

Panorama

For global professional /
qualified / institutional
clients and investors and
US individual investors
For marketing purposes

China edition | UBS Asset Management

The China complex

Wugong Mountains
Jiangxi, China



UBS

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Introduction



Barry Gill
Head of Investments,
UBS Asset Management

So many myths and misunderstandings surround China. It is as complex as it is diverse, and it never fails to confound the West.

But China's geopolitical and economic importance is without question. Investors, even if only indirectly, cannot escape exposure to the world's second largest economy. It demands our attention. As Henry Kissinger once put it, "I do not always agree with the Chinese perspective... But it is necessary to understand it, since China will play such a big role in the world that is emerging in the twenty-first century."

To some degree at least, we must put ideologies and stereotypes aside and find ways to remove our biases; only then will the real China emerge; the one that lies behind the headlines; the one that leads the way in renewable technology; the one that values security over freedom; the one that is socially and environmentally conscious in ways that we in the West do not yet quite understand.

This edition of Panorama is dedicated to providing a more balanced picture of China. We talk to Keyu Jin in **The new China playbook**, who challenges some of the misconceptions and biases and believes a radically different younger generation will reshape the country's economy and future. The multi-decade period of high growth has come to an end for China, but the opportunities for investors have not. Evan Brown and Sylvia Liang provide a good framework to explain the country's interconnected economic challenges (see **Can Chinese equities withstand a slowing economy?**). But at the same time, they point to the underappreciated secular opportunities, especially in the advanced technology areas that have geostrategic importance.

China's push to achieve technology dominance is further discussed in **An entrepreneurial state**, where Michael Nell, Ellis Eckland and Jia Tan consider how the state-centric Jia Tan (TJ) model spurs innovation and compare the Chinese approach to that of the US. **Bucking the trend(s)** examines the relationship between GDP growth and stock returns, as well as where China A-share opportunities are in index investing with Boriana Iordanova and on the active side with Ian McIntosh and Bin Shi.

Because tensions between China and the US remain high, forces to decouple have been gaining pace. One interesting development to me is the digital yuan (see **Dollar diffusion**). The world's leading reserve currency status of the US dollar is not yet being challenged, but the Chinese alternative is a central-bank digital currency (CBDC) pioneer that could someday upend the existing global finance system.

By and large, many see the US-China decoupling having a detrimental impact on the world. Nobel laureate Michael Spence believes the two countries can and must work together to advance on various critical issues in **Where China and the US can underwrite world progress together**. Lucy Thomas argues for the same in **China and net zero**: it will be impossible to stop climate change without China.

It is always dangerous to look at a country and a culture through a singular lens, let alone a country like China that has a rich and long history. I hope the different points of view presented here offer a plurality that is missing in the current public discourse, particularly when it comes to investing in China. The "Middle Kingdom" is connected to the world, and its impact on the global economy and markets should not be downplayed. It is important for investors to get to know the real China.

Please enjoy reading this edition and we welcome any feedback.

A handwritten signature in black ink, appearing to read 'Barry Gill', written in a cursive style.

Barry Gill
Head of Investments,
UBS Asset Management



Zhangjiajie National Forest Park,
Hunan Province, China

The new China playbook

Barry Gill interviews
Dr. Keyu Jin

Like everyone this year, I was forced to sharpen my thinking on the investment case for China. We came into the year with high hopes for the economy and financial markets based on a post-COVID re-opening. As we all know, this has not materialized.

In my attempt to make sense of events, I came across a book called *The New China Playbook* by Dr. Keyu Jin. Dr. Jin is a Chinese economist, associate professor of economics at the London School of Economics and a World Economic Forum Young Global Leader.



Barry Gill
Head of Investments,
UBS Asset Management



Dr. Keyu Jin
Chinese economist & associate
professor of economics at the
London School of Economics



Karst Mountains,
Yangshuo Guilin, China

Her book is a refreshing take on China that spans a wide-range of topics; from technological innovation, to trade; from consumer and savings habits, to the demographic and psychological hangovers of the one-child policy; and from finance and corporate competition, to the unique and delicate dynamic between central and local government (i.e., the 'mayor economy').

More than anything though, it forces us to think of China as a dynamic country and economy that is changing in front of our eyes. As Dr. Jin sees things, the 'old playbook' was one of industrial subsidies and technology transfers, but a radically different younger generation is set to reshape China's future. The new China that is emerging is dynamic and exciting but by no means perfect and not without risks.¹

Can you explain why you wrote this book and what you hoped to achieve with it?

China is a large complex country and is often misunderstood. I set out to provide perspectives from the inside through a cultural and historical lens. Ultimately, I want to reduce the misgivings that often divide the East and West.

What is the single biggest thing we in the West get wrong about China?

Instead of being a highly centralized state with heavy top-down decision making, the Chinese development model is actually characterized by political centralization with an extreme form of economic decentralization.

Local government officials in China are highly entrepreneurial.

¹ Special thanks to Brian Tart, President of Viking Books, for arranging this interview.

They are focused on doing what is best for their province. They implement economic programs, protect the environment, and pursue high and hard tech technological innovation.

There is also a common misunderstanding about Chinese culture. Chinese people have always had to balance the deference to authority with their independent exertion of free will. Whether between children and parents, subjects and the emperor, or now citizens and the Chinese state, things have never been black and white. Often irreconcilable paradoxes to the Western eye are not so in China; they can coexist.

Can you explain how the so-called 'mayor economy' works and the intricate relationship between central and local government?

The term "mayor" captures the fact that provincial governors or party secretaries are highly motivated to develop their local economy; whether through supporting innovation, pushing hard reforms, maintaining social stability or protecting the environment. They are in charge and are held accountable.

Take Hefei. A city of five million, it is home to what is known as the Global Quantum Avenue, a hub of innovative high-tech companies, and the headquarter of NIO, a high performance smart electric vehicle manufacturer. In what some hailed as the "Hefei model," the local government took an entrepreneurial approach in courting tech companies and investing in them. Many local officials from other prefectures and provinces followed suit to try to build Silicon Valleys all over the country. None of this was ordered by the central government.

However, the West has somehow bought into the idea the state suppresses private entrepreneurs. But it is the opposite. Local officials need private entrepreneurs more than the other way around – for tax collection, employment, or technological innovation.

Can you tell us how the state-owned enterprises (SOEs) have evolved over the last few years and how you see their role in the future?

SOEs have evolved over time along with private enterprises. In fact, the rise of the private sector and stronger competition has accelerated the need for SOE reforms. While SOEs still have monopoly power in a certain number of strategic sectors, their share of the economy has gradually eroded. Manufacturing, services and technology are sectors dominated by private companies. But then again, they push each other. Collaboration between the state and private business is very nuanced, and state enterprises often take an equity stake, directly or indirectly. That relationship is interesting because having a big SOE as a significant stakeholder can help remove barriers to entry or help obtain local financing.

Also, contrary to conventional wisdom, data shows that SOEs have become more productive over time, and this is largely due to reforms.

For decades the investment theme behind China has been about infrastructure spend, leading to an imbalanced economy. What needs to happen for consumer confidence to grow in such a way that the savings rate declines?

Firstly, there is currently a severe lack of confidence in the Chinese economy. This has a lot to do with China not injecting a major stimulus package in the way that Europe and the US did during the pandemic.

In my view, that also explains a significant part of the tepid recovery after the pandemic as well as the need for the savings rate to fall significantly. The recovery will take time. It is not really a confidence issue, either. It is about habits, culture, housing prices and a lack of financial sector development. For example,

the younger generation's spending habits are very different from previous generations.

85% of aggregate consumer credit is taken up by people under 35.

This also helps explain the lack of development in the financial system. If you look at aggregate credit, 80% is intermediated by banks. Such a lack of capital market depth is a typical feature of an immature financial market.

China's GDP and stock market are famous for being uncorrelated. You have some interesting theories as to why. Could you elaborate?

The correlation between economic fundamentals and the stock market is almost zero, which puts China in the same bucket as Iran and similar countries. For reference, the correlation for the US or UK is above 50%, sometimes 80%.

To file for an IPO in China, companies must go through a stringent approval system. It is not registration based as in the US – although China is exploring this. Companies are required to show consecutive years of profitability before filing, which could tie up resources and often results in stocks declining post-IPO.

Also, Chinese companies listed in overseas markets, such as Hong Kong or New York, perform much better than homegrown IPOs. This is because of better corporate governance, and unfortunately Evergrande is the poster child. However, reforms to the stock listing process and the introduction of the Shanghai Stock Exchange Science and Technology Innovation Board (STAR Market) are encouraging.

You talk about many seismic, but unintended consequences of the one-child policy. What do you mean?

The one-child policy is something close to my heart because I have done research on it. I was also part of the first batch born in the early 1980s.

On the negative side, it created a demographic issue. And having gotten used to small families with no siblings, the current generation has not dramatically changed habits since the policy was relaxed. The social fabric of family traditions has changed.

More positively, there used to be a huge hierarchy between parents and kids. Nowadays there is more equality. In fact, sometimes children enjoy a higher status than their parents because there is only one child.

There have been other unexpected economic consequences, too.

My research found that the one-child policy explains a large part of the high savings rate.

People with one child tend to spend less than those with more children. They also tend to save more for retirement as having a greater number of children generally means more support options in old age.

There is also a 'quantity for quality' trade-off, which has led to huge societal angst over education – with up to one third of household income being invested.

On the flip side though, it has led to a golden era for Chinese women. In the past, daughters were educated after sons, which meant that most were not. Levels of education between men and women have converged. And the returns on education for girls have outstripped boys; whether for publicly listed companies or in government, the share of female leaders has increased significantly.

How is all this going to affect consumption patterns, if at all, given the consumer economy is such a small part of the overall Chinese economy? And what are the big investable trends that might emerge?

I have high hopes. Firstly, surveys and data show the younger generation is much more open minded and socially conscious; they care about worker inequality, the environment and nature.

This is partly a result of the country maturing. It is an old country, but a young economy. As it matures and prospers, there is more scope for people to care about things other than just putting food on the table.

Consumption habits are changing. The younger generation likes to borrow, and they spend at least twice as much than previous generations on things like food and clothing, despite having much less income. The notion of 'lying flat' captures a generational rejection of societal pressure to be an overachiever. It (somewhat simplistically) depicts a generation that is highly educated and wants to enjoy life along with working hard. Of course, there are exceptions; entrepreneurial stars that are as ambitious, hardworking and disciplined as anyone in the world.

In terms of sectors, there is a lot of competition in consumer-related sectors. But for snacks, specialty coffees, apparel and so on, luxury conglomerates enjoy a premium. Many younger Chinese are observing busy urban lifestyles and innovating to make people's lives just a little bit better.

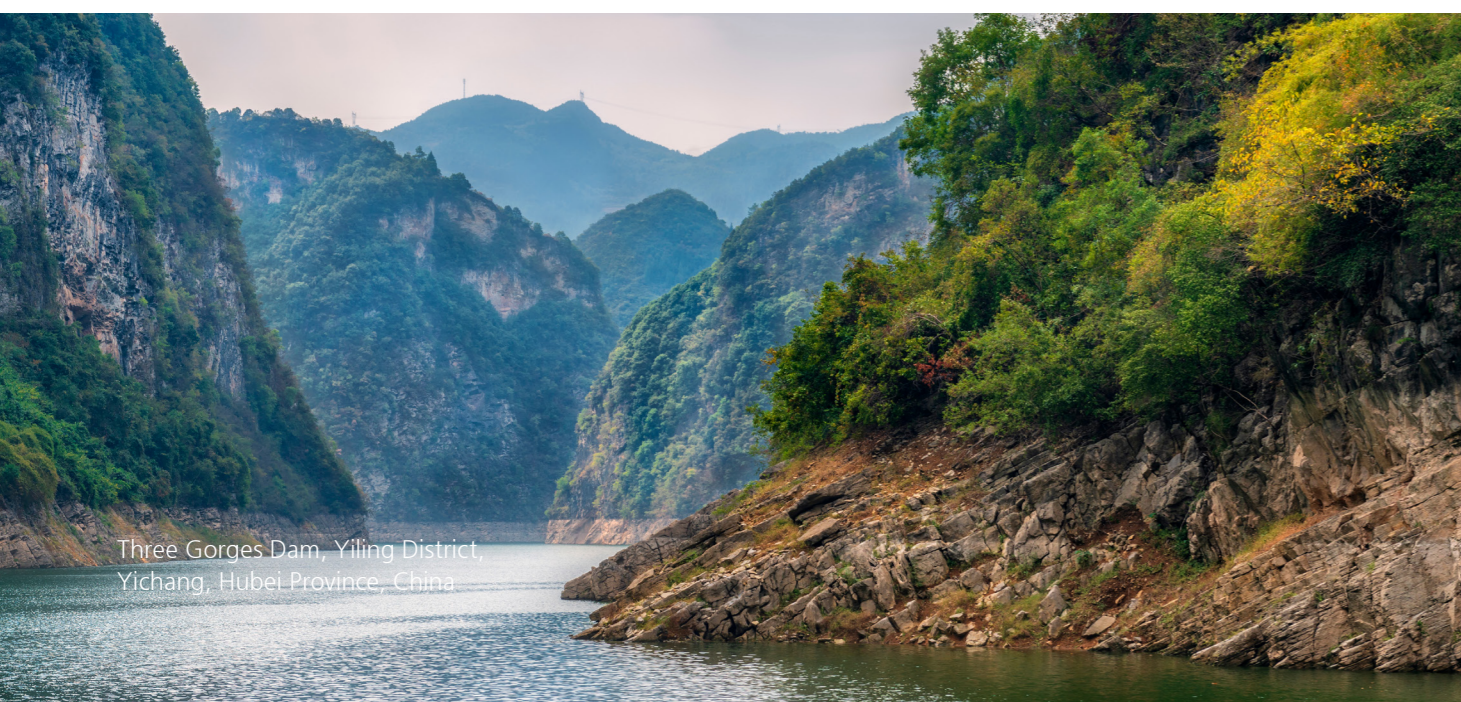
What do you mean by Zero-to-One and One-to-N innovations and why is this useful for understanding China's and ultimately the world's technological future?

The definition of innovation is actually quite broad. It is really whatever makes something better. Any processes or products that make us leaner, cleaner, greener, more productive all count as innovation. This is what matters from an economic standpoint.

Zero-to-One innovations are fundamental breakthroughs – such as going to Mars, curing cancer, or inventing the first computer or steam engine. One-to-N are applications or improvements based on existing technologies and China has been successful with these. Even today, four out of the 10 most-downloaded US apps are Chinese: TikTok, the fashion app SHEIN, Temu (Pinduoduo's outpost in the US) and CapCut.

Many Chinese business models are world class, and are being copied; they used to be copiers and now they are being copied.

However, it is going to be a painful adjustment. The government will try to avoid a hard landing and provide support. In terms of the debt, a lot should be absorbed by commercial banks. In my opinion, a major financial crisis is less likely in a controlled and state-coordinated financial system.



Three Gorges Dam, Yiling District, Yichang, Hubei Province, China

What are the Belt and Road Initiative's (BRI) weaknesses? How do you see China's soft diplomacy evolving and what do you make of the evolving expansion of the BRICs in contrast to the legacy role of the G20?

The BRI was initially a very ambitious project. It was China's answer to a new paradigm of globalization, not only in trade and investment, but building a global network based on physical or digital infrastructure for greater connectivity. This made a lot of sense because almost everything today is part of a network. And you want to connect the nodes and be the most central component of that network. But I think over time Chinese ambitions ran ahead of the global reality – i.e., not all the economies were ready for that scale of infrastructure.

There have also been misunderstandings over debt. Firstly, the quality of Chinese investments in Belt and Road projects have dramatically improved as well as the countries and regimes they have worked with. Secondly, most emerging market debt is held by Western financial institutions, not China. Thirdly, there are incorrect reports on debt seizures. There have been no seizures in Africa. Even in Sri Lanka, some local Sri Lankans have publicly stated that the blame put on China is unjust. The idea of the BRI is good, but the implementation has been a letdown.

In terms of BRICS versus G20, emerging markets have a strong desire to have a greater voice in the global international monetary and financial system. They are pushing to create a coalition of powers that can counter or balance out Western powers.

We see this move on multiple fronts – including an alternative to the US dollar, whether it is a parallel system to SWIFT or the internationalization of the RMB. BRICs is more than just a concept. We will see increased trade among the Global South and greater regionalization in a response to the geopolitical tensions and the unreliability of global supply chains.

The rules for some of these multilateral lenders were written down by a handful of countries with little consideration given to the real needs of emerging markets. Being an emerging country and a great creditor, China sees itself as being more sensitive to some of their needs.



Yu Long River and Karst Mountains,
Yangshuo Guilin, China



Rice terraces, Wengjia Longji,
Longsheng, Hunan Province, China

Can Chinese equities withstand slower growth?

China's multi-decade period of high growth has come to an end, but the opportunities for investors have not, argue Evan Brown and Sylvia Liang.



Evan Brown
Head of Multi-Asset
Strategy



Sylvia Liang
Research
Analyst

China's structural economic issues are no secret. They have been well-documented and follow a long stretch of exceptional growth driven by huge investments in property and infrastructure, as well as a competitive export sector.

The "Four Ds"—coined by the Council of Foreign Relations' Zongyuan Zoe Liu — are useful frame of reference for understanding the country's interconnected economic challenges.¹



Demand

China's consumption share of GDP is 38%, well below the OECD average of 60%. As the property sector and broader investment slow, consumption will need to pick up the slack. But amid a property downturn, household deleveraging, shaken confidence post-COVID, and state reluctance to provide much direct support for consumer spending, catalyzing this transition will be difficult.



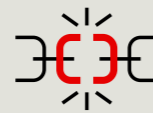
Debt

Property developers, local governments and many households need to de-lever considerably as the housing market adjusts. While China's federal government debt load is approximately 50% of GDP, taking into account local government debt this rises to above 120%, according to Bloomberg and Morgan Stanley estimates. This limits the ability to provide some fiscal cushion to offset broader de-leveraging.



Demographics

An economy's long-term growth is driven by productivity and the labor force, but China's population is now aging rapidly. This weighs on growth and also limits the household formation necessary to support the property market, and by extension, local governments' revenues.



De-risking

Western governments' restrictions on technologies and global multinational companies' realignment of supply chains is a headwind to growth. Foreign direct investment flows to China have declined to a 26-year low, a sharp reversal from the peak reached in 2021.

Secular opportunities

However, we believe negativity on the macro backdrop has led to an underappreciation of China's secular opportunities.

Firstly, policymakers are taking steps to stabilize and smooth out the slowdown and, even as China's expansion moderates, the growth rate is still projected to outpace that of the global economy over the next five years.²

A key reason why earnings growth often doesn't map cleanly to economic growth is because of the ability for domestic champions to become multinational powerhouses and generate outsized profit growth.³

This is where China has the potential to excel, with multiple industries and companies showing remarkable innovation and growth.

A string of successes on the micro level may be needed for China's markets to reach their potential. Crucially, the nation is still well-positioned to capture meaningfully larger value in the global supply chains by transitioning from "factories" to "globally recognized competitors," as has been the case in industries such as:



Home appliances

The international segments of Haier and Midea currently represent nearly 50% of the group's revenue, outstripping the growth of their domestic segments. China can now compete more on quality against European, Korean, and Japanese brands after having previously only been able to compete on price.



Consumer electronics

Chinese smartphone brands have captured ~35% of global market share and are growing exports rapidly. Firms like Xiaomi have leveraged the supply chain developed when global leaders like Apple and Samsung manufactured products in China for access to the domestic market and then moved up the value chain.



Electric vehicles

Chinese electric vehicles are supported by world-class battery R&D and manufacturing capabilities after Tesla established factories and drove EV adoption locally. UBS Investment Bank estimates that China could see their global market share double from 17% to 33% by 2030, largely at the expense of Europe. China employed around 5.4 million people in renewable energy in 2021, which is more than the US, EU, South America and Africa combined.

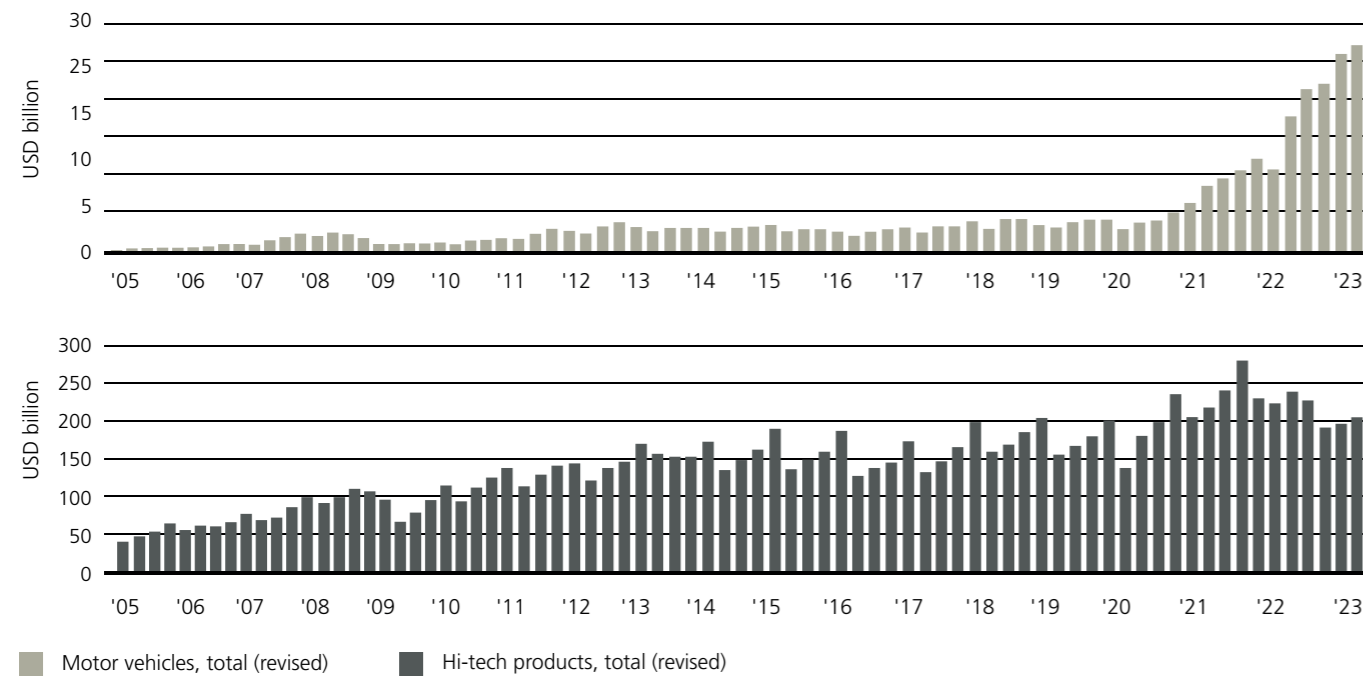
¹ Zongyuan Zoe Liu, "Zero-COVID is the Least of Xi's Economic Problems", November 2022 (Foreign Policy).

² International Monetary Fund, "World Economic Outlook: Navigating Global Divergences", October 2023.

³ MSCI Barra, "Is There a Link Between GDP Growth and Equity Returns?". May 2010.

Chart 1: Exports of auto and high-tech products have been moving higher

China quarterly exports by product



Source: UBS Asset Management, Macrobond. Data as of August 2023.

In addition to these more well-known sectors, the Chinese government is making aggressive investments into advanced technology to ensure self-sustainability and develop global leadership.

According to the National Bureau of Statistics, fixed asset investment in high-tech industries where China hopes to move up the value chain rose 12.5% in the first half of this year compared to the same period in 2022. This compares to a 3.8% increase for fixed asset investment as a whole.

In one respect, part of the “de-risking” headwind for China is an implicit acknowledgement of the economic progress already made, and provides additional incentive to prioritize developing expertise in high tech and other industries that have geostrategic importance. Such rapid technology upgrades, combined with the existing vibrant supply-side ecosystems, best-in-class public infrastructure, and state support are likely to lead to a persistent increase in advanced manufacturing sites in the country.

Examples of this progress include:



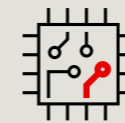
Industrial automation

Chinese companies installed 168,000 industrial robots in 2020, compared with 68,000 in Europe and 31 thousand in the US, according to International Federation of Robotics. The application of automation should be productivity-enhancing and help offset some of the downward pressure on growth coming from demographics.



Patents and entrepreneurship

Ranked 11 in the Global Innovation Index in 2022, China also has the most number of global patent filings and is home to the most technology unicorns.



Less-visible sectors

Such as precision manufacturing in lasers, silicon carbides and opto-electronic components, as well as in industrial equipment and alternative energy. Many of these areas enable Chinese companies to be a more entrenched, essential part of supply chains and grow market share in fast-growing industries, helping to offset some of the “de-risking” impulse.



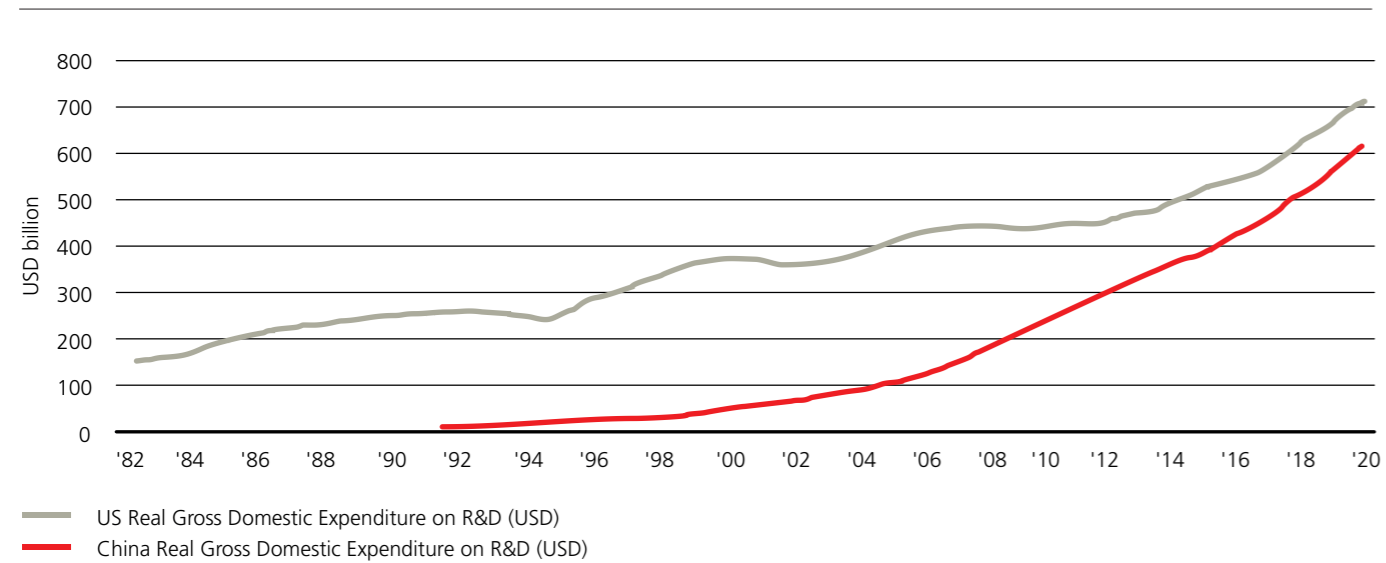
Other niche sectors

Such as advanced radio-frequency communication, hydrogen and ammonia for energy, synthetic biology, and photonic sensors. These seemingly niche areas may support longer-term upgrades in key strategic sectors including power, communication, computer science and life sciences.

The potential for rapid growth in high-margin, advanced technology industries provides fertile ground for alpha opportunities in stock selection.

This is particularly the case as the Chinese market has not been particularly well-covered by analysts relative to developed market counterparts.

Chart 2: China's R&D investment is catching up with the US



Source: UBS Asset Management, Macrobond, OECD. Data as of January 2021.

What is in the price?

Unsurprisingly, the significant economic headwinds have not gone unnoticed by investors. And the inexpensive valuations of Chinese equities imply that much of the negative news appears to be priced in.

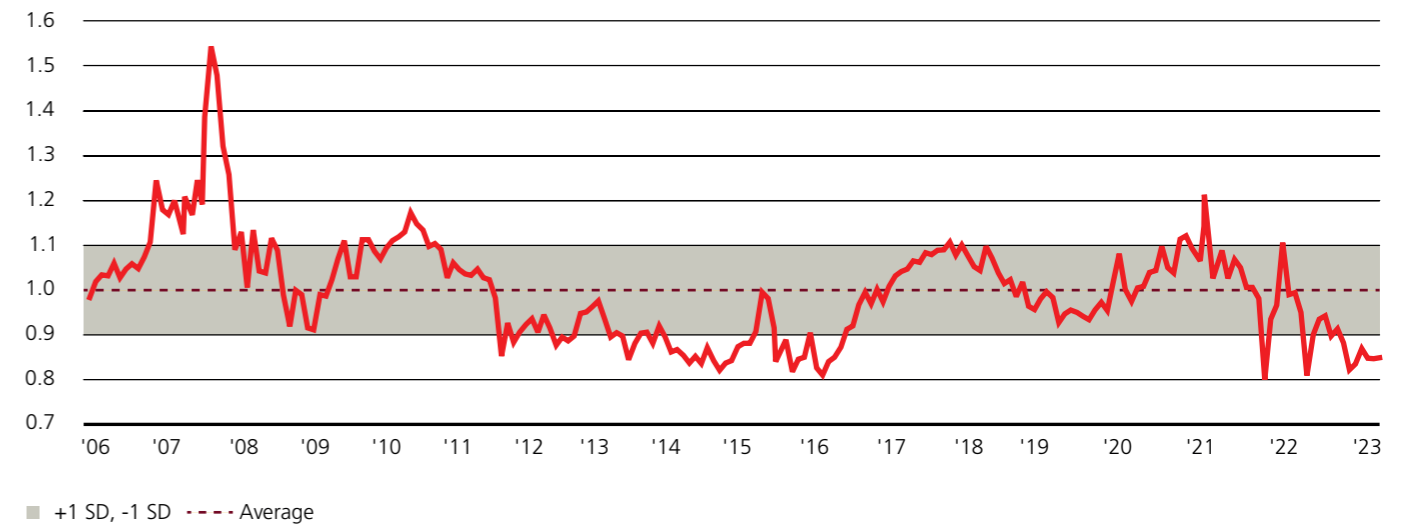
Valuations are inexpensive relative to other emerging market peers. China is trading at a 12-month forward price-to-earnings ratio of 9.8, a significant discount to the MSCI World Index, as of November 1, 2023. We anticipate domestic households' asset allocation will shift towards publicly traded equities over time, as is typically the case

when economies mature.⁴ Furthermore, the slump in real estate is likely to reduce the appeal of this investment vehicle for domestic investors. This could shift relative investment preferences and flows in favor of public equities.

Our five-year capital market expectations point to prospective returns of 8.2% per annum for Chinese equities, well above the 6.3% estimate for global equities or 4.2% forecast for US large-cap stocks.

Chart 3: China trades at a significant discount to MSCI World

MSCI China 12m forward P/E relative to MSCI World



Source: UBS Asset Management, Macrobond. Data as of October 2023.



The Red Earth Terraces, Dongchuan, Yunnan, China

4 UBS Asset Management, "Chinese assets: diversification and return", August 2020.

Encouraging signs

No doubt, the Chinese economy has underwhelmed in 2023, and faces considerable challenges in the years ahead to transition away from its credit-fueled, property-centric growth model.

At the macro level, we have confidence that policymakers will provide sufficient support to manage this cyclical slowdown. Economic data from August through October broadly supports the idea that activity has stabilized amid measured fiscal and monetary stimulus, and forecast revisions for Chinese growth are moving higher. On the micro level,

we are encouraged by the many ways China has moved up the value chain during its economic development, as well as its potential to be a global leader in a suite of nascent, fast-growing industries.

This policy focus on innovation to develop expertise in relatively new advanced technology areas, coupled with low valuations for domestic stocks, give us confidence that Chinese equities will be able to perform well even as economic growth moderates.



The Red Earth Terraces,
Dongchuan, Yunnan, China



Dunhuang Crescent Moon Spring,
Gansu, China

An entrepreneurial state

China is bidding to be the innovation superpower of the 21st century. Will it succeed?

As the Fourth Industrial Revolution gathers pace and the timeline to net zero contracts, global progress is set to depend ever more heavily on technological innovation.

Those countries that can build and maintain leadership in critical technologies like artificial intelligence (AI), quantum computing, and clean energy are likely to reap massive rewards, both politically and economically – a fact China has long recognized and encoded in its industrial policy. In this context, it is worth asking the extent to which China's state-centric model will aid or undermine its efforts to achieve technology dominance across multiple strategic sectors.



Ellis Eckland
Senior Investment
Analyst



Mike Nell
Senior Investment
Analyst



Jia Tan (TJ)
Head of Research,
O'Connor China Equity L/S

The state as an innovation catalyst

Perhaps the most omnipresent piece of innovation in our lives today is the smartphone, a gadget that captures our attention so fully that most of us are never willingly parted from it.

Indeed, many view the smartphone as an archetypal triumph of private sector innovation: physical proof of capitalism's power to incentivise and manifest life-changing products and services.

However, as Mariana Mazzucato reminds us in her book *The Entrepreneurial State*, "While the products owe their

beautiful design and slick integration to the genius of Jobs and his large team, nearly every state-of-the-art technology found in the iPod, iPhone and iPad is an often overlooked and ignored achievement of the research efforts and funding support of the government and military."

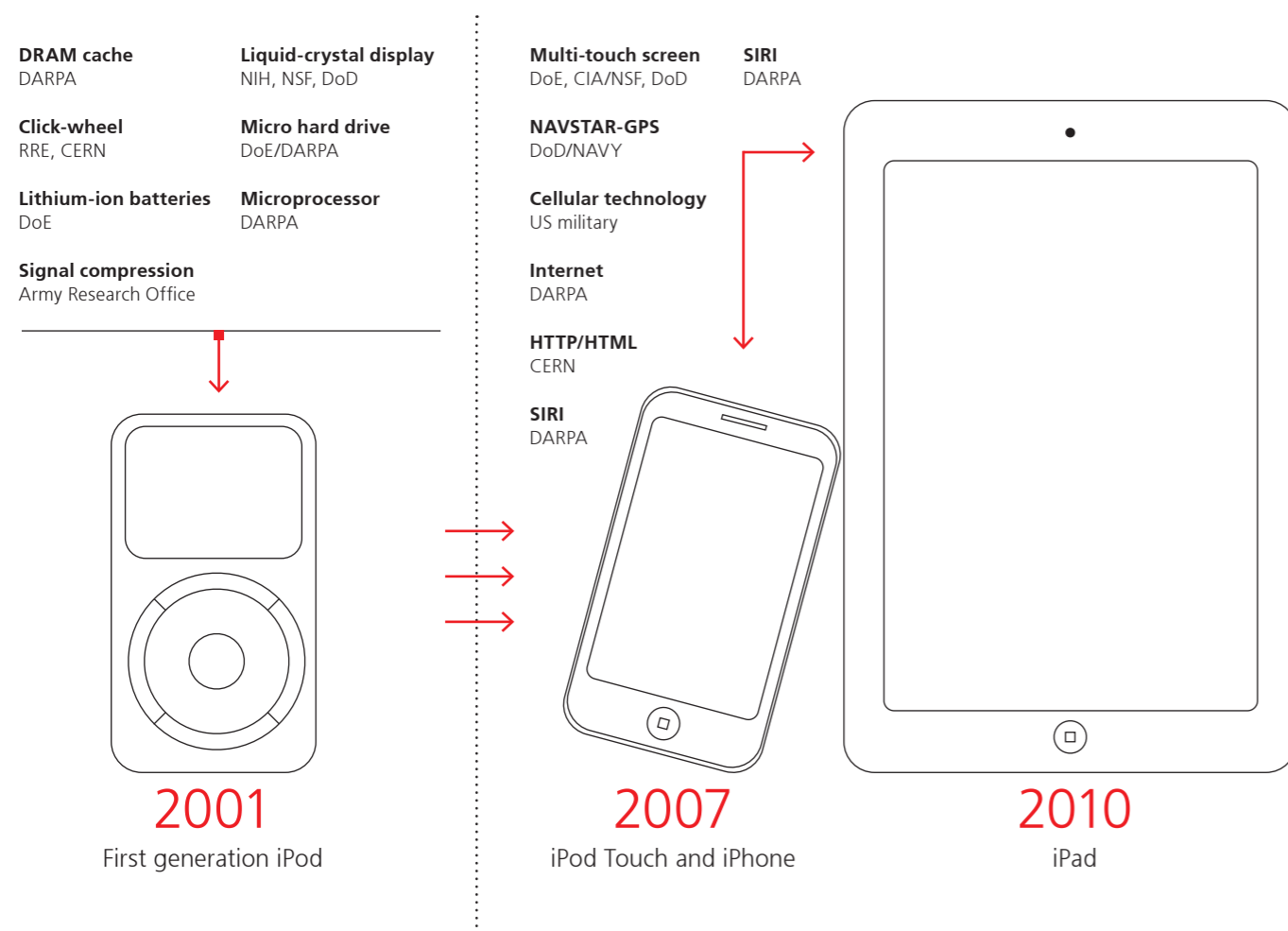
From touchscreen technology to GPS, and from SIRI to the internet, Apple's 2007 launch of its first iPhone was built on a whole suite of enabling technologies whose origins lie in state-funded development.

Acknowledging these technological roots doesn't make the iPhone any less spectacularly useful, and of course the combination of these particular technologies in this particular format remains a special feat of commercial creativity, whose benefits Apple continues to reap to this day. Innovation in all fields is iterative; today's breakthroughs rely on those of prior generations.

But the iPhone technology dissection does inject important nuance into the debate about innovation, and what conditions best produce it. Doctrinaire economic liberals often fetishize innovation as a uniquely capitalist phenomenon, an economic miracle brought about by free competition that succeeds despite the supposed 'dead hand' of the state.

Seen in this light, the optimal conditions for innovation are likely to emerge from an interplay between the public and private spheres, with the state fostering foundational infrastructure and breakthrough technology, and the private sector building and iterating on these with a consumer demand focus. Such thinking has breathed fresh life into once-fashionable industrial policy ideas now being exhumed in the US and Europe, where governments are once again directly supporting key industries in pursuit of strategic self-sufficiency.

Exhibit 1: What makes the iPhone so 'Smart?'



According to Mazzucato, this is at best an oversimplification, at worst a contradiction of reality. In her thesis, the state instead plays a key role in the innovation chain. Through its willingness to underwrite the risky, the theoretical, and the expensive, the state has often laid the foundations on which private enterprise has realized the world's greatest commercial breakthroughs.

Recent history provides plenty of support for such arguments. As Mike Nell, senior equity analyst and portfolio manager at UBS Asset Management, points out,

"the US space programme of the 50s and 60s yielded a glut of technologies that were later to be commercialised to spectacular success, including satellites, microchips, water filtration systems, and infant formula."

And in Asia, South Korea's entry into the semiconductor memory industry is often cited as a textbook example of the so-called 'developmental state', and has of course achieved overwhelming success.

Chinese exceptionalism

If Mazzucato's thesis is broadly correct, what are its implications for investor analyses of China, a massive, activist state with a declared intention to achieve dominance across a range of strategically critical technologies?

Before getting too carried away, Nell injects some important nuance to how we should think about China's approach.

The US government was never trying to invent the "consumer technologies of tomorrow" when it invested efforts in developing critical smartphone technologies.

He argues that, by contrast, the Chinese appear to be skipping this step and trying to fund winners in technologies likely to be focused on consumer markets. "This is more like Japan's MITI industrial policy strategy of the 70's and 80's than it is like the US's DARPA and space program efforts of the past," he says.

Regardless, China's ambitions to be an innovation superpower have been well publicized by its leadership. And it has achieved remarkable success to this end, especially in what associate professor at the London School of Economics Dr. Keyu Jin calls 'One-to-N' innovations, which are iterative improvements on so-called 'Zero-to-One' innovations – true fundamental breakthroughs.¹ So while China was once dismissed as a mere copier of Western technology, it is now producing world-leading technologies of its own, and Chinese companies are being copied by their competitors in fields from social media to online payment. According to the World Economic Forum, China has birthed more than 300 unicorns, and has attracted only marginally less start-up funding than the US.

1 'The New China Playbook', 2023, Dr. Keyu Jin

Hyper-adaptive and hyper-adoptive

How has China achieved all this?

The so-called 'entrepreneurial state' has clearly played its part. China's willingness to act as its own venture capital firm, to protect nascent industries from competition, and to invest heavily in science, technology, engineering, and mathematics (STEM) education as well as research and development (R&D), are all well known. But these are not the only factors at work; as Dr. Jin points out, China benefits from a range of other important characteristics.

Ferocious competition, for instance, is every bit as prevalent in the Chinese market as anywhere else. Being relatively undeveloped in comparison to the US and Europe has allowed China to benefit from technology leapfrogging, developing whole new tech ecosystems in, say, digital payments, without the encumbrance of legacy systems.

The simple scale of China's domestic market is another overlooked factor: if data is indeed the new oil, Chinese firms, which can interact with up to 1.4bn consumers, are

richer in it than those in any other country. Having access to this kind of market gives Chinese innovators an unparalleled number of transactions and interactions to learn from, a process that arguably amounts to a built-in innovation advantage.

As the Harvard Business Review (HBR) has argued, it is not merely the size of the Chinese market but its unique characteristics that create this advantage. Chinese consumers, having lived through an extraordinary degree of change, are uniquely comfortable with, and receptive to, rapid social and technological evolution, making them incredibly willing adopters of innovative tech.²

As Zak Dychtwald argues in the HBR piece:

It's that aspect of China's innovation ecosystem – its hundreds of millions of hyper-adoptive and hyper-adaptive consumers – that makes China so globally competitive today.

In the end, innovations must be judged by people's willingness to use them. And on that front China has no peer.³ Indeed, while by 2019 Apple Pay had been used by less than a quarter of Americans, WeChat pay had become almost ubiquitous among China's smartphone users.⁴



Salt lake, Qinghai Province, China

2, 3 and 4 [China's new innovation advantage, Harvard Business Review \(Zak Dychtwald\), May-June 2021](#)

Technology monopoly

An especially detailed look at China's innovation profile comes from research published by the Australian Strategic Policy Institute (ASPI). And while only one of many sources, its Critical Technology Tracker has highlighted a large number of strategically important technologies in which China already dominates, as well as many more in which it is well-positioned to achieve, as ASPI puts it, 'technology monopoly.'

ASPI used its March release of the tracker to warn that: "China has built the foundations to position itself as the world's leading science and technology superpower, by establishing a sometimes stunning lead in high-impact research across the majority of critical and emerging technology domains", and that this lead "coupled with successful strategies for translating research breakthroughs to commercial systems and products that are fed into an efficient manufacturing base – could allow China to gain a stranglehold on the global supply of certain critical technologies."

According to ASPI, China has achieved this position by concentrating technological expertise, a deliberate strategic goal underpinned by its strong educational base, preponderance of STEM researchers and institutions, significant investment in science and tech R&D, and direct support for strategic industries.

As with any such effort to quantify the complex and dynamic, ASPI's tracker is open to methodological challenge, but the broad thrust of its conclusions surely warrants consideration, and there is certainly growing Western recognition of China's technological progress.

Indeed, such observations are already fuelling a response, with both governments and multinationals scrambling to repatriate manufacturing capability and protect supply chains. The net result for the global economy is likely to be diminished manufacturing efficiency as capital equipment and production capacity is restored to Europe and the US, rather than concentrated in proven centers of excellence such as Taiwan.



Hanging Temple, Hunyuan County, Datong City, Shanxi Province, China

Table 1: Lead country and technology monopoly risk

Technology	Lead country	Technology monopoly risk
Advanced materials and manufacturing		
1. Nanoscale materials and manufacturing	China	High
2. Coatings	China	High
3. Smart materials	China	Medium
4. Advanced composite materials	China	Medium
5. Novel metamaterials	China	Medium
6. High-specification machining processes	China	Medium
7. Advanced explosives and energetic materials	China	Medium
8. Critical minerals extraction and processing	China	Low
9. Advanced magnets and superconductors	China	Low
10. Advanced protection	China	Low
11. Continuous flow chemical synthesis	China	Low
12. Additive manufacturing (incl. 3D printing)	China	Low
Artificial intelligence, computing and communications		
13. Advanced radiofrequency communications (incl. 5G and 6G)	China	High
14. Advanced optical communications	China	Medium
15. Artificial intelligence (AI) algorithms and hardware accelerators	China	Medium
16. Distributed ledgers	China	Medium
17. Advanced data analytics	China	Medium
18. Machine learning (incl. neural networks and deep learning)	China	Low
19. Protective cybersecurity technologies	China	Low
20. High performance computing	USA	Low
21. Advanced integrated circuit design and fabrication	USA	Low
22. Natural language processing (incl. speech and text recognition and analysis)	USA	Low
Energy and environment		
23. Hydrogen and ammonia for power	China	High
24. Supercapacitors	China	High
25. Electric batteries	China	High
26. Photovoltaics	China	Medium
27. Nuclear waste management and recycling	China	Medium
28. Directed energy technologies	China	Medium
29. Biofuels	China	Low
30. Nuclear energy	China	Low
Quantum		
31. Quantum computing	USA	Medium
32. Post-quantum cryptography	China	Low
33. Quantum communications (incl. quantum key distribution)	China	Low
34. Quantum sensors	China	Low
Biotechnology, gene technology and vaccines		
35. Synthetic biology	China	High
36. Biological manufacturing	China	Medium
37. Vaccines and medical countermeasures	USA	Medium
Sensing, timing and navigation		
38. Photonic sensors	China	High
Defence, space, robotics and transportation		
39. Advanced aircraft engines (incl. hypersonics)	China	Medium
40. Drones, swarming and collaborative robots	China	Medium
41. Small satellites	USA	Low
42. Autonomous systems operation technology	China	Low
43. Advanced robotics	China	Low
44. Space launch systems	USA	Low

Source: Australian Strategic Policy Institute, Critical Technology Tracker, March, 2023.

Productivity and profit

Nell agrees that China's technological ambitions have sometimes been dismissed prematurely, and that its significant investments are likely to buy it dominance in several key technologies, including solar panels, electric vehicles (EVs), and semiconductors.

In semiconductors, for instance, he warns that while today's Chinese offerings are often seen as underdeveloped, they are likely to make rapid progress building off the applications they are servicing today, which in the long term may prove to be a route to market dominance. He cites Huawei's recent unveiling of its Mate 60 Pro, powered by SMIC's 7-nanometer processor, as a wake-up call for the industry, suggesting China's chipmaking has evolved much further than was generally believed.

But, as Nell points out, there is an important distinction to make between market dominance and profitability. Investors need to ask not only whether China is likely to dominate a technology, but whether it can do so profitably: "They subsidize a lot of industries that are essentially unprofitable, so it's very difficult in some of them for US and Europe to keep up. But you have to ask yourself, is it worth keeping up if it's an unprofitable enterprise? In many cases, it is not. Electric vehicles would be a good example, where it looks like they're going to be, perhaps the winner. But the question is, how profitable will they be in electric vehicles?"

When it comes to China assessments, therefore, the concerns of investors are not necessarily the same as those of politicians, so it's important to be clear about where one's priorities lie. As Nell explains: "what matters from a stock perspective, in our view, is the intrinsic value of the stock, which is the sum of the discounted cash flows that the company will generate over its life. We have to hold the Chinese stocks to the same standard that we hold all stocks, and those where we can't see line-of-sight profitability are probably going to be uninvestable." He urges investors not to get too caught up in the hype of things and conclude China is somehow winning by investing in unprofitable areas and dominating them.

Jia Tan (TJ), Head of Research for O'Connor China Equity Long/Short, believes there are clear investment opportunities. "Those [companies] that develop and integrate AI applications into areas such as ecommerce, online advertising/gaming and molecular development biology could also benefit greatly. In addition, we believe that long-only opportunities can also be found in the semiconductor sector," he says.

Renewable dominance

It is important to note that China's dominance of EVs and solar PV benefits Chinese society and the Chinese leadership even if it never results in good returns for investors. As Eckland points out, "dominating EV's and solar PV has great strategic benefit as it essentially forces the West to choose between 1) a rapid energy transition (impossible without China's participation) or 2) any kind of hard rivalry with China (war, economic decoupling, strong sanctions or trade barriers)."

The scale and resulting low cost that comes from dominating solar PV and eventually wind will also have strong indirect benefits for Chinese industry. This is because it will likely result in a lower cost of renewable electricity for production resulting in a strategic cost advantage for low carbon green industrial goods. This advantage in downstream goods that will be exported to markets that care about embedded emissions (i.e., Europe, potentially followed by the rest of the OECD) could benefit Chinese industrial profitability more than it is hurt by over allocation of capital to wind and solar production. "More importantly (at least to the Chinese leadership), dominance higher value downstream green manufacturing will shift relatively high wage jobs to China which may help solve their youth unemployment problems and enable them to move to a higher level of industrial development," says Eckland.

Furthermore, while both EVs and solar PV are quite commoditized and thus will never develop the market positions of Netflix or Amazon, China's dominance could result in an economy of scale at the ecosystem level. This would offer broad scale benefits to the entire Chinese solar and EV which could result in Chinese companies in these sectors generating superior profitability vs. global competitors.

Nevertheless, as Sino-American trust deteriorates, many in the West wonder how China might use that domination, if established. A Chinese stranglehold on any strategic technology would be widely seen as a threat, offering China a powerful lever with which to coerce governments and businesses and artificially inflate prices through supply restriction – if it chose to do so. Such fears have seen both the US and EU implement 'CHIPS' acts to promote supply chain resilience in semiconductors,^{5,6} and have only been magnified by China's recent export curbs on gallium and germanium, important minor metals for semiconductor manufacturing.⁷ Moves of this kind remind the West that many of its most innovative companies are still heavily dependent on Chinese-owned or processed materials for production of next-generation technologies.

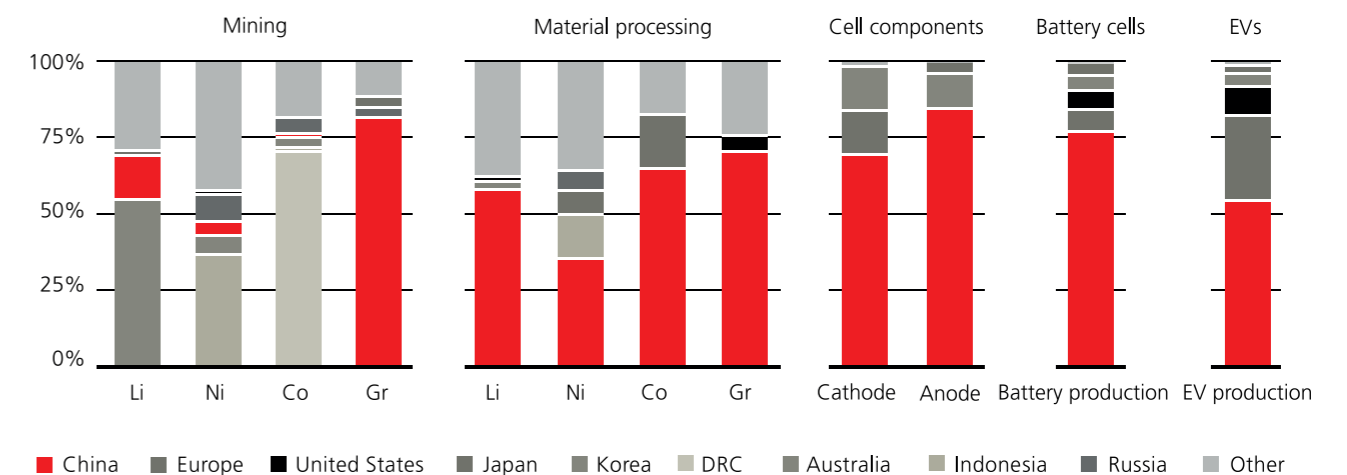
China's dominance in the energy transition is a good example. In 2023 China invested USD 543 billion in the energy transition, nearly three times as much as the European Union (USD 180 billion) and nearly four times as much as the United States (USD 141 billion). This investment has resulted in a completely dominant position in key technologies like EV batteries.⁸

As Eckland points out,

China produces 79% of the world's EV battery cells, 70% of battery anodes, 85% of battery cathodes and 66% of separators and rare earth elements (REE), which are critical to EV motors where China produces and processes over 60% of the world supply.⁹

Chart 1: China dominates the entire downstream EV battery supply chain

Geographical distribution of the global EV battery supply chain



Source: IEA analysis based on: EV volumes: US Geological Survey (2022): Benchmark Mineral Intelligence; Bloomberg NEF, July 2022. Note: Li = lithium; Ni = nickel; Co = cobalt; Gr = graphite; DRC = Democratic Republic of Congo. Geographical breakdown refers to the country where the production occurs. Mining is based on production data. Material processing is based on refining production capacity data. Cell component production is based on cathode and anode material production capacity data. Battery cell production is based on battery cell production capacity data. EV production is based on EV grade nickel production data. Although Indonesia produces around 40% of total nickel, little of this is currently used in the EV battery supply chain. The largest Class 1 battery-grade nickel producers are Russia, Canada and Australia.

5 [Digital sovereignty: European Chips Act enters into force today, European Commission, 21 September 2023](#)

6 CHIPS and Science Act will lower costs, create jobs, strengthen supply chains, and counter China, The White House, August 9, 2022

7 [China gallium, germanium export curbs kick in, wait for permits starts, Reuters, August 1, 2023](#)

8 China Invests USD 546 billion in Clean Energy, Far Surpassing the US, Scientific American, January 30, 2023

9 China's Role in Supplying Critical Minerals for the Global Energy Transition, Leveraging Transparency to Reduce Corruption project (LTRC), July 2022

And their dominant position extends upstream to the key metals used to make batteries and EVs. Here China refines 68% of the world's nickel, 40% of the world's copper, 59% of lithium and 73% of the world's cobalt. Eckland argues this "will make it difficult for other countries to source enough of these metals to reduce China's share of battery production."¹⁰

China is also the low-cost leader in modern renewables manufacturing. It is responsible for 80% of the world's solar manufacturing capacity,¹¹ and non-Chinese manufacturers almost invariably need government subsidies or trade barriers to stay in business. China is also the lowest-cost producer of windturbines by some margin and, as Eckland says, "they now appear to be making huge strides in lowering the cost of manufacturing hydrogen electrolyzers as well."

Engineering innovation

China's success in fostering innovation is increasingly difficult to ignore. This success is attributable to many factors, including its extraordinary market characteristics, its competition, and the activist role of the state as both a promoter and protector of key nascent technologies. If the best conditions for innovation really do emerge from an interplay between the public and private spheres, then China clearly has reason to be optimistic about its technology leadership ambitions.

Of course, there is a counter narrative. The 2022 Global Innovation Index, published by The World Intellectual Property Organization (WIPO), places China outside the world's top ten countries. The US remains an innovation powerhouse, spending over USD 700 billion per year on R&D, and hosting four of the world's five top R&D spenders (Amazon, Alphabet, Microsoft, Apple).

Silicon Valley remains a unique concentration of talent, capital, and aspiration, and the US is still responsible for a huge proportion of the world's fundamental technology breakthroughs.

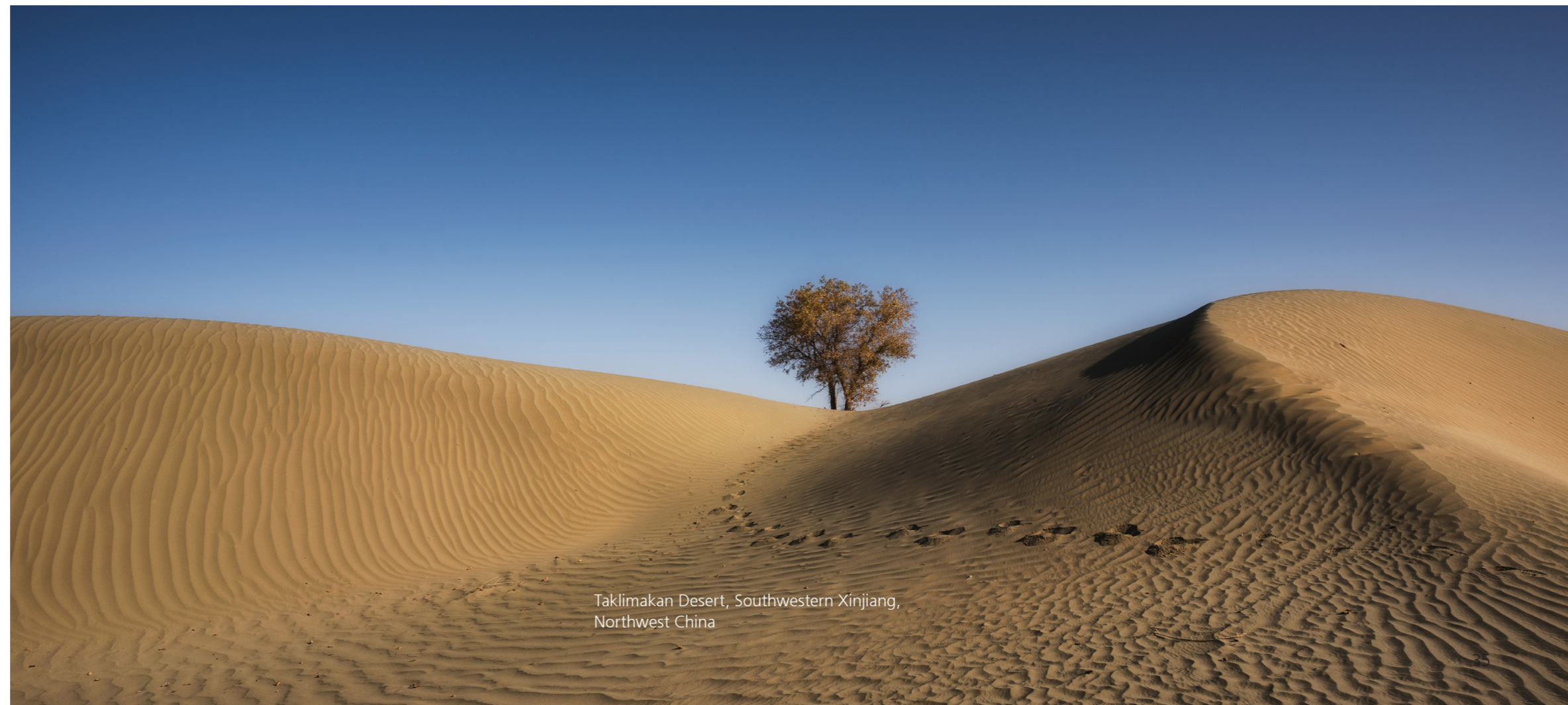
As Dr. Jin warns,

while China is achieving remarkable mastery of One-to-N technologies particularly when it comes to internet applications and business model design, it is not yet poised to consistently make Zero-to-One trailblazing innovations.

For this to happen, there will need to be profound changes to China's civil society, its markets and the role of the state." In the meantime, of course, Western countries are responding more proactively to China's growing technology prowess.

In the meantime, of course, Western countries are responding more proactively to China's growing technology prowess. The reality is that both Chinese and Western systems will continue to spawn innovation and build profitable enterprises on top of it.

At the geopolitical level, policymakers and companies will increasingly seek to mitigate the risk of Chinese technology monopoly in the coming years, implying a net reduction in technology transfer and innovation at the global level, with unfortunate implications for net-zero goals. But as the political rhetoric heats up, investors should be wary of letting it blind them to the opportunities China offers.



¹⁰ China's Role in Supplying Critical Minerals for the Global Energy Transition, Leveraging Transparency to Reduce Corruption project (LTRC), July 2022
¹¹ Solar exports from China increase by a third, Ember, September 14, 2023

Taklimakan Desert, Southwestern Xinjiang, Northwest China



Azure Lake, Jiuzhaigou National Park, Sichuan Province, China

Bucking the trend(s)

An indexing and active view of Chinese equities

Many investors are questioning their Chinese investments this year amid negative headlines and market volatility. The Chinese economy is slowing down dramatically after decades of high growth, but does slower growth mean lower stock returns future? Research suggests not necessarily, and the results can be interpreted as perplexing or even counter intuitive.

More importantly, we are still finding attractive investment opportunities in the A-share market. We believe China is too large an economy to write off, and the overall China investment case still holds true – both for index and active investors. Here we use both investment lenses to shed light on where we see opportunities and risks in Chinese equities.



Boriana Iordanova
Head of Index
Research



Ian McIntosh
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Head of China
Equities

The index/rules-based equity view

Boriana Iordanova
Head of Index Research

Having consulted on (and rejected) the inclusion of Chinese stocks trading in mainland China, known as China A-shares, in MSCI Emerging Markets Index for three years in a row, on 20 June 2017, MSCI announced their long anticipated partial inclusion (at 5% inclusion factor), which was implemented in 2018.

Other index providers followed suit. In 2019, MSCI increased China A-shares inclusion factor to 20%, while FTSE Russell included China A-shares for the first time in their emerging markets indexes (at 25% inclusion factor). Five years after the China A-shares initial index inclusion in MSCI EM Index, while they have performed better than other Chinese stocks, index investors' excitement on this topic has somewhat cooled, and been replaced with questions about, if at all, the China equity market will deliver steady robust returns. Some index investors have

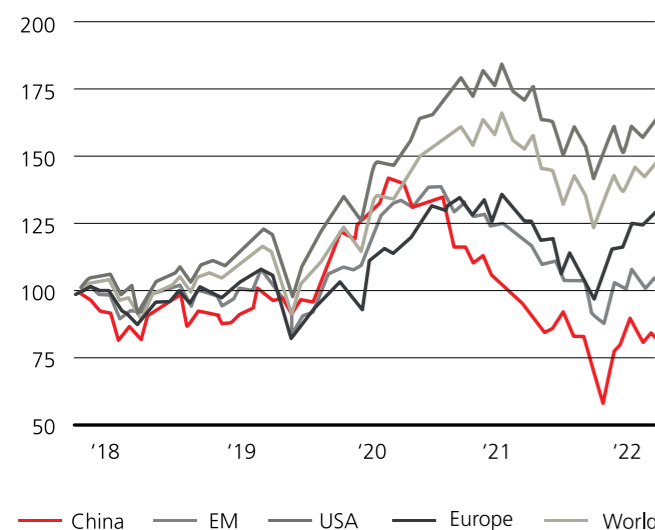
even started opting for emerging markets indexes excluding China as benchmarks for their index portfolios.

This sombre sentiment is understandable, given the China equity market has lagged both the global emerging markets and the global developed markets indices, and trailed the US equity market by around 17% per year, over the past five years period (Chart 1).

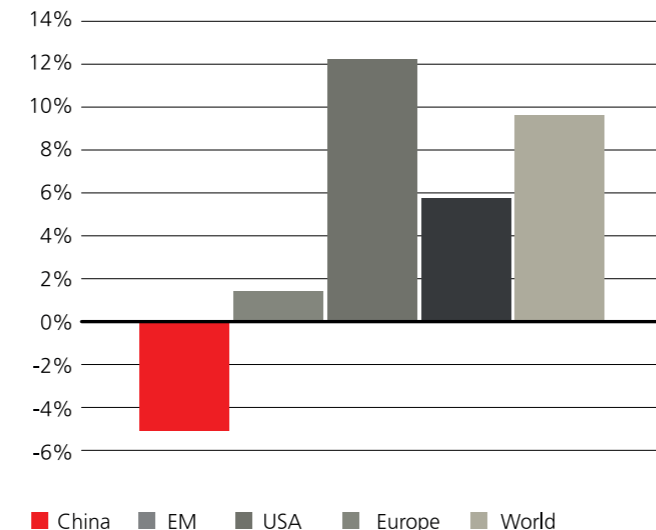
Particularly frustrating and perplexing for investors has been the continuing disconnect between China's GDP growth and its equity market performance, as illustrated in Chart 2. While in the US and in Developed Europe real GDP annual growth in low single digits (circa 2% and less) has been accompanied by healthy equity market returns, in China, 5%+ real GDP annual growth rate is yet to materialise into strong equity market returns.

Chart 1: China equity market has lagged global equity markets over the past 5 years

MSCI indices total return gross cumulative return data in USD rebased to 100

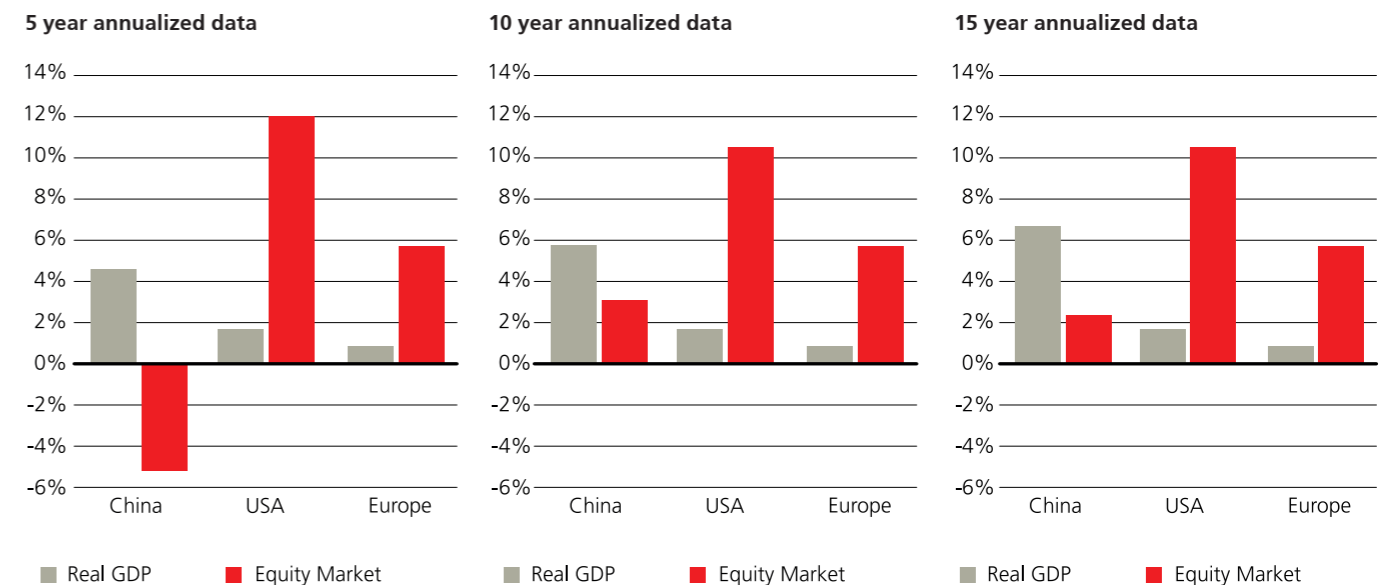


MSCI indices total return gross annualized return data in USD



Source: UBS Asset Management, MSCI, RIMES. Data from 30 June 2018 to 30 June 2023. **Past performance is not a reliable indicator of future results.**

Chart 2: Mind the gap – China robust GDP growth not yet materializing in strong equity market returns



Source: UBS Asset Management, MSCI, RIMES, FactSet. Annualised data as at 30 June 2023. Comparison data between MSCI indices total return gross annualized return in USD and Real GDP (based on 2005 prices) annualized growth rate in USD. **Past performance is not a reliable indicator of future results.**

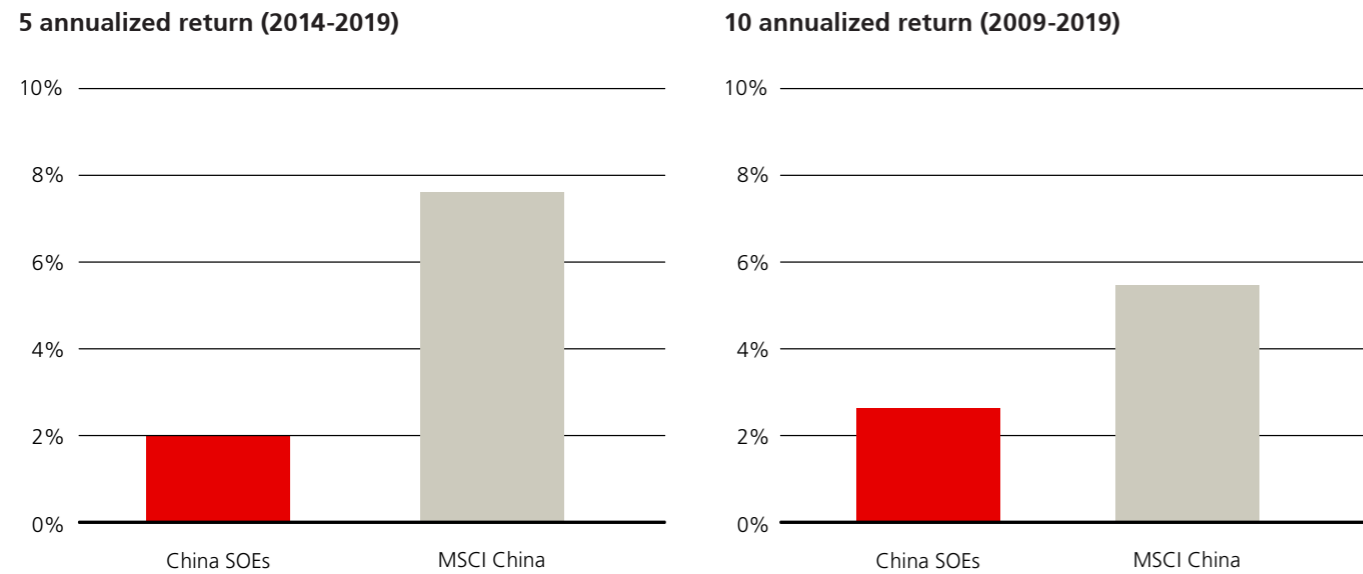
So what are the options for index/rules-based investors who want equity exposure with potentially better risk-adjusted returns compared to the broader China equity market?

If you had asked us this question three or four years ago, we would have suggested investors consider excluding China state owned enterprise (SOEs) stocks. China SOEs are an important component of China's economy, with total revenues accounting for approximately 70% of China's GDP and with around 70% market share in foundational and security related sectors such as energy, infrastructure, public utilities and finance. They are also a major component of China equity indexes. For example,

more than 300 out of total 700+ MSCI China Index constituents are SOEs, with aggregate index weight of approximately 30%.

But these companies are often perceived to be less efficient than their private sector peers, and have historically been associated with weak corporate governance and the principal-agent problem since they (agent) and the state (principal) could have a conflict of interest or priority. Similarly to SOEs in other emerging markets, China's have historically tended to underperform their private sector peers (Chart 3), and index and rules-based strategies excluding these stocks have benefitted.

Chart 3: China SOEs underperformed the broader China index historically



Source: UBS Asset Management, MSCI, RIMES. 5 year and 10 year annualized return data in USD to 31 December 2019. Past performance is not a reliable indicator of future results.

However, this historical underperformance pattern now appears to be reversing (Chart 4). Recent reforms aim to make Chinese SOEs more competitive and strengthen their returns by improving aspects of technology, efficiency, and branding. This could lead to enhanced financial performance, and potentially better stock returns.

China has a long history of SOE reforms dating back to the 1970s, but this time the Chinese government is under fiscal pressure. Strengthening returns to SOEs' government shareholders could potentially alleviate some of this and help economic growth.

The latest round of reforms aims to: re-purpose excess capacity by closing companies with weak fundamentals and merging companies to create national champions; enhance SOEs' core functions, improve capital efficiency, and strengthen key competitiveness; focus on digitalization, green transformation and technological breakthroughs. China's central government has started using return-on-equity (ROE) to evaluate performance of central SOEs management, and regional authorities, which oversee local SOEs, are expected to adopt similar guidelines.

The theme of resurging China SOEs could be captured effectively via an index/rules-based strategy by screening the SOE universe based on one or more financial metrics – e.g., ROE – to select companies with less attractive fundamentals vs global sector peers that are likely to experience re-rating in the near term.

We constructed a sample rules-based portfolio (Chart 5) by screening the underlying China index for SOEs using the SOE flag from the MSCI ESG Metrics database, excluding Real Estate securities, and from the remaining universe selected stocks with ROE below the global sector average which we weighted equally.

The resulting fund comprises 198 stocks (from roughly 700 in the underlying China index), mostly towards the smaller tail of the index, with more than half of the names having investable market capitalisation of USD 1 billion and below.

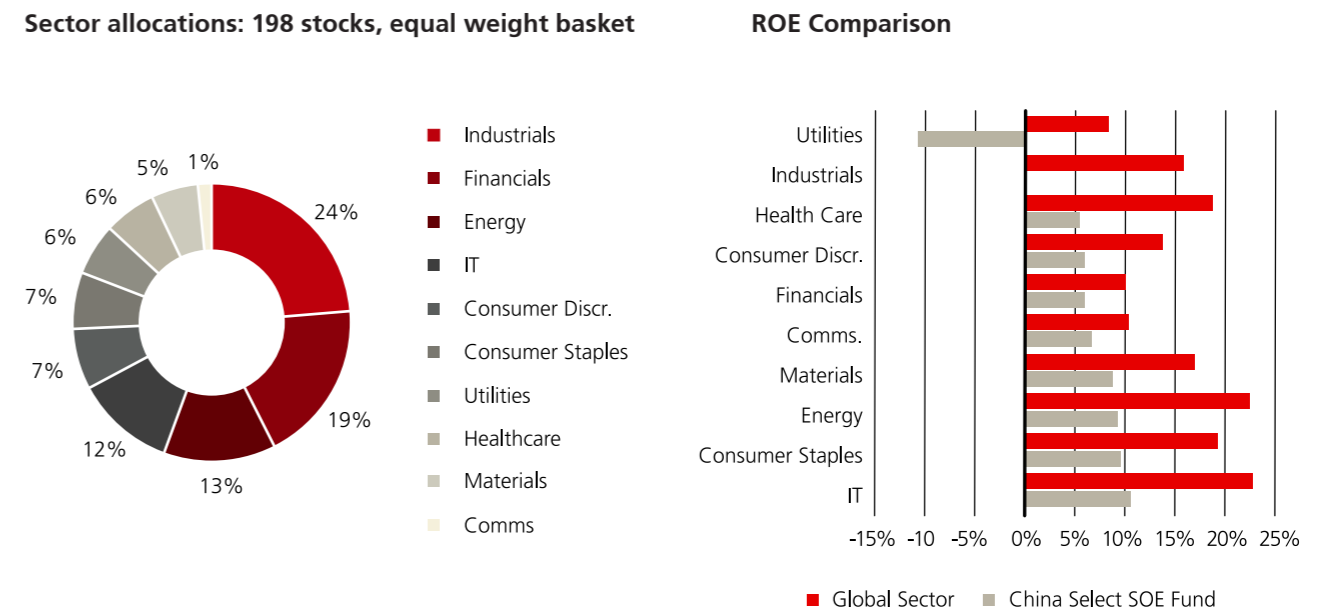
The portfolio has sector average ROE of approximately 5% compared to 15% for the global sector average ROE. Despite the smaller market capitalisations, a USD 10 million trade appears fairly liquid with more than 75% of the trade being below 3% of the average daily volume.

Chart 4: China SOEs historical underperformance is reversing



Source: UBS Asset Management, MSCI, RIMES. 3-year annualized rolling relative return data in USD from 31 December 2006 to 31 August 2023. Past performance is not a reliable indicator of future results.

Chart 5: UBS China Select SOE sample index fund



Source: UBS Asset Management, MSCI, RIMES. Data as at 31 March 2023.

The active equity view

Ian McIntosh
Head of Active Equities

Bin Shi
Head of China Equities

SOEs – But, not so fast...

Chinese SOEs were previously abandoned by investors, leading to extremely low valuations. Revenues and earnings growth have stabilized this year, and when coupled with appealing dividend yields this has led to the valuation gap narrowing.

Yet, many SOEs come with their own challenges. The primary concern is the long-term misalignment between management's objectives and shareholder interests. SOEs prioritize consistent growth and returns, often resulting in a more slow-moving approach, and structurally lower returns than the private sector. Their revenues are predominantly domestic, lacking opportunity for international expansion. As the Chinese domestic economy slows that also limits the growth prospects for SOEs.

In our view, selectivity remains of paramount importance. For instance, we have high conviction in a consumer staples company renowned for its superior brand equity, but where there is substantial state involvement. Additionally, we are investing in SOE property developers that are gaining ground as numerous private developers exit the market.

At this time, without a clear indication that profitability is improving, it would be difficult for any further re-rating to materialize. A shift back in investor attention towards privately-owned enterprises (POEs) is possible if the valuation differences with SOEs diminish further.

Lower GDP growth, lower equity market returns?

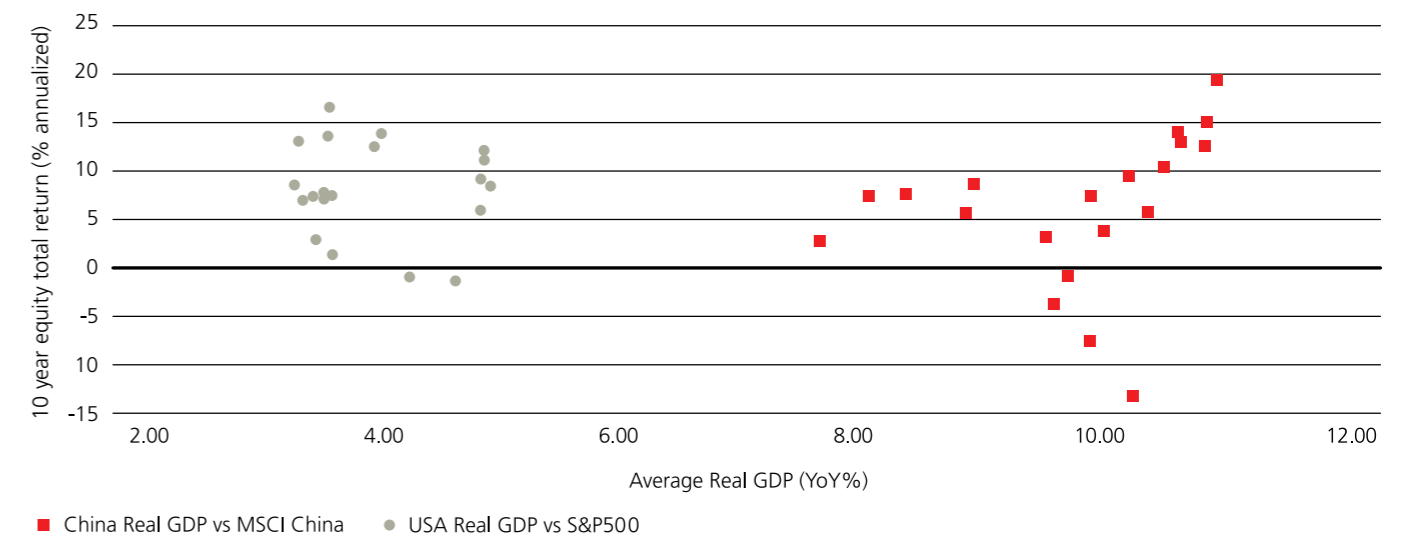
In our view, there is plenty more upside to come from urbanization, and with the country's GDP per capita low by developed economic market standards – there remains a long way to go before the country hits a ceiling in GDP per capita.

However, it is clear the era of double-digit growth is behind us. Having said that, China moving to a lower growth regime of low to mid-single digit real GDP growth does not necessarily mean lower equity market returns going forward. The relationship between GDP growth and stock returns has been well studied and the results are counter intuitive. The correlation is weak and for some countries negative. This is illustrated by looking back at the real GDP growth and equity market returns in US and China the over the last 30 years. The strongest 10-year period of growth in the S&P 500 was accompanied by relatively modest real GDP growth in the US, far lower than real GDP growth in China over the same period.

The reasons are varied. Corporate earnings of public companies are not the same mix as gross domestic product. For instance, the US equity market has significant international exposure, which has grown over the last 30 years. Improving governance and better market and information efficiency, impact the market multiple. Sector composition also makes a big difference to market returns and the US leadership in technology has been a key driver of US outperformance.

Chart 6: Real GDP growth vs. equity total returns

Rolling 10 years from 2003 to 2022



Source: UBS Asset Management, FactSet. Data at 31 October 2023

And, importantly, valuation starting point for the market is key to long-term returns. Ultimately, the market is a discounting machine, and expectations of future GDP growth are embedded into prices.

sign of management competency is the return of excess cash to shareholders, rather than mis-spend on capital projects. Chinese companies are now trading on high cash flow yields and have begun to embrace buybacks.

Equity market returns are better predictors of future GDP growth than the other way around.

Not only are they adapting to the various external challenges in this volatile environment, they continue to invest in technology, research and development, control costs and grow their business.

We believe the that best managed companies will be able to adapt and thrive to a lower growth environment. One

China goes global

China's economy is famously export centric. Yet, its equity revenues are surprisingly domestic, with 86% of MSCI China company revenues originating domestically, compared to 62% for the S&P 500.

Many companies have enjoyed spectacular growth in the domestic market. To keep growing strongly, these companies now need to look overseas. They are doing so already. Increasingly, Chinese companies are thriving internationally in areas such as online gaming and ecommerce. And because these firms have survived fierce domestic competition, we believe they are well placed to succeed in the international market. This is a theme for some of our investments because Chinese companies are only just starting to go global.

In many cases, their success is already striking. Automobiles are not traditionally China's strong suit, but is now the largest car exporter in the world by sales volume and is one of the clear leaders in electric vehicles. In the long run, we expect to see many more Chinese cars on the streets of other countries. Chinese automakers are pushing ahead of

the global brands, spending aggressively on R&D and introducing new technology and features.

It is a matter of time before international customers outside of China realize that the Chinese brands can offer better cars at more competitive prices.

Health care companies are also becoming globally competitive, partly because conducting R&D is cheaper. We are seeing more licensing out from Chinese pharmaceuticals companies instead of purely licensing in from global companies as in the past.

Overall, we expect Chinese companies to continue to advance in their technology, sophistication and understanding of the international market. And so long as they are quick to adapt and learn, they should be able to compete successfully abroad.

In our view, many of the industry-leading companies can still deliver 15-20% CAGR in the long run by controlling expenses and expanding into international markets.

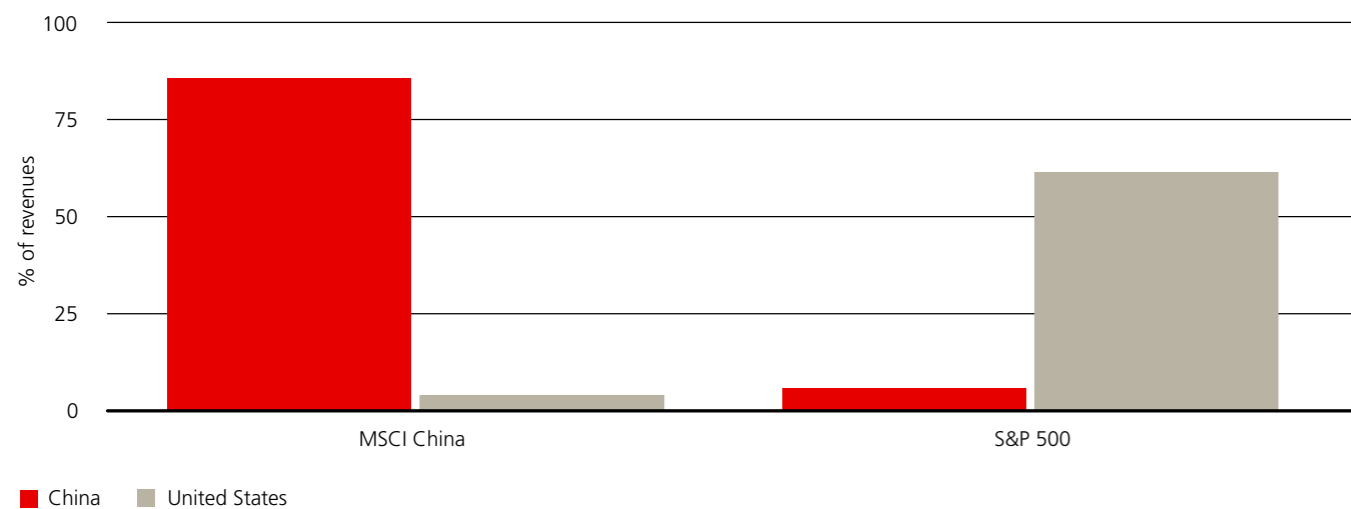
Investing in uncomfortable times

Expectations for China equities are at a low ebb. Global investors are neutral or underweight China, US hedge fund exposures to China are at a decade low.

Yet, the China market has characteristics that make an attractive setting for active managers. It is deep, with many companies to choose from. Retail investors own almost half of the free float market capitalization, a level that is twice the US market, and are prone to hubris and hysteria, amplifying market overreactions.

We have gone through wild sentiment swings before. History tells us that the best time to invest has been when investors feel the most uncomfortable.

Chart 7: Geographic revenue exposure of the China and US equity markets



Source: UBS Asset Management, FactSet Revere. Data at 31 October 2023



Kanas Lake, Altay Prefecture, Xinjiang, China



Moon Hill, Yangshuo County, Guilin, China

Dollar diffusion

China's opportunity to
balance the power dynamics
in global finance

With the dollar's dominance and influence in global finance waning, Barry Gill explores the reserve currency alternatives and investment implications.



Barry Gill
Head of Investments
UBS Asset Management

Transformational change rarely happens the way you expect. As the American futurist Buckminster Fuller put it,

“you never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete.”

Take the dollar’s dominance. With the proverbial ink barely dried on the quantitative-easing printing presses following the global financial crisis, whispers of the erosion of the US’s “exorbitant privilege” were quick to surface. Talk of a multi-polar geopolitical world, with a basket of reserve currencies serving as monetary ballast, has swirled ever since.

Yet we appear no closer to a transition. Old habits die hard, and weaning global finance off its dollar addiction (i.e., de-dollarization) has proved tricky. But look a little deeper and some interesting trends emerge. Perhaps the threat to the dollar comes not from other fiat currencies, but from entirely new ways of doing things.



The Stone Forest or Shilin, Kunming, Yunnan Province, China

Lessons from the past

The US dollar has been unrivalled as the world’s leading reserve currency since the Bretton Woods Agreement of 1946. Few investors can remember that far back. But before the dollar, the British pound was the main global reserve. Sterling’s rise to supremacy came as the British Empire reached its zenith and lingered until its dying days. Earlier, the Dutch guilder fulfilled a similar global role, again in line with imperial power and economic clout. And before that, it was the Spanish real.

So although it may be difficult to conceive of the death of a global reserve currency, similar shifts have happened in the past. Ray Dalio, the investor and author, argues that the relative decline of US power and the rise of China indicate that just such a shift is underway – on past precedent, at least.¹ But as Mr Dalio has also said, “He who lives by the crystal ball will eat shattered glass”.²

The fragmentation of financial architecture

There is no guarantee that the dollar will be toppled in quite the same way that other dominant reserve currencies were. Despite the size of the Chinese economy and China’s leadership in global trade volumes, the yuan is not eclipsing the dollar as the dollar eclipsed sterling in the first half of the twentieth century.

But this doesn’t mean that the dollar is unchallenged. Heightened geopolitical tensions have led to the weaponization of finance, which is now the sanction of first resort for the White House. Witness the US response to the invasion of Ukraine, with the freezing of Russia’s dollar reserves and its exclusion from the SWIFT settlement system. The US currently has 17 other countries or regions under financial sanctions.³

So, as geopolitical tensions increase, many nations have an interest in ensuring that they are not fully exposed to the US financial arsenal. China is foremost among them. Tensions over trade and technology have resulted in an increasingly strained relationship between the world’s two largest powers. This gives China ample incentive to avoid the potential impact of US financial sanctions.

Dethroning the dollar is the obvious way to achieve this. But the Chinese yuan currently accounts for less than 3% of global reserves compared with almost 60% for the dollar.⁴ Still, were foreign reserves to be spread more evenly across a basket of different currencies, the dollar’s standing would be diminished. In a multipolar world, other currencies, including the yuan and even a mooted BRICS currency, would assume more prominent positions – reflecting the decline of US hegemony. Recently, China has been expanding its cross-border interbank payment system, which allows yuan-denominated transactions to be carried out without recourse to Western systems – providing potential for sanction-proof trade.

Against that, the dollar’s position is bolstered by a sizeable incumbency effect and the advantages that the US enjoys over China: a transparent court system, respect for foreign investors’ rights, and deep and open capital market.

Yet the threat to the dollar might come from a different direction. A reserve currency needs to provide investors with three things: a store of value; a unit of account; and a convenient means of payment.

Assessed as a store of value, the dollar is hardly unassailable.⁵ But despite quantitative easing, it has proved more stable over the long term than many other fiat currencies, including the yuan.⁶ The same stability makes the dollar a reliable unit of account for valuing goods and services. However, the dollar’s convenience as a means of payment is already being challenged.

1 Chapter 4: The Big Cycles of the Dutch and British Empires and Their Currencies (linkedin.com)
2 Biggest Opportunity Will Be Shorting the Bond Market: Dalio (cnbc.com)

3 Economic Sanctions Programs - United States Department of State
4 Currency Composition of Official Foreign Exchange Reserve - IMF Data
5 Value of the US dollar 1635-2020 | Statista
6 Chinese Yuan - 2023 Data - 1981-2022 Historical - 2024 Forecast - Quote - Chart (tradingeconomics.com)

Shifting patterns of payment

In much of the world, cash is no longer king. Take China, where smartphone apps such as Alipay and WeChat Pay have long been used to buy everything from flight tickets to street food. Rather than an expensive electronic payment device, vendors require only a printed QR code.^{7 8}

The COVID pandemic, with its attendant anxieties about hygiene, has accelerated the shift to a cashless society, and it has been echoed in other emerging markets.⁹ While the West continues to rely on cumbersome card networks, much of the developing world is accustomed to simpler, sleeker and more seamless payments.

These digital payment systems have implications for improving cross-border trade by cutting out intermediaries and thus reducing costs. Already, India and Singapore have linked their digital payment systems, as have Singapore and Thailand. Meanwhile, China's UnionPay, Alipay and WeChat Pay apps are in use in a growing number of developing countries, where their QR-code model makes them cheap and efficient to use.

The creep of crypto

Another potential threat to the dollar's dominance comes from cryptocurrencies. These offer a decentralized means of exchange outside of government influence.

Crypto provides unit of account and a means of payment, so it offers at least two of the three functions of a reserve currency. There is still disagreement, however, as to its efficacy as a store of value. Its dramatic volatility and high-profile scandals at key exchanges have called this into question.

But Nik Bhatia, an academic, strategist and prominent crypto exponent, says that fiat currency is the uncertain store of value, given its repeated erosion by governments, whether through coin clipping, metal debasement or quantitative easing:

“throughout the ages, currencies have ceased to exist because of one rudimentary fact: governments are unable to resist the temptation to create free money for themselves.”

Bhatia argues that bitcoin's decentralized nature and political neutrality will eventually make it the world's leading reserve currency – although he doesn't expect this to happen anytime soon.¹⁰

Still, both the Central African Republic and El Salvador have made bitcoin an official currency. El Salvador has gone further by keeping some of its reserves in bitcoin. And even if crypto falls short of some claims, it can still help to chip away at the dollar's dominance.

Central banks go digital

One form of digital currency has more immediate potential to dislodge the dollar. This is central-bank digital currency (CBDC).

The crucial point about CBDCs is that they are legal tender – direct liabilities of the central banks. Unlike digital payments made through bank transfers, credit cards or mobile apps, payments made in CBDCs do not involve intermediaries. That makes them cheaper and quicker – giving them an immediate advantage over traditional fiat currency.

Although Finland had an abortive experiment with CBDCs in the 1990s, China is the leader here. The People's Bank of China began work on its digital currency almost a decade ago, and real-world testing of the digital yuan got underway in 2020.

This first-mover advantage may allow China to internationalize the digital yuan throughout its vast trade network, which it has bolstered through its Belt and Road

Initiative. China has already transacted some international trade in yuan, and the digital yuan, with its advantages in speed and cost, may play well with countries happy to see US influence curbed.

However, the digital yuan's role may still be limited. The People's Bank of China can set constraints on its use, which may prove unwelcome. There may also be concerns over the monitoring of transactions by China. And China itself may be reluctant to engage in the opening of its capital account that full competition with the dollar would require.

We are in new territory here, with China a pioneer. As other central banks assess the potential for CBDCs of their own, the digital yuan could be the start of something that ultimately renders our existing model of reserve currency obsolete.



Zhangye National Geopark,
Gansu, China

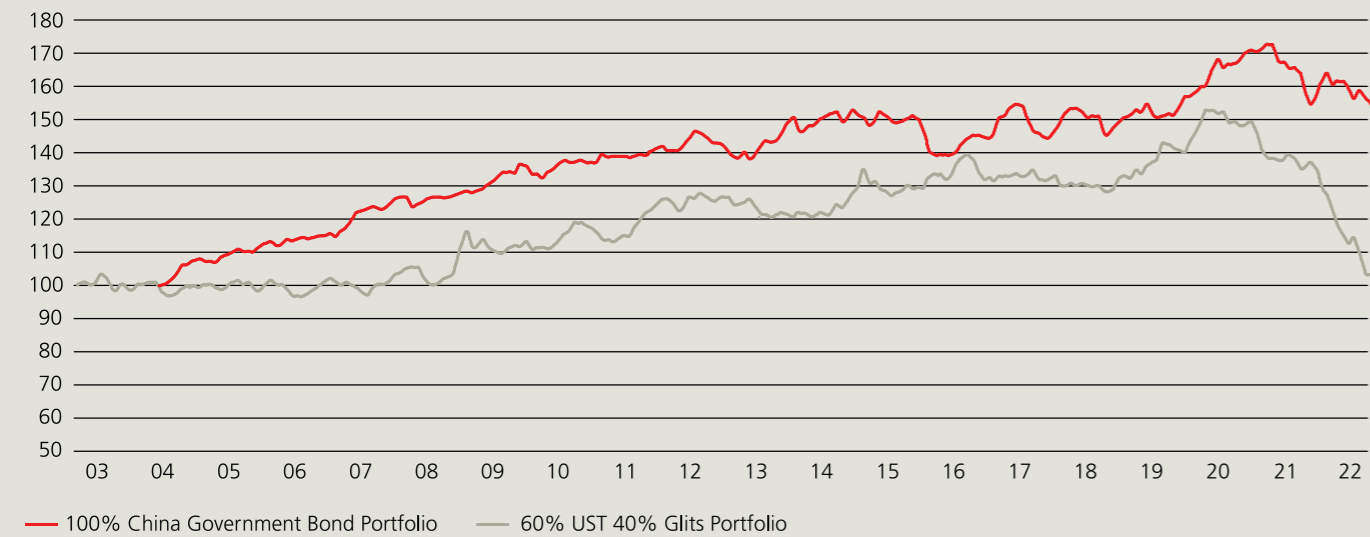
7 China: mobile payment penetration rate 2023 | Statista
8 Mobile payments in China: How China became mobile first (daxueconsulting.com)
9 Unlocking Economic Potential: The Growth of Payments in Emerging Markets (finextra.com)
10 Chinese Yuan – 2023 Data – 1981-2022 Historical - 2024 Forecast – Quote – Chart (tradingeconomics.com)

Investment implications

There are many ways to interpret all this and translate it into investment decisions. Below are some thought-provoking charts and initial observations.

Chart 1: China sovereign bonds could add diversification benefits

Real USD Total Return (Rebase 2003 = 100)



Source: Bloomberg. Data as of October 2023. Indices using Bloomberg US Agg TR, Bloomberg Glits TR Hedged, Bloomberg China Agg TR. Special credit: Gavekal Group

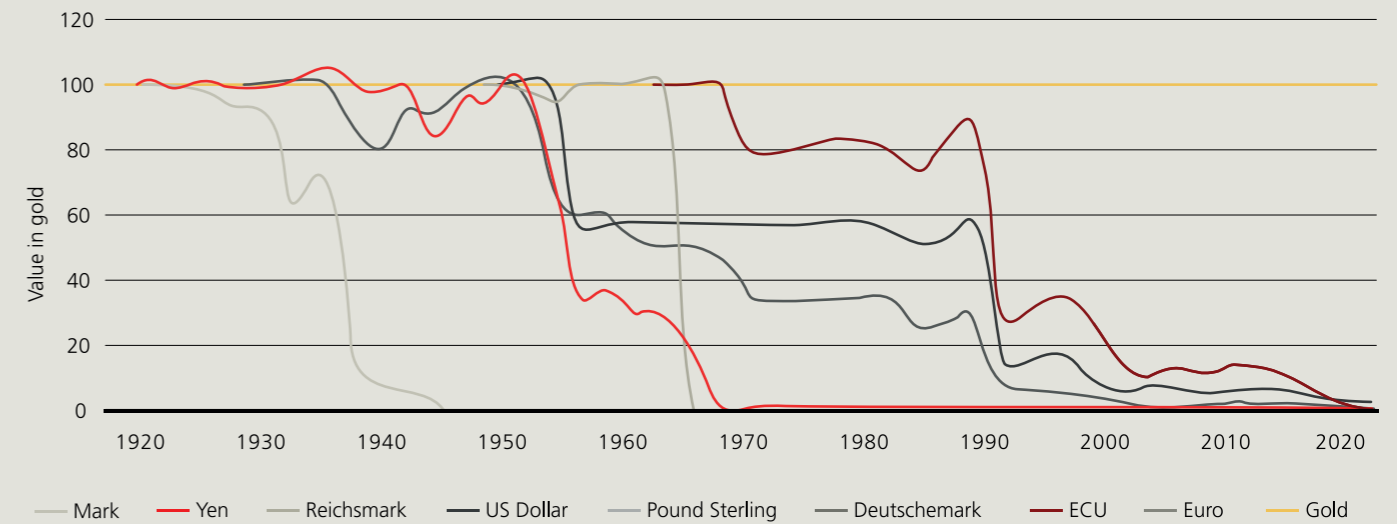
With low inflation and a still-solid GDP growth rate, China has been loosening its monetary policy even as central banks in the West keep theirs tight. The distinct economic trajectories of China and most of the world's developed nations mean that their bonds are increasingly uncorrelated too.

As the chart above illustrates, the historical correlation between US and UK sovereign bonds and their Chinese counterparts has broken down significantly over the last 10 years, making Chinese bonds a potentially attractive diversifier for portfolios.

A common claim made for cryptocurrency is that it is "virtual gold". Indeed, bitcoin was explicitly designed to echo gold, from its limited supply to its production through "mining". So far, however, crypto has failed to provide any semblance of the stability that gives gold its reputation as a safe haven and store of value. Gold also avoids the chief risk of CBDCs – the prospect of government interference, whether through devaluation or controls such as the time limits or purchase constraints that some expect from the digital yuan. In this light, it is worth noting that central banks continue to hold a significant proportion of their own reserves in gold.

Still, you could argue the entire history of currency is an attempt to replicate the advantages of gold without its drawbacks (its safety and storage requirements). As the chart above indicates, this attempt has hardly been an unqualified success. So, against an uncertain and challenging macroeconomic backdrop, and with geopolitical tensions unlikely to dissipate any time soon, gold could have a renewed role to play in investors' portfolios. Finally, as the chart below shows, strategies that switch between gold and government bonds might have even more to offer.

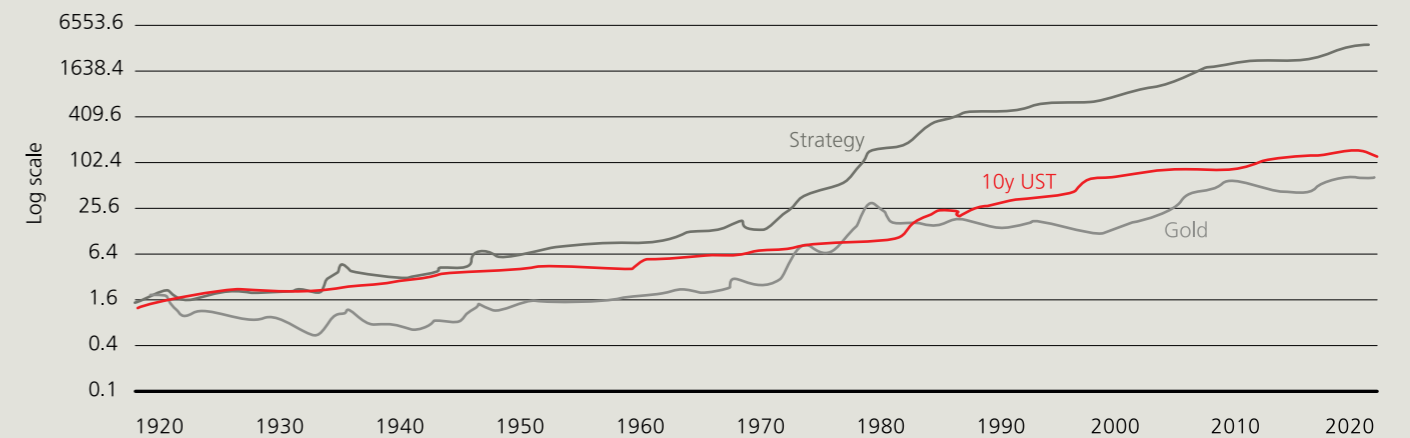
Chart 2: The advantages of gold



Source: Bloomberg, Reuters

Chart 3: A strategy switching between bonds and gold delivers superior returns

Silver is used as a proxy for gold before Aug 1971



Source: Shiller, Bloomberg, Gavekal-IS/Macrobond



Huanglong travertine pools
Huanglong, China

China and net zero

An existential
sustainability issue

It will be impossible to reach net zero without China. Western investors therefore need to put certain ideological differences to one side and seek to understand China in its fullest context, argues Lucy Thomas.



Lucy Thomas
Head of Sustainable
Investing and Impact

Chongu Pasture, Daocheng,
Sichuan Province, China



First, an analogy. The concept of transition investing has grown in popularity in recent years. Climate transition strategies typically contain two investment sleeves: solutions providers and improvers. The latter often include companies that are not yet sustainable from a net-zero perspective. Such investments are included on the basis they will improve and because they are critical to transitioning away from fossil fuels. After all, decarbonizing your portfolio is not the same as decarbonizing the economy – and while divesting may clear one’s conscience, it is unlikely to help green the global economy.

As with transition investing, thinking about China’s global role in reaching net zero requires nuance. And the logic is a little circular.

Climate change presents a systemic risk for investors which cannot be addressed through one portfolio alone. Instead, it requires real-world decarbonization.

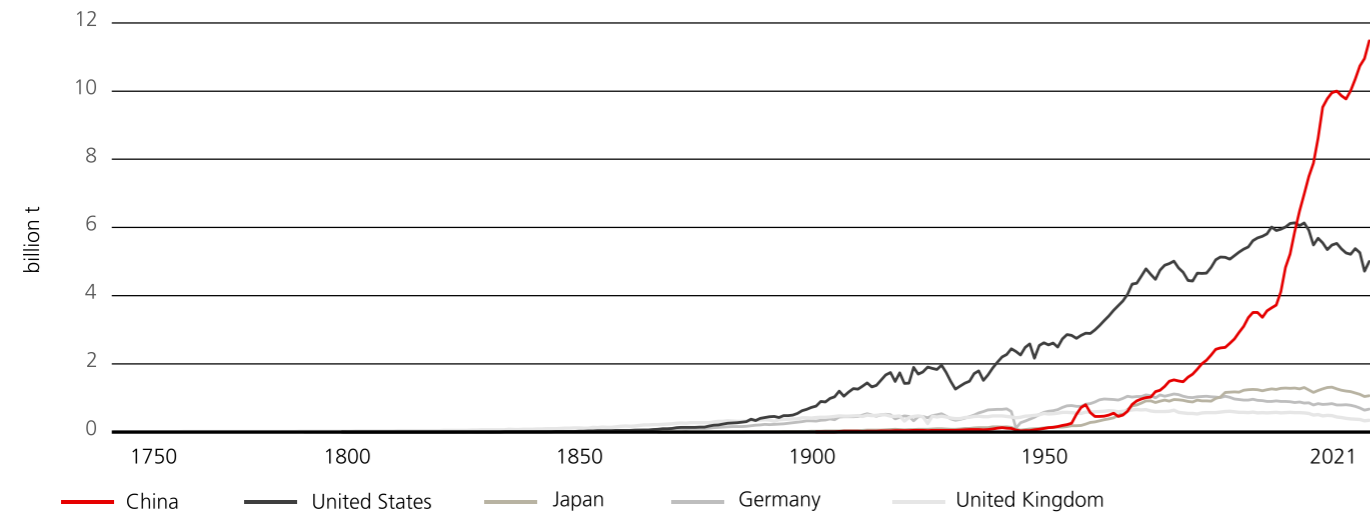
This means all countries and regions in the world need to reach net zero.

Capital allocators must therefore consider how their global investment decisions influence the real economy trajectory of emissions, even as they consider the impact on their portfolios and future returns by the success or failure of that journey. Of course, companies and policymakers in China need to do their part, but investors need to speak with their capital, make their views on China’s role in net zero clear, and provide support for progress with the investment decisions in their portfolios.

Let us look at the facts.

Chart 1: Annual CO₂ emissions

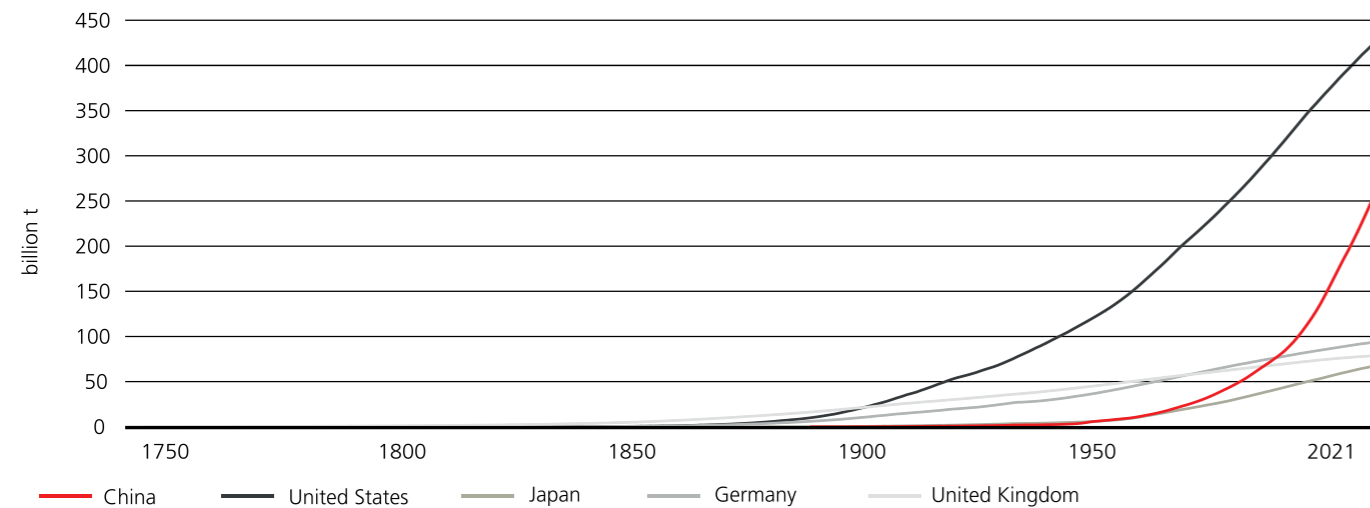
Carbon dioxide (CO₂) emissions from fossil fuels and industry. Land use change is not included.



Source: Global Carbon Budget (2022)

Chart 2: Cumulative CO₂ emissions

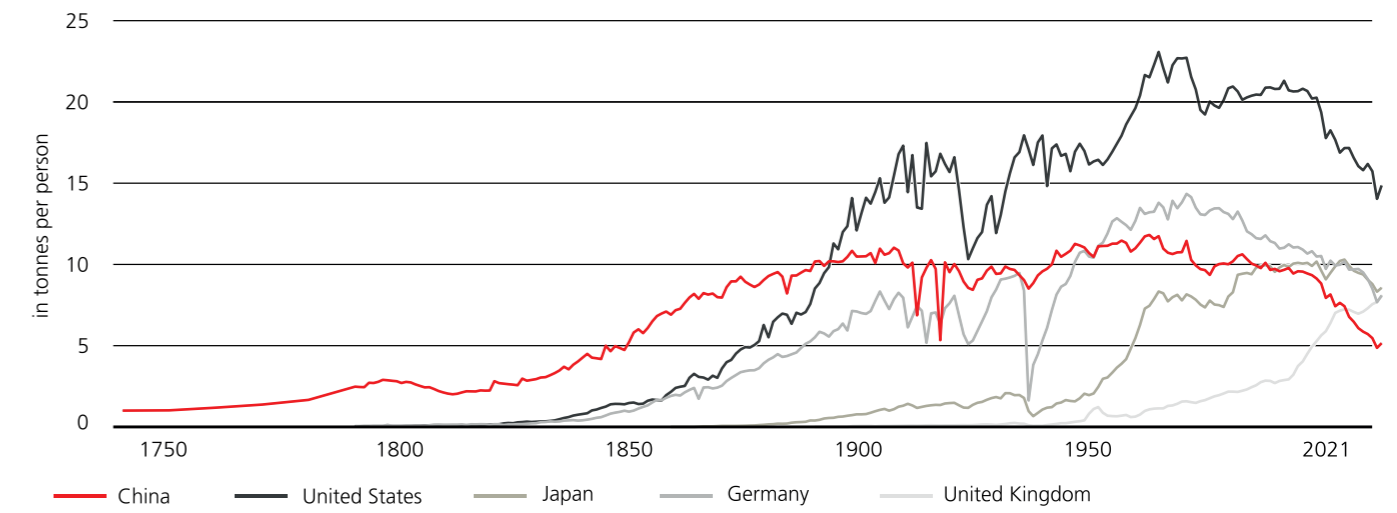
Cumulative emissions are the running sum of CO₂ emissions produced from fossil fuels and industry¹ since 1750. Land use change is not included.



Source: Global Carbon Budget (2022)

Chart 3: Per capita CO₂ emissions

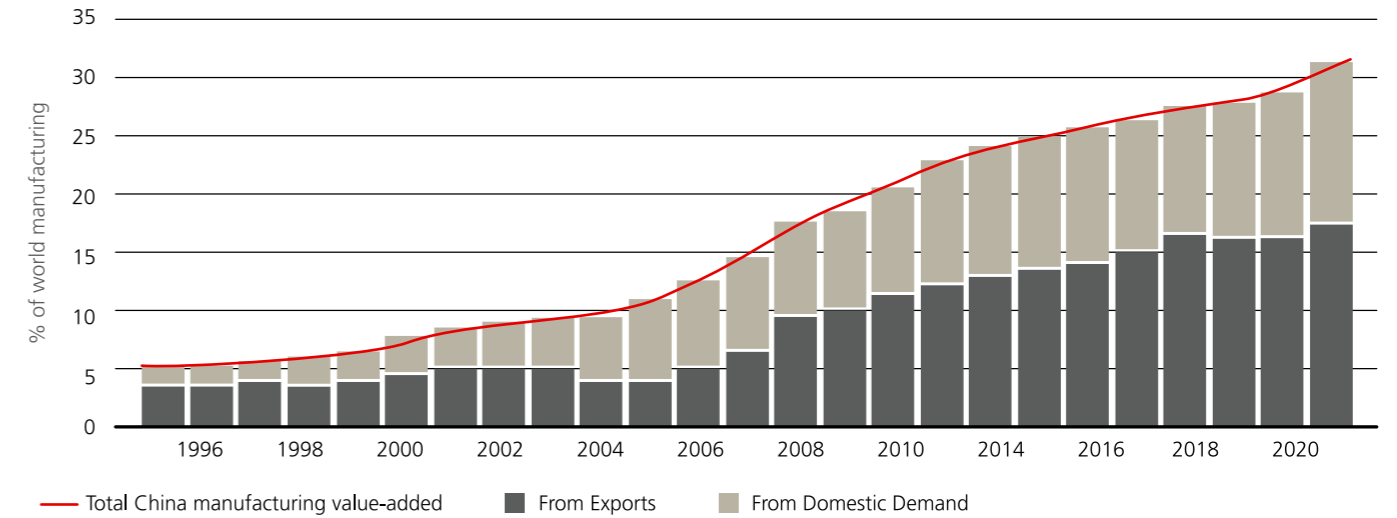
Carbon dioxide (CO₂) emissions from fossil fuels and industry. Land use change is not included.



Source: Global Carbon Budget (2022); Population based on various sources (2023)

Chart 4: China's global manufacturing share keeps rising

Share of world manufacturing value-added, by source



Source: UN national accounts; OECD TiVA to 2018, estimates for 2019-21 using China official data

Finding a path forward

China's president Xi Jinping has pledged to reach net zero by 2060. Perhaps more importantly though, China also committed to a peak in CO₂ emissions by 2030, as their emissions have continued to rise steadily – though a recent report from Carbon Brief showed some encouraging signs on this front.¹ This underscores the magnitude of shorter-term climate commitments they are making, that may not seem apparent given the 2060 goal. To get there, local governments have mobilized to create decarbonization strategies and plans for the short term (e.g., price-based market mechanisms, green bonds) and the long term (e.g., climate tech R&D). Progress is being made across key sectors, such as transport and power, as well as in hard-to-abate sectors like industrial manufacturing. The effects are rippling across global markets.

Much is made of China's continued reliance on coal in its power supply. Given peak load capacity, domestic power outages and rising energy security concerns, China appears to be taking a pragmatic approach to keeping its proverbial lights on. But their long-term goal of carbon neutrality remains clear. The delicate balancing act will come in meeting interim targets; after all, climate and ecological tipping points are deaf to domestic challenges and geopolitical excuses.

In most instances, market-based tools would play a critical role in decarbonization. It is a little different for China. Its emissions trading scheme (ETS) remains embryonic in part because China is less about short-term actions such as price-based market mechanisms. Instead, its eye is on the long term; the state's transition policies have already prompted primary industries to invest in R&D including transition technologies that are not yet economically viable (i.e., CCS, hydrogen).

In many ways, energy security and hence the development of decarbonization technologies take priority over transitioning away from coal for China. The building of ultra-efficient coal plants is intended to help the country reach peak emissions by replacing old ones, yet the replacement rate is not catching up fast enough. It is a risky strategy, but pivoting entirely away from coal is unfortunately not a priority.

A renewables and clean energy leader

More positively, it is no secret that China is a clear leader in many aspects of green technology. And, while commercial and geopolitical reasoning may underpin some of the underlying motive, it still reflects a strategic commitment to decarbonize.

Its success here is undeniable. Having captured 80% of the supply chain for solar panels² and recently become the world's largest manufacturer of electric vehicles³, much of the rest of world looks on in envy and is frantically trying to either emulate or at least ensure the global supply of renewables is more diversified. Meanwhile, China has effectively been an exporter of renewable deflation to other parts of the world by running down the costs of rare earth equipment. Prices for rare earths sank to their lowest since late 2020 as soft demand from green energy companies and the automotive sector combined with rising supply from China.⁴

Yet although China's global position is dominant, it remains an economy in transition.

As the EIA conclude, "China's innovation system will need to be harnessed appropriately to stimulate the wide range of low-carbon energy technologies needed." Commenting on the latest Five-Year Plan, they go on to state, "Current Chinese policy incentives are better suited to large-scale technologies like CCUS and biorefining than network infrastructure and consumer-facing products, which are China's current manufacturing strengths."⁵

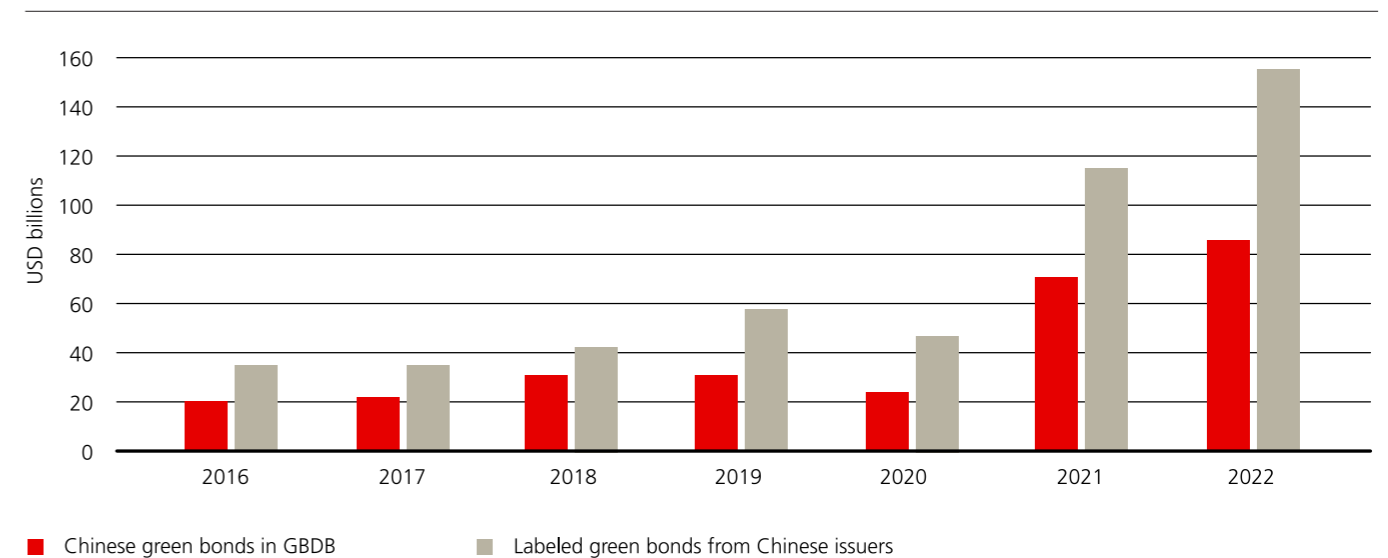
Climate finance

A major part of transitioning to net zero is financing it. Green bonds have seen explosive growth in China as the country seeks to embed itself as a climate finance leader. Indeed, it recorded USD 85.4 billion (RMB 575.2 billion) in the Climate Bonds Initiative green bond database (GBDB) – the largest of any country.

"China has seen incredible growth in green finance over the past few years, reflecting rapid progress in clean energy, low-carbon transport and other areas."

says Sean Kidney of the Climate Bonds Initiative. He goes on, "There is a huge amount still to do, especially in the transition of energy and industrial sectors; green and transition bonds will help drive that change."⁶

Chart 5: China's green bond issuance continued to expand in 2022



Source: Climate Bonds Initiative

As Kidney notes, there is still more to be done as the proportion of labelled green bonds vs. China's overall debt issuance remains below 2% in the onshore market. However, as the market scales so will the diversity of issuers and investors.

While China's change to SOE's have been dominant in thematic debt issuance, we expect this to expand to public and private organisations, and for both domestic and international investors to participate.

China's large-scale transition will undoubtedly create opportunities for all types of investors.

¹ China's emissions set to fall in 2024 after record growth in clean energy, Carbon Brief,

² International Energy Agency, 2023

³ China's automakers take the world by storm with electric vehicle push, CNN, September 8, 2023

⁴ Rare earths prices sink to lowest since 2020 as China ramps up supply, Reuters, July 2023.

⁵ An energy sector roadmap to carbon neutrality in China, International Energy Agency, September 2021

⁶ China is off to spur the transition debt market, Climate Bonds Initiative, 2023

Policy certainty and finding common ground

Tensions within ESG are nothing new. In the US, for example, ESG and sustainable investing has become a hot potato tossed back and forth between conservative Republicans and more liberal Democrats. Equally, the ideological gap between the West and China is extreme and has the capacity to impact Western investment in China's energy transition.

It feels like we need some tangible common ground.

Barely a day goes by without another call from the (Western) sustainable investment community for greater levels of policy certainty and commitment to net zero. Yet I rarely sense any hint of self-reflection or irony as they scorn inefficient decision-making and policy paralysis.

It is worth remembering that achieving carbon neutrality is essential to China's long-term growth and prosperity. And according to the World Bank Group, the country is well positioned to meet its climate commitments and transition to a carbon-neutral economy while still continuing to grow its economy.⁷ So for all its perceived faults, China's political model has the ability to mobilize quickly and to chart a long-term course with a high degree of policy certainty.

The entrepreneurial and socially conscious side of Chinese citizens should not be ignored either. Take pollution. As a result of increasing awareness and frustration with urban pollution levels, a series of policy interventions has led to a rapid decline in particulate matter levels since 2014.

Indeed, the hugely successful Blue Map App – which allows users to track air quality and was an Earthshot Prize finalist in 2021 – is a prime example of the intricate positive feedback loop between innovation and civic engagement. As the Earthshot official website states, "Blue Map App demonstrates the power of transparency and accountability. It also teaches the world a lesson — that clever innovation, combined with public participation, is a recipe for progress."

To some in the West though, China and sustainability will never belong in the same sentence. Yet as Dr. Keyu Jin puts it, "Recognizing that there is some wisdom to China's approach doesn't mean endorsing all of it."⁸ And in The Party's own words, "moving forward with the times" (yu shi ju jin) is critical.

China's future, like everyone's, is not yet set in stone. Addressing climate risk for large asset owners (universal owners), and for the global environment, therefore requires investors to look through a more nuanced lens.

For if China fails,
we all do.

⁷ Pathways to Low-Carbon and Climate-Resilient Development in China, World Bank Group, November 8, 2022.

⁸ What the world can learn from China's innovation playbook, Keyu Jin Ted Talk, April 2023



Blue Moon Valley Waterfalls,
Lijiang, China



Fuli Bridge, Yulong River,
Yangshuo, China

Where China and the US can underwrite world progress together

An interview with
Michael Spence on his
view on the Chinese economy,
as well as China's relationship
with the US



Michael Spence
Nobel Laureate
of Economic Sciences

The world today seems to move from crisis to crisis: wars, natural disasters, stalling growth, runaway inflation, climate deterioration, rising inequality, and more. The term *Permacrisis* describes “an extended period of instability and insecurity, especially one resulting from a series of catastrophic events” by Collins Dictionary. It is also the name of the world-renowned economist and Nobel laureate Michael Spence’s most recent book *Permacrisis: A Plan to Fix a Fractured World*, co-authored with Gordon Brown and Mohamed A El-Erian.

Most crises are not random, isolated incidents.

As Spence puts it, they are results of a policy failure in addressing the underlying trends that lead to a crisis, and world fragmentation is such a trend. Tensions between the US and China have escalated along with restrictions on trade and other areas, leaving major economic, market and social consequences for the international community.

In the *Permacrisis* spirit, we asked Spence about what can be done about the forces of deglobalization. He sees US-China decoupling as having a detrimental impact on the world and believes the two countries can and must work together to advance growth, equity, and sustainability.

Can you give an overview of the Chinese economy and its current strengths and weaknesses?

The Chinese economy has distinct strengths and weaknesses, but it is slowing dramatically currently. While deceleration is happening everywhere in the world, most of what is now slowing China down is from imbalances within the economy. Structural issues such as weakness in household consumption and private investment must be addressed before overall growth can be restored.

China has the resources to prop up the slowing economy if it wants to. However, the issue has been enthusiastically debated within the central government. I am with the camp that believes pulling the stimulus lever too hard could mean making investments that at best have very low returns in absolute and social terms, and at worst could even aggravate the current situation. With aggregate debt-to-GDP at 280%, China’s debt position is high – but not ridiculous – and is in line with many developed economies.

A lot has been written in the media on shorter-term challenges, such as the precarious finances of municipal governments, high youth unemployment as well as protracted weakness, excess capacity, and over-indebtedness in the real estate sector. Next to these immediate headlines, however, exports have held up reasonably well despite the diversification and relocation of supply chains away from China. There is broad wariness among multinational companies with relying on a single source of production, be it China or somewhere else, but China will nevertheless take a hit. That said, these problems to me are not insoluble.

To a great extent, the longer-term secular issues have more serious implications, and businesses holding back from investing for the future is a distress signal. A dramatic drop in private sector investment, which reflects a distinct loss of confidence, is the unfortunate result of the government’s sometimes ambiguous communication and ambivalent approach to the private sector. While there has been some recent improvement, the on-and-off pattern and mixed messages from officials did little to restore business

sentiment or encourage investment in some of the most dynamic parts of the economy. Needless to say, it takes time to build up confidence; there is no simple economic switch the government can flick on.

Another major issue is domestic consumption. Chinese household wealth is in large part tied up in real estate, and the prolonged housing downturn has a direct impact on the family balance sheet and hence willingness to spend. The frugality presents considerable challenges to China’s transition from the old growth model (reliant on significant direct investment from the central government) to a middle-income economy (where consumer spending drives healthy growth).

Chinese household spending currently hovers around 40% of GDP, compared to over 60% for the US and UK.

This is not strong enough to drive the Chinese economy forward. Not only is the savings rate very high relative to developed markets, but disposable income also only makes up about 60% of the overall national income. More complete social security benefits such as social insurance, public services, and retirement schemes could help lower savings, but it is not likely to improve the national income structure.

How to redistribute national income across households, companies, and government is something China needs to work on. Making sure households don’t get the short end of the stick is easier said than done. Case in point: The government owns over 80% of the state-owned enterprises, extending state control over 30-50% of the country’s corporate income.

As geopolitical tensions between the US and China stay elevated, the economies are headed toward decoupling. You have called this “a distinctly suboptimal and perilous course.” Can you elaborate?

Although the topic is a moving target, the relationship between the US and China is mostly symmetric. Both countries are focused on security – whether it is in the form of energy, economic, industrial or foreign policy.

I tend to be an optimist, however. Pragmatism can exist side-by-side with national interests, as long as officials from both sides continue to talk to each other. There are conflicts that seem irreconcilable, but I believe there are many more areas where China and the US can still work together. Various science disciplines come to mind. And then there is climate change, where active participation and commitment from both countries is absolutely crucial in moving the world forward. A climate change solution must be international; one without either country is impractical at best and unworkable at worst.

Science and new technologies are transforming the world we live in, and the exchange of ideas among scientists, technologists and academics must be reestablished and restored. Trust has eroded between the two countries over the years, but Chinese and American policymakers should build a foundation for cooperation to contain the spillover from the existing fights. I believe it can be done with a fair amount of determination and pragmatism.

In the context of American politics, unfortunately, any type of cooperative actions can be interpreted as being soft on China and will probably run into some roadblocks, which could take us beyond what you might call the “rational degrees of separation.” Trump era tariffs aside, economic advisors in the Biden administration do not think tariff on toys is critical to national security.

Ultimately, China is too large of an economy to cast aside – or to delete from an asset allocation decision. There are incredible investment opportunities, powered by a massive amount of human capital and government funding. The second highest number of unicorn startups in the world and successes in digital medical sciences and energy transition/transformation are just some examples. It is possible to invest in these opportunities without taking on extraordinary risks.

How can global institutions and multilateral organizations evolve to meet the varying agendas of the US, China and other major players?

Major multilateral institutions are losing credibility and impact – and possibly funding – and it is a crisis that China and the US must tackle together. Most of the so-called Bretton Woods institutions such as the World Trade Organization (WTO), World Bank, International Monetary Fund (IMF) were established in the post-war years, along with the United Nations (UN). However, nationalism and unilateralism have been on the rise in recent years, calling multilateralism into question.

But it is not just a matter of ideology. China takes issue with its representation and influence in these institutions. Many of the developing economies have grown bigger and more powerful from 30 years ago, and they want their fair share of influence. For example, Belgium at present should not have a larger share than Indonesia or India. And the days of the US and Europe taking turns in appointing directors for these institutions should end. It also does not help that China and other developing markets are often at odds with the US approach, most notably with some of the Ukraine war related sanctions. All in all, a more balanced and objective representation reflecting the changes in the global economy is long overdue in these organizations.

That is not to say the world can do without these imperfect multilateral institutions. My *Permacrisis* coauthor Gordon Brown has repeatedly and eloquently argued that today's world is more complicated and fragmented with these big global problems to solve, we need global solutions that everybody is in on. We need the IMF, WTO, and the likes to help the world meet the challenges head on.

There is also no harm in having a plethora of multilateral institutions.

For example, the New Development Bank (NDB), formerly known as the BRICS Development Bank, has an important role to play as a targeted lender alongside the World Bank. Leaving these organizations undercapitalized, or ignoring them when it is convenient, is self-defeating.

Toward net zero, the coordinated work of multilateral lenders can contribute to meaningful progress. The World Bank has recently formalized its commitment with a new vision statement: "To create a world free of poverty – on a livable planet." The bank's president Ajay Banga is looking for ways to incentivize an exit from coal and fund climate investments as part of the energy transition, and these could include cheaper and longer maturity loans as well as other instruments. By absorbing some of the idiosyncratic risks that stop private capital at the door, these measures could create an attractive climate investment atmosphere in underfunded places like sub-Saharan Africa.

How does industrial policy play into the US and China's dominance in the global climate economy?

China and the US are well capitalized, and their early and sustained investment has made them leaders in different parts of the energy transition, as well as competitors. However, government subsidies on both sides have been a controversial topic, often criticized as an affront to international trade agreements.

Industrial policy has always been considered interventionist, though I believe in some cases it can be essential to a country's long-term economic survival and development.

There have been successful and failed examples in the past. China as a developing country has spent heavily to develop and grow many sectors and industries, dominating

renewable energy such as the manufacturing of solar panels and electric vehicles. On the other hand, the US has always invested heavily in science and technology, particularly in military and space programs, but last year's Inflation Reduction Act contained clean energy incentives that irked the European trading partners.

The challenge of working through these differences will always remain as global interdependence shifts. China and the US should acknowledge any step back in fair trade, even if it is done in the name of moving closer to net zero, and work toward a compromise. I hope a pragmatic solution will eventually allow the two countries to make progress on separate tracks and somehow lead the world to a better place in the future.



Ulan Butong grassland, Inner Mongolia, China

Are China and US in an AI arms race? How does generative AI affect overall productivity growth? Could we see a similar hollowing out of service industries to the one we saw play out in manufacturing that shook certain regions and sectors?

Productivity growth has been in a decline for the past two decades. Global growth stayed strong nonetheless because China and other emerging economies dramatically expanded production capacity and kept inflation in check by bringing inexpensive goods to the world. But as inflationary pressure built in the past few years – made worse by COVID and supply chain issues – global growth slowed. Supply side forces held down productivity: populations aged, workforces shrank, and dependency ratios increased, in a world that has become more fragmented.

The most stunning aspect of generative AI is that it is (almost) a general-purpose technology. Taking a step closer to artificial general intelligence, advanced large language models (LLMs) that power generative AI are so versatile they can respond to questions from the Italian Renaissance to inflation expectations, and from coding to poetry, without needing explicit prompts or instructions. AI can switch subjects like a person.

Secondly, technical training and skills are not required, and anyone including a robot can ask a question. LLMs are designed to respond to ordinary language, making them radically more accessible than older AI models.

Generative AI can do a lot, from predicting the 3D structures of every protein to beating the best professional players in the game of Go, so it just might be able to lift the world economy out of its productivity lull. The technological innovations can transform the supply side of the economy, should they become more affordable and distributed around the world. However, while the potential economic benefits can be great, AI's immediate impact is mostly in the information economy instead of the real economy.

In terms of China and the US, both countries have the resources and talent to take generative AI further. To train advanced LLMs is a costly undertaking that requires a tremendous amount of computing power, and China and the US are home to the AI platform companies that have made defining breakthroughs.

The US is a clear leader in generative AI today, with China as a second. There is no close third. The US ban and restrictions on the export of several types of high-performance semiconductor chips to China should hold China back for the time being. Companies that make semiconductors at this level – capable of training neural networks on enormous datasets that are needed for advanced LLMs – are an exclusive club. But China will catch up. I believe they will be strong competitors with each other in generative AI over the long run.

The restricted flows of technology and capital between the two countries as well as with the world stands in the way of AI transforming the global economy. The use of scientific and technological tools should be geared toward supporting progress that could contribute to the greater good. These new barriers to international diffusion concern me more than which country will be the eventual winner of the AI arms race.

A few final words

The state of the world is uncertain courtesy of cascading crises. Forces to decouple or deglobalize have been gaining pace, undermining the cooperation needed to address current crises and protect against future ones.

US and China remain key to global affairs and geopolitics, so together they must find a way of achieving some sort of competitive coexistence. Encouragingly, signs of a thawing in tensions could be emerging. As President Xi recently told several US senators in Beijing, “I have said many times, including to several presidents, we have 1,000 reasons to improve China-US relations, but not one reason to ruin them.” The recent summit meeting between Presidents Joe Biden and Xi Jinping provides some hope too, with progress made on a number of fronts – not least climate change.

It is more important than ever to learn from mistakes of the past and misguided approaches in handling crises and try to propose achievable solutions.

With a pragmatic approach,
China and the US can underwrite
world progress together.



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