling city, the fast-paced life allows people to learn the skills of modern society, but misses the most authentic parts of life," says Song. "I understand that profit is limited when making and selling healthy ingredients, but I love this business and promoting the ideas around it."

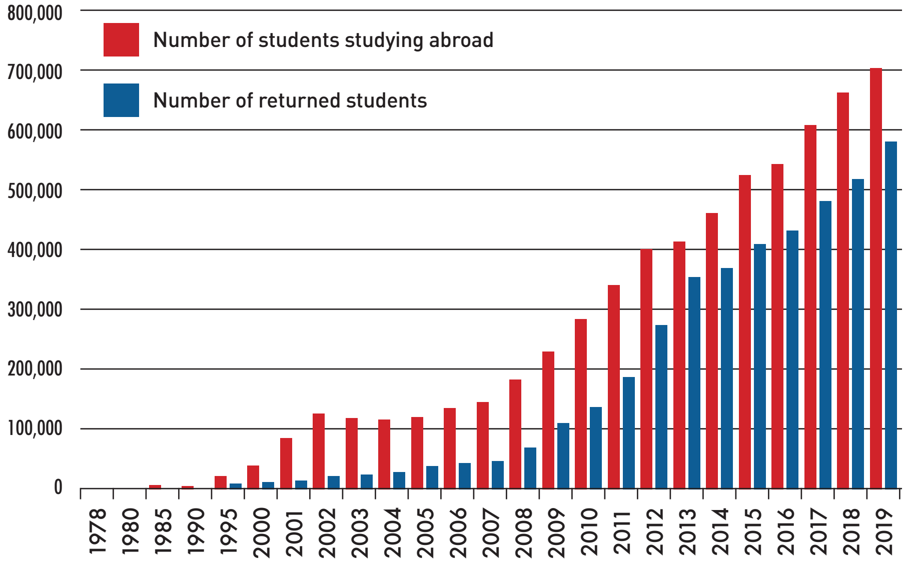
## High tide

Over 80% of Chinese students studying abroad between 2016 and 2019 have returned to China after graduating, according to the Ministry of Education. Many intended to come back immediately, while others only reluctantly joined the tide of returnees after deliberating their options, or failing to get a job and a residence permit.

Various factors contribute to the fresh wave of *haigui*. They include better job opportunities, more favorable government policies and growing salaries. China-based engineers are now earning 70-80% of their US counterparts' salaries, meaning that such positions are becoming increasingly competitive in terms of income.

## HOMEWARD BOUND

The percentage of Chinese students studying abroad who have subsequently returned home has increased over the years




Source: China National Bureau of Statistics

"In academics, we talk about the push and pull model to look at such issues," says Sun. "A push factor would be that it's tough to secure visas like the H-1B in the US. Pull factors include higher salaries in China compared to the US. Now that China is a middle-income country, quality of life can be better than in other countries."

Proximity to other businesses and supply chains is another reason for returnees to choose home, particularly in the tech sector. Much of the basic hardware used in Silicon Valley originates from manufacturing hubs such as Shenzhen, so for tech entrepreneurs it means significant amounts of time saved, simply through geographical convenience.

Peter Arkell, managing director of Carrington Day, an HR firm focusing on the China market, sees the relative level of opportunity as the most significant factor in decision-making. "Talent flows to where opportunity exists," he says. "There's a lot of opportunity in China. If you understand all the advantages of working and living in China and have a background of value, then that's why you come back here. People should always play to their strengths."

Others come back for family reasons. "Due to the one-child policy, many people feel obligated to return to China to look after their aging parents," says Li.

In efforts to prevent brain drain, the Chinese government has spent significant resources since the early 2000s to entice back Chinese-born graduates in finance, science and technology by offering ample research funds, expedited access to multiple-year residence permits and tax breaks to attract top researchers from China and other countries through talent programs.

Using these incentives, the government has run a series of "Thousand Talent Programs" aimed at attracting both returnees and foreign experts. The programs also provide a one-time bonus of RMB 1 million ($157,000), significant resources for academic and research exchange, and assistance with housing and transportation costs.

But there are also many factors affecting Chinese people living abroad that are encouraging the return of *haigui*. The pandemic has had a major impact over the last two years, with many Chinese parents originally urging their children to return to the relative safety of zero-COVID China.

"My parents were definitely scared for me in the UK," says Yang Yuming. "They told me that I needed to come home."

While in the US, where there were around 120,000 Chinese students in STEM programs in April 2021, up from 30,000 in 2005, the anti-China rhetoric and related policies introduced by Donald Trump during his tenure as US President were making those Chinese still in the country less likely to stay. Trump's promotion of COVID-19 being the "China virus" has exacerbated anti-Chinese racism, and attacks against Asian-Americans have risen around the US.

The US advocacy group Stop AAPI Hate said it received over 9,000 reports of hate incidents directed at Asian Americans and Pacific Islanders across America between March 2020 and June 2021.

US officials also fear that some students are moonlighting as "collectors" of intellectual property for the CCP, according to the Center for Security and Emerging Technology. The US blacklisted 60 Chinese companies in 2021 for their alleged support for China's military and audit violations.

### Feeling the ripples

But, the Chinese job market has its issues and returning graduates are entering a saturated market. The unemployment rate for those aged 16 to 24 was 19.9% as of July 2022, far above the national urban jobless rate of 5.6%, according to the National Bureau of Statistics.

With millions of domestic graduates joining the job market each year, young people face exceptionally high competition for jobs. A record 9.09 million graduates entered the workforce in 2021. The year before, just 11.86 million new urban jobs were created.

The country's once bustling tech sector is no exception. Over the past year, China's once overworked but well-compensated tech workers have seen an erosion of office perks, job cuts, headcount freezes and stalling or falling pay. Trouble at smaller, unprofitable companies gradually expanded to highly profitable groups including social media group Tencent and e-commerce leader Alibaba.

But it appears that returnees are somewhat bucking that trend. According to leading career platform Zhaopin, about 42% of overseas returnees have been able to find jobs within one month after returning to China. But whether *haigui* have an edge over students who studied domestically depends on the university that the student attended in China.

"It really depends on which domestic university students went to," says Sun. "If they attended a Project 985 university [the 39 most elite universities in China], then some HR people would likely choose them over a student who studied at a lower-ranking foreign university. But if the domestic graduate went to a regular university, HR people would likely prefer the student with international experience."

Charissa Zheng certainly found this to be the case. "Given my educational background, it's not that hard to find a job," she says. "The real challenge was finding a job I was satisfied with."

Even though salaries for Chinese jobs are becoming increasingly competitive, it does not necessarily mean that returnees are completely happy with the salaries they're being offered. Zhaopin reports that around 80% of overseas returnees were unsatisfied with their salaries. Among them, 49% of those surveyed said their salaries were below expectations, and 31% said their salaries were far below expectations.

"My parents said that if I stayed in America, I'd earn much more money, and that was true," says Zheng. "But I'd also be a small fish in a big pond. There is so much talent there and the growth opportunities there are so much more limited than in China, or even other emerging markets in Asia. Personal and professional development is definitely faster here."

In an attempt to offset finance issues, some cities and provinces have sought to attract returning talent by offering preferential policies and loans to start businesses. The eastern province of Zhejiang once offered enterprising graduates the opportunity to borrow up to RMB 500,000 ($78,900) to start a business in the province. And even if the company failed, the government offered to help pay for at least 80% of the loan.

> **Talent flows to where opportunity exists, and there is a lot of opportunity in China**
>
> Peter Arkell
> Managing Director
> Carrington Day

## Good work

Interestingly, while the majority of students are now heading back to China, those with higher-level qualifications such as PhDs are trending differently, with around 80% of Chinese PhD students in the US opting to stay there after graduation. A 2019 study conducted by US-based think tank Macro Polo found that three-quarters of the world's top Chinese-born AI researchers were working outside of China, with the vast majority being in the United States. In fact, US universities and companies hosted more than twice as many top Chinese AI researchers than their Chinese counterparts did.

The positive contributions of Chinese emigrants to business and academia worldwide are clearly evident. From biotech innovation to the Belt and Road Initiative (BRI), Chinese talent has been involved in helping to build and shape many global industries into what they are today.

According to research conducted by the School of Global Policy and Strategy at UC-San Diego, Chinese scientists are among the most important collaborators with the United States. Chinese inventors were responsible for at least 11.1% of biotech patents in 2019 alone, with over 70% of those patents assigned to US companies.

There are of course many other ways in which Chinese emigrants add to the economies of their new homes, but these often go unmeasured. "There is not enough data on Chinese emigrants' contributions to the world, even though they have contributed to the global economy for decades," says Sun.

## Swimming home

The benefits of attracting talent are abundantly clear, but bringing people into the job market is not something that happens passively. "The US has obviously benefited from brain gain, in particular of Chinese minds," says Sun. "But we are seeing China introduce more and more talent policies, so we will likely see more people returning home."

Today, the choice to go abroad is still an appealing one for many Chinese. "Even though knowledge sharing can be done online now, Chinese students will still want to go and study abroad after the pandemic, as it's about the experience," says Li. "But when it comes to choosing where to stay, it's down to where people feel there are the most opportunities and prospects, and the possibility of a suitable lifestyle for them and their families."

And even though the increasingly saturated job market in China poses an issue, most Chinese with overseas education qualifications maintain a competitive edge in the market, and for them, there should be more opportunities and prospects at home.

"I am now working for a small marketing company in Shanghai," says Yang. "Even though we've sometimes had to work from home due to spikes in COVID-19 infections, I'm happy to have my job. I haven't given up on my dream to gain some work experience abroad, but in practical terms, I know that staying here and climbing the ladder in my industry would be the smartest thing to do."

# Competition for good

Nobel Prize-winning economist Michael Spence discusses the development of strategic competition and the benefits it can bring

The relationship between China and the United States in particular is becoming increasingly strained, and signs of a potential decoupling are now ubiquitous. The competition between the two countries, both economic and strategic, has escalated in recent years and taken on greater technological characteristics than ever before.

Nobel Prize-winning economist Michael Spence, believes that if the US and China fight a zero-sum battle for long-term technological dominance, they will both fail, impeding technological progress and economic growth everywhere. They are far better off striving to reach or remain at the frontier of innovation, without preventing others from challenging them.

***Q. How do you view globalization and the relationship between China and the West in the global economic system?***

A. I believe we are in a transition away from globalization, the end point of which we don't know. Both China and the West are aiming to have something more complex, a balance between strategic cooperation and strategic competition, meaning the world will become more fragmented as countries create barriers, such as dual-use technologies, which have military implications, and place increased emphasis on national security issues. A lot of governments and businesses are also talking about diversification now, which means creating a different way of organizing global supply chains than is currently the case. Both China and Western governments understand that the cost of isolation is extremely high and that an economy can't perform anywhere near its full potential if it's isolated from the global economy and global technology systems. There is the risk that the world will break up into groups in something like a new Cold War, but I think that's unlikely because of the economic consequences.

***Q. How would you define strategic competition in terms of the US-China relationship and how does it differ from standard economic competition?***

A. Strategic competition in the modern world has a technological theme. China is now a first-class technological power, and this fundamentally changes the global economy. Strategic competition now consists of competition to be at the frontier of technology and governments, China in particular, is now focusing on this. The Made in China 2025 documents are a good example.

Until recently, the United States was the premier technological power together with Europe, South Korea and Japan. China now has also reached this point through both its extraordinary growth and its investments in people, science and technology. Although each have their own advantages, I think on balance we're in a situation where the United States and China are competing to be at the technological frontier, which is not necessarily a bad thing.

In terms of the overall global effect of a strategic competition between China and the United States, the focus is more on technological breakthroughs rather than retaining intellectual property, partially because the part of the global system that develops new technologies doesn't have a lot of seriously proprietary stuff, so it's quite open to exchanges and leaks. Europe is also aiming to play a more important role in the future, and other countries will also benefit as they develop. This will benefit the world in general, provided the US and China don't attempt to block the flow of technology.

***Q. To what extent do leaders both in China and the West view economic competition as a "zero-sum" game? And what would be your view?***

A. My view is it's not a zero-sum game, and I think that leaders in all countries understand that too. The exception is with technology related to defense and national security. National security is significant, but developing technology and not sharing it wouldn't be an effective way to operate. Additionally, it would be close to impossible for the West to hold China back in terms of technological development. Defense-related policies which limit global dispersion are standard government practice across time and nothing unusual or new, so governments should try to keep such policies at a minimum. Sensible leaders regardless of nationality understand that being dynamic is key to advancing in technology, and although opposing beliefs are now rife, the mutual benefits of cooperation will win out.

***Q. Do you think there is any prospect of an international organization being able to agree on rules and data management that would be accepted by all major global players?***

A. I think it would be highly desirable to have a global institution specializing in digital security, but national priorities will have to dominate. There are already agreements with respect to nuclear, biological and chemical weapons and this needs to be extended to cyber weapons. It's especially important as our societies are digitalizing rapidly and as such, these weapons are becoming increasingly destructive.

***Q. China's common prosperity policy is targeted at a more equal distribution of wealth and influence within the country, a topic also widely discussed within the US. To what extent can the US learn from China in this area?***

A. China has produced an enormously impressive model of growth which was in important respects inclusive, and as a result there are tens of millions of new middle-class consumers in China today. China has illustrated something that the West should pay attention to, if not everybody is benefiting all the time, it's okay because somebody always gets rich first. In America, people are less comfortable with the resulting economic, political and social polarization which makes good governance very difficult.

I think the main focus should be on two things. Firstly, what Americans call equality of opportunity, that's the core. You want the next generation, whatever their abilities and preferences, to have roughly the same opportunity as the last.

Secondly, they need to strengthen critical services. Education, health and various social security systems should be delivered to the entire population at a high quality. In America, we now

**Michael Spence is a Canadian-American economist who was the co-recipient of the 2001 Nobel Prize in Economics. He is now a professor of economics and business at the Stern School of Business at New York University and a professor of management at the Stanford Graduate School of Business.**

## China is now a first-class technological power, and this fundamentally changes the global economy

have a government that takes this issue seriously, but if you try to implement such a policy with redistribution, you're only utilizing the demand side. Such a focus will obviously result in barriers on the supply side. So the main lesson the US can learn from China is that despite good intentions, achieving the right kind of equality will be undermined by blockages on the supply side of the economy.

***Q. The Belt and Road Initiative (BRI) has now been underway for several years. How would you assess the initiative's progress? Where has it succeeded and where has it faced difficulties?***

A. The BRI is important and it's a very large initiative with a huge global reach, particularly westward into Eurasia. However, when you're negotiating with countries whose negotiating capacity is less than yours, unfair deals will occur. Some arrangements as part of the BRI have happened this way, but I believe this is part of a global learning curve. I think China's intentions generally are to promote growth and development in parts of the world that are far behind. China will become both a friend and an influential player in this process, which is perfectly legitimate. The United States and the West may start investing more heavily in some of these countries as well, or develop an entirely separate supply chain.

> The main lesson the US can learn from China is that despite good intentions, achieving the right kind of equality will be undermined by blockages on the supply side of the economy

***Q. What areas of common ground are there that China and the West can build upon?***

A. There is an enormous amount of common ground. The obvious topic which requires a united world effort is climate change and sustainability. The world needs technology to flow without barriers because to deal with a big challenge like the climate, we need to minimize handicaps. If we don't, the result will be duplicate efforts and slow progress in developing green technology. The inclusiveness agenda is another area of common interest. China talks about common prosperity and the West has a significant problem with rising income inequality and declining wealth. Thirdly, regulating new technology to maximize benefits and minimize the risks from data security, privacy and cybersecurity is very important. In these new technological fields, there's a lot of space for experimentation and learning from peers.

***Q. If you look at it from the perspective of 10 years from now, what will the long-term effects of the pandemic be?***

A. In the short run, it will slow down the Chinese economy. It has also created a greater desire for a new policy as the COVID-zero approach eventually starts to hurt in terms of the economy. Already China has lifted some of its blockages both to the domestic economy and the international economy. However, supply chain congestion won't go away anytime soon because it's not entirely related to the pandemic.

***Q. You have previously said that the world is experiencing four major structural transformations: the multidimensional digital revolution; the push for clean energy and environmental sustainability; major breakthroughs in biomedical science and biology; and the rise of Asia. How successful has international collaboration/competition been in advancing these areas and how could it be improved?***

A. I stand by that, but in addition I would add two more factors. I have recently been studying aging populations and debt levels. Currently 75% of the world's population will soon be living in societies in which the ratio of working people is dangerously low. Debt levels are also at historic highs which makes a society far more prone to shocks such as COVID-19. These two issues will require a lot of policy makers' attention and creative thinking. Right now, we have an explosion of entrepreneurism, which policymakers would be wise to draw on as a source of creative solutions.

President Biden and Xi Jinping have said they are committed to jointly addressing global issues such as climate change and sustainability, and the consensus of policymakers is that this cooperation is critical. Biomedicals is also an area in which there is a huge amount of cooperation.

*Interview by Patrick Body*

# DIAMONDS ARE FOREVER

## Shifting demographics within China's luxury market offer new opportunities for local and international brands

By Patrick Body

Photographer: Mo Gu Model: Yang Xiaomie

## Chinese brands are becoming more prevalent within the Chinese luxury space, particularly in the "luxury-lite" category

A mass of twenty-somethings gathered for the finals of the 2020 League of Legends World Championship in Shanghai—the largest esports competition in the world, but unlike their brethren elsewhere in the world, this crowd of gaming aficionados had ditched their jeans and t-shirts in favor of high-end designer products.

Many of them were wearing items from a collaboration between League of Legends and Louis Vuitton, designed specifically for the World Championship—the collaboration also included a travel case for the trophy. The finals crowd was emblematic of the rising importance of a new demographic in the luxury space in China: the affluent young.

"I bought some of the items from the collaboration even though I couldn't get tickets to the finals," says Justin Jia, a 25-year-old interior designer and League of Legends fan. "The team I support was in the finals and I wanted to remember the event. I can't really wear the team jersey in everyday life, but I love wearing the clothes from the collection."

The nature of luxury in China is changing and demographics within the market have started to shift. Fueled by the growth of the country's middle-class, the increasing desire of younger buyers to stand out from their peers and rapid digitalization, China's is maintaining its position as the fastest-growing luxury market in the world. Last year the market was worth $74.4 billion and is only behind the Americas in terms of total value.

"There have been a lot of changes in the luxury market over the past 20 years," says Denis Cheng, Greater China Consumer Industries Leader at EY. "Being able to afford luxury goods is still a sign of social class in China, but what is new is that we can see that global luxury brands are increasingly targeting the younger generations in China."

### Business before pleasure

China only accounted for 1% of worldwide luxury goods spending in 1999, but the country's entry into the World Trade Organization and its subsequent meteoric economic rise has brought with it an increased appetite for the ability to display that wealth through designer purchases. China had a 20% share of the global luxury goods market in 2020 and despite a slight dip in growth in the second half of 2021, it now has a 21% share and is predicted to reach 40% by 2025, with spending around $192 billion per year.

Online store sales increased last year by around 56%, faster than offline stores which have traditionally been the primary distribution channel for luxury goods—over 150 global luxury brands opened flagship stores on e-commerce platform Tmall.

"Online sales have increased dramatically," says EY's Cheng. "But also, local duty-free in China gained more of a share compared to overseas markets and a lot of the global brands are still opening new stores in China but they are targeting second-tier cities."

According to research by McKinsey, the market is split into three major consumer groups by age. The biggest group, accounting for 41% of total luxury spending in 2019, consists of those born in the 1980s who are now at the peak of their earning ability. Those born between 1965 and 1979 made up a further 26% of spending, but the vanguard of China's luxury goods market now are digitally-minded consumers born after 1990, who account for a quarter of spending.

"The bulk of the growth is driven today by younger consumers living in the heart of the country," says Luca Solca, Senior Research Analyst in Global Luxury Goods at Bernstein. "This is a significant development compared to the early years when penetration would just reach the coastal cities."

The McKinsey research also identified several groups of consumers, including people who stress the brand name: those who buy luxury goods for status, richer consumers looking for sophisticated purchases, and a growing group that shops for what's new rather than specific branded products.

Jane Li, a 33-year-old marketing director from Shanghai, and an avid luxury consumer, is one of the latter. "I'm not necessarily looking for things that are trendy right now," she says. "I'm trying to find something new or different."

The same goes for Jacob Deng, a teacher originally from Hangzhou. "I usually go for what I like and what I think looks good, rather than going straight for a big-name brand," he says.

## House rules

In general, the Chinese luxury market is still dominated by established international brand groups such as LVMH—which owns Louis Vuitton, Bulgari and Dior—Richemont, Kering and Hermès. "It's pretty clear who is the dominant group in terms of the traditional aspects of luxury," says James Roy, Director at Agility Research & Strategy, a Singapore-headquartered luxury consulting company. "If we're talking fashion, jewelry or accessories, these traditional categories have been and continue to be dominated by the major international luxury houses."

There are few recognizable Chinese brand names in the upper echelons of the market. Hong Kong-based Chow Tai Fook is a well-known jewelry seller but would not necessarily be considered a luxury brand and famous names like fashion house Shanghai Tang are associated with China, but are owned by the big Western luxury houses.

There have also been a few purchases of Western brands by Chinese companies, for example the originally London-based Aquascutum and the Greek Folli Follie, but generally there are still few major competitors to Western dominance.

But the definition of what constitutes luxury in China is shifting. "Consumers have become more sophisticated and fragmented into many different groups," says Luca Solca. "We should not speak of the Chinese market, but rather the Chinese 'markets': high-end, entry-price, young, middle-aged, etc."

One such market, "luxury-lite," is growing increasingly popular in the country and is where some domestic brands are making their presence felt. The category consists of fashionable consumer goods, placed somewhere between luxury goods and ordinary consumer goods, with a high-end quality but at a more affordable price.

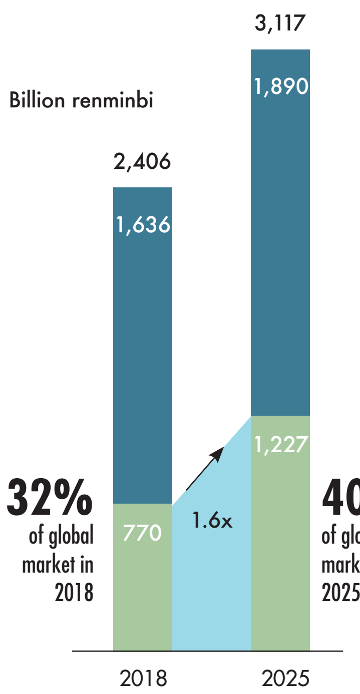
One example is the sportswear brand Li-Ning, which would not traditionally be considered luxury, but some of its products, such as its $255 Way of Wade 9 sneakers, appeal to the young and wealthy Chinese shoppers who are increasingly setting the agenda for luxury brands in China. Locally-designed streetwear brands such as DOE, AnKoRau and Roaring Wild have also experienced growth through the emergence of luxury-lite.

"Low-cost designer brands, particularly the local ones, have really grown in popularity over the last five years," says Jojo Jiao, co-founder of Wuxi-based multi-brand fashion boutique Mushion. "Especially through things like Shanghai Fashion Week, the local designer brands become more well-known and desirable, especially among young people."

China has also historically been home to a sprawling market of counterfeit luxury goods—in 2016 Mainland China and Hong Kong accounted for around 80% of global counterfeit goods seizures. For many, the occasional $500-$1,000 quality counterfeit is significantly more affordable than a $15,000 Louis Vuitton. The Chinese government has introduced various e-commerce liability and IP-related laws over the past three years to curb the flow of fake goods within the market.

## LIVING LARGE

Chinese consumers' spending on luxury goods will continue to grow




Source: McKinsey

## The lap of luxury

Over the last two years, several sectors of China's economy, including property, gaming and education, have experienced upheavals due to major regulatory changes. But the luxury market, bolstered by an uptick in demand from this new, younger market segment, has continued to thrive, as it often does.

"As long as the economy kept growing, the spending and luxury sentiment stayed strong," says Rupert Hoogewerf, chairman of the Hurun Report, a research, media and investments group and a professor in practice at Durham University.

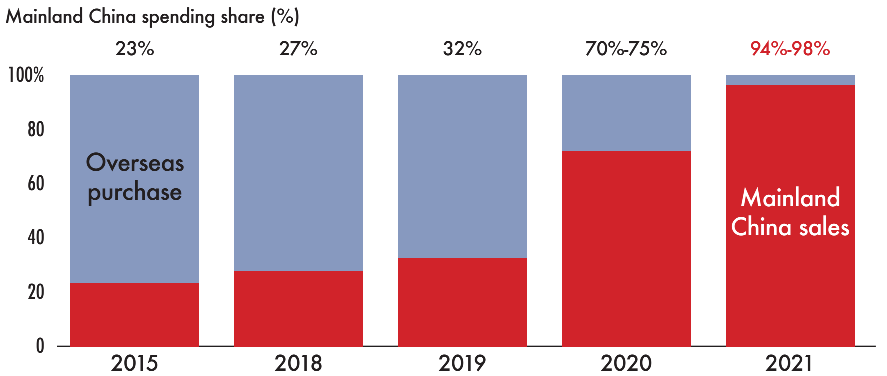
China's luxury market fared better than most during the 2008 global financial crisis, thanks to an enormous economic stimulus package maintaining consumer confidence and driving continued spending. The market's next major challenge came in 2013 when the government introduced an anti-graft campaign against Communist Party officials, banning the use of state money on luxury goods and the acceptance of designer gifts.

"Gifting luxury goods had to be rethought, and that was a shift that needed to happen," says Hoogewerf. "I think the major brands took it in their stride and didn't lose much growth because of it. Most of them had a plan of action on how to deal with it as they'd already been through the same shift in several other countries over the years."

With the advent of the COVID-19 pandemic, many sectors felt the impact of reduced spending on growth, but despite a short-lived blip at the start of 2020 and another slight fall with the recurrence of cases in recent months, the Chinese luxury market has gone from strength to strength.

Consumers limited by travel restrictions

**HOME ECONOMICS** | Luxury purchases by Chinese consumers are increasingly taking place at home




Source: Bain & Co

are now spending their disposable income that would previously have been spent on holidays or luxury goods abroad, at home, denting the prospects of foreign markets that had come to rely on Chinese tourists. Two years ago, there was a clear pricing gap between particularly Europe and China, in many cases due to the high taxes on products in China, but the gap is shrinking, particularly with the growth of duty-free areas in China's southern Hainan province. In 2021, 95% of duty-free sales in Hainan were for personal luxury goods, and the province's duty-free sales as a whole made up 13% of the total RMB 471 billion ($73.98 billion) across the country, according to research by Bain & Co.

"The inland duty-free sales in Hainan are showing that there are more Chinese staying in China and spending on luxury goods," says Denis Cheng. "There is a strong demand in the country."

The custom of younger consumers, along with the continued growth of luxury shopping via digital channels has also driven the market through the pandemic.

"Social media platforms have become the most important forum for brands to meet with consumers, while WeChat has become the primary vehicle for customer relationship management activities," says Luca Solca. "Digital distribution has also helped to reach consumers further away from physical stores."

As of 2022, the newest obstacle for the market are the calls for common prosperity, and what this redistribution of wealth will mean. But given the market's history and consistently positive predictions by analysts, and the fact that it seems to be aimed more at wasteful spending by the rich rather than at the affluent young demographic, the outlook seems good.

"Common prosperity has had some impact on purchasing behavior," says Cheng. "But it has moslty just shifted the reasons why people buy luxury goods. We have gone back to basics and things are now purchased based more on personal needs and satisfaction."

> High-end goods in China are performing really strongly at the moment. The creation of new wealth and a desire for quality has driven demand in many luxury sectors
>
> Rupert Hoogewerf
> Chairman
> Hurun Report

## Young money

Young, affluent urbanites are buying more and brands are responding by offering new products and conducting collaborations that cater to the younger buyers' less-traditional luxury tastes.

Collaborations with game companies and esports organizations are a big draw for China's young consumers and can offer excellent value for the brands themselves. The traditional perception of the esports audience would be that it is a small group of teenage males, but this is far from the case in China. The country's esports audience was estimated in 2020 at 162.6 million, 45% of whom were aged between 25-34 and 39% of whom are female.

Esports teams have large Chinese followings and brands can utilize this like they would any key opinion leader (KOL) for marketing. Branded sponsorships have proven successful, with an Estée Lauder male skincare product, Lab Series, sponsoring China's IG Digital Gaming League. Product collaborations have also been a hit, MAC released an exclusive makeup collection in conjunction with the massive mobile game Honor of Kings (HoK), which sold out in seconds. And brands are looking to enter these digital worlds, too, with UK-based designer brand Burberry signing a deal with Tencent to place its products within the HoK world itself.

"It is pretty remarkable to see these brands engage in games," says James Roy. "They're usually viewed as being quite serious and distant from the everyday, so to use this sort of virtual platform to engage directly with younger consumers is not something that would have been an obvious move. But it is a very direct route to get into these younger consumers' lives and their consciousness."

And it's not just those that play the games that are affected. "Even a few of my friends who don't play games have bought something from gaming collaborations," says Justin Jia. "They bought it because so many people were talking about it, so I guess there was something of a peer pressure effect too."

The digitalization of the luxury industry has been a key player in brands adapting to consumers' needs. While shopping malls across China are still dominated by high-end brand stores, and there has been an increase in multi-brand boutiques such as Mushion, digital traffic has been increasing. Tmall's record increase in luxury brand online stores last year shows the importance of online retail and social media is well understood by the dynasties.

"People of all ages are always on social media in China, so you have to go where people are," says James Roy. "Online information sources are a key part of their consumer journey, even though they might still buy things in person. Luxury brands are highly involved at all of the different stages of the journey, whether through official accounts or KOLs and celebrity endorsements."

But the allure of the luxury shopping experience will always remain. "I've always found things online first, usually through social media," says Jacob Deng. "I don't really buy anything online, though. When I'm spending that much money I want to be sure that it fits properly, but I also like the feeling of being looked after that you get from going to luxury shops or boutiques."

## Fool's gold

While Western luxury brands are demonstrating a strong understanding of the desires and requirements of the Chinese consumer through collaborations and digital outreach, some brands have fallen afoul of certain cultural nuances.

Perhaps the most egregious was a 2018 advertising campaign launched by Italian luxury fashion brand Dolce & Gabbana to promote their Shanghai fashion show.

> **What is new is that we can see that global luxury brands are increasingly targeting the younger generations in China**
>
> Denis Cheng
> Greater China Consumer Industries Leader
> EY

The adverts featured a Chinese woman in a D&G dress attempting to eat various Western foods with chopsticks. Many saw this, and some other parts of the video, as explicit racism and criticized it as such.

The problem didn't end here, though, with screenshots of Instagram messages from Stefano Gabbana appearing to call China a "country of [five poop emojis]" and "ignorant dirty smelling mafia." The screenshots went viral on Chinese social media, resulting in the cancellation of the Shanghai show and the removal of D&G from e-commerce platforms run by Tencent and Alibaba, among others. Dolce & Gabbana's sales have since rebounded by 20% year-on-year in 2021 but they remain behind many competitors.

"I definitely bought into the hype of being offended back then," says Jane Li. "It made a lot of the trope of Chinese people being useless and not understanding foreign cultures or how to eat foreign food."

And Chinese netizens do not have short memories, with many criticizing Hong Kong pop singer Karen Mok for wearing a D&G cloak in a 2021 music video, citing the previous advertising campaign.

Burberry has also faced criticism in China for its 2019 Chinese New Year advertising campaign that many saw as depressing and missing the point of the celebration. Italian luxury fashion label Versace also got into trouble with China for geopolitical references on a t-shirt that listed several place names and their corresponding countries.

## All the rage

Rising from 1% of the world's luxury spend to being the second-largest market in the world in just over 20 years is no mean feat, and that has been driven by the desire of a number of young and middle-class Chinese to enjoy and flaunt their new prosperity.

"High-end goods in China are performing really strongly at the moment," says Rupert Hoogewerf. "The creation of new wealth and a desire for quality has driven demand in many luxury sectors."

The established luxury houses of the West have dominated in these decades of stratospheric growth, and while the consumer demographics within China and their corresponding tastes are shifting, it seems that they are well prepared to stay on top of the market.

But an expanding market can always provide more gaps to fill and the redefinition of luxury into several diversified markets offers an opportunity for Chinese wannabe luxury brands to grow and try and compete with the big guns. The only question is how far they will be able to go.

"There is no doubt that the market will continue to grow," says James Roy. "But I do believe that there will be more local 'affordable luxury brands' in China. They are still small compared to the global brands, but the market is evolving and all of them have the goal to one day become one of those global players."

# No Cash in Hand

## Testing of China's new digital RMB is well underway, but it may have difficulty beating out the competition

By Ouyang Hui, Distinguished Dean's Chair in Finance, CKGSB, and
Weili Wu, Associate Professor of Finance, Central University of Finance and Economics

On January 5, 2022, the pilot version of the People's Bank of China's (PBoC) digital RMB app was released for download. After only two days, almost 50 platforms, including e-commerce giants Tmall and JD.com, were already providing access to the digital currency system as a form of payment.

According to the PBoC, the main goal of the digital currency is to meet the country's future domestic retail sales needs. But the digital RMB will have to beat out the well-established competition, Alipay and WeChat Pay, which already occupy the domestic retail space.

### Digital dabbling

The PBoC began its research and feasibility studies into a digital currency as early as 2014. After several years of development pushed forward by Facebook's announcement of their digital currency Libra in 2016, a "closed-loop test" of China's digital RMB was launched in September 2019, with simulations involving a number of commercial and non-government payment options. Then in August 2020, China's digital RMB underwent a soft launch in 10 major cities across the country, including Shenzhen, Chengdu and Suzhou.

In March 2021, all six major state-owned banks launched and began promoting digital RMB wallets, and in May of the same year a foreign bank, the China subsidiary of Germany's Commerzbank became the seventh commercial bank to participate in public testing. Following this, the PBoC issued a White Paper to clarify the basic functions and purpose of the digital RMB, explaining the development background, target vision, design framework and relevant policy considerations of the new system.

### The digital RMB

The PBoC White Paper made it clear that the digital RMB is legal tender issued by the central bank, and has the same basic functions as any form of money such as a measure of value and a medium of exchange. Aside from transfers being digital, the management mechanism for its issuance and circulation is the same as that of physical RMB, and it remains a liability of the Central bank to the public, backed by the credit of the state.

Secondly, the digital RMB runs on a two-tier operation model. The PBoC is responsible for issuing the currency to commercial banks as designated operators and for managing its entire life cycle. At the same time, these designated operators and related commercial institutions are responsible for providing digital RMB exchange and circulation services to the public.

Third, the digital RMB is primarily positioned as a cash-based payment certificate and will co-exist with the physical RMB over the long term. The digital RMB will be issued in parallel with the physical RMB, and the PBoC will count and manage both together, and as long as there is a demand for physical RMB, the PBoC will continue its supply.

As the digital RMB is primarily used to meet domestic retail payment needs, it should be issued to the public and used for daily transactions in order to reduce transaction costs across society.

Finally, commercial banks and licensed non-bank payment institutions can participate in the digital RMB payment service system and provide related services. But while WeChat Pay, Alipay and other third-party payment wallets and the digital RMB were both developed electronically with the help of Big Data, they differ in that WeChat Pay and Alipay are "wallets" and should be considered as accounts, whereas the digital RMB is "money" or "tokens" inside such accounts. At present, third-party payment wallets mainly function using money held in a customer's bank account, whereas the digital RMB will appear as a separate option in the "wallet."

## Tough Competition

The retail payment sector in China is already extremely competitive and an effective rollout of the digital RMB will face many hurdles. Currently, the two most successful payment platforms in the sector—WeChat Pay and Alipay—have been able to dominate due both to the convenience and security they ensure.

Most individual users of WeChat Pay and Alipay hold their liquid assets in money market funds. Through the apps, users can make payments directly using money market fund shares, greatly enhancing the efficiency of the payment process. Also, WeChat is the most frequently used social networking app in China and many people conduct transactions through WeChat every day, which leads to a large pool of funds being deposited in the collective WeChat wallet. If WeChat users choose to withdraw funds from their wallet, there is a very small fee.

Additionally, for a payment platform to occupy a share in the retail payment space, it must be supported by a large number of vendors. For example, due to the overwhelming dominance of its app Taobao in the early days of the e-commerce sector, Alipay occupied a large share of third-party payments for a long time.

Payment software also needs to provide additional functions to be accepted by users, as few people are willing to open a new app simply for payment. The average time a mobile phone user in China spends on WeChat per day is as high as four hours, so when it comes to paying, it is already a habit to open the app, or the app may even be open already.

## Trying to catch up

For the digital RMB to dominate the retail payment space, reaching the same level of convenience as the two major payment platforms is a necessary condition, and the digital currency still has a long way to go. Digital RMB wallets have not yet been seamlessly integrated with money funds, so from the perspective of financial asset allocation, holding digital RMB is equivalent to holding cash and has a zero return.

Also, even if digital RMB wallets are connected to money market funds, it will be difficult to offer the same level of user experience as WeChat Pay and Alipay. Money funds cannot be redeemed during non-trading hours, but even during non-trading hours, WeChat Pay and Alipay users can still make payments with the assets within the market funds. Digital RMB adopts a pay-as-you-settle model, which means that during non-trading hours, users cannot make payments using their assets in the main fund, making it less convenient currently.

The lack of social attributes of digital RMB wallets and the lack of public interest in digital RMB also make it difficult for digital RMB-specific wallets to become a natural gathering place for funds. There are now so many apps on the market that the real estate on a person's phone screen is increasingly sought-after. This means that users are much more likely to use WeChat and Alipay to pay, as they're on the home screen and often used.

The digital RMB does not yet cover most payment scenarios either, but this is not a difficult problem to solve. Merchants cannot refuse to accept the digital RMB due to its fiat currency status, so the core of the digital RMB rollout is encouraging consumers to use it. But at the moment, in terms of convenience, there is no advantage to be gained from using digital RMB wallets over WeChat Pay and Alipay. Therefore, in terms of convenience alone, few customers will actively choose a digital RMB wallet as their primary payment tool.

Digital RMB wallets can be embedded with WeChat Pay and Alipay, but this will have little tangible effect. The financial institutions that partner with Alipay and WeChat Pay are simply sources of funds that are used when making payments, and the digital RMB will likely become the same, rather than being a transactional channel in and of itself. This would mean that the payment function—scanning a QR code—would likely remain the same.

As part of the initial digital RMB trial, users were given a sum of the currency in order to test it. But since there is currently no real benefit or need to hold digital RMB, by the time customers have spent their existing digital RMB, there will not be much incentive for customers to convert

> **The tremendous advances in electronic payments in China over the past few years have been achieved precisely because of fierce competition among private enterprises**

> For the digital RMB to dominate the retail payment space, reaching the same level of convenience as the two major payment platforms is a necessary condition, and the digital currency still has a long way to go

further assets into digital RMB. So even if it had the same functionality as WeChat Pay or Alipay, it would still not be able to maintain a large number of active users.

## Prospects

The digital RMB has some unique advantages over current payment platforms, but it seems unlikely that these will help it become a mainstream retail payment tool.

The controlled anonymity of the digital RMB allows for better privacy protection, but there are few scenarios in the retail payment space where users need to consider such issues. Food, clothing, housing and transportation transactions will not motivate users to sacrifice convenience for privacy protection.

The digital RMB is reimbursed by a national credit guarantee and is more secure than other forms of payment. However, there are also no obvious gaps in the security of existing third-party payment platforms, and there are few, if any, incidents where users have had their money stolen from third-party payment platforms.

There is also functionality that allows for dual offline payments—where both the paying and receiving device are not connected to the internet—and this is indeed a useful feature, especially in remote areas, or in times of natural disaster. But the problem is that these payment scenarios are inherently unlikely, and the vast majority of use cases do not require dual offline payments. More critically, users are unlikely to have large stores of digital RMB, so by the time they do need to make such a payment, they may not have enough to do so.

The cost of withdrawing digital RMB is zero and this is an improvement on third-party payment platforms, but we need to note that unless the supply of goods or services is a monopoly, the choice of means of payment is usually determined by the payer, with the convenience of the payer being the first priority for the recipient. For example, for payments made with credit cards, banks charge merchants a fee, but this fee is all borne by the merchant, who is willing to do so for the convenience of their customers.

## Promotion questions

One issue that needs to be clarified in the promotion of the digital RMB is whether it will be market-based or administrative. If it is market-based, the current domestic retail payment demand is already largely met by the existing payment system. Promoting the digital RMB through marketization would mean a significant upfront capital investment and the risk of failure. Historical experience shows that governments struggle to outperform the private sector, so the digital RMB may not win that competition.

But if the currency is promoted administratively, then the problem is much simpler. All that is required is to mandate all third-party payment platforms to give up their payment channels and replace them with digital RMB. The problem faced in this scenario would be how to compensate the third-party payment platforms. There are no fees charged for digital RMB payment channels, so there is no way to compensate platforms unless the government subsidizes them.

In addition, the amount and number of retail payments made in China each year is astronomical. To build such a system requires a large amount of upfront investment as well as investment in maintenance later on, and if there is no fee for digital RMB, where will this capital investment come from?

## Does it add up?

As social needs and science and technology evolve, payment systems need to be constantly updated. If payment systems are built entirely by the central bank, then slower technological iteration and missed development may be the result. It is important to understand that a government department, even if it has the resources, cannot outperform the entire market.

The tremendous advances in electronic payments in China over the past few years have been achieved precisely because of fierce competition among private enterprises. Once the competitive pressure disappears, the incentive to innovate will also disappear.

Overall, the digital RMB, as a public service product, should first be considered for its positioning and value before it is rolled out on a large scale. Like all profit-oriented businesses, it is important to first do market research to determine that there is a real market need for a product or service before rolling it out. It needs to be clear who the digital RMB is intended to serve and what features or experiences it can provide to users that the existing financial system cannot.

Although public services are not necessarily profit-oriented, their social benefits must still outweigh their costs for them to be meaningful. According to our analysis, the digital RMB will only provide users with a better experience than existing payment instruments in certain, very specific scenarios. Policymakers need to think through whether it is worthwhile to introduce such a tool for such a very small probability of use.

# The Importance of Specifics

Dan Wang, Technology Analyst at Gavekal Dragonomics, discusses the changes in China's tech industry and the prospects for China-US economic cooperation

While the traditional drivers of the Chinese economy, such as the property sector, are looking increasingly shaky, the country's tech sector continues to be a major area of positive development. At the same time, some tech companies have not been immune to the negative impact of changes to both regulation and expectations on their role in society. The most prominent example is ride-hailing firm Didi's forced delisting from the NYSE and the subsequent $1.2 billion fine imposed on it for misuse of data.

In this interview, Dan Wang, Technology Analyst at Gavekal Dragonomics, discusses the guiding ideas behind China's recent regulatory changes, the lack of nuance in the often-used term "tech crackdown" and the benefits and drawbacks of the ever-greater integration of technology in our lives.

***Q. "Tech crackdown" is a term often used to describe the regulatory changes and ideological shifts that took place in China last year. How accurate do you think the term is in describing what happened?***

A. I certainly push back against the premise that there is any sort of a generalized crackdown on technology. I think the term has been confused, in part because Silicon Valley has done a splendid job of marketing itself as the next wave of technology. Going from semiconductors to telecommunications to the internet might seem like a natural path, but I think it is a bit of a departure from working in science-based industries, like chips and telecommunications, and aviation before that.

Also, a lot of these consumer internet companies that felt most of the effects of the changes are not necessarily very R&D focused or doing a lot of science-based research. They are superb at business model innovation, as well as exploiting network effects, but I don't think that they are necessarily at the peak of technological progress in things such as chemicals or high-end manufacturing or ICT goods.

In addition, we know that the Chinese leadership has spoken at length about the importance of science and technology. We see Chinese leader Xi talk a lot about having some sort of sovereignty in R&D. Talking about breaking foreign controls over what are called "chokepoint" technologies [those that are dominated by one or a handful of companies in other countries]. And so, while the country's leadership has been talking much more about science and technology, and has been cracking down more on social problems, I don't think it is a generalized technology crackdown.

***Q. How does Beijing's approach to regulating Big Tech differ from that of the US and other Western countries? And what are the advantages and disadvantages of China's approach?***

A. The speed and the severity of Beijing's crackdown, I think, would not occur in the US. We know that the US, Europe and China have pretty much identical concerns around Big Tech: that there are too many of these big platforms that may be clogging up

**Dan Wang is a Technology Analyst at Gavekal Dragonomics. He is also a contributor to *Bloomberg Opinion* and writes a highly-regarded annual newsletter that covers China, technology, culture and philosophy**

economic activity for smaller firms, that they have far too much data and that they may be abusing their market position. And so these are, I think, fairly common concerns across these three jurisdictions. But we also know that Europe and especially the US have really dragged their feet in implementing serious regulations against these big firms. It has mostly been slaps on the wrist in the form of fines.

So I think the jury is still out, and it's too soon to say whether China's approach is correct. But, these three jurisdictions have the same questions, and China, because of the nature of its system, is able to move much more quickly without generating a lot of pushback from these companies.

***Q. How would you describe the position of Big Tech in China compared to two years ago and what effect is this having on China's technological aspirations?***

A. Certainly [the standing of Big Tech is] much reduced in China, but also in the US. In the US, it would now be unusual for any US president to visit a large tech company in the way that President Obama visited Google and Facebook. At this point, it is also quite unlikely to see Xi Jinping interact in a friendly way with any major tech company in the way that he used to. And so I think in both countries, there is much less love for these major consumer internet platforms and a much greater recognition that they have only generated a lot of benefits for a relatively small amount of tech employees, as well as for investors. And then, even though many of them are making the consumer experience so much better, the sum of promises of incredible productivity, great gains, as well as moving us into the future look a little bit more distant today.

> China certainly keeps the domestic population happy with cultural products, but I think it is very striking that it has failed to create new things that the rest of the world really enjoys

***Q. There has been a rapid integration of technology into all aspects of our lives, especially in China. To what extent is this a positive thing, both culturally and in terms of economic growth?***

A. It's a little bit hard to say whether it is good culturally. For example, I'm not a big fan of short videos on things like TikTok, but who am I to say that this is not a fairly positive new cultural creation? And I think, economically, the case that best shows how important these consumer internet platforms are was made during the pandemic. In the early months of 2020, those who were able to work remotely needed to go on video conferences. We could order groceries online, and children also started to do their schooling digitally. These things are all fairly positive.

We can also tell a story of consumer internet platforms really bringing smaller manufacturers into the market: their being able to sell on Taobao is a good example. But I think I am a little bit reluctant to endorse the entire consumer internet platforms economy as a major economic benefit, because a lot of the products around, let's say, short videos, new art forms or video games, do not obviously seem to increase economic activity very substantially. So a lot of these companies are making very good products to help entertain us, and to give us more consumption options, but I'm not sure that they are necessarily very important in terms of boosting economic activity.

***Q. To what extent do you agree with the notion of a decoupling between China and the Western world?***

A. I think a lot of people would situate the start of decoupling to be China's ban on Google and Facebook and not letting Twitter in a decade ago. It really accelerated under the Trump administration, when the US government weaponized its dominance in semiconductor technologies to try to set back the advances in Chinese capabilities, especially with firms like Huawei, as well as SMIC.

The world today is much more decoupled and I think that is not likely to shift in a new direction anytime soon.

***Q. To what extent has China's regulation of various areas of the tech sector been rules-based, or is it more bureaucratic whim?***

A. I think it is not based on either whim or very clear legal rules, but it has to do with the political direction of the country set down by the top leadership. There are a few slogans that the leadership has really rallied around over the last two years, and I think these ideological drivers do a pretty substantial job in explaining the regulatory crackdown. These slogans include common propserity, dual circulation, as well as rule of law.

Another regulatory or ideological backdrop I perceive is that the Chinese leadership is quite worried about the country's demographic situation, so the leadership is willing to do a lot to try to encourage families to have children. Part of that means reducing the costs of education, which is why there's a big drive to regulate the industry.

Tech companies have been the biggest victim of this approach, but they haven't been the only victim. I think there is also an effort to try to bring down the cost curve on health care, and to try to make sure that property is for living in and not for speculation.

***Q. The property industry has historically been a major growth driver for China. What are the prospects of consumer spending by the growing middle-class forming the basis of a new growth model?***

A. Certainly the Chinese government's desire is to have more consumer spending—that has been a long-term goal for quite a long while now. But it is also fairly difficult to stimulate the country's consumer spending. In the meantime, because of how big the property sector is, and how much economic activity is associated with it, it is just far easier to focus on the supply side for generating economic growth.

***Q. You have said in the past that China has an inefficient but robust economy, in comparison to the just-in-time model in the US. To what degree do you think there is room for either side to learn from each other in this area?***

A. There probably ought to be a happy middle ground between this focus on efficiency in the US and the focus on resilience in China. Terms that we associate with supply chain efficiency, like "inventory is evil," were shown to leave us in limbo during the pandemic. Now, I think it's perhaps not quite fair to use a once-in-a-century catastrophe to condemn an entire economic system, and I think the Chinese system certainly needs to learn how to be more efficient, especially in the state sector. But I suspect that there ought to be a point where the US is, after two years or so, able to produce more of its own goods, and China's state-owned enterprises (SOEs) have learned to be more efficient and not always be laggards that are employing far too many people.

***Q. China is increasingly becoming recognized as a scientific and technological powerhouse, but the country has so far failed to become a cultural exporter in the same way that many developed countries have, particularly other Asian countries. Why do you think that is and to what extent does this failure pose a barrier to China's development?***

A. I think the Chinese people are highly creative, but the Chinese government and its efforts to control things has stifled a lot of the creative aspects of cultural production, such that China has not concurrently created many new art forms for the rest of the world alongside its incredible surge in wealth. I think the best example to compare China with is Japan. Post-war Japan has, over 40 years or so, created new consumer electronics devices like the Sony Walkman, it has created new cultural genres, like Anime and Manga, and created a lot of movies that people in Western countries really enjoy today. And I think the scale of Chinese achievement is not really comparable.

China certainly keeps the domestic population happy with cultural products, but I think it is very striking that it has failed to create new things that the rest of the world really enjoys. One can say that the arts are not very economically important, but I think cultural products are important for more intangible political as well as diplomatic reasons. Without a lot of cultural products, I think the rest of the world is much less curious about China than it could be, it finds it much more difficult to love Chinese culture. And if any other developing countries, let's say India or Vietnam, more or less catch up to Chinese capabilities in infrastructure and manufacturing, I think it is very plausible that a lot of foreign companies will pack up and leave, because they don't have lasting impressions of great culture in China.

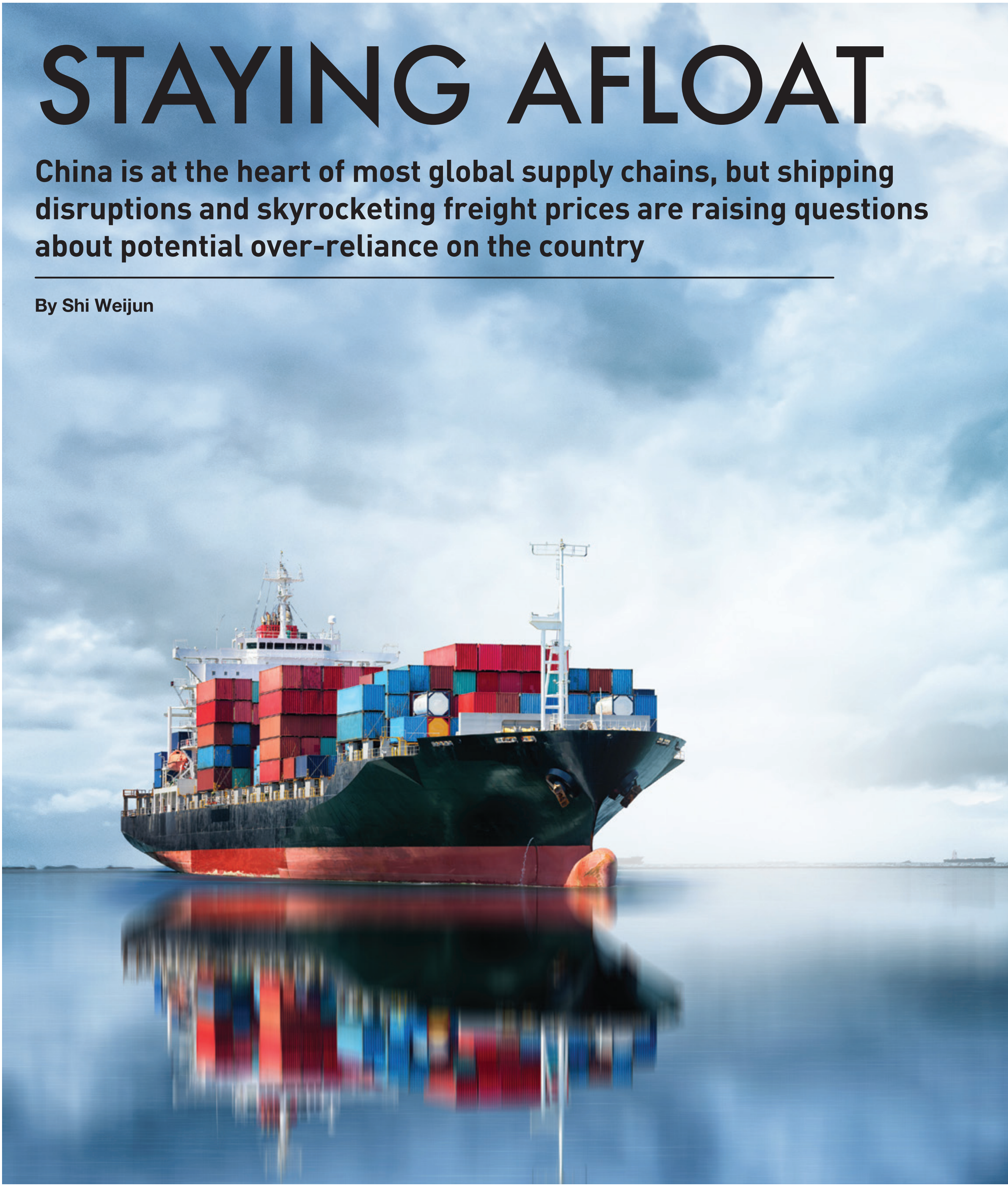
> I certainly push back against the premise that there is any sort of a generalized crackdown on technology. I think the term has been confused

*Interview by Patrick Body*

# STAYING AFLOAT

**China is at the heart of most global supply chains, but shipping disruptions and skyrocketing freight prices are raising questions about potential over-reliance on the country**

By Shi Weijun



In August 2021, a huge stationary fleet of tanker vessels, bulk carriers, and container ships started building up outside eastern China's Ningbo-Zhoushan port. The reason? A dock worker had tested positive for COVID-19, and because of China's rigorous dynamic zero-COVID policy, this meant a closure or severely limited throughput at all of the port terminals.

The shutdown of the world's third-largest port lasted for two weeks and had a huge impact on supply chains and logistics networks crisscrossing the planet, causing retailers around the world to worry about keeping their shelves stocked. The fallout continued for many weeks after, and the maritime logjam underlined how disruptions to manufacturing and logistics in China have far-reaching ramifications for the world.

China's zero-tolerance COVID-19 policy and the impact on local infrastructure whenever outbreaks occur has contributed to soaring shipping costs since 2020, exacerbated by the Omicron outbreak and two-month lockdown of the city of Shanghai in early 2022. All this has led businesses and governments to raise questions about the risks of being so reliant on just one country.

"The fear of overexposure of supply chains to China has picked up, especially in the West. I think this is not just about China, but a global issue because politics plays a very big role," says Dennis Chien, a senior analyst at Hong Kong investment firm HSZ Group. "Globalization might be coming to an end with nations trying to protect themselves."

## Lessons in logistics

Shipping costs and cargo delays were already high entering 2022, peaking in January. And although they later fell by around 50%, the average spot freight price in the third week of March still stood at $8,832 per 40-foot container, nearly five times the $1,832 cost at the start of 2020. Average transit times for containers from China to ports in Europe have also surged, with transit time from Dalian to the British port of Felixstowe up from 65 days in January 2020 to 85 days in January 2022.

The volatility of supply chain logistics costs is giving company executives around the world sleepless nights. Nearly one-third of 130 CFOs in North America surveyed by Deloitte in the last quarter of 2021 named supply chains as their biggest external worry, and almost two-thirds believed supply chain costs would increase substantially in 2022. At the same time, the increased prices have provided a windfall for shipping companies that have benefited from the price hikes.

Chinese businesses are also facing a sizable impact from the surge in costs, according to Chien. "For Chinese companies, shipping costs have gone up by seven or eight times since before COVID-19," he says.

China's strict COVID policy has resulted in unpredictable lockdowns, idle ports, and congested infrastructure. "There were periodic disruptions on the China side, not least when there were outbreaks and ports were shut down, particularly in Shenzhen and Shanghai," says Ben Simpfendorfer, a Hong Kong-based partner at global management consulting firm Oliver Wyman. "For periods, that also created disruptions to shipping costs."

But China is not entirely to blame for the increase in costs over this period. The pandemic created a global container shortage as lockdown regulations around the world stranded both staff and containers in key trade locations, leaving companies in many cases unable to operate normally.

"There is a tremendous container shortage," says Zhou Chen, associate professor at Georgia Tech's Stewart School of Industrial and Systems Engineering, and an expert in sustainable supply chains. "And that's because they're all in the wrong places."

A labor shortage is affecting industries related to supply chains too, especially in some developed economies. Trucking companies in the US suffered a record deficit of 80,000 drivers last year, while the UK was short of more than 100,000 qualified drivers in mid-2021. The resulting slowing of inland transportation meant poor container turnover in ports across the US and the UK.

Global supply chains have also been impacted in recent years by the US-China trade war and climate-related disruptions, adding complexity to logistics networks, such as more stringent and time-consuming inspections, that have increased costs. Other events that have tested the resilience of supply chains recently include the blockage of the Suez Canal by a container ship in mid-2021, severe flooding across China, and the Russia-Ukraine conflict.

## Meeting in the Middle Kingdom

By building out the world's best logistics network of ports, railways, and telecom networks to complement its manufacturing prowess, China has entrenched itself in global supply chains on an unprecedented level. But trade rifts and also COVID-19, are forcing countries and businesses to reconsider their high dependence on China-driven supply chains. This reckoning—combined with rising labor costs in China—has encouraged companies to look at moving manufacturing elsewhere.

"What COVID-19 did is freeze the supply chain to a large degree," says Simpfendorfer. "Before the pandemic, there was a shift taking place where manufacturers were moving into primarily either Vietnam or Mexico. In the early days of COVID-19, there was an anticipation that those flows would accelerate because of the disruption to China's supply base. In the end, we got the reverse because the impact on the rest of the world was more significant than it was in China."

China's swift return to normality in 2020 after its first battle with the pandemic, reinforced its integral role in global supply chains at the time. In that year, some 30% of global trade flowed through mainland China, Hong Kong and Macao, up from 25% in 2010. China alone accounted for almost one-sixth of global goods exports—a record-high share that dwarfed the next-largest suppliers, the US and Germany.

Amid strong demand for exports, container throughput at China's ports last year expanded by 4.5% to 4.7 billion tons, accelerating from a growth of 4% in 2020. Not content with dominating trade flows, China is increasingly controlling the infrastructure too. Three Chinese companies today monopolize global production of shipping containers, producing virtually every box in use, while China has four of the top five global container ports and seven of the top 10. Shanghai is the world's largest port in terms of container throughput, while Ningbo-Zhoushan is the largest in terms of cargo tonnage.

Beijing has also accumulated significant ownership stakes in global ports. Chinese firms hold stakes in over a dozen European ports, with state-backed COSCO Shipping Ports purchasing a 35% stake in Hamburg's container terminal in September 2021.

Government policy has helped Chinese companies establish a strong position in global supply chains over the past two decades and will continue to be a crucial source of support. The 14th Five-Year Plan, issued in March 2021 calls for implementing a "manufacturing great power strategy" and for policies to "guide key links in [manufacturing] industry chains to remain within China"—a clear reference to policies designed to resist pressure from Western countries for supply chain decoupling.

"The consistent thread throughout China's economic rise has always been that the government spotlights several industries that they feel have strategic value for the long term," says Chien. "Then they make huge investments or provide a huge incentive for private enterprise to enter. We are seeing it with manufacturing and we saw it with supply chains."

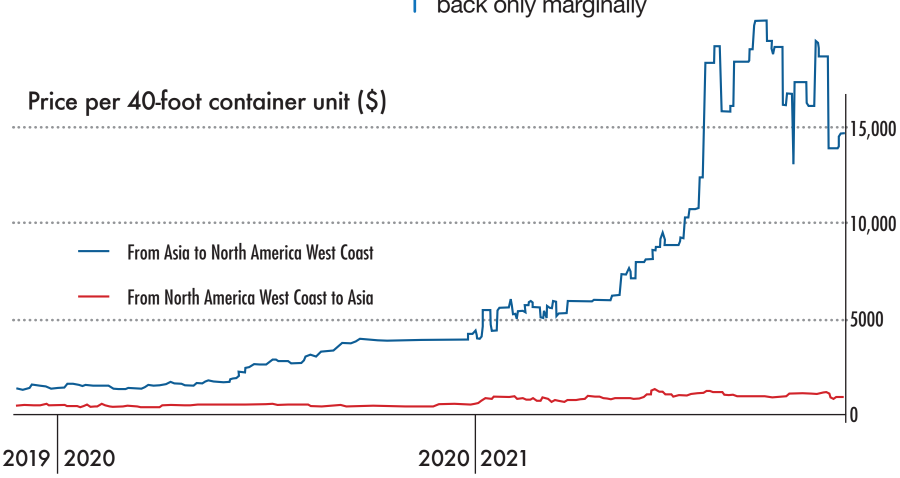
Already home to one of the most advanced digital ecosystems in the world, China is still investing heavily in the "software" of digital infrastructure to complement its "hardware" of global physical assets. In doing so, it is looking to replicate the success of AT&T, the storied US multinational that spearheaded American dominance of global telecommunications for most of the last century.

China is working to unlock the potential of digitalized supply chains through the Digital Silk Road, which aims to link Belt and Road Initiative (BRI) countries through fiber optic cables, cellular towers, widespread internet and telecommunications connections, as well as "soft" digital infrastructure such as common technical standards, e-commerce platforms, mobile payment systems and other digital-economy applications. Chinese-owned ports around the world are prime candidates for this digitalization.

"China is investing in the future. They want to be a leader, they want to own it," says Diane Long, managing director of Xanadu Enterprise, a strategic market

### COSTLY CONTAINERS

The cost of a container unit from Asia to the US skyrocketed in 2021 and has dropped back only marginally




Source: South China Morning Post

entry firm for China. "The US owned the technology and infrastructure 30 years ago. They were the ones laying the undersea cables and launching satellites, but along the way, the government stopped making those investments, the in-roads, offering innovative concepts. China has replaced them."

## China's supply high

The allure of globalization was that it promised an efficient division of labor by country. Developing economies would concentrate on the production of primary products or raw materials through low-paid labor, with the products then transported to deindustrialized economies, where other workers process, package, and market the product. But this has not materialized, as China has built robust production ecosystems for nearly every major industry.

The Middle Kingdom offers a hard-to-reproduce concentration of input suppliers, assembly factories, skilled workers and service providers—all at a massive scale and covering a broad range of low-tech, mid-tech and even high-tech products.

Over the past 20 years, profit margins in a wide range of industries and products have benefited from this concentration, according to Simpfendorfer. "It results in lower costs. Concentration allows for innovation in these clusters because you get scale."

Higher productivity has also been the result of supply chain consolidation. "Productivity in China remains extremely high even if labor costs are not low anymore," says Zhou. "It's very common for businesses to be running 10-12 hours a day, six days a week. Where else could you find that? Even with higher labor costs, per unit costs remain very low because Chinese are so productive."

## Digital dividends

Beijing has made no secret of its desire for China to become a developed economy without losing its strong manufacturing export sector. With this positive outlook in mind, Chinese businesses have been willing to invest in bleeding-edge technology, such as AI and robots, to ensure their supply chain dominance endures.

Take SHEIN, China's first global fashion giant, for example. In February, local government plans revealed the Guangzhou-based fast-fashion retailer intended to invest RMB 15 billion ($2.3 billion) to build a global supply chain center in the city this year. SHEIN boasts a unique business model that has helped it out-compete the likes of Zara and H&M—it constantly gathers and analyzes customer data and uses that knowledge to craft new designs via a vast network of small- to mid-sized workshops that bid for orders daily.

"Data assets and data management are becoming very important," says Steven Zhong, lead partner for ESG strategy and value chain advisory at PwC China. "When we look at the more advanced digital supply chain capabilities, it's more focused on the ability to forecast…on how you're using historical data to forecast, and how you're simulating different risk factors on business and sustainability impacts."

Chinese supply chains are pushing the envelope in other ways. AI-powered robots are increasingly showing up on factory floors and in logistics warehouses, performing tasks previously handled by humans with greater efficiency than ever before. And many of these technologies are showing up in state-of-the-art factories across China that are part of the World Economic Forum's 'global lighthouse network'. These manufacturing sites are pioneering the adoption and integration of frontier technologies, and of the 90 "lighthouse" facilities worldwide last September, a record 28 were in China. As more of these lighthouse factories come online, China's centrality in global supply chains is only likely to grow.

## Chained up

In some ways, China has been a victim of its own success. The pandemic underlined China's capture of supply chains and the extent to which it remains dominant even in the face of the bruising trade war with the US, forcing governments and businesses to examine their extraordinary dependence on China and the associated risks.

"If China had suffered a more serious virus outbreak, then the world would have suffered more," says Zhou Chen. "We should be concerned about this amid a period of already-high inflation that is still rising."

Simpfendorfer says he is worried that there will be an even greater impact on supply chains when China fully reopens its borders. "We can't rule out the risk of potentially large disruptions, and that will have a serious impact on our ability to purchase goods and the price we pay. There is a risk that prices will rise sharply so our China exposure is a challenge."

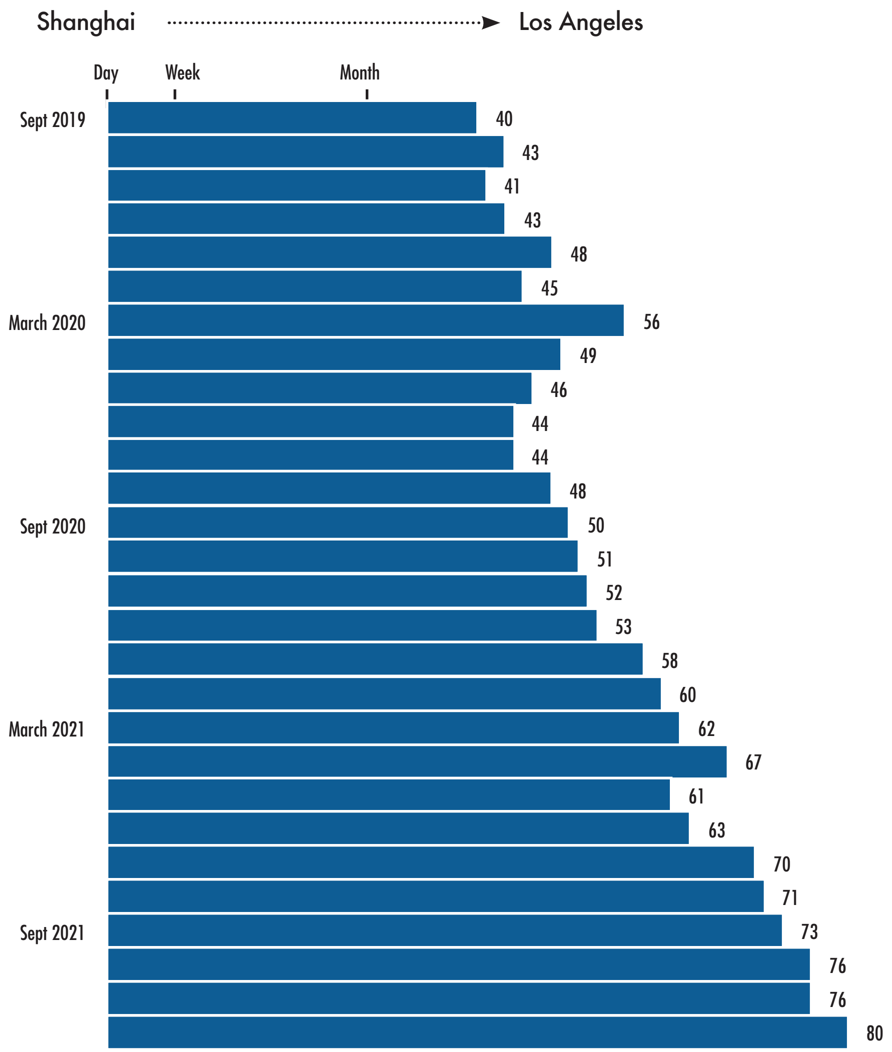
The strict, two-month lockdown in Shanghai, starting in late March, and a whole raft of restrictions in cities across the country caused delays that further strained global supply chains and increased costs. As the factory of the world, any disruptions to exports resulting in shortages could also drive up inflation internationally.

The relocation of manufacturing and supply chains to China in recent decades has also exacted a tremendous cost on the local environment. "There is a reason why some of the dirtiest industries are in China and not Europe or North America—they have been regulated out of business. Europeans and North Americans have to take some responsibility for that," says Chien. Consumer demand for inexpensive goods means China's economy has understandably gravitated toward cheaper inputs—such as dirty coal for producing low-cost electricity.

As countries reconsider whether the risks of global supply chains now outweigh the benefits, the once-unshakeable faith in globalization as a positive force and an irreversible process is now under threat with potentially seismic consequences. Unwinding decades of global economic integration has the potential to impact the free flow of goods that has underpinned growth since the Second World War.

Moving supply chains out of the world's biggest manufacturing nation is also easier said than done, but some attractive alternatives have emerged. Southeast Asia, Vietnam in particular, has

**LAGGING BEHIND** | Average shipping times for ocean freight have doubled over the past two years




Source: South China Morning Post

siphoned off low-end manufacturing from China in recent years, and the migration to Vietnam is expected to continue although investment slowed following the onset of COVID-19. In mid-June Apple announced for the first time that it was moving a part of its iPad manufacturing to the country.

Seeking to avoid US tariffs, Chinese factories themselves are increasingly setting up shop in Vietnam. “Chinese manufacturers tend to move as a group,” says Simpfendorfer. “Once they saw there was an ecosystem there, and that their competitors were there, then they were happier to invest in Vietnam.”

The Vietnamese are famous for their strong work ethic, a value shared with their Chinese neighbors that has helped attract factory bosses to relocate some operations across the border. But a shortage of skilled labor and problems in quality assurance remain barriers, according to PwC China’s Zhong.

The highly differentiated nature of markets in Southeast Asia can make it a headache to move sections of supply chains to the region. “China is a huge market governed by a single set of regulations across regions,” says Zhong. “You can still relocate a factory or build new distribution centers from region to region in China with attractive subsidies and support from local government, but Southeast Asia is a set of completely different markets. It’s very difficult to do the standardized model and to derive enough synergy out of the economy without evaluating pros and cons, especially risk factors on investments and cost benefits based on each country’s unique characteristics.”

Closer to home for American companies, Mexico has emerged as a strong contender as an alternative thanks to the US-China tariff war—particularly after the passage of the US-Mexico-Canada agreement in 2020. Proximity makes Mexico a tantalizing possibility for American firms because companies do not need to wait weeks for goods to be shipped from China.

## Changing with the times

Geopolitical tensions that have erupted in Ukraine and global issues such as COVID are likely to have a continuing impact on the efficiency and cost of logistics networks. And China is, meanwhile, continuing to reconfigure its entire manufacturing sector, starting by de-emphasizing low-end and high-polluting production.

“The next stage will be a departure of the mid-range. Higher-end shoes or good-quality cellphones still have to be made in China as other countries are not ready,” says Zhou Chen. “But just wait—in five to 10 years, they will exit too. China will shift focus to the higher-end products.”

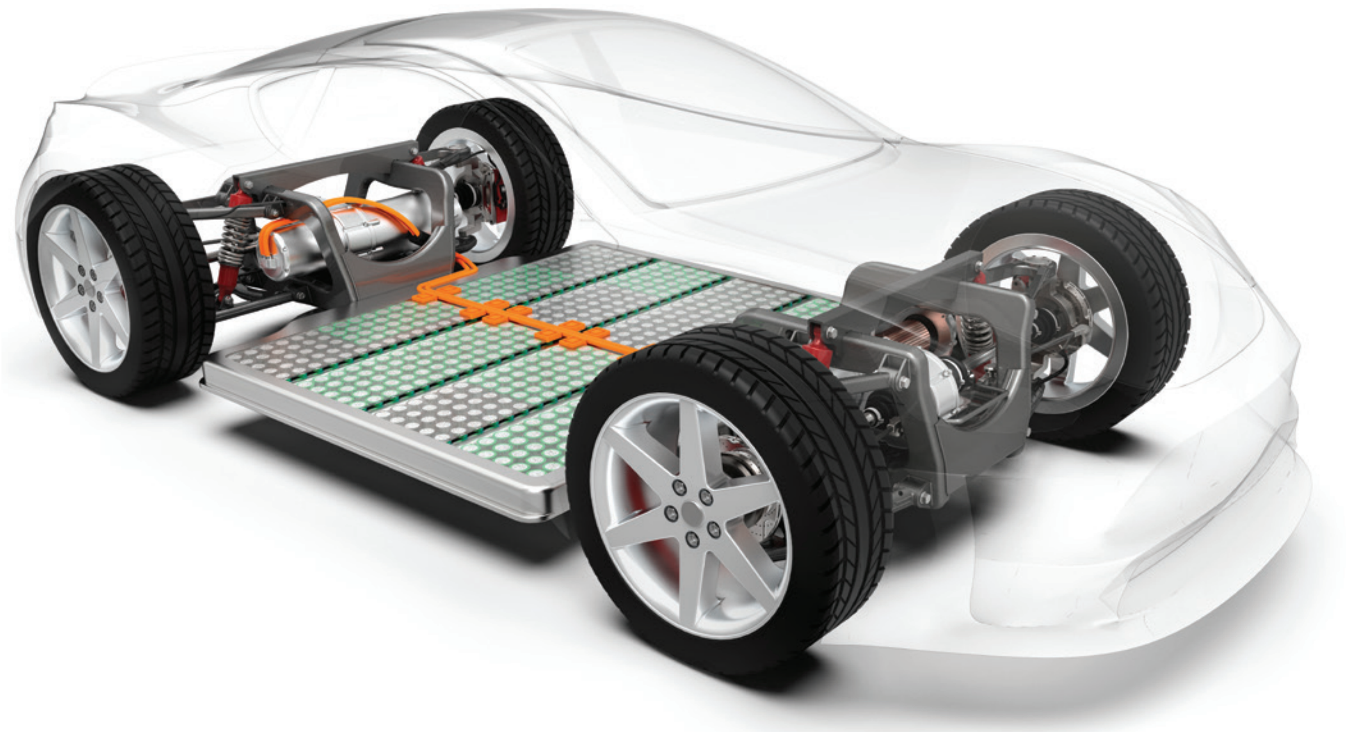
Another reason why China will remain the world’s manufacturing hub is that it is itself one of the world’s largest markets. This will ensure Beijing retains extensive influence over global supply chains, backed up by heavy investment in digitalization both at home and at Chinese-invested ports around the world, which puts the country in a commanding position.

“We went from a world that was relatively isolated to an interconnected one with global supply chains in China,” says Simpfendorfer. “We’re now entering the next stage of global trade where we don’t get a reversal or de-globalization, we simply get a fragmentation of the global supply chain, with China at the heart of it.

# AMPLE CHARGE

## CATL dominates China's electric vehicle battery market, and the company is setting its sights on greater international success

By Mark Andrews



# China's top battery manufacturer CATL dominates due to R&D spending, but some of its competitors are catching up

The driving force behind China's massive shift to electric vehicles (EV) is a company that many outside the industry have never even heard of. Despite its muted reputation, Contemporary Amperex Technology (CATL) batteries power half of Chinese new energy vehicles (NEVs), of which there were 3.3 million in 2021 alone, and the company is by far the world's largest EV battery manufacturer, with a massive 32.6% market share.

But more than that, the company is one of the biggest spenders on R&D in the industry and is at the cutting edge of new EV battery technologies, offering a wide range of batteries to a diverse range of customers, including Tesla, Kia and BMW.

"Currently, it's the biggest, baddest, battery cell manufacturer on the block... and by a long way," says Tu Le, Managing Director of Sino Auto Insights. "It's also been able to sign up the 'Who's Who' of customers which helps legitimize their technology and quality."

At a time when the automotive industry is undergoing difficult supply chain issues and coping with soaring costs of raw materials, CATL is in an enviable position—the price of batteries reached $128 per kilowatt hour in May, compared to $105 in Q1 of 2021, and is expected to climb another 22% by 2026. But there is increasing unease among car producers around the world about CATL's dominance in the market, and competitors are striving to challenge it.

## Starting out

CATL was founded in 2011 by Chinese billionaire and entrepreneur Robin Zeng in the city of Ningde, located in the southeastern province of Fujian. Zeng originally founded Amperex Technology (ATL), a producer of lithium polymer batteries, in 1999, which was acquired by Japanese electronics firm TDK in 2005. After initially staying on as a manager at ATL, in 2012 Zeng and current CATL vice-chairman Huang Shilin spun the business back out of TDK and they took the company public in 2017.

CATL's development benefited greatly from its years as part of TDK, but throughout the company has experienced exceptional growth thanks to protectionist government policies and provincial subsidies.

"The Chinese government for years had a white list policy to prevent OEMs from purchasing international players' batteries," says David Zhang, professor of Engineering at Huanghe S&T University. The list, consisting of 57 approved suppliers including CATL, was scrapped in 2019.

But government support didn't stop there. "Since 2009, there has been an enormous amount of nationwide capital invested in the R&D of battery technology by the state," says Le. "Localized support was given by the Ningde and Fujian provincial governments in the form of subsidies on land and tax abatements specifically favoring CATL that helped them build out their production capacity on the cheap."

By 2021, the company had a 52% share of installed NEV batteries in China, up significantly from an already fairly impressive 15% in 2015. Largely due to the size of the China market, the company is also the largest global player, with a 32.6% share of NEV batteries worldwide. Its closest competitor is the Korean firm LG Energy Solutions which has a 20% global market share.

"A key part of its success was that CATL managed to establish itself as a reliable supplier of EV batteries early on," says Klaus Paur, Managing Partner at MaLogic, a Shanghai-based professional services firm. "This not only refers to its high quality [lithium-ion] batteries, but also to a solid production capacity, which ensured stable supply."

Despite its dominant position, CATL has several serious competitors in the domestic market, including Warren Buffet-backed BYD and rival battery maker CALB with market shares of around 21% and 8% respectively. CATL's China market share also slipped below the 50% mark in early 2022, clocking in at around 48% in February 2022.

In terms of domestic rivals, BYD, the largest NEV manufacturer in the world, is a legitimate threat to CATL's dominance thanks to the ability to supply itself—it sold around 641,000 NEVs in the first half of 2022, surpassing Tesla. In addition to this, since mid-2021, BYD has moved to increase the scale of its battery business by supplying other companies, and it has struck deals to supply automakers like FAW Group, BAIC Group, Toyota and Daimler.

Internationally, South Korean LG Energy Solutions, which went public in a $10 billion IPO in January 2022, is also confident it can catch up to CATL. The company already supplies Tesla, Hyundai and General Motors, among many others, and boasts a number of overseas production plants that it runs together with the clients. LG also has a massive cumulative order backlog worth $217 billion, which will allow it to overtake CATL in terms of market share.

CATL is also not yet the international powerhouse it could be. Around 80% of its revenue comes from the China market and currently it only has one production facility overseas in Germany, the opening of which has been delayed until the end of 2022, supposedly on security concerns. "Its international footprint is weaker compared to its major global competitor LG Energy Solutions, which has a stronger presence in Europe and the US," says Paur.

## Charging ahead

The backbone of the Shenzhen-listed company's success is its dedication to research and development. In 2020, CATL's R&D spend was just over 7% of its revenue and accounted for around a third of the company's workforce. This is proportionally in line with the company's competitors but CATL has a track record of pursuing technologies with the potential to change the market.

This R&D focus has manifested itself both in the breadth of the company's product portfolio and its range of customers. "CATL's batteries cover a wide range of segments, including passenger cars, buses, heavy trucks," says Y.-C. Hsu, co-founder and CEO of Researcher and Research, a market and strategy research firm. "Its customers include startups, Chinese state-owned enterprises, and international companies from Europe, the US, Japan and South Korea. No battery manufacturer has such a diversified customer structure, which is the biggest opportunity for CATL."

The company shifted earlier than its competitors from lithium-ion phosphate (LFP) batteries to a nickel-cobalt manganese (NCM) chemistry, which generally allows for greater energy storage density. Structure is a key challenge in the design of batteries and reducing the weight of the batteries relative to power output is of the utmost importance for any R&D team.

Interestingly, while LFP and NCM batteries have an almost 50/50 split in the China market, LFP batteries make up only 3% of EV batteries in the US and Canada, and 6% in Europe. The reason being that NEVs in the West tend to be higher-end models with a greater range than can be provided by an NCM battery, while in China many models are often cheaper and smaller, using LFP batteries.

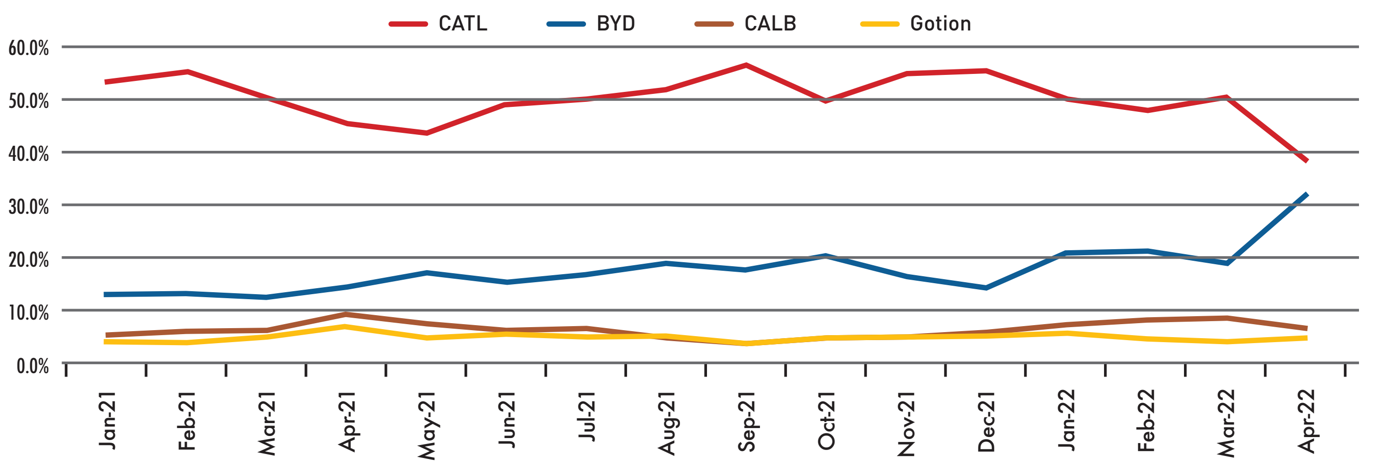
CATL has an over 50% market share in NCM batteries in China and, as of February 2022 CALB, its closest competitor, only had a 15% share. For LFP batteries CATL's lead is far smaller—46% versus BYD's 37% share.

Both NCM and LFP batteries are based on lithium-ion technology and are thereby dependent on supplies of the element. Since 2020, commodity prices including lithium and nickel, have seen dramatic increases—lithium has risen by more than 400%. But CATL has managed to somewhat insulate itself from the increased costs by investing in sources of the minerals.

"CATL has focused on vertical integration," says Paur. "It has invested in raw material and mining companies to ensure its own supply of minerals needed to manufacture batteries."

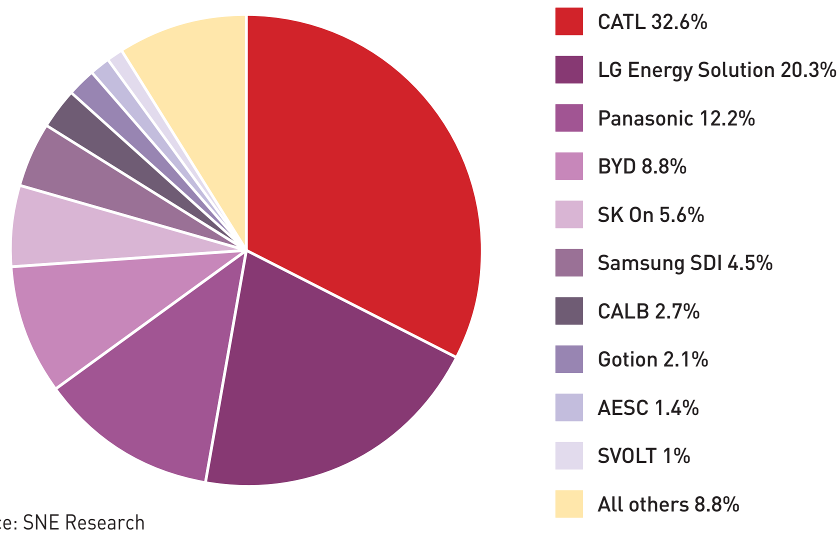
As early as 2012, CATL started a subsidiary in China's northwestern Qinghai Province, to extract lithium from dried-out salt lakes. In 2021, the company made a similar move to shore up cobalt supplies, buying a 25% share of the Kisanfu copper-cobalt mine in the Democratic Republic of Congo.

**LOSING GROUND** | Domestic competitors including BYD are gaining on CATL in the Chinese market




Source: CnEVPost

**GLOBAL POWER** | CATL's global market share of the EV battery market dwarfs its competitors




Source: SNE Research

In 2020, BYD announced its new Blade battery, an improvement on the old LFP technology, which has raised questions about whether CATL was right in pursuing NCM technology so aggressively. Using the cheaper and reportedly more stable LFP chemistry, BYD restructured their battery by creating a new way of arranging cells that gives a higher energy density than early generations of LFP batteries.

"The biggest difference between CATL and its competitors is that it is more diversified than other battery manufacturers," says Hsu. "Therefore, CATL can be competitive in the development of both battery materials, which Japanese and South Korean battery manufacturers are focused on, and also battery structure."

CATL has also invested heavily in research on sodium-ion batteries, which swap out lithium compounds for easier-to-source sodium compounds, which is seen as the most likely contender to replace lithium at the heart of the batteries powering humankind longer term. The technology is the culmination of a Chinese government-led initiative into lithium alternatives, prompted by concerns over the country's dependence on imports for 70% of its lithium needs. In July 2021, CATL commenced small-scale commercialization of the technology.

> No battery manufacturer has such a diversified customer structure, which is the biggest opportunity for CATL
>
> Y.-C. Hsu
> Co-founder and CEO
> Researcher and Research

"Compared with other battery makers, CATL was very active in responding to this policy," says Hsu. "They have made various developments in sodium-ion batteries, as well as creating a commercialization timeline and corresponding production plans. For a long time, the Chinese government and CATL have been in a state of mutual benefit."

CATL has also introduced a new service called Evogo, which provides battery swapping provisions to consumers. One of the biggest challenges with EVs is the time they take to charge, an issue especially important for taxis and commercial vehicles. Battery swapping allows a vehicle to change a depleted pack for a fully charged one in a couple of minutes, versus half an hour or more for fast charging.

In China, EV startup NIO, car manufacturer Geely and dedicated battery swapping service Aulton are already present in this space. But CATL's size already makes it stand out in the sector. Both NIO, which is already a CATL customer, and Geely's swapping stations are limited by brand and model, whereas Evogo batteries will already fit 80% of existing battery electric vehicles and all of the vehicles slated to come out over the next three years, CATL claims.

If they are able to convince more of their customers to adopt the service, they stand a good chance of dominating the battery swapping market. "The key is for CATL to bully a few of their larger customers into implementing the service and continue working through them to standardize battery packs," says Le.

### Holding its charge

Despite being in a strong position compared to its competitors, CATL runs the risk of becoming a victim of its own success. Its commanding share of the domestic battery market gives it little room to grow, and car producers are becoming aware of the dangers of being too dependent on one supplier.

"CATL needs to address several critical issues," says Paur. "Increasing local competition, a growing trend by automakers in China to diversify their battery sources, and CATL's limited international scope."

Currently, CATL is NIO's sole battery supplier, but NIO CEO William Li has publicly stated that battery supply is one of the main factors limiting production capacity. Later this year, NIO will start selling cars with a battery pack supplied by Beijing-based WeLion and is also considering sourcing batteries from BYD.

BYD produces its own batteries for its cars. Tesla does the same, except for its cars produced in China, in which CATL batteries are used. And moving toward self-sufficiency is increasingly popular in the industry. "Currently, the clear trend is for EV automakers to build or invest in battery plants as a way to diversify risk," says Hsu. "Likewise, battery makers want to share the risk of rising raw materials costs with EV automakers, so the trend for EV automakers to collaborate with battery makers will also gain momentum."

Battery safety is another topic of concern. In 2020, BYD released a video of its Blade battery undergoing a "nail penetration test" versus an unnamed competitor's NCM battery. In it, the competitor's battery burst into flames whereas BYD's battery did not. Two months later, Chinese regulators dropped the nail test as a way of grading battery safety and the new regulations that were put in place were drafted by CATL, potentially giving the company an unfair advantage over its competitors. "CATL has been instrumental in setting standards by joining the battery association and becoming the chairman," says Zhang.

To ensure its long-term success, CATL is trying to further expand into international markets, but in the current climate, CATL's strong links to the Chinese government could be a problem in terms of Western regulatory consideration. Its only major customer outside of China so far is BMW, which has four battery suppliers, of which CATL is one of the top two.

> **CATL quickly built a dominant global position in the EV battery sector and currently leads the space by a wide margin**
>
> Tu Le
> Managing Director
> Sino Auto Insights

The various problems faced by CATL are also starting to affect the company's valuation. Over the last year CATL's share price has experienced extreme volatility and since December 2021 it has been declining steadily. Zhang attributes the stock market fluctuations to speculation and notes that Tesla has had similar problems. "The other reason is that OEMs don't like that CATL is much bigger than other players. They want to have more bargaining power during business negotiations," he says.

## Accelerating away

Other than the sodium-ion system currently entering production, little is known about what other battery technologies the company is spending its large R&D budget on, but what is clear is that they are at the leading edge of battery technology. CATL has traditionally excelled with high energy-density technology, which is of utmost importance for electric cars—the higher the density, the larger the capacity. CATL's forthcoming CTP3.0 Qilin battery reportedly has 13% higher capacity than Tesla's 4680 model.

There is more transparency on CATL's future production plans than on R&D. The company is investing $5 billion in a battery factory in Indonesia set to start production in 2024 and it is also eyeing investing a similar amount to create a plant in North America to service global clients.

But continued growth, especially internationally, will not necessarily be smooth sailing. CATL's stock dropped in late 2021 after competitor BYD said it would supply batteries to Tesla "very soon." A number of other significant potential clients are planning to go their own way on batteries. General Motors, already a CATL client, is planning a new US battery plant in partnership with South Korea's LG Energy Solution, Toyota is planning to open its own battery plant in North Carolina, and Ford is building twin battery plants in Kentucky.

"There is already great local competition emerging with ample production capacity to scale up, but commodity prices such as that of lithium carbonate could remain volatile, hurting margins," says Deutsche Bank analyst Edison Yu.

CATL is now facing the challenge of leveraging its production capability and big R&D budget to remain one step ahead of the competition.

"CATL quickly built a dominant global position in the EV battery sector and currently leads the space by a wide margin," says Tu Le. "Now comes an even tougher mission, continuing that growth outside of the friendly confines of the China market. There's no doubt that CATL has global ambitions but so do its competitors, as they all turn to focus on the EU and US markets."

# Keeping a Finger on China's Pulse

Charlene Bian, Managing Director of the China Strategy Group at Moody's Analytics, discusses the uses of data and analytics in evaluating changes in China policy

Investing in the China market has always involved a greater level of risk compared to the more established Western markets. But the spectacular growth of the country's economy, particularly over the past two decades, has continuously provided ample reward for those willing to take the plunge. Today, China's market seems more tumultuous than ever to those outside of the country, but despite the perception of increased risk, the benefits of the market are still there.

Moody's Analytics, a subsidiary of Moody's Corporation, supports the development of China's domestic markets and global economic role through data, analytics and insights. For example, through the products and services offered by Moody's Analytics an investor outside of China can access information on bond issuers, a bank can evaluate the credit risk profile of a small business owner, or a car manufacturer can understand its climate risk exposure stemming from its manufacturing processes and supply chain management.

In this interview, Charlene Bian, Managing Director of the China Strategy Group at Moody's Analytics, looks at the benefits of data and analytics in risk management, how to understand China's approach to policy and avoid falling foul of any changes, and the need for investors to pursue more dynamic portfolios.

***Q. The China market poses a unique set of challenges for businesses and investors. What are the advantages and disadvantages of being in the China market?***

A. For me, the advantages and disadvantages are the same: scale. At the risk of stating the obvious, the size of China's economy, the population and the landmass are all notable. What comes with scale is diversity. There are variations in the way of thinking, the parameters for doing business, and how decisions are made. It's difficult, if not impossible, to try to directly apply what you learn elsewhere in the world to your China business. It's sometimes difficult to apply the experience from one city or region to other parts of China. So scale can be a drawback.

At the same time, it can provide huge benefits. But to gain the advantages from it you need to be here, breathing the air and seeing how people make a living. That will help you visualize and internalize the diversity and draw commonalities that are much needed for businesses to achieve scale. But if one underestimates the nuances introduced by the diversity, it will be dangerously convenient to conclude that China is an unsolvable enigma.

***Q. There are an increasing number of data protection laws being put in place both in China and around the world. Given the importance of data to investment decision-making and risk management, how will these new laws and regulations affect investors in China?***

A. My view is that it's probably going to affect investors outside a little bit more because the data cannot leave the country as easily. In general, it makes competition harder as people will be less likely to share data, and the value of data will likely increase as well.

At the same time, there are opportunities for those who are good with data. You're more often forced to leverage data that's publicly available to make decisions. Can you dig deeper? Can you make the connections between data? Can you see things others don't? Can you, most importantly, relay all that in your business decision-making? I don't think we lack data these days, what we lack are credible insights.

***Q. One of the ways in which China differs from the Western model is a different approach to laws and regulations and the degree of transparency when it comes to changes. In the past, investors were able to offset this "China risk" with the potential for major profit from a fast-growing economy. How does this equation look in the future?***

A. Since the outbreak of COVID-19, investors around the world have seen a significant rise in policy uncertainty. But I think it's not always unpredictable. I see people and institutions in China effectively make decisions from new policies and other information the government releases to the public. One can understand how policy works in China as a different way of thinking. It's a new language that can be learned and translated.

As a company, we recently created an interesting tool which uses machine learning and natural language processing to pick up keywords from news articles or other publicly available sources, then tag and classify them into risk categories. Basically, if you read a certain keyword in an article, we want to be able to understand what it means in terms of credit events and what early warning signs we should take from it.

***Q. Businesses, particularly in China, are digitalizing rapidly. To what extent are new trends such as Big Data, AI and SaaS shaping the way investors behave in the China market? And how can investors in other markets learn from this?***

A. It varies by industry. For example, B2B and B2C are very different. The B2C industries are definitely at the leading edge—the almost cashless society we have in China is a good example. The B2B industries are catching up, but still have a lot of work to do in terms of digitalization, and a lot to learn. As consumers, we're going to hold the same high standards when we buy enterprise software as when we buy groceries. Therefore, I think it's fair to say there is a pressure upon the B2B providers.

There's also a similar amount of catching up and a lot of imagination required for external international investors to enter the country. Investors, particularly those in the China market, are very good at balancing experience with analytics. Balancing what you might call instinct with science, and heart with brain. One could argue there are perhaps more qualitative factors in the China market to consider than in some other markets, so it is highly impressive that they can channel the qualitative with the quantitative. It's certainly something to learn from.

**Charlene Bian is the Managing Director of the China Strategy Group at Moody's Analytics. She has held various positions in Moody's Analytics' New York, Hong Kong and Shenzhen offices including Chief of Staff for the President of Moody's Analytics, as well as head of business for the APAC risk and finance analytics group.**

> **Although progress is being made when it comes to leveraging data and analytics for decision support, I think leaders still need to embrace them a little bit more**

*Q. How should investors, portfolio managers and asset managers approach risk management in China and how does this differ from other established markets?*

A. Although progress is being made when it comes to leveraging data and analytics for decision support, I think leaders still need to embrace them a little bit more. I also think it's important to recognize and understand the limitations of the models, even the best ones. It is also important to triangulate the decision-making process from as many information sources as you can find, and then combine this with your own theory of how things work. This is especially true for the capital markets here because there are so many qualitative and quantitative factors that it's impossible to just use one source or a single model.

We also need to do more testing of hypotheses. The market here is still growing and shaping into its own rhythm compared to more established markets. The effort of understanding how this market functions is also an evolving process. Having a set of tools and analytical frameworks is as important as having people with experience in handling challenges.

> "Investors, particularly those in the China market, are very good at balancing experience with analytics...One could argue there are perhaps more qualitative factors in the China market to consider than in some other markets

*Q. What can help business leaders make decisions with more confidence in this time of increasing uncertainties?*

A. I'm a strong believer in models working for people, not the other way around. I have had the privilege of engaging with a lot of institutions in China, other APAC and Europe countries, and the Americas. The successful institutions that I see are very good at making data analytics tools work for their people, making their lives easier. Meanwhile, I've also seen practitioners laboring themselves to collect data and generate reports day and night, for very little in return.

For business leaders, it is useful to periodically look at three things. The first is whether your teams have the right tools and analytics to understand your assets and liabilities, as well as the risk and opportunities associated with them at full scale. This means no blind spots, always staying at the frontline of technology, and having an up-to-date understanding of the full picture.

Secondly, ask yourself how useful these tools are—when we acquire or develop something, it may only be useful for the time being. With the pace of how things evolve these days, we need to look at our tools more often, particularly when we are using them for decision-making.

The third is whether you have the policies, processes and systems that will support all of this. Be it escalation rules, data quality checks and workflow automation. These things are not rocket science, but important basics that if not done right, will render a lot of decisions less useful or with unintended consequences.

*Q. How do you expect the risk management landscape in China to change in the coming five to ten years? Where are the key opportunities and challenges to be found?*

A. There are two areas of opportunity. Institutions have been spending time looking at individual investments and they have become very good at it. But portfolio management is still often an afterthought and an area that can unlock huge value. The China market will shape your portfolio with natural concentrations. Are these concentrations well compensated? Portfolio management can help you better balance risk and return, and do more with less.

The other aspect is thinking about asset and liability dynamics in an integrated way. This is particularly important for firms that have much more complex liabilities, in addition to dynamic assets. Take insurance firms for example, if the investment strategies are too conservative, then you lose out on potential uptake. It also limits how you design your products and how you compete in the market. But, if you're too aggressive, then chances are the stakes are too high when it comes to risk management and its potential impact on revenue and liquidity.

Over the next ten years, those who are better at making effective decisions in dynamic market conditions will likely be the ones staying ahead of the curve.

*Interview by Patrick Body*


This is the fifth and final article in a series on digitalization in different industries in China

# DIGITAL TIES

**China's eagerness to adopt technology is driving the digitalization of the country's businesses**

**By Sean Williams**

Image by José Luna

Businesses across China, from large state-owned enterprises to small-to-medium enterprises are pursuing some level of digitalization

In early 2020, as China's economy stalled to quell the spread of COVID-19, the country's biggest retailer, JD.com, built a digital replica of its entire supply chain to forecast and thereby avoid problems arising from the lockdowns and closures.

Detailed, real-time analysis of over 8,000 individual transportation routes allowed the company to keep business moving when much of the country had ground to a halt. And it worked. The tool decreased response times to disruptions by an average of 50% and shortened the time it took to reconfigure supply chains to less than an hour, down from several days.

The use of digital twins and other advanced tools, such as AI, data analytics and visualization software is not yet ubiquitous, but China is at the forefront of such digital business technology. Digital twins can now be found in a range of industries across China. They are widely used to increase efficiency in the manufacturing sector by simulating processes, to develop and improve autonomous driving technology, and to monitor and predict patient health in medical settings, among many other applications.

Once derided as little more than a technological copycat, China is now rapidly rising through the ranks of tech-capable nations. While the US still remains on top of IMD's global Digital Competitiveness Ranking, China rose 15 places to 15th in 2021, from 30th just four years previously. In Dell's Digital Transformation Index (DTI) China has 7% more companies classed as "digital practitioners" than the global average.

"If you talk about digitalization of operations, China is more pragmatic in employing technologies," says Thomas Mooser, CEO of management and IT consultancy MHP's Shanghai office. "China is simply implementing things and learning on its way there. They take pride in being at the cutting edge of all things digital."

## Beyond analog

The pandemic reinforced the importance of digital transformation, which has very often provided dramatic improvements in efficiency, productivity, return on investment and a competitive advantage. According to a McKinsey report, the global average acceleration of business digitalization brought about by the pandemic was a 7-year advance in technology adoption. But the Asia-Pacific region far out-paced that number, with an over 10-year acceleration of adoption. And it is clear that companies that have embraced digitalization are better able to maximize efficiency and competitiveness at scale.

"It is actually a fully online, fully collaborative and comprehensive shift based on an enterprise's original competitive advantage and strategy," says Zhou Chunsheng, Professor of Finance at CKGSB. "They can utilize digital technology to improve operational efficiency, solve an enterprise's pain points and optimize its strategic positioning."

A survey of Chinese businesses in early 2022 by CPA Australia found that 47% of respondents regarded "digital transformation, technology development and innovation" as a key strategic focus this year, the highest among all options.

"Mainland China has been the leading performer within the Asia-Pacific region over the past few years when it comes to business technology adoption," says Tony Chan, deputy president of CPA Australia's South China Committee.

Corporate executives' attitudes toward digital transformations have shifted to be much more open to a top-to-bottom approach when it comes to digitalizing business.

"Executives used to only talk about digitalization of marketing or customer engagement," says Tom Zhang, a Shanghai-based partner at business transformation consultants Prophet. "It is much broader now, extending to how they digitize their entire operations using digital tools and data, and how they make efficient, smarter decisions based on data."

It is also clear that small and medium-sized enterprises (SMEs)—which provide 80% of urban jobs and 60% of GDP—are fast digitalizing their business processes. More than 70% of 1,200 SME managers surveyed by research firm IDC plan to ramp up IT spending in 2022 to buttress digital resiliency, compared to 63% in Western Europe, and expenditure is forecast to grow by nearly 50% among the Chinese businesses polled by 2025.

"It is important that businesses remember that the development of new technologies and business models will disrupt certain industries," says Zhou. "Traditional enterprises must actively respond to the challenges brought by new technologies and new business models."

## The toolkit

The list of business-enabling digital tools is long, but several are beginning to stand out in China. Artificial intelligence (AI), business intelligence (BI) software, customer relationship management (CRM) software, data analytics and visualization software, and enterprise resource planning (ERP) software are all used across the country—with high-growth businesses particularly likely to utilize the tools.

For BI solutions, local company FanRuan is China's leading provider with a 19.1% share of the market in the first half of 2021, followed by Microsoft on 9.3%, according to IDC.

Another company, DataHunter, worked with Xiaomi to improve the smartphone maker's data analysis capabilities. Using the data analytics software provided by DataHunter, Xiaomi employees were able to see visualizations of up-to-date business data at any time and receive detailed insights from the data. Through automation of data collection and analysis, the platform reduced the data analysis workload of IT staff. The user-friendly platform also allowed more employees to participate in data analysis work, making it possible to introduce data analysis to a wider range of business processes.

"There is a connection between technology usage and business performance," says Chan. "A strong focus on digitalization and innovation from top management will enable businesses to not only keep pace with new technology trends, but also to lead them from a position of competitive advantage."

But among the digital tools that Chinese companies are embracing, AI is the most popular. China's AI market—including elements such as computer vision, natural language processing (NLP) and machine learning—grew by 42.2% year-on-year in the first half of 2021 to $2.18 billion.

According to a PwC survey, over 47% of CEOs in China surveyed reported that there are some forms of AI initiatives currently in place in their organizations, compared with 42% globally. On the other side, 39% of executives said they have plans to introduce AI initiatives in their organization in the next three years, 4% higher than their global counterparts.

Some AI tools are created internally—for instance, Ping An, China's largest insurer, developed a powerful NLP model capable of interpreting human speech and text that is used by the insurer to provide human-free smart customer services, telemarketing, training and interviews.

But most of the work is being done by standalone companies that sell enterprise solutions, such as software platforms, to businesses. AI giants SenseTime, Megvii, CloudWalk and Yitu all provide such services, as well as a host of smaller, specialized companies, such as Wofeng Technology. Wofeng recently provided dairy firm Yuexiu Huishan with a set of AI-driven CRM products to help deal with the companies growing number of pain points.

Yuexiu's original CRM platform was found to be inefficient in responding to a large number of consultations and after-sales calls from offline stores, supplier companies, sales centers and other parties. Labor, system operation and maintenance costs were high and the user experience could be unsatisfactory.

Using Wofeng's tech, Yuexiu integrated all their online consultation channels. Platforms with similar functionality have been around for well over a decade. But what the software also offered was, through the monitoring and analysis of all aspects of the customer service experience, the production of quality inspection reports and automatic development of knowledge bases for use by customer service personnel.

AI adoption in China is most clearly seen in companies such as Alibaba Group, which launched an AI-powered chatbot in 2015 to receive and clarify customer problems just like a human.

JD.com's experience with digital twins in 2020 underlined their power in supply chains, and the tool is also proving popular in other sectors such as infrastructure. Last year, the rail transit operator for Hunan province's capital of Changsha worked with 51World, a Beijing-based developer of digital twin tools, to build an exact digital model of Changsha's busiest subway station. The project allowed the

### DIGITAL TRANSFORMATION

The digitalization of business can have an outsized impact on value added

**1 TECHNOLOGY TRANSFORMATION**
Digitalization

Digital communication technologies are fast replacing analog ones. Manual processes are completely or partly being digitalized.
Companies are benefiting from less complex infrastructure, faster processes and optimized cash flow.

**2 PROCESS TRANSFORMATION**
Automation

The digital flow of information is increasingly automated. Applications communicate with each other without any manual intervention. Media disruption is being reduced. The error-rate is falling. Optimized communication processes are boosting productivity.

**3 BUSINESS TRANSFORMATION**
Maximizing the value added

To ensure an effcient interchange of information along the entire value chain, external partners are integrated into automated communication processes. Devices communicate directly with each other in the Internet of Things. Innovative business models are emerging.

| | 1 Technology transformation | 2 Process transformation | 3 Business transformation |
|---|---|---|---|
| Cost savings | ★★★★ | ★★½☆ | ★☆☆☆ |
| Productivity | ★★☆☆ | ★★★☆ | ★★★★ |
| Impact on business | ★☆☆☆ | ★★★☆ | ★★★★ |

Source: Retarus

partners to simulate passenger flows and the impact of potential scenarios such as equipment malfunction and emergency evacuation.

Many of these digitalization tools can be used in conjunction with each other. For instance, Microsoft launched a chatbot nicknamed Xiaoice in 2014 that combines AI, NLP, Big Data and digital twin technologies. The service—which Microsoft spun off into a standalone business under the same name in 2020—powers the smart assistants on Huawei and Xiaomi smartphones, and raised just under $75 million in an investment round last year that valued it at $1 billion. But the technology wasn't perfect and the company had to deal with blockages in China due to politically sensitive responses and a backlash in the US due to an exploit that resulted in the bot posting racist messages on Twitter.

"Through new processes, enterprises are presented with new business opportunities," says Zhou Chunsheng. "They can even turn crises into opportunities and open up a second growth curve."

Business digitalization is hugely helped by the fact that China leads globally in 5G deployment, meaning connectivity is that much faster.

## From big to byte-sized

Both smaller enterprises and big, data-rich corporations have options for digitalization, but the scale of a company largely determines which digital tools they harness and to what end. Speed seems to be key for large businesses, as they often employ tools mainly to improve their efficiency and cost controls, and conserve resources.

They are also taking the opportunity to reinvent themselves, mainly through data-driven decisions. "A stability of profit is one of the key elements for business success and a new generation of business initiatives is the key factor for enterprises to transform from their 'business as usual' mode nowadays" says Chan. "Leading companies are investing in upgrading their core business through innovation and harnessing technology."

Smaller enterprises, however, are often focused on survival and ensuring cash flow. "Customer retention and satisfaction are key success factors to them, so they will focus more on improving the customer satisfaction experience," adds Chan. "It's about attracting and expanding their customer segments in different areas of business."

And business size is not the only thing that matters when it comes to digitalizing products and processes. "Digital transformation impacts all companies," says Prophet's Zhang. "But the penetration rate for digitalization varies between industries, ranging from 40% for services such as hospitality, to around 20% for manufacturing and 10% for agriculture."

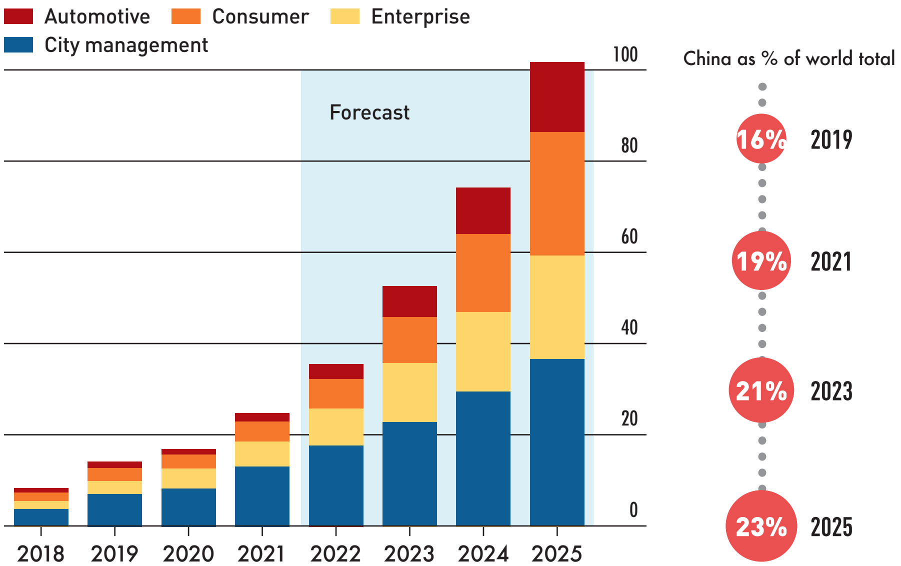
Some of the biggest players in the digitalization space offer integrated services, such as Alibaba's Lingshoutong (LST) platform which works with small retailers such as mom-and-pop shops and neighborhood convenience stores to digitalize their operations, from payments through to marketing.

But as the digitalization movement accelerates, there is a growing risk of some companies struggling to keep up and ceasing to exist. "I don't think this is really specific to China," says Mooser. "Unless somebody really takes care with where technology and customer demands are headed, their company may not fare very well in a market that is thoroughly digitizing."

Even though digitalization is a work-in-progress around the world, it is clear that companies in China are pushing ahead particularly strenuously when compared with other manufacturing powerhouses, such as Germany.

"There is a cultural aspect to this," adds Mooser. "Digitalization is a buzzword in China and every company wants to have a digital transformation. Everything needs to move very, very fast in China."

**EYE-ROBOT** | China's AI software market is growing and is expected to make up almost a quarter of the global market by 2025




Source: The Economist

## China at the leading edge

More Chinese companies than ever before are reporting the use of a wide range of digital tools, and many expect to increase investment in them in the future.

Much of the enthusiasm for digitalization comes from the top as the central government has pulled the policy lever in recent years to prod companies into digitalizing their operations. When it was announced in 2015, the Made in China 2025 initiative, seen as China's answer to Industry 4.0, was the first sign of this. "The policy was really about trying to turn China from a low-cost, labor-intensive world factory to a more tech-intensive powerhouse economy," says Zhang.

Beijing is also encouraging state-owned enterprises (SOEs) to undergo digital transformation to boost productivity and provide greater resilience to their often slow-moving and complicated organizational structures.

Few countries can boast a digital ecosystem as advanced as China's, which has earned a reputation as a hot-house for innovation and experimentation. This mindset is mirrored in Chinese consumers, who tend to love trying new products, services and technologies.

"In China, adoption can go quickly from zero to 100," says Allison Malmsten, marketing director at market research firm Daxue Consulting. "A big share of the general population are digital natives who are very comfortable with technology, so trends can spring out of nowhere."

There are potential downsides to this, though. Catering to the demands of China's fickle, hyper-connected customers can be a boon for business, but the unique nature of the market means products and ideas developed here tend to do less well abroad. "Some of the digital business solutions that have really taken off in China may not be fit for export as demands are different in other countries," says Malmsten.

## Digital dilemmas

But digitalizing business operations is easier said than done. And the intense competition that exists in China can produce diminishing returns—the country is a land of rapid iteration and testing, so ideas with momentum can attract millions of users and spawn dozens of copycats.

"The incentive is often not there to encourage original ideas so those who produce said original ideas may not get the highest rewards," says Zhang. "That promotes the speed of innovation on business scaling and on commercialization, but much less so around the originality of new ideas."

According to the Dell Digital Transformation Index survey, the three major obstacles hindering the digital transformation of Chinese companies are a lack of in-house skills and expertise, data privacy and cybersecurity issues, and a lack

> It is important that businesses remember that the development of new technologies and business models will disrupt certain industries
>
> Zhou Chunsheng
> Professor of Finance
> CKGSB

of the right technologies in place to keep up to speed with business development. Globally, data and cybersecurity are also major issues, but budget and resource constraints and the inability to gain insights or information from data pose greater obstacles than they do in China.

When asked about solving their issues, 97% of the Chinese companies surveyed made it clear that they need to spend more on agile and scalable IT infrastructure to solve these problems, and were increasing budgets where they could. The rise of digitalization service providers in China is also helping companies who can't develop what they need in-house.

Retraining workers is also a viable option. "Enterprises can give more consideration to their talent development strategy to incorporate science, tech, engineering, art and mathematics," says Chan. "This can advance the corporate culture, help improve skills diversity, and create more synergy to help employee development."

But digitalization does not come cheap. Chan estimates that before the pandemic, large companies usually budgeted between 5-10% of their total turnover on digitalization. Now, amid intense competition to both defend and grab market share, typical spending has surged to 30%. SMEs by comparison earmark 10-15%, as they prefer to allocate resources toward sustaining growth.

There is also the risk of businesses viewing digitalization as a panacea for issues that could be addressed more easily or cheaply, by streamlining existing processes, among other things.

## Folly or future?

As Chinese businesses increasingly go digital, the authorities are beginning to grapple with the challenge of transforming the world's largest workforce into lifelong learners. The task at hand is to transform education and skills development to deliver the talent needed for an innovative, digitalized, post-industrial economy.

The 14th Five-Year Plan in mid-2021 called for subsidized vocational training for 75 million people and the blueprint also made clear that a mechanism would be established to track and assess the impact of AI on employment, to prevent technology replacing people too quickly.

Much of China's edge in digitalization comes from the massive volumes of data collected across the economy and population, which is used to train highly-prized algorithms that govern everything from facial recognition to news recommendations. As more Chinese businesses go digital, more governance will be needed to ensure digitalization expands within desired parameters. Authorities have already sought to rein in the power of commercial algorithmic technology with new rules in March on their use.

But these concerns are unlikely to slow China's ascendancy in business digitalization. "Simply for the fact that it is implementing and refining its learnings," says Mooser. "China is going to be faster than most of the rest of the world."

# Tourism Turnaround

Tourism both in China and internationally has struggled due to the pandemic, but strong demand for travel remains

By James Liang, Executive Chairman and Co-Founder of Trip.com Group

The challenges brought about by the COVID-19 pandemic have significantly altered the tourism landscape, both in China and internationally. For the first time in recent history, worldwide travel came to a virtual standstill in early 2020 and since then, the implementation of various travel restrictions across the globe have greatly affected people's ability and willingness to travel. But with challenges come new opportunities, and the tourism industry has risen to the challenge.

In late 2021, we at Trip.com Group, alongside the World Travel & Tourism Council (WTTC), released a "Trending in Travel" report which looks at the shift in traveler behavior and future booking trends in the wake of COVID-19. It also shows how severe and inconsistent travel restrictions worldwide have resulted in a significant rise in domestic tourism.

Although the impact of the pandemic has now waned internationally, there still remains the specter of lockdowns across China, and border restrictions look set to stay in place for the meantime. Despite these setbacks, there has already been a shift in the tourism industry, and this shift provides a variety of different new and interesting opportunities.

## Mentality changes

Inevitably, due to the pandemic, we've seen a change in tourists' mentality around the types of trips they are looking for, with people paying more attention to safety measures and demonstrating a preference for travel in smaller groups. But, despite these potential barriers to travel, the general population still feels relatively safe traveling domestically.

Perhaps also due to the pandemic, travelers of all ages and demographics are searching for something meaningful from their trips away, whether that be experiencing nature or culture through rural travel. Or, for younger travelers, through new experiences with friends, exemplified by the recent winter sports boom and thriving nighttime economy experiences.

These younger travelers are increasingly becoming an important global market, with their interest in themed and experiential travel driving them to forgo the traditional family holiday—only 7% of Gen Z travelers were planning to go on holidays with their parents this year. The popularity of summer graduation travel for high school and college students increased by 28% year-on-year in 2022, and their travel spending increased by 21%.

There is a pent-up demand for travel among Gen Zers, and their appetite for new experiences is robust—many are willing to dedicate a significant portion of their income to travel experiences.

For many other travelers, sustainability is also a key focus. People are paying closer attention to their impact on the environment and are seeking more sustainable options in how they travel, reflecting a similar value change in their daily lives. One of the results of this new thought process has been the desire to travel for longer, which results in them taking fewer trips, and therefore flights, overall. It does, however, also mean that these trips need to be more impactful for the travelers.

In the mainland China market, it is important to stimulate supply chains to enrich the number and type of products on offer to meet this new demand, while utilizing a content strategy aimed at attracting younger people. For example, during the pandemic, I unveiled our "Local Focus, Global Vision" strategy, which involves launching innovative products to engage with customers and the industry. This included a trends report, new partnerships and pivoting our content marketing strategy. We had to provide travel inspiration to people while they couldn't travel, so they would be ready to book once restrictions were lifted.

I can see the demand for sustainable travel and meaningful experiences continuing for the foreseeable future, especially in the domestic China market, but only time will tell if there will be a shift in general trends in cross-border movements. It will be interesting to see if people revert to old habits once borders open up, or if the trend we currently see will continue beyond 2022.

**Rural Getaway: A woman cycles through the rice fields of Yangshuo in southern China**

## Domestic recovery

Despite sporadic outbreaks, domestic travel has rebounded well. Driving holidays have proven popular, meeting the increasing demand for short-haul, rural destinations. This has also provided benefits to the local economy in the destination areas and helped local Chinese tourism companies thrive in the face of pandemic-related issues.

Also, since high-end customers haven't been able to travel overseas, the money they would usually have spent on international trips has been turned inwards, towards more diverse and personalized tours. Over the last few years, customers have had more disposable income to spend on luxury staycations, which has meant an increase in high-end travel in areas of China including the northwest and Hainan Island.

Business travel is also growing fast. In 2021, our Corporate Travel business unit found a V-shaped recovery to 2019 pre-pandemic levels, prompting us to start exclusive partnerships with multiple group hotels and high-end hotels for business travelers.

## International recovery

While it is hard to predict precisely when and how international travel will return to pre-pandemic levels, the "Trending in Travel" report reveals that the global recovery of the travel and tourism sector is picking up pace with the sector's contribution to global GDP projected to rise by 31.7% in 2022, which is very promising. Therefore, it's reasonable to be optimistic about the return of global international travel to pre-pandemic levels. For the China market, there is pent-up travel demand, but until COVID-related travel restrictions are lifted it is difficult to know how things will change.

A good example of this pent-up demand has been the massive increase in bookings for trips to Macao. The recent signing of a memorandum of understanding with the Macao Government Tourism Office has been fruitful in driving outbound tourism to Macao. In H1 2021, total bookings for Macao travel products saw 244% year-on-year growth and Macao travel product trip bookings grew by 150% compared to the same period in 2020.

In general, the global market continues to make major strides towards recovery. Overall, air ticket bookings on our global brand, Trip.com, have seen an increase of approximately 400% year-over-year. In overseas markets, domestic air ticket bookings have surpassed 2019 levels, growing over 150% and outpacing the industry average across all of our key markets.

Hotel bookings have also shown a solid rebound. Globally, we have seen them increase by more than 25% above 2019 levels in the first quarter of 2022, and domestic hotel bookings in non-China

> China is essentially a world of its own in one destination, and Chinese travel brands can offer travelers a spectrum of exciting experiences

markets on Trip.com increased over 200% when compared to the same period in 2019, especially in markets such as Hong Kong, South Korea, Singapore, Malaysia, the US and the UK.

### Innovation and aspirations

China has seen a rapid expansion of its economy over the last few decades and that growth is linked to the country's rapid infrastructure development. For travel purposes, a striking example is the 1 million kilometer-long expansion of China's road system over the last decade. From a business perspective, this development means that changes in strategy and focus are necessary for continued success.

In line with this ethos of infrastructure development and China's dual circulation policy, and the increased demand from consumers for meaningful holidays, it was clear that there was an opportunity for rural revitalization in China. Improving the accommodation experience in rural destinations and providing local people with a level of training that facilitates a greater amount of autonomy became a key strategic priority for us: not only for our benefit, but also for the benefit of communities around the country. To this end, we created an RMB 1 billion investment fund for the rural tourism industry, large-scale empowerment of 100 villages, and training of 10,000 people with rural tourism revitalization in mind.

The digital world has also become essential to the global economy and people's personal lives during the pandemic, and the travel sector has been quick to grasp this. A pivot towards the optimization of domestic travel through creative marketing strategies and content marketing was, and still is, necessary.

One such opportunity, and one that we opted to use, is live streaming to drive purchases and generate revenue for industry partners, building out marketing products, tools and channels to help them increase traffic and drive sales. In the China market, our live streaming platform has hosted over 3,000 such partners, who have presented over 10,000 live stream sessions showcasing their products and promotions, this resulted in the transaction volume of Ctrip's live streaming platform increasing by nearly 20% in Q1 2022.

A key issue to bear in mind with these technological tools is the customers' ease of use. When the pandemic was causing much disruption to travel and customers were having to change or cancel their bookings, the introduction of chatbots improved the response to special service requests. This was followed by the implementation of a social media management tool with sentiment analysis built in to improve the overall customer experience. Trip.com now also has Automated Speech Recognition (ASR) AI capability and operation application enhancement, making the interactions between customers and the customer services team easy and efficient.

We do know that Chinese tourism is ready and waiting to receive inbound travelers as tourism partners have excelled in accommodating Chinese travelers and adapting their products to the domestic market while international borders have been closed.

We have also worked closely with Chinese local governments to find new and attractive ways to bring foreign tourists to the country. At the 2021 Global Travel Agents Conference hosted by the Hubei Provincial Department of Culture and Tourism, we released an action plan to actively position Hubei as a world-class tourism destination.

The focus is on creating new marketing platform innovations, tourism projects, industry innovation research and in-depth cooperation with key enterprises to attract domestic and international customers to Hubei. The aforementioned pivot to content marketing will play an essential part in promoting Chinese destinations. By providing engaging content and live stream promotions, we can increase awareness of Chinese destinations to international travelers.

The world is preparing to welcome the return of Chinese tourists, and while there doesn't seem to be a specific date confirmed for the reopening of China to foreign travel, we've been doubling our efforts to ensure we are ready.

### What's next?

China is essentially a world of its own in one destination, and Chinese travel brands can offer travelers a spectrum of exciting experiences. Despite the current travel limitations due to COVID, there are advantages to being a China travel brand, including enhanced digitalization, broad product offerings for international travelers, and the rapidly increasing accessibility of iconic tourist sites and rich cultural experiences from bustling city adventures to winter sports.

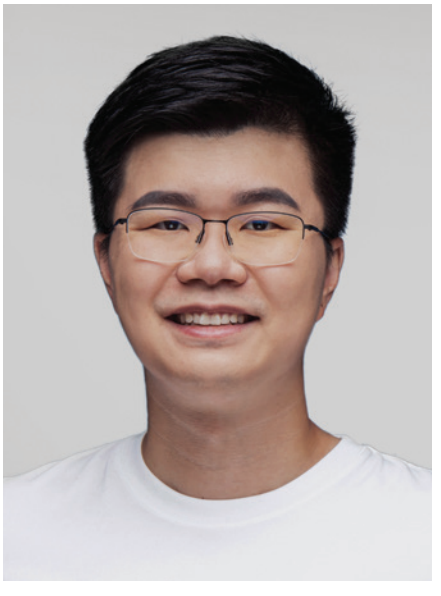
The country has quality tourism resources with technical and policy support. Because of this, players who allocate resources wisely and insist on innovation will become the industry leaders in the post-pandemic era.

China and the rest of the world are waiting for tourists to return to their embrace. While the effects of the pandemic are unlikely to go away any time soon, and we may still experience travel restrictions, I believe that tourism has a bright future.

# A Whole New World

Carson Sun, CEO of Lululand, a company operating almost entirely in the metaverse, talks metaverse advertising, world building and the future

The metaverse, the poster child of the latest phase of the newest technological revolution, consists of virtual worlds where users can play, build, own and monetize their virtual experiences in a way that is seamlessly intertwined with the real world. One of the most prominent metaverses is The Sandbox, and Lululand operates within that world offering services to users including experience design, virtual city spaces, building tools and selling advertising space. It's simply a virtual reflection of the real world.



For Carson Sun, CEO of Lululand, the metaverse is a place where friends and family can meet, regardless of time and space, and his company is designed to facilitate this. In this interview, he discusses Lululand's place in The Sandbox, the practical issues of running a business in a digital world, and the need for co-operation over competition at this stage of metaversal development.

***Q. How does Lululand fit into The Sandbox and what different services do they offer?***

A. Lululand aims to maximize economic value produced by The Sandbox. We use Lululand to build customer loyalty to The Sandbox and, by creating emotional links, people will be more likely to return to the metaverse if they enjoy what Lululand offers. The Sandbox relies on user generated content and cooperative IP to build up stories, and this is exactly what Lululand does. An analogous example would be to think of The Sandbox as a huge national park and Lululand as a playground or a camping area within it. Lululand provides content and develops user interest and emotional connections within The Sandbox ecosystem.

We offer four different services. Firstly, Lululand offers a metaverse experience which we believe is very enjoyable and emotionally nourishing. Secondly, we offer what we call The Pinnacle Project, which can help any user build up their own land in The Sandbox within 30 minutes. It is a very efficient way to build a home, just like playing with Lego.

Thirdly, we have a shop where you can buy virtual world NFTs such as virtual clothing, cars and other items. You can also use this shop to buy things to be delivered to yourself in real life, so instead of going to the shops in your city, you can visit them within The Sandbox from the comfort of your own home. Finally, we have a brand promotion service by which we help companies create jobs and roles within the world, from which real value can be gained for our company partners. One of the ways we do this is by offering billboards for businesses to advertise on.

**Carson Sun is CEO of Lululand, a company operating in The Sandbox metaverse. He is a member of the Executive Council at the Rensselaer Polytechnic Institute and a Columbia University Health Education Ed.D. Candidate, as well as a Pace University Computer Science Ph.D. Candidate.**

***Q. What does The Sandbox offer to Lululand and why have you chosen to use it?***

It's a great place to utilize your imagination and creativity. The Sandbox offers two very powerful tools, one is a Game Maker, and the other is an editing tool, Voxedit. Every user who wants to own land and experience the metaverse can use these tools very easily and without any prior knowledge or technical skills. The Sandbox is also great for accessibility, for example you can play with Lego or make your own art and in this way you can slowly build up your own home and personal effects within the world. It is a little like the game Minecraft in this respect, but has much greater depth and customization. You can also interact with Adidas, Gucci and other big brands in the world, which are arguably more accessible there than in real life.

***Q. How does Lululand interface with the real world?***

A. Currently we are based primarily in China, but we have our headquarters in New York. The company is registered in New York and our cash flow capitalization took place in New York. In China, we have a lot of difficulties because it's hard to operate a metaverse community when cryptocurrencies are illegal. A metaverse is composed of two parts, one part is NFTs and the other part is crypto. These features are key to the atmosphere and environment of the metaverse and without them you will lose a lot of imagination and feeling.

***Q. Why did you choose The Sandbox over the alternative of Decentraland?***

A. The Sandbox has a very friendly community, everyone works together and often helps each other with whatever we are working on, which was a huge benefit when we first started. Not only do people help you do things, they also share skills and teach each other. This is a huge driver for growth when compared to traditional IP and business.

Also, user-generated content for Decentraland is not as open when compared to The Sandbox. The difference is mainly that users cannot share experiences and post about them. The Sandbox is art, each block is a form of art which is totally customizable and that appeals more to us.

***Q. And so within The Sandbox, who are your main competitors?***

A. Currently I would say it's ourselves. Right now, the metaverse is in a grace period in which most companies are actually cooperating to build strong products and services for the user. This is because without good infrastructure, Lululand won't be able to provide good content, events and stories. The foundations need to be made as solid as possible before we think about competing, so we need more cooperation between peer companies and external companies.

***Q. What is your revenue model and what prospects are there for adding to it in the future?***

A. For now we don't have any offline business, rather, we work more on in-game advertising. When you walk down the street in our virtual world, there are public parks and there are commercial hubs. The brands that are represented in these spaces generate our advertising revenue, but that's not our main revenue source. We also have channel sales, which are based on our Pinnacle Project home design tools. These tools have some additional items that you can purchase which are not required for play, but make nice additions. In the future, we intend to roll out a subscription model which is very different from traditional subscription models, based on blockchain technology.

***Q. What were the main barriers you had to overcome when setting up the company in a virtual world?***

A. The cost of advertising effectively within a digital world is quite high, and training for advertising purposes is also very difficult. Incorporating advertisements into communal places and buildings, such as a virtual town hall building, or on transportation systems and in town squares, seems simple, but the challenge is doing it in an aesthetically pleasing and intelligent way. Also, all communal places needed to be made from scratch, rather than simply putting a poster on a wall like in real life. This costs a lot

## Yes, but what is The Sandbox?

The Sandbox is a game you can buy for your mobile phone or computer, and you download and install it like any other game or program. Upon opening the game, you create a character with which you can explore a virtual world that is split into areas akin to city blocks. Think of it like getting off a train in a new city, ready to explore what is around you.

The blocks of "land" are up for sale, and whoever purchases them can build whatever they want on it. This can include activities for other players to enjoy, shops selling real-life products or NFTs, or advertisements—the only limit is your imagination. The Sandbox contains a total of 166,464 blocks of land, and the company has committed to not creating more. At the time of writing, a single 3x3 plot of land is on sale for the cryptocurrency equivalent to $31,000. Plots are originally purchased from The Sandbox, but can be resold just like plots of land in the real world.

and is very time consuming, obviously there is no cost of materials because it's virtual, but you need a lot of capacity for intelligent and creative graphic design. We spent $2 million to buy a 12x12 plot of land within The Sandbox, which is lifetime advertisement virtual real estate.

***Q. How confident are you in The Sandbox's long-term prospects?***

A. There are three things I would like to emphasize here. Firstly, there is already a lot of big brand attention in The Sandbox, such as gaming giant Ubisoft, the Korean Hana Bank, HSBC and the South China Morning Post (SCMP), which will sustain it over the long run. The SCMP is creating an "ARTIFACT" which will record historical accounts and assets on the blockchain, thereby ensuring immutability and decentralized ownership in The Sandbox metaverse. The partner banks are also planning to provide a stable line of credit to anyone who needs it within The Sandbox. These are very successful examples of how businesses can add value to the metaverse.

Secondly, The Sandbox is very compelling and reliable because, as well as the big brands, its users are generating content and improving the experience all the time. The Sandbox is built on user-generated content, therefore The Sandbox by its very nature is constantly evolving and this makes it a better experience.

Finally, The Sandbox also has something called a Game Maker Fund (GMF), which supports primary content generation by funding and publishing projects. Every brand looking to work within the metaverse needs primary content generation, so the GMF can help brands get their own unique content ready for release.

***Q. What is the technology behind The Sandbox?***

A. There is blockchain technology and there are also other decentralized finance technologies. In the future, things will be very different. There will be more venture capital-supported content, software companies will begin land financing for customers, and this will change everything. In the future, The Sandbox will also have VR and AR which will create a more immersive experience. There is also BRINC, which is functionally a business accelerator for The Sandbox, which focuses on improving the technologies in the system. There are a lot of ambitious people bringing high technology into the world. It's really just evolving as we speak.

***Q. Given the decentralized nature of blockchain technologies, how does decision-making and development of joint projects work, and how advanced is IP law in the metaverse?***

A. Decision-making and development of joint projects are more efficient within the metaverse. The capital flow and the workflow will become much more efficient, and sometimes projects that would take a month in the real world can take as little as a week within the metaverse. This is because access to capital is easy, and transaction and approval times are very fast thanks to blockchain technology. Smart contracts are one example of how the system works quickly but also reliably.

Most of our technical difficulties and IP problems are associated with the blockchain technology, because cashflow depends on trading volume which is notoriously volatile. With the development of finance companies within the metaverse, this will gradually stabilize as underlying value becomes less reliant on individual actors.

***Q. What do you make of the recent market correction in the price of NFTs?***

A. As in the infamous tulip mania period in the Netherlands, throughout history there have always been bubbles of hype and speculation. Of course, Apple, Amazon and many others were born in the dotcom bubble, which people tend to forget. My job is to explain why the metaverse matters and what it can do for people. The value of NFTs comes from imagination and the asset's atributes, so if the price of an NFT goes up, it's because people are engaging with their own imagination in conjunction with the NFT. All NFTs and virtual land plots are products, and when prices drop it's an opportunity for reconsidering product utility and to reconnect with the product.

When the prices went up last year, it was a time to work hard. We worked almost 24/7 and finished almost three years work in a single year. But now that prices have dropped, we have stopped focusing on the future and on our imagination so much, and instead have shifted focus to our operations and how to make it more efficient. These are totally natural cycles.

***Q. How is the metaverse experience different in China compared to the rest of the world?***

A. The metaverse in China is very isolated, you can access it via a VPN, but it's not commonplace, but I do believe that in the future, Shanghai will be open to the global metaverse, to crypto and to NFTs. The simple reality is that if China doesn't recognize other countries' NFTs, how can they recognize their own? It is an important reality that all digital worlds need interchangeable systems to realize their full potential. Perhaps they could create special digital economic zones akin to the special economic zones in Shenzhen or Hainan. Interoperability is an essential element we need to take into consideration.

***Q. What advice do you have for entrepreneurs who would like to leverage the metaverse or Web 3.0 for business opportunities?***

A. Because blockchain is anti-AI, the metaverse is a great opportunity to provide more human interaction than ever before. Entrepreneurs need to understand this, the virtual world is more connected and more spiritual. Human concepts such as these will be easy to fit into the blockchain and that's a great place to start. But this is a very fast-paced industry that requires a lot of dedication. To meet these high standards, I would also encourage an appreciation of the culture and history surrounding the technology. I am still on this journey, but I wouldn't be if I didn't believe that this is a great space for new startups.

*Interview by Patrick Body*

CKGSB BUSINESS CONDITIONS INDEX

# Muted Optimism

## CKGSB's Business Conditions Index, reflecting confidence levels in China business, reveals some small signs of improvement

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

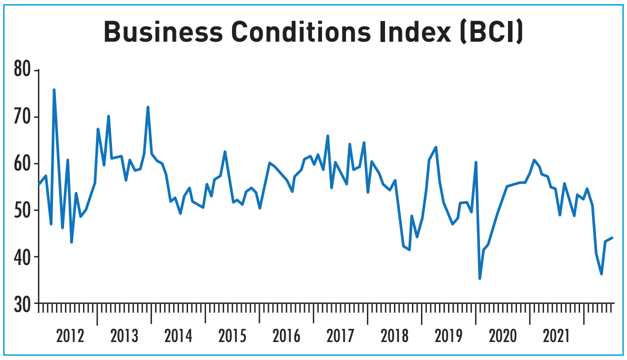
In July, the CKGSB Business Conditions Index (BCI) rose from 42.9 to 44.3, a small improvement on June's data, but still below the confidence threshold of 50.0. This reflects higher expectations of growth in China's business community but recovery is still weak.

It should be noted that the government's policies to stimulate economic growth have had an immediate effect, reflecting the advantages and responsiveness of the Chinese government in focusing its efforts on major tasks. Both our data and that of the government are saying the economy is getting better, and much of this is the result of policy. However, the data also suggest that policy is having less of an impact than before, leaving China's economy with some way to go before it returns to normal.

### Introduction

In June 2011, the CKGSB Case Center and the Center for Economic Research initiated a project to gauge the business sentiment of executives regarding the macro-economic environment in China—calling it a business conditions index. Under the direction of Professor Li Wei, the two research centers designed and tested the BCI survey in July 2011. In September 2011, the first survey was carried out. 128 surveys have now been completed between May 2012 and April 2022 and 123 reports published.

The CKGSB Business Conditions Index (CKBCI) is a set of forward-looking diffusion indicators. The index takes 50 as its threshold, so a value above 50 means that the variable that the index measures is expected to increase, while a value below 50 means that the variable is expected to fall. The CKGSB BCI uses the same methodology as the PMI index.



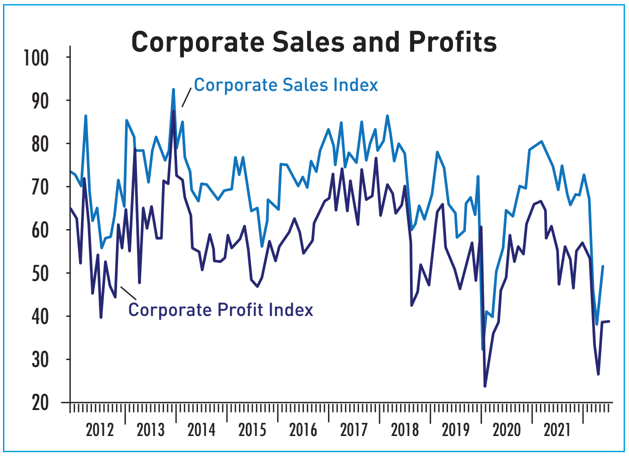

### Key Findings

- Although it showed signs of improvement, the BCI still remains well below the confidence threshold
- While travel restrictions remain in place, we hold muted confidence in China's economic outlook
- The consumer price index fell again after last month's rebound, falling to 44.2

### Analysis

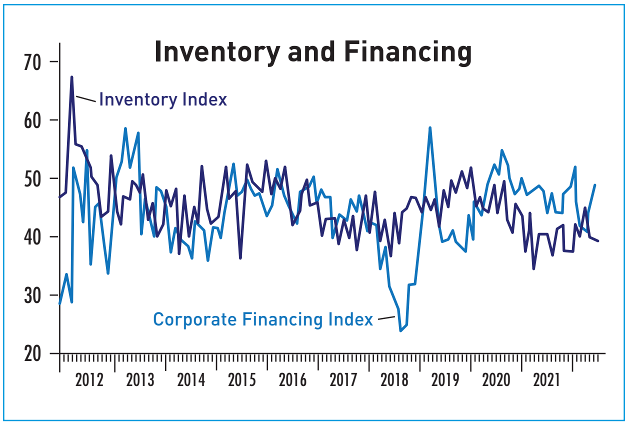
The CKGSB BCI comprises four sub-indices: corporate sales, corporate profits, corporate financing environment and inventory levels. Three measure future prospects and one, the corporate financing index, measures the current climate.

This month, two rose and two fell. The corporate sales index slipped from 50.7 to 49.0, while the corporate profit

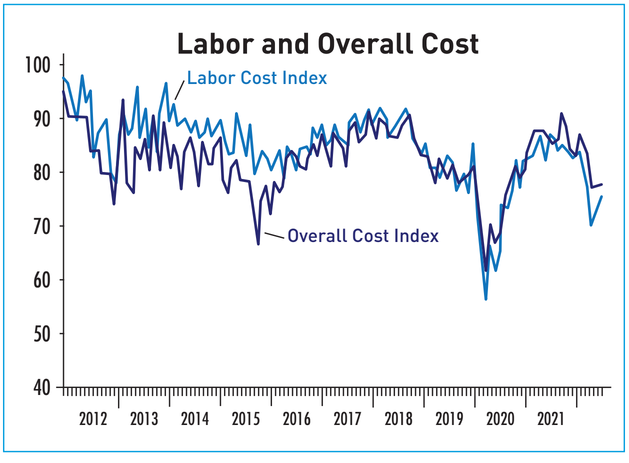



index lifted from 38.2 to 38.7.

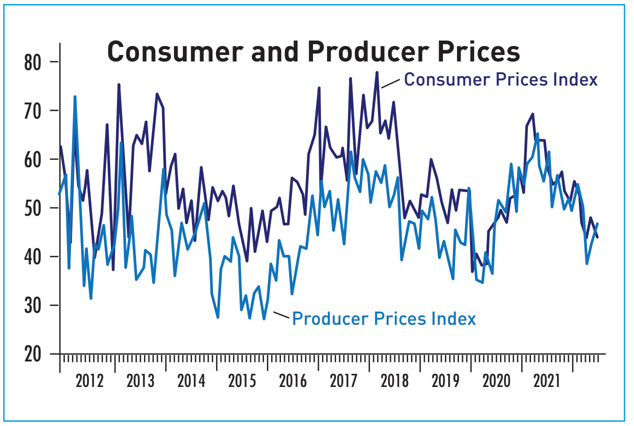
In terms of inventory and finance, the companies in our sample have had a persistently negative outlook ever since our survey began in 2012, and this month does nothing to buck the trend.



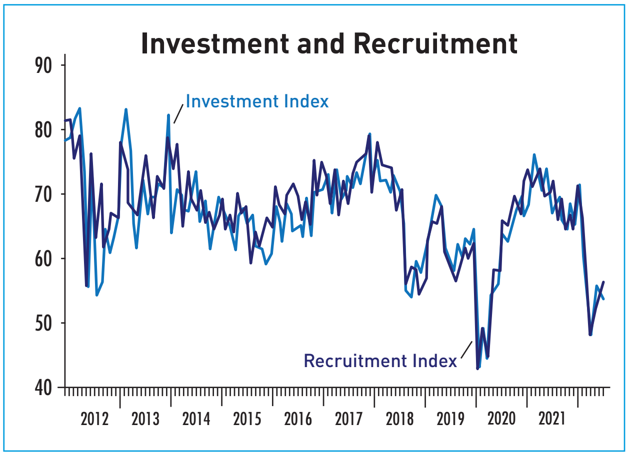

Aside from the main BCI, we also forecast costs, prices, investment and recruitment demand over the next six months. The labor cost forecast rose from 72.3 to 75.4. The overall costs forecast fell back slightly from 78.0 to 77.6.




Turning to prices, the consumer price forecast fell back from last month's rebound, from 47.5 to 44.2 while the producer price index improved from 40.0 to 46.4.




We now turn to investment and recruitment. These indices have been consistently at the more confident end of the scale since the BCI began. In the past two months, both trended downwards, and both indices hovering at the confidence threshold this month, with confidence in investment prospects at 54.1 from 55.6 last month, and the recruitment score rising from 51.7 to 55.6 this month.




## Conclusion

Many of the BCI indices have shown general downward trends over the past few months, but several have shown some form of leveling out or improvement in July. Both our data and that of the government are saying the economy is getting better, and much of this is the result of policy. However, the data also suggest that policy is having less of an impact that before, leaving China's economy with some way to go before it returns to normal. Based on this and the continuation of China's zero-COVID policy, we hold only muted optimism over China's economic outlook.

# EBB AND FLOW

## International investors in China's private equity are finding it increasingly difficult to get their money out

By Sherry Fei Ju

Image by José Luna

The China market can no longer offer the vast returns that used to offset the risks of investing in the country

In late 2021, one of the world's 10 largest private equity firms invested $156 million in a relatively unknown Chinese cosmetics startup called moody, which specializes in colored contact lenses that change the look of a user's eyes. It was a huge but outlying investment by private equity (PE) into the China market, which overall is facing significant headwinds.

Twenty years ago, international PE also used to dominate the China market, but the moody deal is increasingly an exception in a market now dominated by state-backed equity firms, not least because international PE firms are facing difficulties in getting the money out once a deal is done.

One of the fundamental parts of the PE play in China over the last two decades has been taking companies public on US stock exchanges to provide an exit for investors. But this route may no longer be an option for many, thanks to the decoupling of the financial markets in China and the US. There are always exceptions, however, and moody's business model and very fast growth rate—its sales value jumped from RMB 200 million in 2020 to RMB 800 million in 2021—proved too tempting to pass up for US investment firm KKR & Co.

In the past two decades, international PE investors have been an active part in China's so-called "consumption upgrade," as the country's booming economy helped it become one of the world's most profitable PE markets, valued at $1.3 trillion.

"Foreign private equity is now in a difficult position in China," says Shen Meng, director at Chanson & Co, a boutique investment bank in Beijing. "On the one hand, Beijing needs international private equity players to showcase its openness to the outside world, but on the other hand, the government does not want foreign private equity firms to really become predators that harvest high-quality local projects."

## Home or away?

Private equity funds are pools of capital used to invest in non-listed companies, usually aimed at companies with the potential for fast growth and a high rate of return. PE funds tend to have a fixed investment horizon, typically ranging from four to seven years, at which point the firm hopes to profitably exit the investment. The exit for investors is usually an IPO or the sale of the business to another private equity firm or strategic buyer.

Deployment of PE funds in the China market surpassed $100 billion for the first time in 2017 and today, according to McKinsey estimates, China is the third-largest private equity market in the world, behind the US and the UK. According to China Bridge Group, an information service provider in China's PE investment market, more than 60% of funds raised in China's PE market are now from state-owned capital, a jump from 40% in 2018 and a massive leap from less than 4% in 2007.

"The private equity industry in China has expanded significantly in the past decade thanks to underlying economic growth in the country," says Ivo Naumann, Partner at McKinsey & Company based in Shanghai. "It has also seen increased complexity and size of typical PE transactions and an increasing share of buyouts."

Investing in private equity in China differs depending on whether the PE fund is an offshore fund or an onshore fund. Offshore holding companies, also known as "red chip" companies, hold assets indirectly or directly in China through a Special Purpose Vehicle (SPV), which acquires or invests in the stocks of the target company's offshore holding company. Generally, the offshore holding company is intended to be a listing vehicle in an overseas IPO in the future.

On the other hand, onshore PE funds invest in domestic, PRC corporate entities through an offshore SPV. The private equity company thus becomes a shareholder in the onshore corporate entity.

International investments in PE funds have grown significantly in value since China joined the WTO in 2001 when it opened up the finance sector to global investors.

Upon entering the Chinese market, foreign PE investors played a non-negligible role in China's economic growth. "The most straightforward advantage they have brought was the inflow of capital," says Liu

Lei, Partner at Shanghai-based StratePower Consulting Group. "Back then China used to be poor and something of a blank canvas, and foreign investors' money definitely helped the growth and development of many industries in China, especially in high-tech industries that are highly reliant on investments."

According to David San Roman, Founder of ANKEN Group, a Shanghai-based real estate developer, the small- and mid-sized investors proved to be those most interested in China in the past. "Because they're the ones that were willing to take risks," he adds.

And this brought about another benefit to the developing Chinese PE sector, which is that international firms imported expertise from operations in already established markets. "International private equity players can apply their decades of experience in Europe and the US to the Chinese market," says Franklin Fu, head of M&A advisory at consultancy Roland Berger. "They can make proactive strategic adjustments and accelerate the transformation of the invested companies."

### First movers

To begin with, the private equity industry as a whole somewhat flew under the radar for many years without much intervention from Beijing. "From the government standpoint, it is a new thing," according to San Roman. "They do put a lot of attention on the financial industry as they want JP Morgan and the bigger guys to come in here from the investment and the banking point of view, but private equity is still fairly unknown terrain."

In the past decade or so, officials from China's Central Bank have clearly stated its mission to promote local PE funds and the State Council has also repeatedly pointed out that PE funds were the "weak links" in China's capital market. To facilitate this change, regulators and lawmakers in Beijing have introduced several laws in order to support the development of domestic RMB-dominated private equity funds.

And it has worked. "In the past few years, the previously wide gap between global firms and local private equity players has been drastically decreasing," says Liu Lei.

Boyu Capital, Legend Capital, CITIC PE, Hony Capital and a number of other Chinese PE players have stood out among the domestic and international competition, each with billions of RMB under management and successful exits from the likes of Alibaba, JD Logistics and Suning.

The success of domestic businesses is not likely to be limited to China. "Inevitably, over time some of these newly emerging local PE players will also be players on a global scale," says Naumann.

But this has also led to a significant drop in the proportion of international money in the China PE market. According to the Asset Management Association of China, the country's self-regulatory association of fund management companies, by 2020, international PE investment accounted for only 3.6% of the private equity market in China—a massive drop from 96% in 2007. There were a total of 302 foreign-controlled or equity-involved institutions in the PE, venture capital, and private securities investment fund management market in China at the beginning of 2020, with a total of $69.5 billion under management.

"Now with more domestic capital in China flowing to the local PEs, combined with the prosperity of the A-share IPO market, international PEs are more and more limited by their foreign funding source," says Shen Meng.

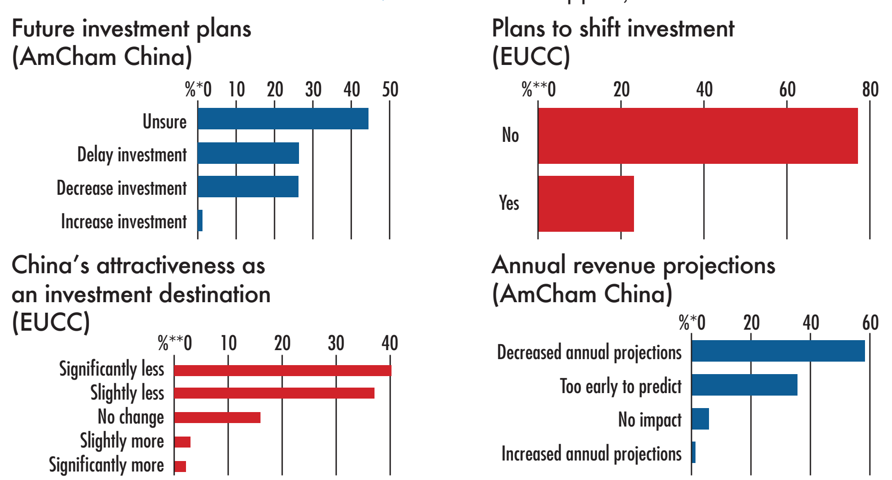
### Money block

In the past, many global PE players entered the Chinese market through investment vehicles such as Hong Kong intermediary companies, which are eligible to take 100% interest or a majority stake in a Mainland China-based subsidiary. These offshore holding companies were intended to be the listing vehicle for a future overseas IPO. However, with the recent regulatory crackdowns on Chinese tech companies, issues arising with overseas listings for Chinese companies, and travel restrictions due to the COVID-19 pandemic, foreign private equity firms have found themselves facing new challenges.

"Many global private equity people based in Hong Kong, and elsewhere in the world, have been for the most part unable to make it to the mainland," says Roman. "For example, from a real estate standpoint, it has been very difficult for private equity investors to come in [to the mainland] and see on-site what kind of asset they're going to be investing in."

Beyond pandemic-related travel restrictions, for many investors with millions of dollars invested in the Chinese market, the volatile regulatory environment

**MONEY TROUBLES** | Foreign business confidence in the China market has dropped, and with it FDI as well




*Percentage of US businesses in China
**Percentage of EU businesses in China
Sources: EU Chamber of Commerce in China, AmCham

and recent government crackdowns in China's highly profitable property sector, technology and online education industries have left many foreign investors wondering if they would still be able to successfully execute their investment exit strategy if current policies or regulations change. Global investors betting on the country's tech companies from fintech, ride-hailing apps, e-commerce delivery apps and the wider tech industry have incurred hundreds of billions of dollars in losses since 2021.

"Top foreign PE investors that have done well in China have actually made the majority of their investments in consumer goods and the tech industry, which have been a free and open market for foreign investors," says Liu of StratePower. "Now everyone knows that there are basically no more investment opportunities in these two industries thanks to regulatory crackdowns, they would have to start looking for something new."

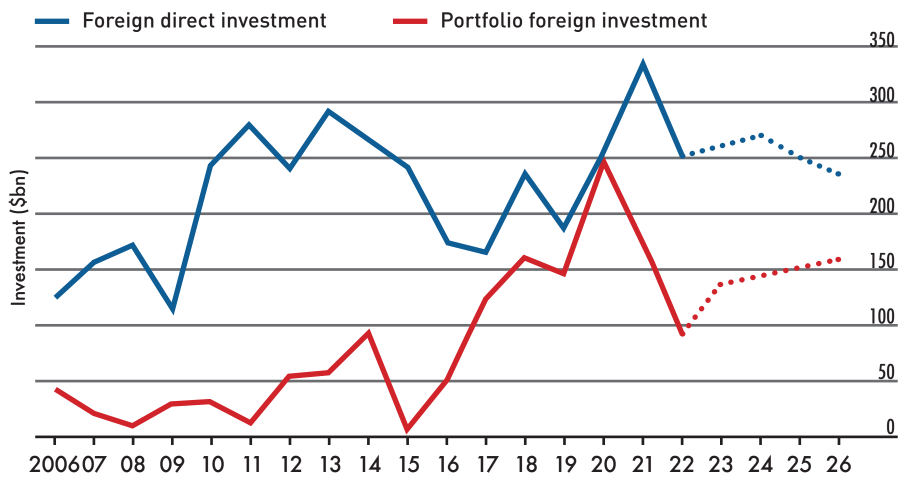
With Beijing's tightening foreign exchange controls and restrictions on foreign investment in sensitive areas, analysts point out that the scope left for foreign PE investment is now heavily restricted.

"In particular, China's loose monetary policy and the transfer of medium and long-term funds from social financing scale to short-term funds will significantly increase the inflow of local PE funds," says Shen Meng of Chanson & Co. "These potential PE fund bubbles are not conducive to professional global PE investors."

Last December, the Chinese securities regulator proposed its plan to tighten restrictions for Chinese companies that want to list overseas. While Beijing did not say it wishes to ban domestic companies from trading abroad altogether, this could still lead to increasing difficulties for non-Chinese private equity investors to exit their investment by listing the companies on US stock markets.

Listings of China-based companies on US exchanges are becoming increasingly precarious because the US Securities and Exchange Commission (SEC) has mandated that Chinese companies must disclose

**LEVELING OUT** | Foreign investment in China recently peaked and it looks unlikely to return to its highs in the forseeable future




Source: State Administration of Foreign Exchange, EIU forecasts

whether they are owned or controlled by a government entity, and provide evidence of their auditing inspections.

Under the rule, more than 200 companies, including Weibo, Alibaba and Baidu, face being delisted unless they comply by the start of 2023. A deal has been reached between the two sides, but it is still not clear how it will play out once the auditng process is underway.

For foreign investors, the option of a listing on the Hong Kong Stock Exchange is still available, but the bourse is less active and has a lower value estimation benchmark, which makes it a less attractive option. This means that if US listings are no longer possible, a successful investment exit for a PE firm will be even harder to achieve.

## The road ahead

Despite potential regulatory risks and increasing competition from local players, many global PE funds are continuing to increase their asset allocation to the Asian and Chinese markets. In March, European buyout giant EQT AB struck a $7.5 billion deal to acquire private equity firm Baring Private Equity Asia (BPEA), strengthening its presence and engagement in China and other Asian countries. Only five days after the BPEA acquisition, EQT Private Equity Asia announced that it has taken a majority investment in Guardian, China's largest domestic pest control operator.

Similarly, Kewsong Lee, CEO of private equity giant Carlyle Group said in an interview with *Nikkei Asia* last May that the group sees "massive opportunities" in the Chinese market despite trade frictions and geopolitical tensions. According to Carlyle, opportunities are being created in China because of the digitization of its economy, the demographics of its population, the use of mobile, its fintech payment systems and its ability as a country to potentially leapfrog in certain areas like climate and health care.

"In a large economy with a population of 1.5 billion, there have been ongoing mega trends attracting investors' interests," says Franklin Fu. "Electric vehicles, healthcare, consumer and e-commerce have been the center of attention for both local and international investors in the past decade."

But however attractive these options may be, the difficulty and cost of a successful exit are greater than ever before. "For investment project exits in an overseas market, foreign PE firms are now restricted by regulatory policies, and for project exits in the local market, they are subject to China's foreign exchange control policies limits," says Shen of Chanson & Co. "Either way, the cost of exits for foreign private equity players is getting higher."

CKGSB CASE STUDY

# A Growing Forest

Genki Forest has successfully challenged the perception that China's beverage industry belongs to established brands

By Teng Binsheng, Professor of Strategy at CKGSB, and
Wang Xiaolong, Senior Research Fellow at the CKGSB Case Center

While the beverage industry in China has not been short of growth miracles, there has never been a new brand or product with such a positive reputation and consecutive years of high growth as Genki Forest. On its way to becoming China's fastest-growing beverage brand, the company overturned traditional perceptions one by one, and most importantly, proved that the assumption that new brands can't compete against long-lasting behemoths is no longer true.

In the country's Tier-1 and Tier-2 cities, the company's sales of low-calorie, low-sugar drinks are fast approaching those of the traditional beverage giants. In Shanghai, for example, Genki Forest's sales reached 67% of Coca-Cola's in 2019 and climbed to 92% in 2020. But even though they now have an annual sales volume in billions of RMB, there are still huge opportunities for the company to expand into the rest of the country.

The drinks they manufacture have proved popular with the Chinese Gen-Z and Millennials, who are overall looking for healthier consumer products, and Genki Forest has now released its products in 40 countries around the world, including the United States, Japan, Australia and the United Kingdom. And in its most recent round of funding in early 2021, the company raised $6 billion.

For Genki Forest, 2022 is a critical year. The company is looking to build on its sales of around RMB 7 billion in 2021, and if it manages to exceed RMB 10 billion in 2022, then by 2023, Genki Forest will be considered a legitimate challenger to the established giants.

## Planting the seed

Genki Forest was founded in 2016 by the serial investor and tech entrepreneur, Binsen Tang, who previously founded China's third-largest gaming company, ELEX Technology, before selling the company for $434 million in 2014. Frustrated at the overwhelming dominance of Tencent and NetEase in the gaming sector, Tang decided to switch to consumer goods, in particular the beverage sector, which he believed was yet to be transformed by technology—something that he and his team had notable expertise in. After ELEX Technology and before Genki Forest, Tang also set up an investment company called Challenger Ventures, through which he supported many Chinese entrepreneurs in the FMCG industry.

Tang and his team of tech entrepreneurs, none of whom had previous experience in the drinks industry, initially struggled to launch a product that resonated with consumers. Their first batch of products was a disaster and the team eventually chose to pay an extra RMB 1 million to destroy the RMB 5 million shipment. This failure sent the Genki Forest team back to square one, and for a long time the company survived almost entirely on loans from Challenger Ventures.

The company eventually managed to generate enough funds through crowdfunding on the Chinese platform Weibo to launch their first product—Xuanmi or "Burning Tea," a low-calorie, low-sugar oolong tea. Its price of RMB 6

($0.94) per 500 ml bottle was one of the highest in the bottled tea beverage market at the time. The high cost was due to the use of the sugar substitute, erythritol, which, although it has advantages in terms of taste and health benefits, is 70 times more expensive than other substitutes commonly used, such as xylitol, maltol and aspartame, which is used by Coca-Cola.

After the success of "Burning Tea," Tang and his team launched the company into the carbonated beverage market in 2018, with its zero-calorie, zero-sugar sparkling water sold in stand-out white bottles. It was an immediate success and the company now offers over ten different flavors, including white peach, cranberry and cucumber.

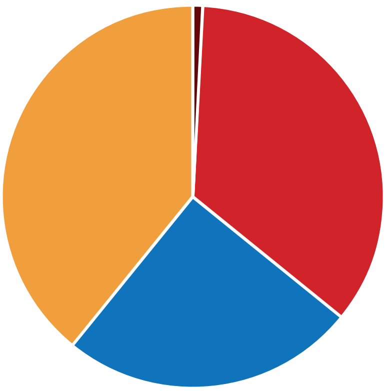
Genki Forest has since continued to release new products on the market: a low-sugar milk-powdered drink with jasmine and Assam tea extracts, and Xiancha tea, based on traditional Chinese medicine using corn silk, brown rice and barley extract, were both launched in 2019. The company has recently released new products under subsidiary brands, such as Hokkari Pastures' sugar-free yogurt, and Alienergy, a zero-calorie herbal energy drink.

## Assembling the team

Tang's philosophy on prospective team members was less about how many years of experience they had in a particular industry and more about their skill set, which explains the make-up of the core Genki Forest team, who managed to hit the ground running despite having no previous experience in the FMCG industry. In Tang's view, "trusting in young people" was the way forward. According to him, their passion, taste, ability to learn, motivation and desire to succeed makes them incredibly valuable to any business.

The team members are, therefore, mostly young people who come from all walks of life, with few having a background in the traditional beverage industry. Moreover, the majority of the members are women, who provide a strong link to the target customer demographic in terms of desire for healthy products.

**SALES BY CHANNEL** | Genki Forest's diversified sales channels allow it to reach a wide range of consumers




Source: China Playbook

Many of the team are not trained in chemistry or nutrition specifically, but they are able to quickly and thoroughly research the requirements for the creation of a healthy, tasty drink. They then utilize the team's chemistry and experimental expertise to cross-pollinate ideas and come together to create great products.

By mid-2020, the team at Genki Forest had grown to more than 3,000 from just 30 people in 2016.

## Growing reach

In a previous generation, when Nongfu Spring and Wahaha were entering the beverage market dominated by established brands such as Coca-Cola, they faced great difficulties given their low levels of brand recognition at the time.

So, how did Genki Forest become China's fastest growing beverage company? By centering its entire strategy on the sugar-free, calorie-free market, catering to a consumer base that is becoming increasingly health conscious.

The initial visibility for their first products was provided by the crowdfunding process they had used to launch the drinks. This proved incredibly useful given that early on in its existence Genki Forest had no marketing budget and Weibo was its main tool for getting its message out. The team set up an official Weibo account, and instead of posting ads, their daily job was to search for the keywords "Genki Forest" and "Burning Tea" to see what people were talking about and whether they were happy with the product. Then, in response to the different feedback, they rigorously expressed their gratitude, apologized to and addressed the concerns of as many users as they could.

> While the beverage industry has never been short of growth miracles, there has never been a new brand or product that has matched Genki Forest's growth trajectory


Low calorie: Genki Forest has focused on creating a healthy drink

This tactic contrasted sharply with the traditional FMCG practices of the time, where the main contact point with consumers was the cold shelves in hypermarkets and supermarkets, and the only communication between brands and consumers was through sales channels and various promotions. Now, the company often tops the beverage category on e-commerce platforms such as Tmall and has used key opinion leaders (KOLs), such as the influencers Li Jiaqi and Weiya, to promote its brand on streaming platforms, for example on both Xiaohongshu and Douyin (TikTok's Chinese sister app). Its drinks can also be found offline in shops and convenience stores all over China.

But for Genki Forest, having started out online, entering into these traditional sales channels was not an easy task. Luckily for Genki, new retail models that integrate online and offline shopping began to emerge around 2016. These new retail channels were looking for new, high-quality products to differentiate themselves from the shops on the streets. They also needed higher-margin products, something that Genki Forest could supply.

Genki Forest has also marketed its products using Japanese-style packaging: even its brand name uses Japanese characters, which makes its brand more unique in China and appealing to consumers. Japanese products, which are known for being high-quality while aesthetically pleasing, are very attractive to Genki's young target demographic, so the company opted to induce customers into thinking that it is a Japanese brand—a reasonably common tactic in China (another case being the Chinese retailer Miniso, although the company has apologized for the practice after a backlash).

Unlike "Burning Tea," which gradually grew after a slow start, the company's sparkling soda water proved popular with young people as soon as it launched. Interestingly, on social media such as Xiaohongshu, Zhihu, Jieyin and BiliBili, a large number of users spontaneously recommended, commented on and reposted messages about the product, which quickly boosted the product's reputation. In just a few months, the sales of Genki Forest's sparkling water reached levels that had taken "Burning Tea" more than a year to achieve.

In an attempt to continuously expand the influence of the brand, Genki Forest has also utilized product placement in the variety show "Our Band," appeared in the Golden Rooster and Hundred Flowers Film Festivals, and signed the actress Kitty Zhang as an image ambassador.

## Growing up

As a self-described technology company, Genki Forest now sees its data-driven and high-tech manufacturing as an indispensable part of its model. But prior to 2020, Genki Forest had adopted an asset-light model, outsourcing the manufacturing of its products to other companies including Toyo, Jianlibao and Unity. China's domestic beverage production capacity has long been controlled by a few leading brands, and as Genki Forest continued to grow its market share, it experienced a bottleneck in terms of reliable production capacity.

Since 2020, the company has taken control of its production lines by building five of its own factories. This has significantly reduced production costs and increased capacity, as well as permitted the company to manufacture its sparkling water without preservatives. Over the last two years, Genki Forest has completed the development of these factories, forming a production network that spans the entirety of China, covering key markets such as North China (Beijing, Tianjin and Hebei), East China (the Yangtze River Delta including Jiangsu, Zhejiang and Shanghai), South China (Pearl River Delta including Guangdong, Hong Kong and Macao), Southwest China (Sichuan, Guizhou and Yunnan), all with a significantly increased delivery capacity. With all five factories in operation, Genki Forest's annual production capacity will exceed 5 billion bottles.

## The next level

Although it was initially a challenge for a group of technology entrepreneurs to enter the consumer goods industry, the technological prowess of Tang and his team has enabled Genki Forest to release a slew of new and innovative products. In 2020, Tang said that 95% of Genki Forest's planned products are yet to be launched.

While the beverage industry has never been short of growth miracles, there has never been a new brand or product that has matched Genki Forest's growth trajectory and stellar reputation. In just a few years, the company has gone from strength to strength, challenging the traditional perception that the beverage industry belongs only to the established brands. The success of Genki Forest is based on entrepreneurship and technology, but most importantly a fundamental belief in the power of innovation.


**Non-fungible tokens have exploded in popularity over the last year, but China is stressing the technology not the collectibles**

**By Patrick Body**

Image by Jamie Stevenson

# A lack of secondary market and cryptocurrency in China mean that NFTs in the country are disconnected from the global market

It didn't take long for comparisons to be made between the Chinese Bored Wukong non-fungible token (NFT) collection and the Bored Ape Yacht Club, one of the most recognizable sets of images in the current global NFT boom. The look-alike images are a perfect example of how China seems determined to create a localized version of every digital phenomenon that succeeds anywhere in the world.

NFTs are digital assets, such as images or songs, that are registered, bought and sold on blockchain-based networks. Their purchase allows the buyer to say that they own a unique, original copy of a digital file but does not give them the same rights of control over reuse that apply to traditionally owned intellectual property. The concept of the NFT was created in 2014, but the phenomenon really grew in popularity only last year and, aided by a market filled with speculation, valuations of some items shot through the roof. The most expensive NFT to date, The Merge, a collage of multiple other NFT images, sold for $91.8 million in 2021.

On the back of a surge in speculation last year, the global NFT market reached a valuation of around $41 billion—roughly the same size as the regular art market—and China's market was valued at $450 million. There has since been a dramatic drop in some NFT valuations, but the sector is still widely expected to grow by around $150 billion worldwide between 2021 and 2026.

The Chinese NFT market is separated, both technologically and creatively, from its global counterpart and the price difference between the two "Bored" collections shows just how big a difference there is. The first Bored Wukong NFT sold for just RMB 1,888 ($280) in December, while the most expensive Bored Ape sold for $3,408,000 and the whole collection has reached a cumulative value of $2 billion.

Given the strict limits on blockchain and cryptocurrencies of all kinds in China, as well as the regulations stifling an NFT secondary market, China's NFT scene is less about speculation and more about a harmless and cheap collectible fad for consumers. At the same time, it is pushing the development of underlying technologies for business and government use which have the potential to fundamentally reshape the global economic infrastructure.

"The Chinese government is not supporting the trading of NFTs, just like it isn't supporting crypto," says Winston Ma, managing partner and co-founder of CloudTree Ventures, a metaverse-related VC firm. "But at the same time, government-backed entities are developing China's own blockchain and NFT infrastructure, which is a very Chinese characteristic in that their NFT play is focusing more on the technology behind it than the NFTs themselves. They want to use it for the real economy, to record real assets and data."

## Next-generation art

While many have already bought into the new phenomenon, questions around the nature of and uses of NFTs are still common. At the most basic level, a non-fungible token is a digital asset that is stored on the blockchain, that acts as a traceable digital ledger keeping track of information related to the ownership of the said asset.

"Blockchain technology and NFTs internationally offer artists, creators and developers a unique opportunity to monetize their products through the new creator economy," says Ramzi Chaabane, managing director at the global creative digital advertising company Stink Studios. "Thus, artists no longer have to rely on conventional galleries to sell their art. Instead, they can sell them directly on digital galleries in the form of NFTs, allowing them to recoup more of the profits and also collect royalties every time their product is traded, a feature unique to NFTs."

In China, creators are allowed to do a one-off sale of NFTs but are only allowed to accept RMB for them, not cryptocurrencies, and the price generally never exceeds RMB 50. And because resale is not explicitly allowed, NFTs have become known in China as Digital Collectibles.

"Generally, NFTs outside of China are speculative," says Rand Han, founder and managing director of Resonance, a Shanghai-based digital consultancy.

"Whereas in China, the Chinese authorities have allowed NFTs so long as they serve as pure 'Digital Collectibles' with no real secondary market."

The value of an NFT can be broken down into three separate parts. First, it has intrinsic value, which is the value of the product itself, akin to the value of a painting. This value can be increased in some NFTs by embedding cryptocurrency tokens within them. An NFT also has a level of utility value, for example, a token that can perform a function in the metaverse—an item in a game or the deed to a digital plot of land—will have a higher utility value. Finally, premium value is based on rarity or brand IP, meaning that someone like Disney can sell a branded NFT for a higher fee. These forms of value apply to both global NFTs and Digital Collectibles but in some cases the Chinese tokens are limited, for example, the embedding of crypto to increase intrinsic value is not possible.

"The value of most NFTs is mostly intrinsic and premium at the moment," says a partner at a Shanghai-based technology VC firm who did not want to be named and who will be referred to under the pseudonym Alfred Wang. "Utility value will increase in the future as things like the metaverse grow. And this is where the interoperability of blockchain has its benefits because you will be able to use NFTs in more areas." Globally accessible blockchains—such as the Etherium or Bitcoin blockchains—while separate systems, have a level of interoperability, and cross-blockchain transactions are available for a fee.

In markets outside of China, in order to produce and sell an NFT, artists simply need to create a piece of digital media, own an e-wallet where they can store cryptocurrencies, and have access to a recognized NFT platform, such as TRLab, OpenSea or Rarible, where the "minting"—the unique publication of a token on a blockchain—and sale of the NFT will take place.

"As long as you have some crypto to pay the fees, you basically just have to upload your work on a platform and write a description of it," says Min Shi, a China-born, LA-based NFT artist who recently sold two pieces worth around $30,000. "At that point, you click mint, and pay the gas fee—which is designed to compensate for the cost of the computing power required for the NFT and depends on the volume of work on the entire blockchain, so can vary from hour to hour—and then it's ready for auction. It's simple, really."

But in China, after the government's recent ban on cryptocurrencies, this model is not an option. This has given rise to the Digital Collectible, which holds many of the same properties as the standard NFT, but are bought using traditional currencies and cannot be resold.

## Digital collectibles

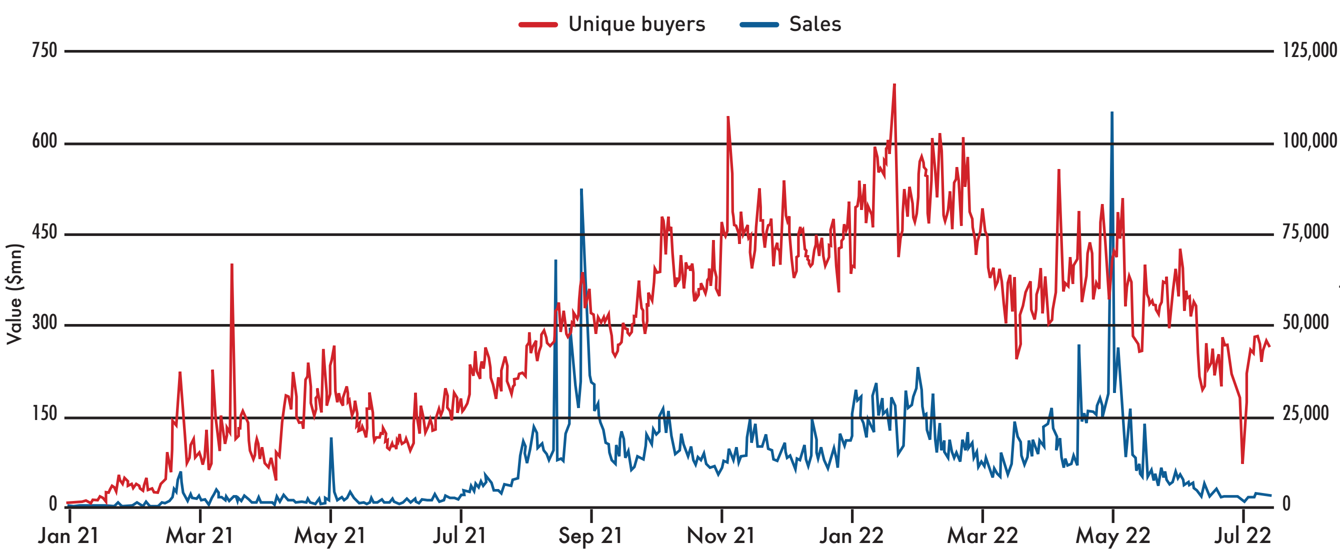
China's NFT market, in monetary value, is still significantly smaller than the global market, with the 4.56 million separate Digital Collectibles sold last year worth a cumulative RMB 1 billion. But it is expected to grow in size to around RMB 29.52 billion ($4.63 billion) by 2026, and looking at online search trends, China is already the number one country in terms of online interest in NFTs.

The range of Digital Collectibles available in China is similar to those available worldwide, with art, music and digital tokens linked to real-world objects.

"I bought several products," says Cathy Chen, who is in her forties and works in the education industry. "One song, one digital image from the lantern festival, and a cultural relic. The last one is a piece of china made in the Ming Dynasty, which is currently housed in one of the museums in Shanghai."

Without a secondary market for the NFTs, motivations other than money-

**UP AND DOWN** | The value of global NFT sales peaked in May 2022 before falling off rapidly




Source: CryptoSlam.io

making guide purchases in China, but they are limited to intrigue and a desire for inclusion. For Cathy Chen, it's more curiosity than anything else. "I like new products and wanted to become an early adopter," she says. "Also, the friend who introduced me to them was talking about the fact that we have a physical house or a physical pair of shoes, but in the future, we'll have a version of those in the metaverse as well. That intrigued me."

For others, there may be some hope of a secondary market in the future, and with it the possibility of speculation.

## Content creation

Production of NFTs and Digital Collectibles can be split, as with almost all other metaverse-related content, into professionally-generated content (PGC) and user-generated content (UGC). UGC is created by individuals or groups of artists who develop a piece of work and auction it on a platform, paying the platform a 10-15% fee, whereas PGC involves platforms actively commissioning from or partnering with outside groups.

"The biggest difference between the two methods is the professionalism of the creators," says Ramzi Chaabane. "The UGC model works well in tandem with well-known IP, and the sales are divided according to agreed proportions. Whereas within the PGC model, the platform signs the IP at a fixed price and then sells it on the platform and takes its share of the profit."

In terms of the China market, there is very little in the way of UGC because most of the platforms used to auction such content are internationally based and function through the use of crypto. But there is a thriving PGC model on NFT platforms operated by the country's major tech companies through their own blockchains, which have an increased level of control over them compared to their international counterparts.

"At present, the main difference is that the NFT products issued by many internet platforms in China are issued based on so-called non-public chains," says Zhang Feng, partner at V&T Law Firm. "Whereas many overseas NFTs are issued based on public chains and traded through smart contracts. But the NFT technical protocols on which they are based are basically similar."

Tencent's Magic Core, Alibaba's Ant Chain, and JD.com's Lingxi are all non-public or permission—blockchains, which provide the company with control over who can use the network and how. International blockchains such as Etherium are known as public blockchains and are completely decentralized, with no ownership or control systems in place.

Alibaba and JD.com both run separate NFT platforms on their blockchains—Jingtan and Lingxi, respectively—and are releasing collections both made by themselves or in conjunction with other artists, big-name IP, or cultural organizations. Until July 2022, Tencent also ran an NFT platform, Huanhe, but closed it as the ban on secondary trading limited its business potential.

JD.com recently released a set of Digital Collectibles, listing five sets of dog-themed tokens named "JOY." Each set consisted of 2,000 coins, all priced at just over $1.50 per coin, and all selling out swiftly. Another release has been Ant Group's "Treasure Project," which works in conjunction with China's museums to digitalize their collections, and is how Cathy Chen purchased her Ming Dynasty china NFT.

Xinhua, the official Chinese media outlet, released a set of 10,000 copies each of 11 digital photos taken by journalists throughout 2021, for free. Chinese independent fashion brand ANNAKIKI also released NFTs as part of one of its recent collections.

"Brands seem to be very interested in exploring the NFT space and seeing what's possible," says Rand Han. "In the future, we may see more NFT innovation led by brands and marketing budgets instead of by artists and creators."

China has also now introduced the Blockchain Service Network (BSN), a state-sanctioned blockchain infrastructure. In January, the BSN launched its NFT network which provides a structure for building NFTs that is compliant with Chinese government regulation. Within the BSN there are currently 10 Open Permissioned Blockchains (OPBs) available, which are hybrids of the permission and public blockchains. They are localized versions of their public, permissionless counterparts that set restrictions on who can participate in network governance and use fiat currency for payment.

"The real advantage of the BSN is the development of the technology behind it," says Winston Ma. "The decentralized data certification will mostly be used for the real economy. It will be used to manage the recording of real assets and real data. It's less about NFTs and digital art."

## The China chain

Given the limitations on digital collectibles in China, it is surprising to see them

**HYBRID THEORY** | China's Blockchain Service Network (BSN) promotes the use of hybrid blockchains

| | Public (permissionless) | Private (permissioned) | Hybrid |
|---|---|---|---|
| USE CASES | Cryptocurrency<br>Document validation | Supply chain<br>Asset ownership | Medical records<br>Real estate |
| ADVANTAGES | Independence<br>Transparency<br>Trust | Access control<br>Performance | Access control<br>Performance<br>Scalability |
| DISADVANTAGES | Performance<br>Scalability<br>Security | Trust<br>Auditability | Transparency<br>Upgrading |

Source: Techtarget

experience such an explosion of popularity in the country. But the Chinese government is very active in the development of blockchain technology and the country is already in fairly advanced stages of testing its own digital currency, suggesting that NFTs have a home in China as long as they stay within the legal framework set out for them.

Generally speaking, there seem to be three main legal issues that NFT-related organizations need to be aware of: issues related to information and data; intellectual property rights, including things such as portrait rights and virtual property rights; and the financialization of the market.

"In terms of platform compliance, these three issues are very important," says Zhang Feng. "If these issues are not handled well, they may lead to civil, administrative and even criminal liabilities. Relatively speaking, compliance with financial regulatory requirements may be the most important of the three."

In April 2022, Chinese financial institutions were told by regulators to steer clear of NFTs in an attempt to pre-empt any government backlash given its cautious stance on the technology.

Some of China's major tech giants, including Ant Group, Tencent and JD.com have signed a "self-regulation convention" on NFTs, showing a willingness to follow the rules. The "Digital Culture and Creative Industries Self-Regulation Convention" was signed with state organizations and encompasses 11 principles that align with government aims that vary from enabling the real economy to promoting national culture.

Despite the recent shuttering of its Huanhe platform, Tencent is also leading the way in the standardization of NFT technology globally, becoming the first company, in conjunction with Ant and others, to gain UN approval for their standards initiative. When completed by the end of 2022, it will "specify the technical architecture, technical flows, functional requirements, and security requirements for blockchain-based digital collectibles, and it could help drive a consensus and common understanding around the world on the formation of a technical framework for digital collection services," according to the company.

But these attempts to standardize NFTs, Digital Collectibles, and blockchains are not necessarily in line with the decentralized nature of the global phenomenon.

"The difference in blockchains, caused by regulation in China, is the fundamental difference between China and the rest of the world when it comes to NFTs," says Alfred Wang. "And this is why I would say that Chinese Digital Collectibles are basically similar to what we have already seen in the Web 2.0 world. They really should be permissionless and they also lack interoperability because you can't easily transfer your NFT out of the specific application and on to the others."

## No fake transactions

China's separation of Digital Collectibles from true NFTs, although to some a stifling of possible creativity and future opportunity, may also have already proven to be a smart decision.

Blockchain technology is supposed to provide the ability to track the creation, minting and ownership of NFTs over different transactions, but as with any new technology, there are still some loopholes that can fudge this information. It is also a new and not particularly well-understood technology, meaning scams are rife as a result. At the end of March, two 20-year-olds in the US were prosecuted for selling falsified NFTs and absconding with $1.1 million in digital currencies. In China's system, that couldn't happen.

Another, less nefarious but no less dangerous, financial risk of NFTs is a market bubble, the effects of which can be exacerbated if purchases are made with profit in mind. "A bubble is unlikely in China as regulation completely removes speculation," says Rand Han. "Globally, except for a few projects like 'Bored Apes,' we're already seeing a cooling off in sales volume and sentiment from August 2021 peaks. As with crypto-currencies, the global NFT market is highly volatile and cyclical, with individual NFT projects having bubbles and crashes."

## New future tech

To those interested in NFTs from outside of China, the limitations placed on Digital Collectibles within the country mean the stunting of an opportunity that offers a huge amount of future potential value and utility. But it shouldn't be assumed that the rules were put in place without a clear understanding of the technology.

"The decision-makers and the researchers at the PBOC are slowing it down so they can work on how to sustainably adopt a new, disruptive technology into China's massive financial framework," says Alfred Wang. "At the same time, they're protecting against scams and 'pump and dump' investments, neither of which form a part of a healthy market."

It remains to be seen what new ideas will emerge out of China's unique NFT ecosystem. A case in point may be WeChat, which started as a simple chat service akin to WhatsApp, but eventually became embedded in almost all aspects of life in China. NFTs have the potential to better connect brands, creators and their communities, but also provide a more efficient identity and ownership infrastructure for digital assets of any kind, that benefits society through the underlying technology.

"I think NFTs in China will develop very similarly to the blockchain," says Winston Ma. "China prohibits crypto trading, but in terms of blockchain application, it really is the country where it is most mainstream. And for NFTs, if the BSN-type applications become mainstream, then China could become the first country to broadly use NFT technology for decentralized data certification."

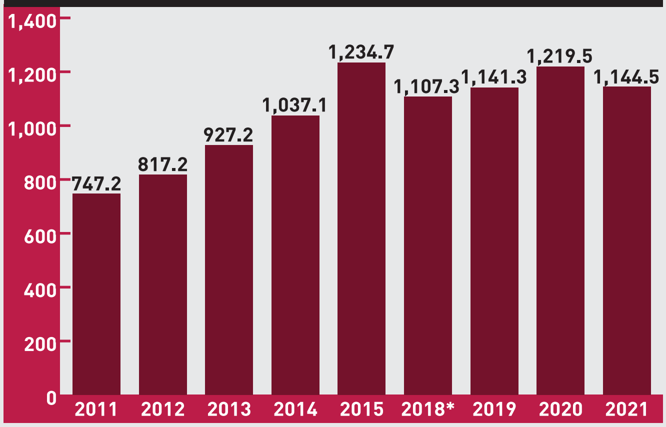
"If we've learned anything from the past," says Rand Han. "It's that China's digital industry is full of innovation and has rapidly become one of the most advanced and sophisticated ecosystems in the world." It's very early to imagine what might come out of China's NFT boom, but whatever it is, it sure will be interesting.

# DOMESTIC TRANSPORT INFRASTRUCTURE

## TOTAL SPEND

One of the main drivers of the Chinese economy over the last two decades has been the rapid expansion of the country's domestic transport infrastructure. Since 2014, the Chinese government has spent over RMB 1 trillion a year on air, rail and roads. This is incredibly high from a global perspective, but it has plateaued and may start to fall because of the country's mounting debt concerns.

**Public expenditure on transport infrastructure (¥bn)**



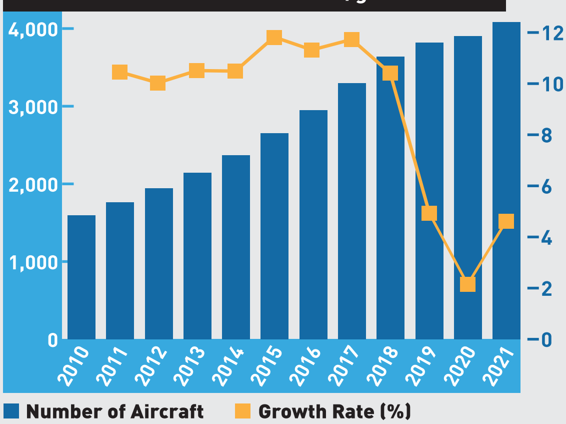

*Statistics for 2016 and 2017 are unavailable

## AIR

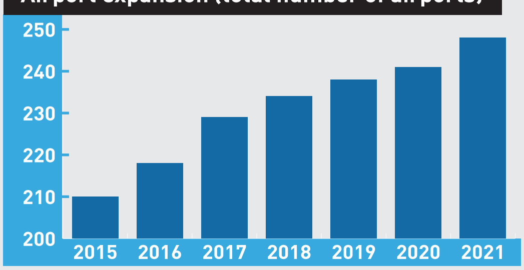
### PLANE AND SIMPLE

The number of commercial aircraft in China grew by a little over 10% a year between 2010 and 2018. The increase slowed after several Boeing crashes in 2018 that put a pause on China's imports and the subsequent disruptions caused by the pandemic in 2020. However, in July 2022 China signed a massive agreement with Airbus, which is expected to push this number up again.

**Number of commercial aircraft/growth rate**



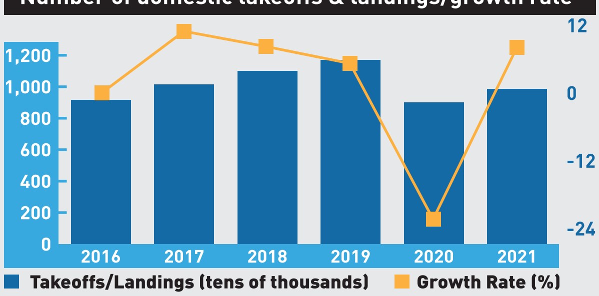

**Airport expansion (total number of airports)**




### FEELING FLIGHTY

In 2019, with air traveler numbers at their peak, China had 39 airports with an annual throughput of over 10 million people, 25 with a throughput between 2 and 10 million people, and another 165 with a throughput under 2 million people. Airports in just three cities—Beijing, Shanghai and Guangzhou—accounted for 22.4% of all passenger throughput.

**Number of domestic takeoffs & landings/growth rate**




The pandemic dramatically hit the number of domestic flights in 2020, but the recovery already appears to be well underway.

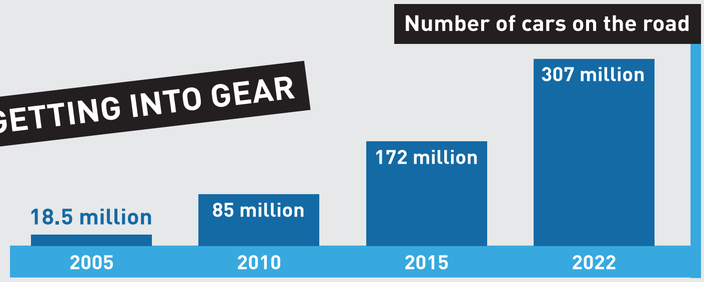
Sources: National Bureau of Statistics, Qianku Industry Research Institute, Zhiyan Consulting

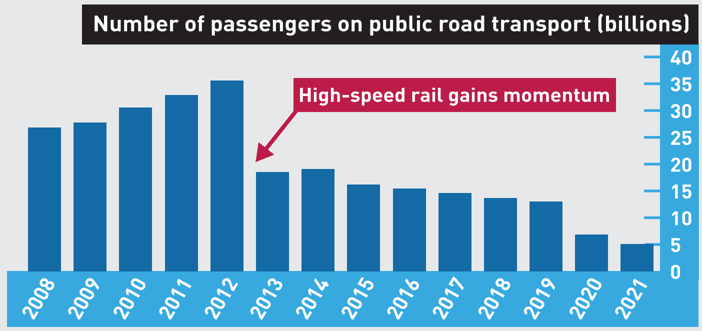
# ROADS

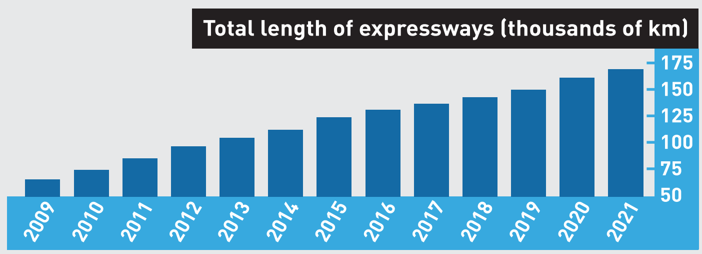
## GETTING INTO GEAR

China's roads have seen a globally-unrivaled expansion over the last decade, and the total number of expressways—China's largest roads—has doubled since 2011. Understandably, the number of private cars on the road has also dramatically increased, but since the country's high-speed rail system really came to fruition in 2013, the number of passengers on the roads has dropped significantly, thanks to a shift from buses to trains.

The total length of expressways in China has also more than doubled in the past 10 years, dwarfing that of any other country. Despite having more overall kilometers of roads than China, the US sits in second place in terms of expressways with only 95,932 km compared to China's 169,100 km. However, the US is still way ahead on a per-capita basis.



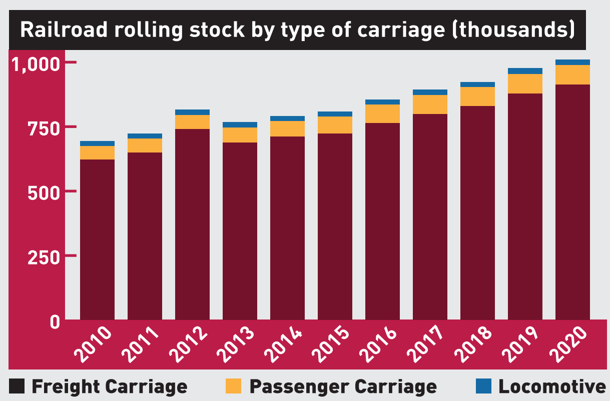




# RAIL

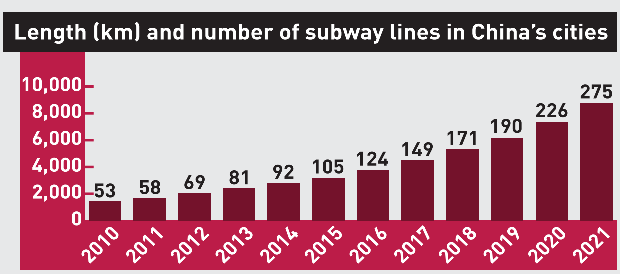
## ROLLING STOCK

China's rail network has expanded from 68,000 kilometers in 2000, to 150,000 kilometers of railways and 40,000 kilometers of high-speed track today. As China's economy boomed, so did passenger usage of the rail network, peaking at 3.66 billion passengers per year. The country's busiest passenger rail route is the high-speed link between Beijing and Shanghai. It is estimated that around 220,000 people took trains on this stretch of track every single day in 2020. Most of the country's railways are dedicated to freight, however.




## METRO-POLIS

China's metro lines have also grown exponentially. There has been a fourfold increase in the length and number of lines spanning the country's cities since 2012 alone. To put it into perspective, there were only two functioning metro lines in all of China in 1995.




Sources: NBS, Sina Finance, CGTN

data CHINA data

The stats you need to know

## Macro


### Faltering Funding

China faces a shortfall in green financing over the next four decades as it strives to hit its carbon neutrality goal. The country will need to raise about **RMB 140 trillion** from green bonds and other environmentally friendly funding tools to become carbon neutral by 2060, but will fall short by **RMB 44 trillion ($6.5 trillion)**.

Source: *South China Morning Post*

### Housing Hiccup

Sales by the country's top **100** property developers fell **39.7%** in July from the same period last year to the equivalent of **$77.6 billion (RMB 523.14 billion)**. July sales were down **28.6%** from June, ending a two-month recovery in month-to-month sales growth.

Source: *The Wall Street Journal*

### Surprise Contractions

China's factory activity contracted unexpectedly in July after bouncing back from COVID-19 lockdowns the month before. The official manufacturing purchasing managers' index fell to **49.0** in July from **50.2** in June, below the 50-point mark that separates contraction from growth.

Source: *Reuters*

## Business


### Listless Listing

Around **52** of the **261** Chinese companies currently listed in the US are probably not qualified to go public on the Hong Kong Stock Exchange, limiting the options for firms looking to offset the increased risk of a US delisting amid an ongoing auditing stand-off.

Source: *South China Morning Post*

### Outlandish Offerings

The value of initial public offerings (IPOs) on Mainland China exchanges climbed to **$57.8 billion** as of August 2022, the largest-ever for such a period. From January to July there have been five IPOs of above **$1 billion** on the Chinese mainland.

Source: *Bloomberg*



### Happy Hour

China's high-end liquor maker Kweichow Moutai is celebrating a first-place ranking in the Alcoholic Drinks 2022 spirits' list. Moutai's brand value hit **$42.9 billion** based upon the evaluations of a group of key indicators such as brand competitiveness, its industry franchise rate and the enterprise's expected business revenue.

Source: *China Daily*

### Doubling Defaults

The value of bond defaults in China in H1 2022 has already more than doubled the full-year total from last year. Defaults by Chinese issuers have already exceeded **$20 billion**, compared with about **$9 billion** for all of last year, with property developers accounting for most of the defaults.

Source: *South China Morning Post*

## Technology

### Catching Up

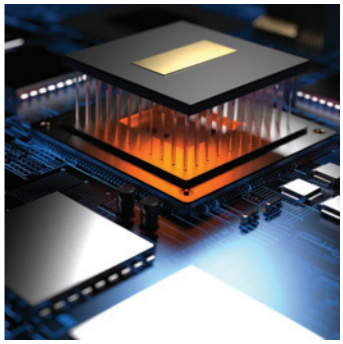
China's BYD became the world's No. 2 seller of electric vehicles globally for the first six months of 2022, trailing only Tesla. BYD, which was fourth in 2021, sold **324,000** EVs in the January-June half to pass Chinese rival SAIC Motor and Volkswagen.

Source: *Nikkei Asia*

### Data Damages

Chinese regulators fined ride-hailing group Didi Chuxing **RMB 8 billion ($1.18 billion)** and hit its founders with additional penalties over breaches of the country's data security laws. The Cyberspace Administration of China probe had forced the company to delist from the New York Stock Exchange roughly a year after its IPO.

Source: *Financial Times*

### Thick-cut Chips

Chinese chipmaker Yangtze Memory Technologies announced new memory chip technology that will help it catch up with rivals Micron and SK Hynix. The company unveiled its fourth-generation 3D NAND chip, the X3-9070, and its first to feature **232 layers** of memory cells.

Source: *Gadgets360*

### Building Biomedicine

WuXi Biologics, a China-based biopharmaceutical firm, announced an investment of **$1.4 billion** over the next 10 years to expand its R&D and manufacturing capabilities in Singapore. The plan involves setting up a research and development service center and large-scale drug manufacturing plants in the city-state.

Source: *TechInAsia*

## Consumer


### Retail regression

China's retail sales, a critical gauge of sentiment in the world's biggest consumer market, were down **4.6%** in the second quarter, including a double-digit fall in April. Consumer spending has lagged behind the wider recovery since the start of the pandemic, in part because of travel restrictions.

Source: *Financial Times*

### Consumer concerns

Chinese shoppers have mounted at least **78** boycotts of foreign companies since 2016, more than six times the number seen in the preceding eight years. While consumer brands all face the same complex operating environment in China, how they get out of hot water differs depending on the issue.

Source: *Bloomberg*



### Makeup maintenance

Cosmetics group L'Oreal bucked a declining trend for the luxury and fashion industry in China, with sales growing **13.4%** in the second quarter despite COVID-19 lockdowns. The group's overall sales for the three months to June came in at **$9.46 billion**.

Source: *Reuters*

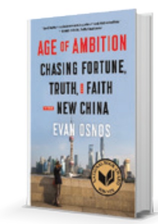
BOOKSHELF

# Building Knowledge

**World-renowned architect Benjamin T. Wood, recommends books that build a deeper knowledge of China**

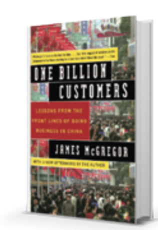
Ben Wood, CEO of design house StudioShanghai, is the architect behind many urban renewal projects in China's major cities, including Shanghai's famous Xintiandi district, a project that has become symbolic of China's changing aspirations. It is known for its nuanced embrace of both the past and the present, with brick-built houses, narrow alleyways and many links to history, and feels trendy to the young and reminiscent to the elderly. He has lived in China for more than 20 years and has completed major projects in many cities across the country.

### What would be your number one book recommendation for someone looking to learn more about China?




Evan Osnos' *Age of Ambition* is an excellent overview of China from a grassroots perspective. In chronicling the lives of those people he came across during his years living in China, Osnos managed to present a story to Western audiences that would never have been told without him. What really sets the book apart from its contemporaries are the details included by Osnos that clearly show the time that he spent with real people, and a deep desire to tell stories of some of China's hardest-working people. It generated in me a much greater understanding of the country's work ethic.

### What book on China have you re-read the most?




James McGregor's *One Billion Customers: Lessons From the Front Lines of Doing Business in China* is one of the seminal China business books of the last two decades. Although it was published in 2005, the book remains an evergreen, explaining the nature of China's system and the opportunities and pitfalls inherent in doing business here. McGregor tells stories from his own rich business life in China and puts them in the right context politically and socially, and then crucially draws conclusions from them which anyone one doing business here will ignore at their peril.

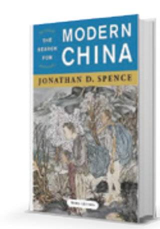
### Which book had the greatest impact on your professional life?


Edward Denison and Guang Yu Ren produced a book called *Building Shanghai* that added a new layer to my approach to architecture. The book offers a riveting history of the development of Shanghai's urban planning. There is no better city in the world in terms of urban design, and the book traces the development of the city's boulevards, alleyways and roads through the influences of the Chinese old city and the Western Concessions. It is a brilliant book on a very worthy subject.

### What book totally changed your perspective on a certain topic?

I am working my way through the *Science and Civilization in China* series, originally started by Joseph Needham in 1954. It is a masterpiece containing over 40 years of work spread across 27 different books, explaining the building blocks of China's incredible technological development that has led the country to be at the leading-edge of business and digitalization today. Needham's endeavors provide a vital linkage between two previously distinct histories and offer a chance to truly understand China's past.

### Which China book do you think is the most underappreciated?




*The Search for Modern China* by Jonathan Spence is a masterpiece. In it, Spence explains the evolution of China's politics and society and how it changed through different eras. From the Communist revolution, through the "Reform and Opening Up" era, it charts the changes within China and how they affected the country, its people and its relationships with the outside world. Spence is unrivaled as a Western scholar of China and Chinese and the objectivity he brings, alongside his ability to explain everything in an extremely accessible way, make this book a must-read.

# CKGSB 2022 ESG and Social Innovation Report

## Our Innovative Path towards Sustainable Development

CKGSB
长江商学院
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Jennifer WANG, Program Manager
jenniferwang@ckgsb.edu.cn
+44 (0)7717 748855