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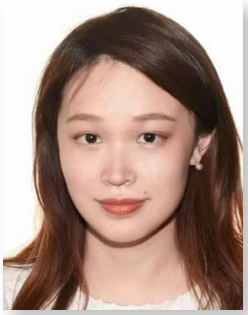

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# Financing Technological Innovation in China

## NEO-DEVELOPMENTAL FINANCIAL STATECRAFT THROUGH GOVERNMENT GUIDANCE FUNDS

**BY XUAN LI[1] AND CORNEL BAN[2]**

### ABSTRACT

This paper examines China's dirigiste approach to financing innovation policy, contributing to debates on the derisking state, neo-developmentalist alternatives and economic statecraft. The focus of the paper is on the pivotal role of Chinese Government Guidance Funds (GGFs)—jointly owned by a broad spectrum of state entities—in terms of their distinctiveness from government-owned venture capital vehicles in the European derisking state or liberal-developmental states like Korea. By making the case for the adoption of a financial statecraft perspective in the comparative study of these funds, the paper argues that three defining features set Chinese GGFs apart: strong sectoral innovation targets subject to strong disciplining by the state, the conversion into risk capital of both state fiscal resources and state assets in state-owned firms, and the adoption of geographic investment conditionalities to spread innovation while enduring central control. Our analysis reveals that these features are derivative of both the structural features of the Chinese political economy and the fast institutional innovations of the Chinese innovation bureaucracy. Their role is not merely financial but also strategic, with governments at many levels actively steering the funds to meet politically chosen

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goals. The shadow cases from Europe and Korea make the case for studying the nexus between national varieties of financial statecraft and national policy regimes.

**Keywords:** China; financial statecraft; derisking state; neo-developmental state; dirigiste, industrial policy; guidance funds; venture capital

## INTRODUCTION

Driven by geopolitics and the threat of climate change, industrial policy has reclaimed center stage in the comparative political economy of national economies, irrespective of their level of per capita income (Bulfone 2023; Thurbon et al. 2021, 2023; Babic and Mertens 2024). However, this turn has been criticized for primarily enticing private capital into serving public agendas in ways that reduce the state to a "derisking" function for capital (Dafermos et al. 2020; Gabor 2021, 2023; Gabor & Braun 2023). The alternative proposed by critics is a more directive ("developmental") role for the state, with conditionalities (or "disciplines") ensuring that private capitalists align with the state's industrial policy objectives (Lee 2021; Thurbon et al. 2021, 2023; Gabor and Braun 2024).

This paper intervenes in this debate by focusing on the case of China's state-owned non-bank financial channels specialized in financing the innovation-focused side of industrial policy: government guidance funds (GGFs). Indeed, in a literature dominated by an emphasis on state banks (Ban 2013 and Thurbon 2013 for overviews; Naughton and Tsai 2021 on China; for criticism see Petry et al. 2021), the political economy canon opened only recently to less conventional, non-bank funding channels (e.g. Musacchio and Lazzarini 2014). While GGFs have been extensively covered by China scholars (e.g. Noughton 2021; Beck and Larsen 2024), they have nevertheless not been studied comparatively and as a topic in its own right. Overall, this is in contrast to the emerging comparative literature on the embeddedness of capital markets into state-capitalist institutions (Petry et al. 2021).

Addressing this gap is important because much of the scholarship on industrial policy financing is centered on the role of central bank policy (Larsen 2022; Kedward et al. 2024), subsidies (Juhász et al. 2023), credit guidance via state-owned banks (Thurbon 2016; Ban 2013; Mikheeva 2024) or non-bank financial institutions such as sovereign wealth funds, state-owned insurance companies or state-owned enterprise (SOE) pension funds (Musacchio and Lazzarini 2014), with insufficient attention to how state-owned finance serves the hardest part of industrial policy: technical innovation (Chang and Andreoni 2020; Aiginger and Rodrik 2020; Lee 2021).

To date, comparativists addressed this challenge by looking at how states created state venture capital institutions (Mazzucato 2014) or remade their financial systems to encourage the emergence of Silicon Valley-style venture capital ecosystems (Klinger-Vidra 2018) able to do what venture capital (VC) firms do best: select high-growth entrepreneurial ventures; supply risk capital; provide advisory services and networks, advise or certify to follow-on lenders or investors the higher potential of the start-up (Mocanu and Thieman, 2024: 437). In contrast, less is known about how GGFs operate differently in derisking and developmental states as well as across the different typologies of developmental states. The paucity of in-depth and comparative political economy work on government VC (GVCs) firms that China's GGFs are an expression of is striking given that they have been familiar to political economists of Chinese industrial policy as well as economists (see section 3) as an important arm of innovation policy in many capitalist economies. Institutions like the European Investment Fund, Innovation Fund Denmark or the Korea Venture Investment Corporation have domestic innovation as their primary mandate. Indeed, many single case studies in economics documented



the effectiveness of GVCs in "bridging the equity gap" in domestic technological innovation—from Europe (Alperovych et al. 2023) to Japan (Kirihata 2018) and China (see section 4 in this paper for a review).

This paper aims to fill in this gap by looking at China's GGFs (hybrid institutions combining a primary VC function with secondary support investments) in a comparative context with a representative neo-developmental state or a developmental state for the open economy (South Korea) and a representative derisking context (European Union). There is by now clear evidence that China's GGFs stand out in terms of their extraordinary target capital size ($1.78 trillion)[3] and critical role in financing China's leapfrogging of advanced Western and Asian incumbents in fields such as electronics and cleantech (Luong et al. 2021; Wei et al. 2023).

GGFs can be understood as the financial backbone of China's "financial statecraft." Departing from Weiss and Thurbon's (2019) work on economic statecraft, we define financial statecraft as government-led financial initiatives aimed at promoting industrial upgrading through domestic technical innovation in order to fend off, outflank or move in step with clearly defined economic or geopolitical rivals.

The main argument of the paper is that China's GGFs are not just different from GVCs in derisking states but also embody an innovative form of financial neo-developmentalism. Unlike GVCs in derisking states, China's GGFs keep the state in the "driving seat" of innovation policy finance (Gabor 2023) when mobilizing capital for industrial innovation, prioritize technological innovation over profits and coordinate mainly with state-owned rather than privately-owned entities (Luong et al. 2021; Wei et al. 2023). However, the phrase "the state is in the driving seat" should be understood less like seamless top-down imposition or command-and-control by the central government, and more like an adaptive form of dirigisme, or "grand steerage" (Naughton 2021) executed by central, provincial and municipal level authorities (Gomes and Ten Brink 2023; Whitfield 2023). We further argue that unlike in other neo-developmental states, China's GGFs localize investments competitively and prioritize sector-specific over generalist financing. Most importantly, in so doing GGFs forge intricate synergies between the state as a venture and/or equity investor and the state as planner, orchestrating industrial upgrading across multiple sectors in ways that challenge the orthodox dichotomy of state versus market. Otherwise put, Chinese financial statecraft leverages state assets beyond budgetary appropriations and state bank investments through employing the financial instruments of guidance funds to scale up industrial policy in ways that reinforce state guidance of the market. Finally, the evidence marshalled by the econometric literature in China that we reviewed suggest that for all their problems, China's GGFs have been a "good enough" solution to the country's innovation challenges, resembling in their flawed, but ultimately effective workings, China's adaptive and learning-oriented bureaucracy specialized in innovation (Gomes and ten Brink 2023).

The paper is organized as follows: in the theoretical section we first review the literature on financing innovation and then propose our own analytical propositions for this form of finance. In section 3, we introduce the methodology and data. In section 4, after we frame GGFs as instruments of financial statecraft, we unravel the working mechanisms of GGFs, evaluate their effectiveness and underscore their distinctly localized, spatially circumscribed operational features. Following this, we explore the ways in which Chinese GGFs compare with government venture capital institutions in Europe and Korea in section 5. The final section concludes.

[3] According to CVsource, the accumulated capital of GGFs amounts to 13 trillion yuan (or 1.78 trillion USD at 2024 exchange rate), accessed at https://www.fxbaogao.com/detail/4163438

## THEORETICAL FRAMEWORK

Much of the state of the art in the field of the economics of innovation (see Bazhal 2017 for an overview) emphasizes the importance of fiscal and regulatory derisking measures—such as subsidies, intellectual property rights, grants and tax credits—that reduce the private costs of innovation, particularly for high-risk projects. Other studies highlight the role of public funding for basic research and partnerships with universities, especially in facilitating the commercialization of university research through mechanisms like public procurement. Political economists extend these insights by underscoring the active and nuanced roles states can play. These include attracting and training innovation talent, establishing innovation clusters, creating technology transfer offices, launching technological "mission economies" (Mazuccato 2021), fostering private venture capital ecosystems (Klinger-Vidra 2018) or integrating all these strategies, as exemplified by the case of China (Sun and Cao 2023). However, even when states do all of the above, in most contexts private venture capital for startups is sparse and even if start-ups are successful, they usually perish in the financial "valley of death" where they must scale up the commercialization of their innovations, a most capital-intensive operation that elicits investor skepticism (Branscomb and Auersvad 2003).

For a long time, in derisking states GVCs were designed to support startups by providing then with bridge financing (Mocanu and Thiemann 2024). This approach exemplifies the derisking role of the innovation economy in the European Union (EU), where the state had for a long time adhered to a minimalist neoclassical role as a repairman of market failures and an insurer against investment risks faced by profit-driven private sector firms. Rather than a form of financial statecraft, the GVCs of derisking states have been mainly stopgap measure, a form of market fixing.

The role of the state, however, needs not be confined to derisking alone. Recent research on the derisking-developmental state spectrum (Mazzucato 2021; Gabor 2023; Weiss and Thurbon 2021; Mocanu and Thiemann 2024) leads one to expect that GVCs could also function as instruments of financial statecraft within a mission-oriented neo-developmental state context. This has been shown to be the case in Korea (Klingler-Vidra and Pacheco Pardo 2020; Pacheco Pardo and Klingler-Vidra 2019) and, on a smaller scale and experimental basis, even in the EU derisking state (Mocanu and Thiemann 2024). Studies have showed that the role of developmental financial statecraft is even stronger in China, where GGFs —operating either strictly as GVCs or by investing in activities ancillary to innovation, such as innovation hub infrastructure—have played an important role in driving the country's global industrial ascendancy, targeting strategic sectors like artificial intelligence, advanced electronics, cleantech and dual-use technologies (Luong et al. 2021; Wei et al. 2023).

Still, in comparative political economy, China's GGFs have only recently entered the scholarly radar of political economists working in China, with most of the existing coverage of these funds limited to particular debates in the disciplines of economics and economic geography. In political economy, Kennedy (2024) mentions them in passing within China's innovation system, while Beck and Larsen (2024) explore in greater depth their role in this country's "market-driven, government-led" financialization of its green transition strategy. Noughton's opus (2021) discusses their institutional features at length and explores their broad financial landscape as part of China's broader financing of industrial policy, albeit with an emphasis on their early history.

These are important trailblazers, yet the existing work on Chinese GGFs lacks a deep dive into the mechanics of these funds as well as the comparative ambition to distinguish Chinese GGFs from analogous institutions in both derisking states and other forms of neo-developmental states. This risks "exoticizing" Chinese GGFs and limits theoretical construction for the uses of the broader literature in financial statecraft in neo-developmentalism.



The main contribution here is to take inspiration from research on China that situates its financial sector in comparative perspective (Petry et al. 2021). This means looking at GGFs in comparison with other theoretically interesting cases in Europe and Korea, while recasting GGFs as forms of *dirigiste* neo-developmentalism linked to the imperative of catching up with and eventually outcompeting rivals economies on technological innovation, a priority which, for historical reasons, has motivated elites in neo-developmental states more than those in liberal policy regimes (Lee 2021). To do so, GGFs combine the carrots (equity financing on favorable terms) and sticks (strict conditionalities to ensure the alignment of beneficiary firms profit seeking with the central and local governments' priorities), as one would expect based on the classical developmental state literature (Amsden 1989; Wade 1990). Unlike in classical developmentalism, *neo*-developmentalism capitalizes on a more open (post-World Trade Organization) global economy, with more external constraints on state action that preclude the strong mercantilism specific to the postwar developmental state (Wade 1990; Ban 2013). Specifically, Ban (2013) defined neo-developmentalism as a hybrid made out of economically *liberal* policy goals and instruments associated with the Consensus as well as policy goals and instruments that can be traced to the *developmentalist* tradition. In his definition, a key feature of neo-developmentalism is a structural view of economic development, which emphasizes mobilizing labor, increasing industry productivity, and directing financial resources toward high-wage, high-value-added sectors. Unlike old developmentalism, which was skeptical of open economies and favored protectionism, neo-developmentalism supports trade openness but with interventionist policies. These policies focus on industrial upgrading, ensuring that domestic firms can compete in high-value-added markets, accelerating technological advancement and reshape comparative advantages over time. Overall, neo-developmentalism modernizes developmentalist thought by embracing globalization while strategically supporting domestic industry through industrial policies.

In this neo-developmental context, technological innovation-oriented private financial and industrial firms benefit from state support (and are therefore "derisked"). However, this is a "thin" form of derisking taking place only to the extent that private firms' profit motives align (or can be made to align) with the sector-specific innovation goals defined by the state's vertical industrial policy that innovation policy is part of. Based on these considerations, we expect that *while GGFs in derisking states do not have strict technology innovation mandates for specific sectors, neo-developmental states do.*

But the implications of the contrast between the GGFs of derisking states and those of neo-developmental states should not be overstated. The neo-developmental state encompasses a wide spectrum. For example, Ban (2013) distinguishes between *liberal* neo-developmentalism, where state ownership in finance and industry is relatively limited compared to private capitalists' and where planning is at best suggestive and sectoral, rather than indicative and inter-sectoral, as in postwar France or contemporary China (Ban 2013; Thurbon 2013). The other form is *dirigiste* neo-developmentalism, as exemplified by China. Two features make this neo-developmentalism *dirigiste*: strong state ownership and intersectoral indicative planning. First, for all the vibrancy of the Chinese private sector, state ownership dominates: SOEs control 60 percent of all assets (Gabriele 2020) and of the 143 Chinese firms listed in the Fortune 500 list in 2021, 82 were state-owned;[4] state ownership is significant in sectors like machinery, automotive, electronics and pharma, while it is nearly total (infrastructural) in oil, petrochemicals, electricity, telecommunications, banking and the military industry; 96 giant SOEs in these sectors serve as critical leverage points for executing state plans, and high-tech firms either owned by the state (China Telecom, Sinopharm) or very close to it (Huawei) serve as forms of critical high-tech infrastructure for privately-dominated high technology sectors like electronics, electric cars and biotech (Medeiros and Majerovics 2024). Regardless of whether one views China as a distinctive form of capitalism (Noughton and Tsai 2015) or market socialism

[4] Global 500, Fortune, https://fortune.com/global500/2021/search/?fg500_country=China

with Chinese characteristics (Fraser and Jaeggi 2018), such a scale of state involvement is unprecedented in any other contemporary neo-developmental state and cannot but impact GGF structure and mandates. Hence, we submit that *given this dominant state ownership in the Chinese economy, on the neo-developmental financial spectrum only China's GGFs can mobilize both fiscal resources and broader state-owned assets (such as SOE resources) into risk capital for technological innovation ventures.*

Third, China integrates central and provincial indicative planning with the political objectives of the party-state, at the heart of which is Chinese leader Xi Jinping's vision of "national rejuvenation." Importantly, this rejuvenation is to happen mainly through technological innovation, an objective that the Chinese state sees as having an existential geopolitical dimension (Cheung 2022).[5] As such, since 2015, the government's inter-sectoral planning whose strongly indicative function is backed by resources ("carrots") from state-owned banks and SOEs has been geared to recalibrate the economy, shifting investments toward cutting-edge industries, a process recently accelerated by the decline of construction and the increase in the cost of labor. Indeed, for China's highest party-state authorities, this mission is deemed existential in a national security sense:

> "It is the nation's destiny to be innovation-driven. The core support of national strength is technological innovation capability. National prosperity follows from strength in innovation, and *national misfortune follows from weakness in innovation*." (authors' emphasis)[6]

Given the existential importance of technological innovation for state planning, the well-evidenced reflexivity of China's innovation policy bureaucracy in terms of adjusting the plans to private sector capabilities and market dynamics (Gomes and Ten Brink 2023) and the tendency of specific institutions in bureaucratic states to align with larger institutional complexes (DiMaggio and Powell 1983), we propose that *on the neo-developmental financial statecraft spectrum, Chinese GGFs are forms of dirigiste neo-developmentalism whose mandates are enforced by the state within national and provincial indicative plans.*

Finally, no other developmental state practices China's experimental and competitive regionalism (Rithmire 2014) and localized "adaptive governance" strategy (Heilmann and Perry 2011) whereby the state sets provincial state bureaucracies in competition with each other based on central government objectives outlined in five-year plans. This enables regional policymakers to adjust policy pathways in response to regional successes and failures while shielding the central government from the political fallout created from local failures bureaucracy (Noughton 2021; Gomes and Ten Brink 2023). Politically, while this regional and local decentralization of policy governance have at times led to crony networks—with increasingly less pronounced in the Xi Jinping era (Bulman and Jaros 2021; Noughton 2021)—they structurally enhance central oversight of provincial policymaking and SOEs by increasing local officials' financial accountability and policy autonomy. Economically, the integration of profitability-focused business practices in regional and local SOEs, such as the use of financial instruments and shareholder value for investment decisions (Chen and Rithmire 2020), reflects a hybrid logic combining dirigiste and capitalist rationality as a part of China's "grand steerage" (Boughton 2021).

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[5] Xi Jinping, "Secure a decisive Victory in Building a Moderately Prosperous Society," speech delivered at the 19th National Congress of the Communist Party of China, 18 October 2017, http://news.xin-huanet.com/english/special/2017-11/03/c_136725942.htm (accessed Dec 18, 2024)

[6] Central Committee of the Communist Party of China (CPC) and the State Council issued, *Outline of the National Innovation-Driven Development Strategy, [中共中央 国务院印发《国家创新驱动发展战略纲要》], Xinhua News Agency, May 19, 2016*, translation available at https://cset.georgetown.edu/publication/outline-of-the-national-innovation-driven-development-strategy/



The upshot of the financial statecraft view we propose here is that we need to better understand how the central and local levels of government channel significant risk capital into innovative, high-growth, and high-risk ventures that require longer maturities across the investment and value chain than state-owned policy banks can accommodate. Therefore, we propose that *based on the combination of the planned and decentralized-experimental nature of Chinese political economy across sub-national units we captured so far, we suggest that only Chinese GGFs have strong geographic conditionalities on their investment.*

## METHODOLOGY AND DATA

This paper uses an exploratory single case study (China) approach with comparative shadow cases (EU and Korea). This approach is used in political economy to investigate a phenomenon or context that is not well understood and to generate hypotheses or identify variables for further study (e.g., Choung et al. 2014). The approach is weaker than full-fledged comparative studies where each case is given equal weight (as in Petry et al. 2021) but it is stronger than an uncontextualized case study.

The shadow cases are drawn based on their representative character for derisking states (EU) and liberal neo-developmental states (Korea), respectively. In terms of data, we drew first on primary official documents, press releases as well as of a substantial body of literature in economics and economic geography that to date has not been explored by comparative political economy scholarship. We further explored statistical data collected by Chinese corporate registers accessed via QiChaCha as well as by Zero2IPO, a pay-for-service dataset available from inside China. We also processed data collected from individual GGF websites and international consultancy reports. These databases enabled us to examine more closely the shareholding and sectoral targets of GGFs, offering descriptive statistical depth to the analysis.

Additionally, we complemented with 22 semi-structured interviews. Of these, 17 were conducted in China with Government VC management firms, private VC management firms working with GGFs and experts familiar with Chinese innovation policy. These interviews were conducted in Chinese, ensuring linguistic accuracy and enabling participants to articulate sensitive perspectives candidly. The interviews bridge the gap between the stated objectives and public analysis of GGFs and the realities of their implementation, providing nuanced insights into the operational mechanics of these government financial vehicles. While their organizational affiliations were disclosed, interviewees' identities remain anonymized to respect confidentiality. The other five interviews were carried out at the European Investment Bank, its principal (European Commission), the European Investment Fund and InvestEU (EU's GGFs). For the Korean case, we relied on desktop research and an interview with Keun Lee, a former economic advisor to the Korean Presidency. The list of informants is summarized in Appendix I.

## GGFS AS FINANCIAL STATECRAFT

GGFs were formally introduced in 2002 by Beijing's Zhongguancun Management Committee (Hua et al. 2023), their number peaked in 2016 and by 2021 reached a total number of 1,849 (Wei et al. 2023: 944). Central, provincial and city government entities and SOEs are their main shareholders, thus illustrating the decentralized organization of Chinese developmental finance. Despite regional disparities—where underdeveloped areas provide few quality innovation ventures—GGFs have grown in number and expanded the scale of financing, with 980 funds established by 2016, managing a total of $453 billion (3.3 trillion RMB) (Hua et al. 2023). By August 2024, GGFs had a target

value of $1.8 trillion (13 trillion RMB), comprising 2,126 GGFs.[7] However, these numbers should be interpreted with caution as in 2021 only 26 percent of total existing GGFs had completed fundraising and achieved their target size and many of their sub-funds remained inactive due to lack of quality partners (Wei et al. 2023: 948). Still, at a massive 6.61 trillion RMB, the confirmed contributions in 2022 were nearly half of the target size (12.84 trillion RMB) (Pan et al. 2024: 13).

GGFs were created to bypass the conservatism of banks and the paucity of private VC. Wen and Zhao (2021) showed that banks tend to support SOEs and have low average performance on spurring innovation output. As industrial policy picked up speed after 2010 (Noughton 2021), Chinese policymakers at all levels became aware of the necessity of large GVCs to back unfunded innovative entrepreneurs.[8] As a GGF manager memorialized it:

> "The financial constraints and conservative lending practices of state-owned banks, especially post-global financial crisis, present significant challenges for "three-nos" firms [those lacking revenues, tangible assets and profits], such as the biopharmaceutical sector our funds invest. These firms do not meet the traditional criteria for bank loans. We are attempting to fill the gap."[9]

In this ecosystem, city-level GGFs represent over half of the total GGF count and 42 percent of their realized capital (CVSource 2023), a "municipalist" feature that has not been captured by previous political economy studies on GGFs (Kennedy 2024; Beck and Larsen 2024). Provincial level GGFs are the second largest with 38 percent of realized scale. This central-local duality captures the balance in China's GGF strategy: local authorities drive the specifics of broad-based innovation planning, while central state leadership provides the core capital. Indeed, although they are fewer in number, the central government's own GGFs are a systemic feature of financial statecraft. In Table 1, we sorted out the central government GGFs in China with assets over $10 billion and ordered them by size and sectoral focus using Zero2IPO and institutional website data (an extended table for assets over $1 billion is available in the Appendix II).

By mandate, the alignment of central-level GGF operations with the strategic plan "Made in China 2025" (MIC25) and Five-Year Plan is manifestly obvious in Table 1. Some of the "mega" funds focus on simple upgrading activities for SOEs or act as social cohesion funds, removed from the VC function. But most focus on investing in innovations related to "emerging productive forces" (semiconductors, advanced manufacturing, information technology, robotics, etc). The chosen sectors fall into the MIC25 priorities where China bets on the developmentalist logic seen elsewhere in Asia: catch up with and eventually outcompete foreign rivals in incumbent and new technologies, including through leapfrogging them via new technologies produced domestically at scale (Lee 2023).

The purpose of GGFs is to mobilize central and local resources in order to leverage private VC in innovative ventures. The capacity to raise the resources varies by region, with East China showing a robust growth rate of 25 percent in the third quarter in 2023, while Northeast China reported no growth (0 percent) in the value of GGFs (CVsource 2023). Still, the largest three GGFs far exceed the scale of the largest three private VC firms. Even when considering only the $484 billion of centrally owned GGFs (authors' own calculation from Zero2IPO) exceeding $1 billion bar per fund, the aggregate market size of private VC firms above this threshold sits at only $122 billion, merely a quarter of the scale of these GGFs. Moreover, surveys showed that 31 percent of GGFs had government fiscal departments or state asset supervisory bodies as observers, 29 percent involved them as final approvers and 25 percent involved them in investment committees (Wei et al. 2023: 953).

[7] Content same as footnote one.
[8] Panel with experts on innovation policy at the University of the Chinese Academy of Sciences (December 2024).
[9] Interview 1.



**Table 1: Central GGFs over $10 Billion and Private Financing**

| Central GGF | Size bn USD | Sectoral focus | Private Venture Capital AUM | Size bn USD |
|---|---|---|---|---|
| National Integrated Circuit Industry Investment Fund[10] | 96 | Semiconductors | Sequoia Capital China-Hong Shan | 55[11] |
| China Structural Reform Fund | 63 | Large SOEs transitioning to high value-added activities in telecom, energy and pharma | Legend Capital | 10[12] |
| China Railway Development Fund | 54 | Advanced railway equipment and infrastructure | Qiming Venture Partners | 9.5[13] |
| China  Venture Capital Fund | 28 | Artificial intelligence, big data, cloud computing and Internet of Things (IoT) | Matrix Partners China[14] | 10 |
| Central Guiding Demonstration PPP Fund | 25 | Public utilities and environmental projects, healthcare and elderly care | Sinovation Ventures[15] | 3 |
| China Innovation Fund | 21 | Artificial intelligence, quantum computing, blockchain, 5G and 6G communications, and cybersecurity. | Shunwei Capital[16] | 3 |
| National Manufacturing Industry Transformation and Upgrading Fund[17] | 21 | Manufacturing upgrading | K2VC [18] | 1 |
| Guoxin Central Enterprise Operation Investment Fund | 21 | Strengthening SOEs's in high-end equipment manufacturing, aerospace, shipbuilding and automotive industries. | | |
| China Internet Investment Fund | 14 | Digital economy and e-commerce | | |
| Central Enterprise Rural Industry Investment Fund | 14 | Agritech | | |
| China National Green Development Fund | 13 | Solar, wind, hydropower, energy storage solutions and EVs | | |

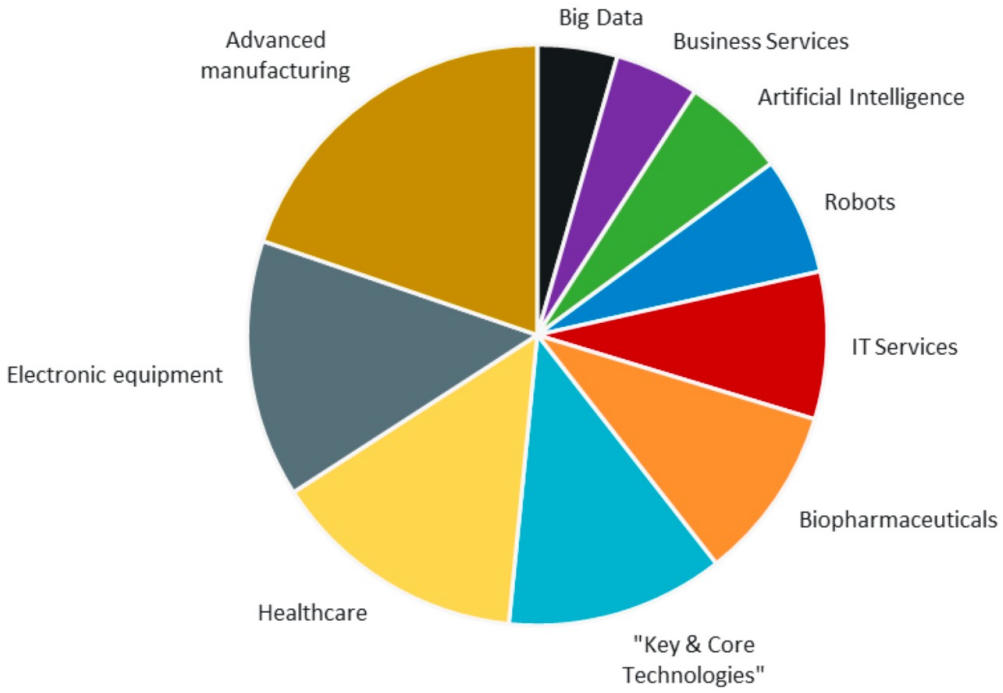
[10] https://sayari.com/resources/inside-chinas-largest-semiconductor-investment-fund/
[11] https://www.hsgcap.com/
[12] https://www.legendcapital.com.cn/index_en.aspx; https://www.hamiltonlane.com/en-us/news/legend-capital-continuation-fund
[13] https://www.qimingvc.com/en
[14] https://www.matrixpartners.com.cn/en
[15] https://www.sinovationventures.com/
[16] https://www.thewirechina.com/2023/04/30/who-is-shunwei-capital/
[17] https://finance.sina.com.cn/
[18] https://www.k2vc.com/en

All this means that private VC is not the main driver propelling forward China's innovative ventures. This trend was accelerated recently by the country's 2023-2024 initial public offering (IPO) freeze that alarmed private VC firms and was blamed for starving tech startups of private funds by keeping market participants locked into existing investments, a change that further increases the role of GGFs in financing innovation.[19] The trend is in sharp contrast to Hong Kong, Taiwan and Singapore, but also Europe, where "venture states'" key objective is to foster private VC and public-private partnerships in VC as the leading forces of innovation finance in ways that minimized state ownership (Klinger-Vidra 2018).

[19] https://www.reuters.com/world/china/chinese-venture-capitalists-warn-ipo-freeze-will-hit-innovation-2024-05-10/?utm_source=chatgpt

Looking beyond the central GGFs and at the whole GGF ecosystem that includes provincial and city-level GGFs, a sectoral analysis carried out by VentureChina (a prominent Chinese venture capital research and consulting firm) shows that GGFs as a whole do, indeed, conform to investing in sectors where China is known for its technical innovation boom in the past few years.

**Figure 1: GGF Investment by Sector**




**Source:** García-Herrero and Schindowski (2024).

## Opening the GGF Black Box

Some GGFs sometimes invest directly in innovation ventures, indirectly as a limited partner (LP) acting via professional investment institutions such as private equity or VC firms, or act as Funds of Funds (FoFs), which provide capital to sub-funds commonly set up at the provincial or city level that steer investment into strategic sectors as identified by the government five-year plan priorities (Pan et al. 2024: 12). The most active local GGFs are located in Beijing and industrial hubs in coastal cities where preexisting high-tech agglomerations enables the sub-funds to invest in "deeptech" startups (Wei et al. 2023).[20]

Politically, localized investments by GGFs help mitigate the risk of harmful competition between provinces and cities, avoiding a costly race to the bottom to attract innovative firms through tax waivers. Most importantly, it enables local governments to build both financial resources and technical capacities for how to design a better innovation policy without resorting to fiscal transfers or soft public bank loans, a particularly sensitive issue given high levels of provincial state indebtedness. As one of the GGF officials put it: "After becoming shareholders, as public servants, we also have more opportunities and discourse the power [话语权] [i.e., the ability to speak and influence] to have in-depth exchanges with enterprises."[21]

[20] This information is confirmed by all the China informants.
[21] Interview 8.



To better understand these forms of financial statecraft, consider the case of the National Manufacturing Industry Transformation and Upgrading Fund (NMITUF, hereinafter referred to as the Fund). This GGF was established in 2019 to answer the 14th Five Year Plan's (2021-2025) (2021) calls for the deepening of advanced manufacturing and services ("new productive forces") amid an escalating trade war with the US and the first signs of a declining growth rate. As one official put it, "few private companies would be capable of pumping money into business transformation amid an economic slowdown."[22] At the time of its establishment, the Fund was estimated at $21 billion. Acting as a FoF (or "mother fund") for central government entities, the Fund mainly focuses on innovative activities in higher value added technology-heavy areas, such as machine tools, new materials, semi-conductors, renewable energy vehicles, quantum communication, 3D printing and robots.[23] To date, its largest equity investments (ranging between hundreds of millions of dollars to $1 billion) are channeled through specific sub-funds specialized in AI, robotics, nanotech and prevision vision equipment.[24] The Fund is managed by China Development Bank (CDB) Capital, a professional asset management firm of the state-owned CDB, a giant state-owned bank playing a strategic role in financing MIC2025.

As Table 2 shows, nearly 60 percent of the Fund's equity ownership is from central-level state actors: the Ministry of Finance, government-owned financial institutions (CDB Finance, a financial entity fully owned by CDB), People's Insurance Company of China, China Pacific Life Insurance Corporation and low-tech state owned enterprises (e.g. China Tobacco Corporation) whose resources are thus converted into risk capital through GGF shareholding. However, mother fund shareholders are not all strictly from the central level, with provincial and city-level governments, VC firms and SOEs contributing 38.73 percent. There are no private shareholders in this particular FoF, but they do exist

**Table 2: The Top Ten Shareholders of National Manufacturing Industry Transformation and Upgrading Fund**

| Top Ten Stakeholders | The percentage of the shares (rounded to 0.00%) |
|---|---|
| Ministry of Finance | 15.29% |
| CDB Finance | 13.59% |
| China Pacific Life Insurance | 6.79% |
| People's Insurance Company of China (PICC) | 10.19% |
| China Tobacco Corporation | 10.19% |
| Beijing Economic and Technological Development Zone | 6.8% |
| State-owned Assets Supervision and Administration Commission of Hubei Provincial People's Government | 6.8% |
| Zhejiang Manufacturing Industry Upgrading Financial Platform | 6.8% |
| State-owned Assets Supervision and Administration Commission of Beijing Municipal People's Government | 3.40% |
| Foshan Municipal and Guangdong Province Finance Bureau | 3.40% |

**Source:** Authors' calculations based on aiqicha.com.

[22] Tian Yun, vice director of the Beijing Economic Operation Association, in https://www.globaltimes.cn/content/1170551.shtml

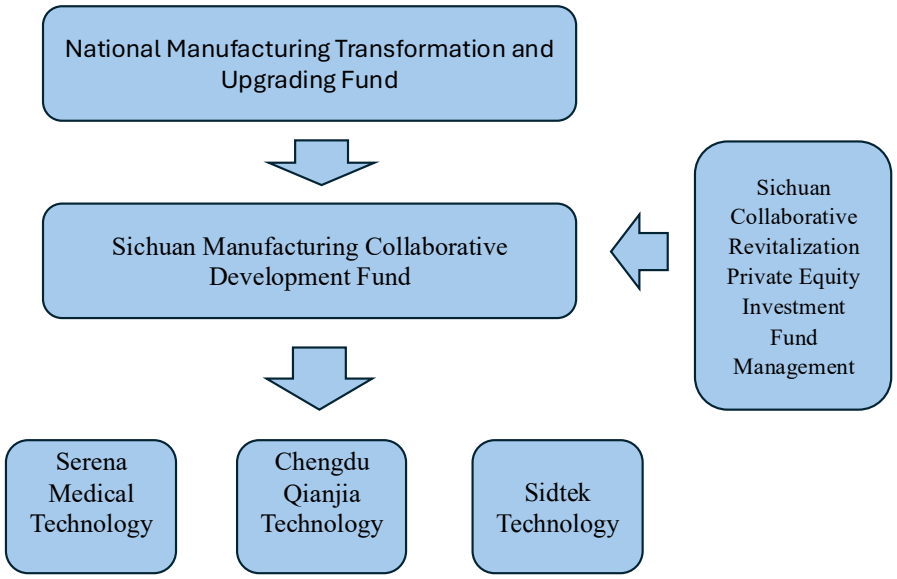
[23] https://aiqicha.baidu.com/company_detail_26068403411128

[24] https://app.dealroom.co/investors/national_manufacturing_transformation_and_upgrade_fund/portfolio; https://crustdata.com/investor/National%20Manufacturing%20Transformation%20and%20Upgrading%20Fund

in others (Wei et al. 2023). In brief, this is a form of government co-investment across China's levels of state administration and state companies.

Overall, the Fund has 10 major sub-funds incorporated either as independent financial firms or integrated into an existing financial firm. One of the sub-funds is incorporated as Sichuan Manufacturing Collaborative Development Fund (SMCDF) with the Fund providing 29.93 percent of the equity (almost to the 30 percent regulatory limit). As illustrated in Figure 2, the investment portfolio of SMCDF includes a medical tech company, an Internet of Things (IoT) company specializing in smart meters for public utilities, and a semiconductor and an LED display firm[25]. Importantly, SMCDF is managed by a private asset management firm (Sichuan Collaborative Revitalization Private Equity Investment Fund Management Co., Ltd), which specializes in the management of state assets. However, this firm is backed by a giant (provincial) government-owned financial holding company (Sichuan Development Holding) with $72.5 billion under management in 2023.[26] Figure 2 shows that with the financial and political endorsement of this FoF, the call for setting up sub-funds can attract institutional and corporate investors to make a specific infrastructure asset investable.

**Figure 2: How "Mother" GGF Connects to Sub-funds**




**Source:** Authors' compilations based on aiqicha.com.

China's growing reliance on FoFs reflects the need to sustain local financing in the face of economic slowdown and aligns with top-down policy signals increasingly emphasizing investment in early- and seed-stage tech projects (CVsource 2023), while highlighting the various risks of cronyism that often plague localist dynamics in China. This should raise questions about GGFs effectiveness, an issue we turn to next.

## GGF Effects on the Innovation Economy

This section reviews the findings of the rich quantitative literature in economics. Economic geography has dealt with established orthodox skepticism about Chinese GGF's effectiveness. Three patterns emerge from this scholarship. First, in terms of financial performance, GGFs are not as financially agile as the country's private VC firms (Peng et al. 2024; Kajitani et al. 2024). Moreover,

[25] Based on https://www.tianyancha.com/company/5130876813
[26] https://www.sdholding.com/about_us



concerns over a "crowding-out" affect in the VC ecosystem persist, as GGFs often struggle to attract private financial investors to their portfolios (Da Rin et al. 2006). Huang et al. (2023) highlight that GGF-backed firms perform well in IPO initial returns due to political capital mitigating information asymmetry, but this advantage does not translate into sustained operational performance. Such critiques underscore the limitations of state-directed venture capital in sustaining value creation for the shareholders.

But emphasizing the relative inferiority of GGFs on traditional performance metrics in the financial sector misses the point that, by their very nature, China's neo-developmentalist GGFs are forms of "grand steerage" (Noughton 2021) of technological innovation-based growth over standard performance metrics.  And indeed, in this regard, there is hard evidence that on average GGFs deliver on this mandate. Thus, econometric studies show that GGFs do prioritize policy-endorsed sectors, invest at earlier stages and hold equity longer than banks, while supporting innovation in less developed regions where financial opportunities are more limited (Ge et al. 2024). On average, by 2021, the sectors which accounted for more than half of all GGF investments were in telecommunications, computers and medical and pharmaceutical products (Wei et al. 2023: 945-946), three areas where Chinese firms have risen to challenge established global firms.

Most importantly, policy backed firms sponsored by GVCs are said to have 14.9 percent more patent applications than those backed by non-GVCs (Ge et al. 2024: 2). GGFs are also more spatially distributed than private VC funds, covering even less-developed inland areas (Beraja et al. 2024). GGF-backed firms in policy-driven sectors may underperform in IPOs and mergers and acquisitions (M&A) compared to those that are private VC-backed, but they do play an essential role in fostering innovation and scaling it up, particularly when concentrated in high tech zones, as demonstrated by Wei et al. (2023: 945-948). Still, success varies across sectors. While GGFs played a role in the electric vehicle value chain, they have been less successful at helping China catch up on advanced chips, perhaps the most geoeconomically valuable good (Fuller 2016).

Third, some GGFs go beyond pure VC activities to support local initiatives in talent attraction, infrastructure development for innovation clusters, as well as in funding advanced technology transfer activities (Standaert & Manigart 2018). This strategic orchestration of resources ensures that the innovation-driven economy also gets supported by financing the "hard" infrastructure these innovation zones' need. Studies of high-tech zones confirm GGFs' transformative impact, with their equity allocations correlated to a 5.5 percent surge in industrial activity and significant agglomeration benefits (Xiao et al. 2023). Yet, some studies caution that in doing so, GGFs can get trapped in infrastructure public-private partnerships (PPP) rather than foster innovation (Kajitani et al. 2024). Further challenges persist, including lower-than-expected fundraising outcomes (Wei et al. 2023), limited exit diversification (Lau 2024), overcapacity exacerbating international trade tensions (Xiao & Yuen 2024) and inefficiencies caused by overlapping priorities (Wei et al. 2023).

Nonetheless, there seems to be a consensus in these econometric studies that with certain qualifications, GGFs can effectively abet innovation ambitions, forming a core component of China's distinctive model of neo-developmentalist financial statecraft. As the next section shows, GGFs blend central oversight with local and experimental execution of sectoral innovation priorities assumed by different levels of indicative planning.

## Localizing and Disciplining Investment

By law, local sub-funds are mandated to invest in the tech ventures of the same region where they are incorporated, looking for both private equity and VC investment firms in advanced sectors, from semiconductors to electric vehicles. The pressure on these sub-funds is very high, as they are constrained by a Chinese innovation of the GGF formula: the reverse investment ratio (RIR), a mandate

whereby the sub-funds invest locally at the value of between 100 to 200 percent of the equity commitment of central FoFs in the sub-funds (Wang 2022). However, according to a 2023 LP landscape report (China-FOF 2023), the RIR has become more relaxed towards the lower end of the range. Another localizing requirement is "the FoF to sub-fund investment ratio," stipulating that FoFs should contribute no more than 20 to 30 percent of the target capital for each sub-fund in which they are incorporated (Zhongzhengnet 2018), with some relaxation of this requirement as of late.[27] Empirical evidence reveals that in some cities, FoFs are permitted to supply up to 50 percent of the capital, with a few even allowing up to 60 percent (Luong et al. 2021).

These regional adaptations help mitigate the fiscal pressures on local governments while titling top-down support more towards high-risk and early-stage tech growth. As the manager of a state-owned Ningbo Venture Capital Guiding Fund (NVCGF) revealed to us:

> "We plan to increase our fundraising efforts at the General Partner (GP) level, thereby enhancing our controlling and managerial power within the fund. On one hand, we mitigate the fiscal pressures of sub-regional levels, and on the other hand, we aim to provide funds with longer horizons".[28]

As showed in the last empirical section, the intense localization sits in great contrast to GGFs in derisking states, which are driven by demand-based investments with no hard geographical conditionalities imposed. For instance, the 2023 Ningbo Administrative Measures for Government Guidance Funds stipulates that "the investment amount of the sub-fund devoted to the 'real economy' enterprises located in Ningbo shall not be less than 120 percent of what FoFs have contributed" (MOF of Ningbo 2023), compared to 150 percent set in 2019. Now, let us assume that this FoF invests 1 billion RMB in a Ningbo city sub-fund (or underlying fund). This means that based on RIR, the asset manager of the Ningbo sub-fund is required to invest 1.2 billion RMB in Ningbo's region's tech ventures, even though the returns of investment in, say, the Shanghai or Hong Kong financial markets would be superior.

Likewise, a sub-fund established in one of the least developed regions, such as Gansu, must invest a certain amount in Gansu, not elsewhere. These regulatory restrictions on where to invest and how much to invest locally seek to lock in capital resources to ease the funding difficulties of high-innovation firms in strategic sectors in that specific region where the sub-fund is established. These localization requirements did yield some results. As Ge et al. (2024) demonstrate, there is hard evidence that Chinese GGFs are more likely to invest in such regions than private VC firms are.

Further, a central feature of the GGF system is that it creates local state asset managers with a public mission, contrasting sharply with the derisking state model of private asset management focused on maximizing shareholder value. Thus, local GGF regulations stipulate very high profit-sharing incentives for the GGF asset managers excelling at localization. While local GVCs in Europe do not have formal requirements for local investment in innovation that are tied to management compensation (Testa et al. 2024), in China regulations provide GGF managers with massive profit-sharing incentives for performing on RIR on top of their fees. Thus, Chinese GGF managers (usually asset management firms) have strict compliance incentives under the RIR mandate. Consider the city of Foshan's Measures for GGFs. These regulations set not just fee conditions for the asset managers but also transfer to them a substantial share of the GGF profits ("carrots") if the sub-fund exceeds the average annualized yield. Along this logic, if the managers achieve a RIR target at 150 percent in local investment, up to 40 percent of the extra profits go to the asset manager, which means that only more

[27] This information is provided by the informants 1, 4, 5, 7, 8, 10, 11, 12 and 15.
[28] Interview 3.



than 60 percent go to the shareholders in the sub-fund. If the RIR goes above 200 percent in local investment, asset managers cash in half the profits (Finance Development Office of Foshan 2019).

In so doing, the Chinese neo-developmental state aims to cultivate a national and local financial technocracy for the innovation economy. This technocracy is tasked to manage public investment using private finance-style incentive structures, but with these incentives tied to specifications of scale, localization and in alignment with provincial plans, ultimately supporting national technological leapfrogging.

Beyond offering such incentives ("carrots") for successful local investments, the system also enforces penalties ("sticks"). According to the Article 12 of the Ministry of Finance guidelines (2015), GGF managers are liable for engaging in activities not essential to the technological innovation process such as mortgages, secondary market stocks, futures, real estate, securities investment funds, trust products and others. Furthermore, central level investors in GGFs demand shareholder value discipline and often threaten to withdraw their equity from the funds in case the innovation mandate is not observed. Some local GGFs learned how to negotiate ample space for operational autonomy by helping local officials hit their technological innovation targets in exchange for paying the costs if the companies they invest in end up failing, a form of "political derisking" that deserves further research. However, this task often clashes with the same government's imposition of tough shareholder discipline. As one Shenzhen GGF manager put it:

> "As a state-owned venture capitalist, we bear more pressure. For example, our money does not come from ourselves, but from higher-level state-owned investors. If not handled properly, we may be held accountable by higher-level investors. This means that on one hand, we need to be cautious to avoid the loss of state-owned assets. On the other hand, we are aware of providing patient capital as advocated by the central government. As many of you know, we have filed repurchase claims against several of our funded firms, as they failed to go public within the agreed-upon timeframe stipulated in our agreements. I know it is a hard situation for them because the Chinese IPO market is getting rigid, but we are also having a hard time because we don't want to lose state money."[29]

The main downside of mandatory localization is that less developed provinces or municipalities might not have a solid technological and corporate base to provide enough investment opportunities for such GGFs (Sun and Tian 2023), leading to the relaxation of RIR over time.[30] To counter this risk, many provincial leaders have therefore scrambled in a national race to develop world-class technical universities and innovation clusters churning out talent and innovation hubs that can ensure a steady flow of quality innovation projects for GGFs to fund.[31] One of our informants revealed the strong benefits of the alignment of GGFs and industrial cluster planning:

> "Our state venture capitalist firm, which originated in Suzhou Industrial Park, has grown into a leading domestic equity investment institution. With a fund management scale exceeding 100 billion RMB, we've invested in over 4,000 enterprises and helped 200 companies go public, with a total market value of 4.7 trillion RMB. A key factor in our success has been the abundance of high-quality tech firms in Suzhou Industrial Park, which has provided a strong foundation for our investments."[32]

[29] Interview 7.
[30] Guo Libo idem
[31] Panel with academic experts on innovation at the University of the Chinese Academy of Sciences (2024).
[32] Interview 2.

Also, some of our interviews highlight tensions between government officials, state VC and private VC, including restrictive localization requirements and conflicting mandates. One GGF informant likened this to "dancing with chains—and we must dance well."[33] As another one put it,

> "It is in our mutual interest that they [local government, *authors' note*] refrain from interfering with our investment decision-making and exit strategies. As an experienced finance team, we are committed to adhering to market principles rather than administrative directives. For government officials, this approach minimizes the risk of being held accountable for any potential state capital losses resulting from unsuccessful investments. We [local government and GGFs manager] are in the same boat on this."[34]

Finally, localization also entails the risk that some local authorities with close control of the GGFs would channel their capital to low-risk firms with stable returns in incumbent technologies (often close to IPO stage) rather than to firms that need seed-stage or early-stage funding (Tang and Xue 2020). But as the purges of local sub-funds by government-controlled fund of funds suggests, such risks have been recently mitigated by curtailed threats of and actual equity withdrawals by the FoFs (Luong 2021: 59). With central-level entities in the driving seat of innovation policy finance, the use of sticks to discipline mandate derailment remains within reach.

So far, the paper shows that China's GGFs lead on innovation finance by relying on the massive top-down conversion of state assets into risk capital within central and provincial planning processes as well as on the execution of geographically bound investment in sectorally specific innovation objectives across the country's multi-level administrative state. But how distinctive are these features to China's GGFs? The next section addresses this question by comparing these features with the GGFs of a derisking state context (EU) and a liberal neo-developmental state context (Korea).

## CHINESE GGFS IN COMPARATIVE PERSPECTIVE

By comparing the discussion on China with Korea-based GGFs—Korea Venture Investment Corporation (KVIC) and the Growth Ladder Fund (KGLF) (Klinger-Vidra and Pacheco 2020)—and EU-based ones (European Investment Fund (EIF), Invest EU, European Investment Council, and national and regional GGFs across the EU member states) (Merstens and Thiemann 2019; Mocanu and Thiemann 2024), we noticed many similarities. All are based on an acknowledgement of market failure and the principle that publicly owned financial entities should take the lead on innovation financing. All provide loans to businesses directly as well as indirectly through other financial intermediaries to provide government VC funding to innovative but riskier activities. All delegate management of the fund to other financial actors and combine public and private resources together. Finally, all operate under executive authority at the state level. However, the Chinese GGFs remain sharply distinctive from its Korean or European peers, a distinctiveness reflects the structural characteristics of the China's dirigiste neo-developmental state.

First, while the state remains in the driving seat in Chinese GGFs, it does less so in the EU and even Korea, where GGF projects are predominantly managed by private funds incentivized to maximize profits as a precondition of achieving technological innovation.[35] In contrast, we have showed that Chinese projects supported by GGFs are managed largely by state-owned entities, including state-owned asset management firms and state-owned venture capital firms, incentivized to maximize

[33] Interview 9.
[34] Interview 13.
[35] Interviews 16, 17.



investment in the chosen sectors targeted by the planners. This creates important advantages for China's financial statecraft: while management compensation in the European and Korean models is shaped by shareholder value and credit ratings, in China the focus is more on technology innovation targets.

Until the very recent establishment of the (rather small) European Innovation Council Fund (EICF) in 2020, the EIF was not mandated by its principals, as the Chinese ones are, to set up sector-specialized sub-funds aimed at fostering technological innovation in the technologies that the European Commission, their principal, finds of interest. Although EIF was asked by a more statecraft-minded Commission in 2017 with increasing support for innovative activities and protecting EU start-ups against acquisitions by US and Chinese funds (Testa et al. 2024), a specific technological mandate was never specified. Indeed, the 3 billion USD EICF is a notable exception, as it is first EU financial institution directly taking equity stakes in strategic start-ups focused on innovations in high-risk, high-impact technologies from early-stage research and proof of concept to the scale up of start-ups and small- and medium-sized enterprises (SMEs) – in other words, a genuine "unicorn factory" (Mocanu and Thiemann 2024: 445). The other, older EU funds with GVC functions have fewer clear cases. They co-invest with private VC, Private Equity and member state development funds and banks to support early stage or growth stage companies as a risk buffer, leaving it to private funds to lead on deciding what technologies and degrees of risk should be adopted.[36] For example, the purpose of the EIF was "never to replace private investment but to fill funding gaps across stages, sectors, and geographies and legitimise VC as an attractive asset class" (Mocanu and Thiemann 2024: 442), without this entailing sectoral preferences in innovation.

While EIF is a clear-cut case of innovation-oriented yet generic FoF, InvestEU is a hybrid institution. On the one hand, it has a demonstrated track record in focusing its investments on high value added sectors, with its initial investments including advanced geothermal energy systems, hydrogen-powered steel production or cutting-edge battery manufacturing systems.[37] Yet, in response to member states' demand, it did so in a diluted way, alongside a "Christmas tree" of missions unrelated to innovation such as general countercyclical lending to SMEs, job growth, digital inclusion, skill upgrading, health and water infrastructure; it tried to be both a venture capitalist and a supplier of social cohesion.[38] At the national and sub-national GVC level, Testa et al. (2024: 27) found that out of 369 European GVC initiatives screened, 81 percent did not have a specific industry focus and only 19 percent (almost all in Northern Europe and France) had a mandate to invest in a specific sector, most typically biotechnology, digital technologies, energy and health-related technologies. Unlike the case of China, the actual impact on technological innovation of these funds is uncertain.

Unlike in Europe, Korean GVCs exhibit a more explicit focus on high-value added sectors (Vidra-Klinger and Pacheco-Parado 2020: 314-315), a reflection of the developmentalist mindset captured by Thurbon (2013), and they align with the financial statecraft perspective adopted in this paper. Yet unlike in China, with strong bias for industrial technology innovation, in Korea the knowledge sectors targeted by GVCs are defined very broadly, from technology and service industry to the cultural industry.

Second, Chinese GGFs are not meant to leverage and shape the market for primarily private capital, as in the European GGFs (Merstens and Thiemann 2019; Testa et al. 2024) or as in Korea (Chung and Kang 2018; Vidra-Klinger and Pacheco Pardo 2020), but to leverage primarily *public* capital and

[36] Interview 16, 17, 19.

[37] Page 27 of https://commission.europa.eu/about/departments-and-executive-agencies/economic-and-financial-affairs/evaluation-reports-economic-and-financial-affairs-policies-and-spending-activities/interim-evaluation-investeu-programme_en

[38] https://commission.europa.eu/strategy-and-policy/eu-budget/performance-and-reporting/programme-performance-statements/investeu-performance_en

risk management expertise, usually at the local level to provide cheap and patient capital downstream. While private venture investors have contributed over 50 percent of funding for both KVIC (Shin 2014: 36) and European GVC initiatives (Testa et al. 2024) their contribution to Chinese GGFs has remained significantly lower, typically in the low teens at best.[39]

Indeed, Korean and European funds act as facilitators or enablers rather than allocators of investment via derisking private VC and other intermediaries making their own calculations in terms of risk-reward profiles based on market dynamics.[40] The beneficiaries of these forms of public finance are almost always very small firms, usually start-ups reflecting the onset of a turn to a small entrepreneur focus in public financing in both derisking states and liberal-neo-developmental ones (Testa et al. 2024; Vidra-Klingler and Pacheco-Parado 2020). In China, the targets can be start-ups, midcaps and even large infrastructure operations relevant for well-defined and enforced industrial technology goals from the Five-Year Plan. Europe is a more dynamic case in this regard, with geoeconomic competition pushing the EU after 2020 to provide scale-up finance via EICF to EU-based deep tech start-ups in order to protect them from foreign rivals (Mocanu and Thiemann 2024: 445).

Third, on the face of it, localization in GGFs can be seen as a generic feature of such funds everywhere. For example, the EIF, an institution established as a joint venture between the EIB, the European Commission and the development banks of the member states, invest in regional and national sub-funds out of concerns for territorial cohesion, usually in partnership with local governments.[41] These are VC, PE and mezzanine funds with deep local market knowledge or co-investment vehicles alongside angel investors, investment funds, family offices and institutional investors into SMEs and small mid-caps at various growth stages.[42] To achieve a greater mobilizing impact, EIF guarantees to leverage its own funds among other financial intermediaries in financial transactions. However, the terms and conditions of these rather small European sub-funds (the largest is at 1 billion EUR) are negotiated with private investors, which means that there is a tendency to concentrate investment in pre-existing financial and innovation hubs, with private sector firms tending to resist geographical conditionalities.[43] A survey of all European GGFs in 11 key EU member states found that only the regional GGFs have local investment targets, although in practice the amounts of contributed capital required of their private VC managers to invest locally does not exceed 60 percent (Testa et al. 2024: 24). In China, the sub-funds are not just much bigger, but their asset managers are subject to formal and stricter geographical conditionality, as shown in our analysis.

Finally, Chinese GGFs operate on a much larger scale than their EU and Korean counterparts. On a per capita basis, the EU GGFs have approximately $375 per EU citizen while KVIC manages about $164 per South Korean resident. Chinese GGFs have $1061 per citizen. Thus, the EIF's size in terms of assets under management in 2023 was $95 billion,[44] equivalent to the largest central Chinese GGF and a fraction of the whole Chinese GGF pool, giving the EU a much smaller leverage punch. InvestEU, operates with EU budget guarantee of $27.4 billion[45] and a study mapping out 128 European GVC agencies operating 392 GVC-like initiatives invested barely 38 billion over the entire 2007–2021 time period. In turn, EICF, the European entity that comes closest to Chinese GGFs, can only marshal $3 billion. Finally, at $9 billion, KVIC (FoF for startups and VC funds) and the $0.8 billion KGLF (government VC firm for high-growth SMEs and startups) are important forms of what

[39] This information is validated by all the China informants.
[40] Interview 19.
[41] https://www.eif.org/what_we_do/resources/funds_of_funds/index.htm
[42] Interviews with European Investment Bank, 2017.
[43] https://www.eif.org/what_we_do/resources/funds_of_funds/index.htm
[44] EIF, *Annual Report,* 2023, p.91.
[45] Figure for InvestEU is from https://investeu.europa.eu/investeu-programme/investeu-fund_en



Klingler-Vidra and Ramos (2020) termed "entrepreneurial developmentalism"[46] but they are very small relative to the size and needs of the Korean economy.

Albeit operated on a much larger scale, we found out that GGFs are less patient to the firms in their portfolio than European and Korean public funds. While 10-12 years is a standard timeframe in Europe and Korea, in China it is much shorter. As several interviewees noted, the typical 6–7-year horizon of government guidance funds often falls short, as many tech firms require 12-15 years to get mature. This shortened duration is partly driven by the tenure of government officials overseeing the funds (normally, they stay at one position for 5 years and two terms maximum). These officials are often eager to demonstrate successful outcomes, such as profitable exits or measurable policy impacts, before they transition to new roles. As a result, they wish to land the projects safely prior to assuming the new role of position, denting the main intent of government VC: patient capital for high-risk ventures.[47]

## DISCUSSION AND CONCLUSIONS

This study invites scholars to rethink financial statecraft in an era where technological sovereignty and resilience are paramount. China's GGFs stand as a powerful "financial statecraft" counter-narrative to derisking state recipes. Far from replicating conventional models of innovation finance, these GGFs embody a bespoke governance framework that integrates state control with market adaptability, marking a transformative approach to fostering ascendancy. In so doing, GGFs do not embody a seamless top-down imposition of state priorities on a compliant private sector. Instead, they enact an adaptive dirigisme or steerage of entrepreneurial firms' motivations and resources – ultimately steering more than commanding.

Our findings empirically bolster and go beyond the expectations generated by the financial statecraft framework we advanced at the beginning of the paper. Table 3 synthesizes the core focal points generated by the financial statecraft view and, with italics, the surprising elements that emerged

**Table 3: Derisking State, Liberal Neo-developmental State and Dirigiste Neo-developmental State**

| | Derisking state (EU) | Liberal neo-developmental state (Korea) | Dirigiste neo-developmental state (China) |
|---|---|---|---|
| **Specific technology innovation mandate with sticks** | Weak, with growth and cohesion focus; *post-2020, stronger technology innovation emerged in the small-scale EICF* | Moderate, with growth and broad knowledge economy orientation for market actors | Strong, with specific *sectoral innovation targets embedded in national and provincial indicative plans, bans on activities that are not core to technological innovation and equity withdrawal for mandate non-fulfillment* |
| **What state resources are converted into risk capital** | Strictly fiscal resources of executive branch actors at the EU, national and regional levels | Strictly fiscal resources of executive branch actors at the national level. | *State assets from SOEs, state owned banks, state owned insurance companies, state asset management firms,* layered on top of fiscal resources of executive branch actors national level. |
| **Geographic conditionality** | No | No | *Yes, with reverse investment ratio* |

**Source:** Compiled by authors.

[46] Authors' percentage calculations based on Statista-provided total banking assets in EU, China and Korea in 2023. Figures for AUM are from EIF, *Annual Report,* 2023, p.91. Figures for KVIC AUM are from https://www.kvic.or.kr/en/

[47] Interviews 2, 3, 8, 14, 15, 2024.

from the empirical analysis only. In terms of the comparative analysis with shadow cases, we found that three defining characteristics set Chinese GGFs apart. First, only the Chinese state remains in the driving seat, ensuring an adaptive alignment with national priorities, steering profit motives towards strategic sectoral innovation priorities integrated into the planning mechanism and disciplining sub-funds with bans on non-core innovation activities and threats of central level FoF equity withdrawal for mandate non-fulfillment. The European case appeared more dynamic, appearing to go more in the direction of Korea than expected, with neo-developmentalist financial statecraft emerging on an experimental basis after 2020.

Second, when doing VC investing, only Chinese GGFs mobilize state assets from SOEs, state-owned insurance companies or state asset management firms on top of the fiscal resources of executive branch actors at national level. In this way, only China converts "stale" state assets into patient finance for productivity-enhancing technological innovations, an option available but not exercised in both Europe and Korea, where the state still owns large parts of critical sectors like energy and insurance.

Third, only GGFs have a strict geographical diversification mandate, fostering local innovation ecosystems while maintaining central oversight. The reverse investment ratio increasing localization effects in both innovation and the formation of a GGF management technocracy appears to be a particularly innovative and distinctive feature of Chinese GGFs. This feature addresses regional disparities, enabling less developed areas to develop innovation hubs while fostering hypergrowth in already developed ones. However, these mandates also reveal challenges in aligning local and national objectives, warranting further scrutiny.

This study enriches the comparative political economy of industrial policy and innovation finance by contrasting China's dirigiste model with global counterparts. Chinese GGFs' scale, sectoral focus and integration into centralized strategies surpass the capabilities of other frameworks, highlighting the diversity of approaches to innovation finance. The paper also makes the case for the concept of "financial statecraft," positioning GGFs as tools that not only leverage state assets but steer the direction of market activities.

Although our framework is not explicitly concerned with the literature on neoliberal financialization, one could note that with GGFs the state employs financial instruments and logics to mobilize state assets—ranging from fiscal resources to SOE profits. Yet in so doing it reappropriates the financialization logic transforming state assets (just like it transformed capital markets in Petry et al.'s 2021 work) into risk capital to support technological upgrading. In doing so, the Chinese state does not succumb to the pitfalls of neoliberalism itself and its financialization drive, such as the erosion of state capacity.

To conclude, GGFs provide an alternative model for innovation policy experts, demonstrating how state stewardship can bridge equity gaps in innovation finance without falling prey to accusations of "corporate welfare" (Bulfone et al. 2023). However, given China's particular political economy, replicating this approach requires careful adaptation to political, fiscal and institutional contexts. Future research should examine the long-term sustainability of GGFs and their balance between profitability and policy-driven goals. Comparative studies could also explore how similar mechanisms are innovated in other regions and examine the different contextual underpinning that make "varieties of financial statecraft" possible, thus offering broader insights into state-led financial governance, the megatrend of an increasingly geoeconomic world. Finally, future scholarship is left with ample opportunities to deepen the discussion of the implications of these findings for the broader literature on financialization under state capitalism using full-fledged comparative approaches, as in the current work on capital markets (Petry et al. 2021).



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## Appendix I: List of Informants

| Informant Number | Organizations | Nature | Roles | Time Collected | Duration (h) |
|---|---|---|---|---|---|
| 1 | Efung Capital | Private VC | Executive | June 30, 2024 | |
| 2 | Suzhou Yuanhe Holdings | GGF | Executive | July 24, 2024 | 1.5 |
| 3 | Suzhou Yuanhe Holdings | GGF | Suzhou SASAC Delegate | July 30,2024 | 0.5 |
| 4 | Boray Capital | Private VC | Cofounder | Aug 18,2024 | 1.5 |
| 5 | Xihu Science and Technology Venture Capital | GGF | Executive | Aug 19,2024 | 2 |
| 6 | Hangzhou Gaoxin Jintou Holding Group | GGF | Executive | September 10,2024 | 2.5 |
| 7 | Shenzhen Venture Capital Group | GGF | Shenzhen SASAC Delegate | September 16, 2024 | 2.5 |
| 8 | Wuhan Industrial Development Fund | GGF | Executive | October 5, 2024 | |
| 9 | Zhejiang University Innovation Technology investment group | Semi state-owned VC | CEO of the university investment companies | October 14, 2024 | 3 |
| 10 | Zhejiang Provincial Financial Holding group | GGF | Executive | October 15, 2024 | |
| 11 | Huaiji Fund management | Private VC | Cofounder | October 16,2024 | 3 |
| 12 | XinDa Assets-Management Company | GGF | Executive | November 2, 2024 | 3 |
| 13 | Ningbo Venture Capital Guiding Fund | GGF | Executive | November 10, 2024 | 1.5 |
| 14 | Zheshang Venure Capital | GGF | Executive | November 15, 2024 | 0.5 |
| 15 | Shenzhen Zhongke Innovation and Entrepreneurship Investment company | Private VC | Executive | November 21,2024 | 1.5 |
| 16 | Yifeng (Shanghai) Capital Co., Ltd | Private VC | Executive | November 30, 2024 | 0.5 |
| 17 | European Investment Bank | EU-level bank, manager of EIF | Executive | June 13, 2017 | 0.4 |
| 18 | EFSI-InvestEU | EU-level fund with VC functions | Executive | June 13, 2017 | 1 |
| 19 | ECFIN | EC body | Economist | November 20, 2024 | 0.2 |
| 20 | European Parliament | EU body | Member of European Parliament | November 19, 2024 | 1.2 |
| 21 | Korean Presidency | Economic Advisory | Economic advisor | April 21, 2024 | 1.3 |

**Source:** Based on the interview data.



## Appendix II: GGFs above $1 billion

| Fund Title | Size (USD bn) | Fundraising Status |
|---|---|---|
| National Integrated Circuit Industry Investment Fund | 95.8 | completed |
| China Structural Reform Fund | 63.4 | The first round of fundraising completed |
| China Railway Development Fund | 53.9 | The first round of fundraising completed |
| China Venture Capital Fund | 28.2 | The first round of fundraising completed |
| Central Guiding Demonstration PPP Fund | 25.2 | completed |
| China Innovation Fund | 21.1 | The first round of fundraising completed |
| National Manufacturing Industry Transformation and Upgrading Fund | 21 | completed |
| Guoxin Central Enterprise Operation Investment Fund | 21 | The first round of fundraising completed |
| China Internet Investment Fund | 14.1 | The first round of fundraising completed |
| Central Enterprise Rural Industry Investment Fund | 14 | The first round of fundraising completed |
| China National Green Development Fund | 12.4 | The first round of fundraising completed |
| China State owned Enterprise Mixed Ownership Reform Fund | 9.9 | The first round of fundraising completed |
| Guoxin Guotong Investment Fund (Phase I) | 9.9 | The first round of fundraising completed |
| National Financing Guarantee Fund | 9.3 | The first round of fundraising completed |
| National SME Development Fund | 8.5 | The first round of fundraising completed |
| National Reform Double Hundred Development Fund | 8.4 | The first round of fundraising completed |
| National Military Civilian Integration Industry Investment Fund | 8.4 | The first round of fundraising completed |
| China Cultural Industry Investment Fund Phase II | 7 | The first round of fundraising completed |
| China Agricultural Reclamation Industry Development Fund | 7 | The first round of fundraising completed |
| Zhongjin Qiyuan National Emerging Industry Entrepreneurship Investment Guidance Fund | 5.6 | completed |
| Guohua Military Civilian Integration Industry Development Fund | 4.9 | The first round of fundraising completed |
| China Structural Reform phase II Parallel Fund | 4.4 | the first round of fundraising completed |
| National Strategic Emerging Industries Development Fund | 4.2 | The first round of fundraising completed |
| China Service Trade Development Special Government Guidance Fund | 4.2 | The first round of fundraising completed |
| Guoxie Equity Investment Fund Phase I | 4.2 | completed |
| Technology based SME Entrepreneurship Investment Guidance Fund | 3.8 | The first round of fundraising completed |
| Technology Innovation Fund for Technology oriented Small and Medium sized Enterprises | 3.8 | completed |
| Advanced Manufacturing Industry Investment Fund | 2.8 | The first round of fundraising completed |
| Guotou Chuanghe National Emerging Industry Entrepreneurship Investment Guidance Fund | 2.5 | Completed |
| National Science and Technology Achievement Transformation Guidance Fund | 2.1 | The first round of fundraising completed |
| China Overseas Agricultural Investment and Development Fund | 1.4 | The first round of fundraising completed |
| Yingfutech National Emerging Industry Entrepreneurship Investment Guidance Fund | 1.4 | The first round of fundraising completed |

**Source:** Zero2IPO.

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