

The Sino-American Innovation Dilemma
Stephen S. Roach¹

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In the midst of an ever-escalating tariff war, I do not share the view that Sino-American tensions are all about trade imbalances. The real battle is a strategic clash over innovation and technology — the Holy Grail of any nation’s prosperity.

Yes, there is a large and seemingly chronic trade imbalance between the United States and China that is growing even wider today. But this is just as much a function of America’s own macroeconomic problems as a reflection of unfair Chinese trading practices long alleged by the Washington consensus and now underscored by the shrill rhetoric of the Trump Administration.

The United States suffers from a chronic deficiency of domestic saving. Its net national saving rate was just 3% in the first half of 2018 — up a bit from the 1.9% post-crisis average (2009-17) but still less than half the 6.3% norm of the final three decades of the 20th century. Lacking in saving and wanting to invest, consume, and grow, the US must import surplus saving from abroad and run massive current account and trade deficits to attract foreign capital.

Therein lies Trump’s folly. The United States had trade deficits with 102 nations in 2017 — a multilateral problem.² By opting for budget-busting tax cuts in late 2017, America’s already depressed domestic saving will move sharply lower in the years ahead, pushing its current account and trade gaps even deeper into deficit. Moves to rectify this imbalance with tariffs against China will only backfire. The Chinese piece of the trade deficit will shift to higher-cost trading partners, putting more pressure on American consumers. That is already happening. There can be no bilateral fix for a multilateral problem.

Trade deficits are a foil for a far more profound struggle between the US and China. A recent White House policy paper says it all: “...the Chinese State seeks to access the crown jewels of American technology and intellectual property.”³ White House advisor Peter Navarro adds that, “China has targeted America’s industries of the future ... if China successfully captures these emerging industries, America will have no economic future.”⁴

¹ Senior Fellow, Yale Jackson Institute for Global Affairs and former Chairman, Morgan Stanley Asia

² See Stephen S. Roach, “A Bilateral Foil for America’s Multilateral Dilemma,” *Project Syndicate*, May 2018

³ See White House Office of Trade and Manufacturing Policy, “How China’s Economic Aggression Threatens the Technologies and Intellectual Property of the United States and the World,” June 2018.

⁴ CNBC interview with Peter Navarro, June 19, 2018

These charges draw heavily on the March findings of a so-called Section 301 investigation conducted by the US Trade Representative, Robert Lighthizer, a report which has become central to the national anti-China narrative.⁵ Unfortunately, the USTR's conclusions are wide of the mark in four areas:⁶

1. **Joint ventures.** Allegations of forced technology transfers through the JV structure overlook the most basic aspect of these arrangements — two partners working together *willingly*, in the context of commercially and legally binding agreements, to create a business that requires a sharing of personnel, systems, and processes. That was certainly my own experience as a senior executive in a joint venture between my former employer, Morgan Stanley and the China Construction Bank in building China's first investment bank, CICC. At no point was I *forced* to turn over anything to my Chinese partners.
2. **Cyberhacking.** Allegations of stealing America's secrets via cyberhacking were addressed in the Sunnylands Summit of 2015 between Presidents Obama and Xi; since then, cyber incursions have been sharply reduced, a point overlooked by the USTR in its emphasis on cyberhacking activity that largely predates this summit.
3. **Outbound capture.** The USTR also charges China with technology theft through its "going out" policies of acquiring US companies and their proprietary systems. Such allegations of predatory behavior are exaggerated. Tabulations by the American Enterprise Institute find that only 16 of China's 228 outward bound M&A deals over the decade ending in 2017 were in the technology sector; that compares with fully 51 deals in the real estate sector over the same period.⁷
4. **Industrial policy.** The USTR insists that China is using industrial policies, such as Made in China 2025 or AI 2030, to gain an unfair advantage in the acquisition of foreign technology. Yet from Japan to Germany to Pentagon-sponsored innovations of America's military-industrial complex, industrial policies have been more the rule than the exception for today's leading economies.

⁵ See Office of the United States Trade Representative, "Findings of the Investigation Into China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation Under Section 301 of the Trade Act of 1974," March 22, 2018

⁶ The four points below draw on Stephen Roach, "America's Weak Case Against China," *Project Syndicate*, April 2018

⁷ See American Enterprise Institute, *China Global Investment Tracker*, www.aei.org/china-global-investment-tracker/

Unfortunately, there is a striking element of hypocrisy that runs through the USTR's accusations of Chinese intellectual property theft. In the 19th century, Great Britain, Continental Europe, and the United States all engaged in a multitude of flagrant abuses of technology transfers. There are countless examples of industrial espionage, illegal recruitment, the kidnapping of foreign workers with knowledge of proprietary production techniques, trademark counterfeiting, and the artificial protection of interlocking patents.⁸ This is not to say China should be excused just because others did the same. But historical context and precedent can hardly be ignored in putting today's accusations in perspective.

The allegations leveled against China by the USTR make it sound as if the Chinese are interlopers — that they have no rightful claim to the hallowed ground of innovation that has long defined the prosperity of nations. That overlooks the simple but important fact that ancient China was the world's preeminent innovator. From agricultural production to textile weaving, from paper and printing to missiles and gunpower, from magnetic polarity and navigational guidance to breakthroughs in civil and mechanical engineering and nautics, from discoveries of synthetic insulin to ferrous metallurgy and ceramic technology, China's extraordinary breakthroughs in science and technology came well before the 18th and 19th century agricultural and industrial revolutions in Europe, and the United States.⁹ By the late 11th century, China's per capita iron output was five to six times the European average; by the 13th century, Chinese textile spinning was operating at efficiency levels that Europe would not enjoy for another 500 years.¹⁰

The real question is not whether ancient China knew how to innovate, but why the China of the 14th century didn't capitalize on its innovative culture through its own industrial revolution. China's lag in science and technology became especially acute in the first 75 years of the 20th century, brought on by the combination of the collapse of the late Qing dynasty, the national revolution, and the inward-looking focus of Mao Zedong. But this gap was more a function of systemic failures in China's political system than a loss of the creative DNA of the Chinese people. The same culture that gave us magnetic polarity, gunpowder, and paper is perfectly capable of doing it again.

While the innovation debate is of critical importance to the current dispute between the US and China, it raises an even deeper question: Will China make the transition from imported to

⁸ See Ha-Joon Chang, "Intellectual Property Rights and Economic Development: Historical Lessons and Emerging Issues," *Journal of Human Development*, 2001; also see, Charles R. Morris, "We Were Pirates, Too," *Foreign Policy*, May 2018.

⁹ See Joseph Needham, *Science and Civilisation in China*, Volumes I-VII, Cambridge University Press, 1954-98; also see, Colin A. Ronan, *The Shorter Science and Civilisation in China*, Books 1-3, Cambridge University Press 1978-86

¹⁰ See Justin Yifu Lin, "The Needham Puzzle: Why the Industrial Revolution Did Not Originate in China," *Economic Development and Cultural Change*, 1995

home-grown, or indigenous, innovation that is required to avoid the dreaded “middle-income trap” which has long ensnared most developing nations?¹¹

On this count, there are five pieces of compelling evidence to believe that China will pull it off:

1. **Silicon Valley-like hubs.** Hubs provide the cultural assimilation between leading universities, venture capital investors, and serial entrepreneurs. China has established 17 tech hubs.¹² The most notable include the so-called Greater Bay Area (the broader Pearl River Delta area — Shenzhen, Hong Kong, Macau, and Guangdong), Z-Park in Beijing (Zhongguancun Software Park), and the Guangzhou Innovation Hub. Comparable efforts have sprung up in Shanghai Pudong (i.e., Zhangjiang Hi-Tech Park as well as the Lujiazui fintech incubation center) and, more recently, at Tsinghua University (the Tsinghua Institute for Artificial Intelligence).
2. **Start-up companies.** Hubs foster start-ups, providing incentives for a new generation of innovators and entrepreneurs. Over the past decade, the Chinese start-up culture has hit its stride. China now has over 160 “unicorns” – private companies with valuations in excess of \$1 billion each — versus about 130 unicorns in the United States.¹³ China’s unicorns span the gamut — from the fintech of internet finance, to a vast e-commerce platform, to online travel, to cloud computing, to big data management, to new energy, and logistics. Moreover, there is also a large population of listed Chinese companies which are already on the leading edge of the global innovation curve – from e-commerce and social media giants like Alibaba, Tencent, JD.com, and Baidu, to world-class leaders in DNA sequencing and biogenetics such as BGI and Hengri, to high-speed rail, autonomous vehicles, and artificial intelligence, where China and the United States are the global leaders in what could well be this century’s most important technology gambit.
3. **Strategy and governance.** The lessons of ancient China are not without interest in assessing the future of Chinese innovation and technological development. Then, as now, success hinges on implementation and effective governance to catalyze the creative spark of entrepreneurs and innovators. China’s two high-profile industrial polices, MIC2025 and AI2030, are clear signs that modern China will differentiate itself from its ancient past.

¹¹ See B. Kang, et. al., “Avoiding the Middle-income Trap: Indigenous innovative effort vs foreign innovative effort,” IDE Discussion Paper No. 509, March 2015

¹² See CB Insights, *Global Tech Hubs Report*, 2018

¹³ See Torch High Technology Industry Development Center of China’s Ministry of Science and Technology jointly with Greatwall Strategy Consultants in Beijing, March 23, 2018

4. **China's innovation DNA.** China's DNA as an unparalleled historic innovator is very much evident today. Chinese educational reforms are now turning out more than 4.5 million graduates per year in the so-called STEM areas (Science, Technology, Engineering).¹⁴ And it's not just quantity — the quality is increasingly impressive. From nanoscience and nanotechnology, to quantum networking, to stem-cell research and regenerative medicine, to gene editing and the genetics of cancer research, to AI-related breakthroughs that put China, at most, only one year behind the United States. The new innovators of modern China speak volumes to the nation's own "crown jewels."

5. **R&D.** US National Science Foundation data put Chinese spending on overall research and development of \$409 billion in 2015 (in international dollars) — nearly double that of 2010 and second only to America's \$497-billion; significantly, fully 84% of overall Chinese R&D expenditures is earmarked for "experimental development," making China the global leader in this leading-edge category. Equally compelling, the NSF also reports that in 2016 China surpassed the United States as the world's leader in academic science and engineering publications.¹⁵

This evidence takes us to an even bigger question: Is China is coming full circle — from an ancient civilization that once led the world in innovation and technology to a modern nation now focused on research, scientific development, indigenous innovation, and commercialization of these activities? By fixating on IP theft, cyberhacking, and forced technology transfer, the USTR's stress on the dark side Chinese innovation allows for literally no consideration of this possibility. That may well be one of America's most egregious oversight.

Let me end where I started, with the clash. Much has been made over the race for technological supremacy as the decisive factor in the struggle for economic dominance between China and the United States. There is, however, an alternative interpretation. Each economy needs the productivity payback from technology and innovation for its *own purposes* — China to avoid the middle-income trap and the United States to counter the risks of economic stagnation that might well arise from another productivity slowdown that now appears to be under way.¹⁶ Resolving the innovation dilemma does not imply defeating the other in the arena of global power. This contrast between the zero-sum imagery of the conflict and a win-win outcome of mutual success is of great potential importance in understanding and ultimately resolving the strains in the US-Sino relationship.

This alternative interpretation leads to a very different set of issues — not just for China but also for the United States. As an American, I will put it bluntly: Is the China fixation of the US

¹⁴ Source: N. McCarthy, "The Countries with the Most STEM Graduates," *Forbes*, Feb. 2017

¹⁵ National Science Board, *2018 Science & Engineering Indicators*, US National Science Foundation, Washington, DC

¹⁶ D.M. Byrne, et. al., "Does the United States have a Productivity Slowdown or a Measurement Problem?" Finance and Economic Discussion Series, Federal Reserve Board, Mar 2016

Trade Representative, to say nothing of the more extreme charges of Peter Navarro and President Trump, the real challenge that the United States needs to face in the years ahead?

In the end, America's race, like that of most nations, is more with itself than with any purported foreign adversary. America's scapegoating of China would make Don Quixote blush. It is a convenient excuse for ducking the tough issues of economic strategy that the United States has avoided for decades – namely, its saving and productivity imperatives. Both the US and China face formidable economic challenges in the years ahead. They both win if they solve their own problems. They both lose if they attack the other in a destructive and diversionary trade war.

Over time, there is a growing risk that perception becomes reality. The US body politic is in danger of convincing itself that China, a nation with a long and rich heritage as a leader in technological innovation, now needs to cheat in order to regain that edge and in doing so will stop at nothing short of the outright theft of the crown jewels of America's economic primacy, its intellectual property.

China, for its part, is increasingly convinced that it is being victimized by an American containment strategy aimed at its geostrategic role as well as limiting its progress on the road to indigenous innovation, sustained development, and prosperity.

The longer the current US-Sino dispute persists, the deeper those convictions are likely to become ingrained on both sides of the relationship. And then, the long and tragic history of struggles between rising and ruling powers — the so-called Thucydides Trap¹⁷ — will become all the more relevant. Resolving the innovation dilemma is key to avoiding that potentially dire outcome.

Thank you very much.

¹⁷ See Graham T. Allison, *Destined for War: Can America and China Escape the Thucydides's Trap?* Houghton Mifflin Harcourt, 2017