

# Financing Mechanisms Underpinning China's Tech Self-Reliance

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In 2018, Chinese leader Xi Jinping declared, “key technologies are the most important weapons of the country to promote high-quality economic development and guarantee our national security.”<sup>1</sup> Under his leadership, China has sought technology-focused securitization to build an innovation system that supports its broader economic, societal, and geostrategic goals. In response to the economic impact ranging from the ongoing COVID-19 pandemic to the US-China trade and technology war, the Chinese Politburo unveiled the new “dual circulation” strategy at a Central Financial and Economic Commission meeting in 2020.<sup>2</sup> The strategy emphasizes China’s domestic market and homegrown technology as well as its continued efforts to promote a hybrid model that balances global integration with domestic economic activities.

At its core, dual circulation aims to reduce China’s vulnerability to external shocks, and to increase the country’s self-reliance to better guard against global volatility. To be clear, the goal of the strategy is not to steer China toward complete autarky. Instead, it is meant to be a “proactive strategy to shape the parameters of the divorce.”<sup>3</sup> Toward this end, the Chinese government works to improve China’s innovation-building capacity by attracting foreign capital and technology know-how, as well as setting

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- 1 “Xi Jinping: Core Technology is the Most Important Weapon of the Country [习近平：关键核心技术是国之重器]” Xinhua, July 15, 2018, <https://perma.cc/3XVT-U6C2>.
- 2 “The Standing Committee of the Political Bureau of the CCP Central Committee Held a Meeting; General Secretary of the CCP Central Committee Xi Jinping Presided over the Meeting [中共中央政治局常务委员会召开会议 中共中央总书记习近平主持会议]” *People's Daily*, May 15, 2020, [http://cpc.people.com.cn/n1/2020/0515/c64094-31709627.html?mc\\_cid=28966ada58&mc\\_eid=902fe70bde](http://cpc.people.com.cn/n1/2020/0515/c64094-31709627.html?mc_cid=28966ada58&mc_eid=902fe70bde).
- 3 Jude Blanchette and Andrew Polk, “Dual Circulation and China’s New Hedged Integration Strategy,” Center for Strategic and International Studies, August 24, 2020, <https://www.csis.org/analysis/dual-circulation-and-chinas-new-hedged-integration-strategy>.

“traffic lights” for capital that flows into priority sectors.<sup>4</sup> In China’s state-capitalism system, the “various forms of capital” serve as tools for the Chinese state to maximize the benefits of the private sector while retaining control.<sup>5</sup>

China’s government is not only creating synergy between domestic and foreign markets, but is also balancing public-financing modes with private ones to achieve its goals. As stipulated in the 14th Five-Year Plan, the Chinese government aims to “deepen the reform of investment and financing systems, exploit the leveraging role of government investment, stimulate private investment activity, and form endogenous growth mechanisms based on market-led investment.”<sup>6</sup> Within this context, the paper examines the various forms of financing vehicles that involve a range of diverse actors to support China’s whole-of-nation approach in an effort to achieve self-reliance in technology. To conclude, the paper assesses the mechanisms’ successes and shortcomings as well as areas to monitor going forward.

## 1: SCALING UP PUBLIC FUNDING

In its quest for self-sufficiency in technology, the Chinese government channels state funding in the form of research and development (R&D) funding and direct state subsidies to key stakeholders within China’s science and technology (S&T) ecosystem. To grapple with the rapidly changing technology landscape, the state has established new funding initiatives while reforming old ones.

### R&D Funding

To support R&D and streamline the innovation process, the Chinese government has funneled large amounts of

state capital and other resources to government-sponsored projects. The 2016 Innovation Driven Development Strategy calls for key and core technologies that have “long been controlled by others” to be reversed by increasing R&D expenditures to 2.5 percent of gross domestic product (GDP).<sup>7</sup> Breaking this pattern of relying on foreign technologies is a focus of China’s tech ambitions. The Chinese National Bureau of Statistics reported that China’s R&D investment reached \$392 billion (2.79 trillion renminbi (RMB)) in 2021, a 14-percent increase from the previous year.<sup>8</sup>

Ramping up R&D spending alone is not enough; targeted funding is also needed. According to the 14th Five-Year Plan, China needs to boost spending on basic research to reduce chokepoints in areas such as artificial intelligence (AI), biotechnology, robotics, and quantum computing. One way to achieve this goal is through state funding mechanisms such as the National Key R&D Programs (NKPs). After the 2014 reform of the national S&T funding system, the NKPs absorbed both the 973 Program for basic research and the 863 Program for high-tech development.<sup>9</sup> In 2018, the NKPs dedicated \$3 billion to AI-related projects, such as supply-chain process control for intelligent manufacturing, data mining and analysis, and new cloud-computing architectures for big-data processing.<sup>10</sup>

At the laboratory level, State Key Labs (SKLs) play a central role in fostering China’s indigenous innovation. These labs receive a steady stream of funding from the government to drive China’s strategic basic research in S&T. In 2019, SKLs received a total of \$925 million from China’s Ministry of Education, Ministry of Science and Technology, and Academy of Sciences.<sup>11</sup> To incentivize an innovation base that includes SKLs and focuses on technology self-reliance, the state

4 “Will the Dual Circulation Strategy Enable China to Compete in a Post-Pandemic World?” Center for Strategic and International Studies, last visited October 26, 2022, <https://chinapower.csis.org/china-covid-dual-circulation-economic-strategy/>.

5 “The Central Economic Work Conference Was Held, and Xi Jinping and Li Keqiang Made Important Speeches [中央经济工作会议举行 习近平李克强作重要讲话],” Xinhua, December 10, 2021, [http://www.gov.cn/xinwen/2021-12/10/content\\_5659796.htm](http://www.gov.cn/xinwen/2021-12/10/content_5659796.htm).

6 “Outline of the People’s Republic of China 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035 [中华人民共和国国民经济和社会发展第十四个五年规划和 2035 年远景目标纲要],” Xinhua, March 12, 2021, <https://perma.cc/73AK-BUW2>; English translation is available at: [https://cset.georgetown.edu/wp-content/uploads/t0284\\_14th\\_Five\\_Year\\_Plan\\_EN.pdf](https://cset.georgetown.edu/wp-content/uploads/t0284_14th_Five_Year_Plan_EN.pdf).

7 “Outline of the National Innovation-Driven Development Strategy Issued by the CPC Central Committee and the State Council [中共中央 国务院印发《国家创新驱动发展战略纲要》],” Xinhua, May 19, 2016, [http://www.xinhuanet.com/politics/2016-05/19/c\\_1118898033.htm](http://www.xinhuanet.com/politics/2016-05/19/c_1118898033.htm); English translation is available at: [https://cset.georgetown.edu/wp-content/uploads/t0076\\_innovation\\_driven\\_development\\_strategy\\_EN.pdf](https://cset.georgetown.edu/wp-content/uploads/t0076_innovation_driven_development_strategy_EN.pdf).

8 “China’s R&D Expenditure Reached 2.79 Trillion Yuan in 2021,” National Bureau of Statistics of China, January 27, 2022, [http://www.stats.gov.cn/english/PressRelease/202201/t20220127\\_1827065.html](http://www.stats.gov.cn/english/PressRelease/202201/t20220127_1827065.html).

9 “Press Conference on the ‘Launch and Implementation of the National Key R&D Program’: Summary Transcript [国家重点研发计划启动实施” 新闻发布会：文字摘要],” PRC Ministry of Science and Technology, February 16, 2016, <https://perma.cc/XFZ3-3AMX>; English translation is available at: <https://cset.georgetown.edu/publication/press-conference-on-the-launch-and-implementation-of-the-national-key-rd-program-summary-transcript>.

10 Ngor Luong and Ryan Fedasiuk, “State Plans, Research, and Funding” in William C. Hannas and Huey-Meei Chang, eds., *Chinese Power and Artificial Intelligence: Perspectives and Challenges* (1st ed.), (London: Routledge, 2022), <https://doi.org/10.4324/9781003212980>.

11 Emily S. Weinstein, et al., “China’s State Key Laboratory System: A View into China’s Innovation System,” Center for Security and Emerging Technology, June 2022, <https://cset.georgetown.edu/publication/chinas-state-key-laboratory-system/>.

establishes enterprise SKLs that are hosted within firms to link basic research to advanced application of the technology. At present, nearly 40 percent of the four hundred and sixty-nine known SKLs are managed by firms.<sup>12</sup>

### Direct State Subsidies

Having long recognized that firms are at the center of innovation, the Chinese state seeks to align public and private interests around strategic technologies, using subsidies and R&D support directly from public funding. In 2019 alone, Chinese listed companies received \$41 billion in subsidies, and a majority of these firms are in critical and strategic sectors such as software, technology hardware, semiconductors, automobiles, and transportation.<sup>13</sup> There are different avenues for the government to provide funding to ease market barriers to entry for firms at the forefront of technological innovation. One way to “pick winners” is through competitions hosted by public-private collaboration platforms, such as China’s Artificial Intelligence Industry Alliance. For example, a deep-learning company, iDeepWise, won a competition, received R&D subsidies and cash handouts, and went on to be the first AI company that received investment from Huawei’s venture-capital arm, Hubble Technology Investment.<sup>14</sup>

One of the latest initiatives identifies and supports the “little giants,” which are small companies or startups with significant responsibilities for China’s economic growth. Launched by the Ministry of Industry and Information Technology in 2018, the nationwide little giant initiative focuses on companies in strategically important sectors such as AI, software, and semiconductors. The initiative’s primary goal is to spur innovation while insulating the country from supply-chain vulnerability and other external shocks. As of September 2022, 8,997 little giants have been nominated. The central government plans to dedicate \$1.4 billion (10 billion RMB) in grants and subsidies to support more than one thousand

little giants between 2021 and 2025.<sup>15</sup> Not only do little giants receive direct state subsidies, but—in the past two years—more than 1,500 of them also received other forms of funding by winning major national S&T projects.<sup>16</sup>

## 2: LEVERAGING PRIVATE CAPITAL

Along with public capital, the Chinese government seeks to control private-capital flows in the commercial sector. The China Banking and Insurance Regulatory Commission plans to set up a “traffic light” system for investment to guide private capital toward productive sectors, while urging “firms to obey the Party’s leadership.”<sup>17</sup> As key and core technologies are developed in the commercial sector, the state aims to leverage private capital in both the public investment market and the private equity investment realm to achieve its technology ambitions.

### Public Equity Investment

China’s stock exchanges are some of the world’s largest, with a market capitalization of \$12.21 trillion at the end of 2020.<sup>18</sup> The country’s stock markets have been historically closed off to foreign investors, but some reforms are underway to loosen these restrictions and push for capital support for tech companies. One experiment is Shanghai’s Nasdaq-style Science and Technology Innovation Board, or STAR Market. Launched in July 2019, the STAR Market helps Chinese tech companies in priority sectors, such as AI, semiconductors, and biotechnology, expedite their initial public offerings (IPO) track by loosening regulations and restrictions on IPO pricing. The STAR Market has also been part of China’s financial liberalization. For instance, since last year, foreign investors can access the STAR Market through the Stock Connect program, which allows investors in mainland China and Hong Kong to buy shares in one another’s market.<sup>19</sup> With its goal of nurturing China’s homegrown technology companies, it is not

12 Author’s calculation of the numbers provided in Ibid.

13 Gerard DiPippo, Ilaria Mazzocco, and Scott Kennedy, “Red Ink: Estimating Chinese Industrial Policy Spending in Comparative Perspective,” Center for Strategic and International Studies, May 23, 2022, <https://www.csis.org/analysis/red-ink-estimating-chinese-industrial-policy-spending-comparative-perspective>.

14 Ngor Luong and Zachary Arnold, “China’s Artificial Intelligence Industry Alliance,” Center for Security and Emerging Technology, May 2021, <https://cset.georgetown.edu/publication/chinas-artificial-intelligence-industry-alliance/>; Fendy Wang, “Huawei vs. Xiaomi: How Two Giants Fueled China’s Growth,” *EE Times*, March 26, 2020, <https://www.eetimes.com/huawei-vs-xiaomi-how-two-giants-fueled-chinas-growth/>.

15 “The Report on the Development of Specialized, New Small and Medium Enterprises was Released [《专精特新中小企业发展报告》发布],” Zhongguancun Hi-Tech Technology Enterprise Association, September 19, 2022, <http://www.cecc.org.cn/news/202209/569205.html>.

16 Ibid.

17 “Correctly Understand and Grasp the Characteristics of the Rules of Capital (People’s Viewpoint) [正确认识和把握资本的特性和行为规律（人民观点）],” *People’s Daily*, February 8, 2022, <http://qh.people.com.cn/n2/2022/0208/c401598-35125876.html>.

18 “Market Capitalization of Listed Domestic Companies,” World Bank, last visited October 26, 2022, [https://data.worldbank.org/indicator/CM.MKT.LCAP.CD?locations=CN&most\\_recent\\_value\\_desc=false](https://data.worldbank.org/indicator/CM.MKT.LCAP.CD?locations=CN&most_recent_value_desc=false).

19 CK Tan and Narynan Somasundaram, “Foreign Investors Get New Entry to China’s Tech-Heavy STAR Market,” *Nikkei Asia*, February 1, 2021, <https://asia.nikkei.com/Business/Markets/Foreign-investors-get-new-entry-to-china-s-tech-heavy-STAR-Market>.

surprising that the STAR Market is experimenting with different ways to help Chinese firms deepen their pockets beyond the domestic market.

Tech companies listed on the STAR Market align closely with China's industrial policy goals. According to the 14th Five Year Plan, China "will open up domestic IPO financing channels for S&T enterprises, enhance the 'key and core technology' characteristics of the STAR Market...to serve growing innovative and entrepreneurial enterprises."<sup>20</sup> Some of China's high-profile tech companies, such as Semiconductor Manufacturing International Corporation (SMIC), are listed on the stock market. SMIC has received large amounts of investment from China's largest government guidance funds, such as the Integrated Circuit Industry Investment Fund, also known as the "Big Fund."

With greater capital market reforms, the launch of tech-focused stock markets such as the STAR Market and ChiNext board in Shenzhen has attracted huge amounts of capital to support China's tech development. In 2020, the STAR Market and ChiNext accounted for 56 percent of worldwide IPOs.<sup>21</sup> The aforementioned little giants, which have significant political and financial backing from the government, also raised nearly \$24 billion (170 billion RMB) from their IPOs on the STAR Market and ChiNext as of the end of 2021.<sup>22</sup>

### Private Equity Investment

China's private equity (PE) and venture capital (VC) market is the second largest in the world, following that of the United States.<sup>23</sup> The government hopes to use this to its advantage by mobilizing private investors to fund China's priority sectors. The Chinese Ministry of Science and Technology and Ministry of Finance "Action Plan for Improving the Technological Capabilities of Enterprises (2022–2023)" calls for strengthening financial support, such as venture capital and angel investment, for enterprise innovation by "guid[ing]

venture capital enterprises to invest in early-stage, small, and hard S&T companies."<sup>24</sup>

Such government guidance in private equity investment can happen directly and indirectly. The state can insert party cells or state-affiliated employees in Chinese VC or PE firms. For example, Sequoia Capital China, a subsidiary of US-based Sequoia Capital, reportedly employed Wang Xisha, the daughter of a Politburo member.<sup>25</sup> In addition, the state can indirectly guide capital investment via signaling. For many Chinese VC or PE investors, following government signals when making investment decisions is likely their best bet. This is especially true as the Chinese government pushes for greater control of a "disorderly expansion of capital."<sup>26</sup>

Finally, the Chinese government does not want its heavy involvement to cut the Chinese PE/VC market off from the rest of the world; in fact, the early formation of that market did not occur in a vacuum. Many foreign VC firms, such as US Sequoia Capital and Japanese Softbank, have participated in the development scene. The Chinese government is cognizant of the importance of foreign capital. According to the 14th Five-Year Plan, China will "make more efforts to attract and utilize foreign capital...in an orderly manner."<sup>27</sup> The key emphasis here is that the Chinese government wants to maintain its ability to control capital flows, including foreign ones, as well as to guide capital to benefit the nation.

### 3: MERGING PUBLIC AND PRIVATE CAPITAL

In addition to funneling public funding and controlling private capital flows into China's tech companies, the Chinese government also establishes the government guidance fund (GGF) mechanism as a financing vehicle that mobilizes public and private capital into strategic industries.<sup>28</sup> In the GGF mechanism, the government injects itself into the limited-partnership structure, which is commonly used in

20 "Outline of the People's Republic of China 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035."

21 Mei Ni Yang, "China Private Equity and Venture Capital Too Big to Ignore," Mercer, 2021, <https://www.mercer.com/content/dam/mercer/attachments/global/gl-2021-6011825b-we-china-private-equity.pdf>.

22 "The Report on the Development of Specialized, New Small and Medium Enterprises was Released."

23 Yang, "China Private Equity and Venture Capital Too Big to Ignore."

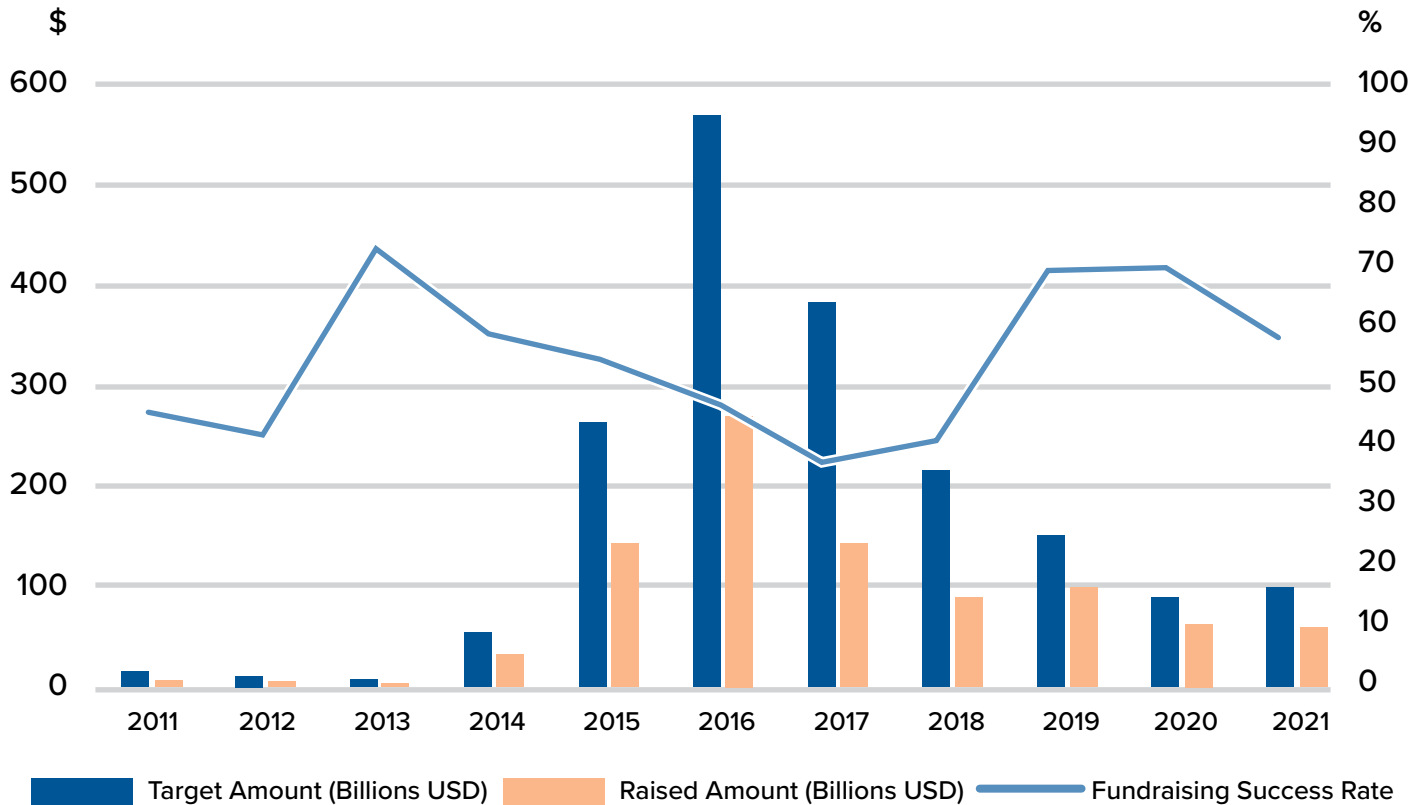
24 "Notice of the Ministry of Science and Technology and the Ministry of Finance on the Issuance of the Action Plan for the Improvement of Enterprise Technology Innovation Capability (2022–2023) [科技部 财政部关于印发《企业技术创新能力提升行动方案（2022—2023年）》的通知]," Ministry of Science and Technology, August 5, 2022, <https://perma.cc/VN5C-XMKF>.

25 Juro Osawa and Shai Oster, "Sequoia Capital's China Arm Employed Daughter of Politburo Member," *Information*, September 9, 2022, <https://www.theinformation.com/articles/sequoia-capitals-china-arm-employed-daughter-of-politburo-member>.

26 "Correctly Understand and Grasp the Characteristics of the Rules of Capital (People's Viewpoint)."

27 "Outline of the People's Republic of China 14th Five-Year Plan for National Economic and Social Development and Long-Range Objectives for 2035."

28 Ngor Luong, Zachary Arnold, and Ben Murphy, "Understanding Chinese Government Guidance Funds," Center for Security and Emerging Technology, March 2021, <https://cset.georgetown.edu/publication/understanding-chinese-government-guidance-funds/>.

**Figure 1: Distribution of Guidance Funds' Target Amount and Raised Amount, 2011-2021**

Source: Author's analysis of Zero2IPO.<sup>1</sup>

equity finance worldwide, in an effort to guide capital to fund strategic industries.

As limited partners, the government sponsors should be divorced from the decision-making process of the fund, but government presence exists at various stages and parts of the fund. First, the government sets up the fund's target size and allocates 20–30 percent of the target funding to attract private investors who may have too little appetite for the risk of investing in high-risk, high-reward sectors like emerging technologies. Often, these private investors are state-owned enterprises and state-run banks disguising themselves as profit-motivated actors. Finally, government-affiliated entities, such as management institutions established by government agencies or state-owned investment firms, can also be found

among the general partners who handle the day-to-day operations of the GGFs.

However, the guidance fund mechanism has to reckon with some challenges. Despite the enormous political and financial support from the government, GGFs typically do not meet their target goals. Figure 1 shows that while the fundraising success rate has fluctuated in the last decade, the rate consistently remains below 75 percent. In addition, while guidance funds can offer patient capital to small companies and startups to commercialize their technology, these funds can also crowd private capital out of the market. According to a report by the Semiconductor Industry Association, China's National Integrated Circuits Fund (the Big Fund) has already invested \$39 billion to increase China's share of global semiconductor

<sup>1</sup> "2021 Government Guidance Fund Data Inventory—Fund Optimization and Integration is Around the Corner [2021年政府引导基金数据盘点—基金优化整合在即]," Zero2IPO, March 16, 2022, <https://perma.cc/6BNX-UGTR>.

companies.<sup>29</sup> But, as discussed earlier, although China's PE/VC market is still maturing, many private funds will now need to compete with government-backed funds like GGFs when bidding for high-performing companies.

#### 4: CONCLUSION

Beijing is committed to becoming a state-led and self-sufficient techno-superpower. In doing so, the Chinese government is consolidating its influence in both the domestic market and overseas markets where Chinese firms are active, while simultaneously mobilizing public, private, and public-private investment vehicles to support these tech ambitions. A number of its financial mechanisms have already spanned decades, but others have emerged recently. The decade-long mechanisms have yielded mixed results, while the successes of the new ones remain to be seen.

#### Evaluating the Successes and Shortcomings of China's Financing Modes for Tech Self-Reliance

Technology development needs an enormous amount of capital, and it is clear that the Chinese government views its financing tools as critical for China's attempt to reduce or eliminate its dependence on foreign technologies for the country's tech development. Given the government's willingness to spend, and its tolerance of capital waste and inefficiency, there is some degree of success in the sectors of interest. For example, consider China's chip sector. After receiving heavy state and private investments, the Chinese semiconductor industry saw its global market share gradually increase from 3.8 percent in 2015 to 9 percent in 2020.<sup>30</sup> But overall, China's semiconductor industry remains multiple generations behind that of the United States.<sup>31</sup>

Money cannot buy everything. Even if extremely well-funded Chinese universities and research institutes make technological breakthroughs, they still face difficulties streamlining the innovation process—for example, commercializing the products as alternatives to those of foreign suppliers.<sup>32</sup> Accessing and cultivating talent in the age of a shrinking population may prove even more challenging. Earlier this year, Xi said, “technological innovation depends first on investment and second on talent.”<sup>33</sup> To achieve self-sufficiency in technology, investment in all aspects of the innovation system will become China's top priority.

With respect to public equity flows into Chinese tech companies, there is tension between Beijing's expectations and market realities. Despite the financial incentives for Chinese firms to localize, some of them still look to access a large pool of public capital in the United States, and to be less susceptible to domestic shocks resulting from government policies.<sup>34</sup> Ultimately, there are still two hundred and sixty-two Chinese companies listed on the New York Stock Exchange (NYSE), Nasdaq, and NYSE American, which are the three largest US stock exchanges.<sup>35</sup> A number of these companies have also opted for dual listing, which allows US investors to convert their shares into securities listed in Hong Kong to hedge against the uncertainty caused by heightened tensions between the United States and China.

#### Outlook

As the United States works to cut off technology and capital flows to China, Beijing's desire to achieve technological self-sufficiency is greater than ever. On October 7, the Biden administration announced a new rule to control exports of advanced-computing semiconductor chips to China. This move

29 “Taking Stock of China's Semiconductor Industry,” Semiconductor Industry Association, July 13, 2021, <https://www.semiconductors.org/taking-stock-of-chinas-semiconductor-industry/>.

30 “China's Share of Global Chip Sales Now Surpasses Taiwan's, Closing in on Europe's and Japan's,” Semiconductor Industry Association, January 10, 2022, <https://www.semiconductors.org/chinas-share-of-global-chip-sales-now-surpasses-taiwan-closing-in-on-europe-and-japan/>.

31 Will Hunt, Saif M. Khan, and Dahlia Peterson, “China's Progress in Semiconductor Manufacturing Equipment: Accelerants and Policy Implications,” Center for Security and Emerging Technology, March 2021, <https://cset.georgetown.edu/wp-content/uploads/CSET-Chinas-Progress-in-Semiconductor-Manufacturing-Equipment.pdf>.

32 Ben Murphy, “Chokepoints: China's Self-Identified Strategic Technology Import Dependencies,” Center for Security and Emerging Technology, May 2022, <https://cset.georgetown.edu/publication/chokepoints/>.

33 “People's Daily Online Comment: Firmly Grasp the Lifeline of Science and Technology in Our Own Hands [人民网评：把科技的命脉牢牢掌握在自己手中],” *People's Daily*, July 1, 2022, <https://archive.ph/mWT5i>.

34 Maia Nikoladze, *Companies on the Front Line: Trends in Overseas Chinese Listings*, *Atlantic Council*, October 12, 2022, <https://www.atlanticcouncil.org/blogs/econographics/companies-on-the-front-line-trends-in-overseas-chinese-listings/#:~:text=US%20and%20China%3A%20Capital%20markets,more%20diverse%20group%20of%20investors>.

35 “Chinese Companies Listed on Major U.S. Stock Exchanges,” US-China Economic and Security Review Commission, September 30, 2022, [https://www.uscc.gov/sites/default/files/2022-09/Chinese\\_Companies\\_Listed\\_on\\_US\\_Stock\\_Exchanges.pdf](https://www.uscc.gov/sites/default/files/2022-09/Chinese_Companies_Listed_on_US_Stock_Exchanges.pdf).

will likely give an even greater urgency to Beijing's desire to achieve self-reliance in key and core technologies. During the 20th Party Congress in the following week, Xi further pledged self-reliance in technology to gain a competitive edge in the tech competition with the United States.<sup>36</sup>

The success of the financing mechanisms is likely to hinge on how well Beijing balances domestic demands with global connectivity, as well as how it ensures public funding complements rather than crowds out private investment. From where Xi Jinping sits, the duality of these factors is not a paradox, but something that needs rebalancing by upholding the party's leadership. In his speech to the 20th Party Congress, he called for more support for the public and private sectors, and emphasized the development of a "market-oriented system for technological innovation"—but, ultimately, he wanted this done by "better leveraging the role of the government."<sup>37</sup> The Chinese government will further assert itself in all aspects of the innovation system by providing financial support and political guidance for critical and strategic industries.

It is unlikely that China will be able to meet all of its ambitions for self-reliance in technology soon, but the incremental progress—for instance, in the chip sector—is sufficient for Beijing to continue its policy. China's quest for self-reliance, along with the supporting instruments, is here to stay, especially because over the long term, as a Chinese scholar puts it, self-reliance in core technologies is "a matter of [China's] survival."<sup>38</sup>

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Her work and commentary have appeared in the Wall Street Journal, Nikkei Asia, and the Diplomat, among other outlets. She is a co-author of the forthcoming Routledge-published book titled *Chinese Power and Artificial Intelligence*. Luong received a BA in international politics and economics from Middlebury College and is pursuing an MA at Georgetown University's Security Studies Program with a concentration in technology and national security.

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36 "Xi Jinping: Hold High the Great Banner of Socialism with Chinese Characteristics and Work Together to Comprehensively Build a Modern Socialist Country—Report at the 20th National Congress of the Communist Party of China [习近平：高举中国特色社会主义伟大旗帜 为全面建设社会主义现代化国家而团结奋斗——在中国共产党第二十次全国代表大会上的报告]" *Xinhua*, October 25, 2022, [http://www.gov.cn/xinwen/2022-10/25/content\\_5721685.htm](http://www.gov.cn/xinwen/2022-10/25/content_5721685.htm).

37 *Ibid.*

38 Liu Weifeng, Ma Si, and Li Fusheng, "Strategy Set to Accelerate Self-Reliance," *China Daily*, July 7, 2022, <https://www.chinadaily.com.cn/a/202207/07/WS62c61507a310fd2b29e6ad07.html>.

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