International Review of Entrepreneurship, Article #1733, 23(4): pp. 303-332.
© 2025, Senate Hall Academic Publishing.

Breaking Constraints: Does the Hidden Champion Policy Boost the Firm's Position in Domestic Business Networks?

Ting Xia
School of Finance, Guangdong University of Finance and Economics, Guangzhou, China

Ren Lu[1]
School of Business Administration, Guangdong University of Finance and Economics, Guangzhou, China

Torger Reve
Department of Strategy and Entrepreneurship, BI Norwegian Business School, Oslo, Norway

Zili Wang
Institute of Industrial Economics, Jiangxi University of Finance and Economics, Nanchang, China

Abstract: A central limitation of the hidden champion literature lies in its underlying assumption of a free-market environment, which overlooks the role of policy intervention in fostering such firms. To address this gap—particularly in contexts where firms face actual or potential external constraints—this study investigates how hidden champion policy shapes firms' positions within domestic business networks. Drawing on signaling theory and using data from China and a time-varying difference-in-differences design that treats policy designation as a quasi-experiment, we find that official recognition as a hidden champion enhances a firm's standing among domestic partners. The findings contribute to the hidden champion theory by highlighting the signaling function of industrial policy in shaping firm-level outcomes.

Keywords: hidden champion policy, hidden champions, domestic business networks, signaling theory, difference-in-differences

Acknowledgments: This study received financial support from Guangdong Planning Office of Philosophy and Social Science (Project No. GD22XYJ13), National Natural Science Foundation of China (Project No. 72163012), and Jiangxi Provincial Social Science Foundation Project (No. 24JL01).

1. Corresponding author: Ren Lu, Guangdong University of Finance and Economics, Guangzhou, China. Email: renlu@gdufe.edu.cn

© 2025, Senate Hall Academic Publishing. All Rights Reserved

1. Introduction

In the context of contemporary economic development, hidden champions occupy a pivotal role (Johann et al., 2022; Schlepphorst et al., 2024). Hidden champions are key innovators within niche markets (Zhang et al., 2023), characterized by greater technological innovation output and a more inward-oriented approach to technological sourcing (Lampe et al., 2025). They not only enhance the competitiveness of their respective industries but also contribute substantially to their national economies (Rietmann, 2024). As a result, their strategic influence and sustained growth are critical to shaping the economic landscapes of the future and maintaining long-term industrial leadership (Schenkenhofer, 2022).

Despite their remarkable achievements, hidden champions frequently face foreign constraints such as tariffs and sanctions, which are driven by concerns like national security (e.g., Cruz, 2022) and overcapacity (e.g., Galloni & Lawder, 2024). From the perspective of the sanctioning nation, the foremost aim of imposing constraints is not to exclude the products and services of the sanctioned nation's hidden champions from the sanctioning nation's market. Instead, it is to disrupt the business networks of hidden champions, ultimately aiming to render them unable to continue production. For example, if a foreign hidden champion is added to Nation A's "Entity List," Nation A can impose business restrictions on that company. As a result, firms operating in or trading with Nation A are prohibited from doing business with the hidden champion (e.g., Jacobs et al., 2022), whose entire supply chain might or can be disrupted.

In response, sanctioned nations are increasingly adopting proactive strategies to support their hidden champions. This shift from passive observation to active intervention is often achieved through the hidden champion policy. This policy aims to help hidden champions overcome foreign constraints, particularly by strengthening their positions within domestic business networks when international networks are inaccessible. Therefore, the primary struggle between sanctioning and sanctioned nations lies in the ability to either disrupt or protect business networks. The critical question however remains unanswered: Can hidden champion policy boost the firm's position in domestic business networks? This is a matter of life and death: if the policy is effective, it means hidden champions can rely on their own nation for support. Conversely, if the policy fails, hidden champions must confront the constraints posed by one or more foreign nations alone, which can be extremely risky.

Addressing this question is not easy and presents three difficulties: (1) Lack of theoretical foundation: the theory of hidden champions, as originally conceptualized by Hermann Simon (1992), does not account for policy as a factor that can influence hidden champions, nor does it explore the interplay between hidden champion policy and business networks. Despite extensive scholarly discussion on hidden champions (e.g., Rietmann, 2024; Schlepphorst et al., 2024;

Zhang et al., 2023) and the increasing adoption of supportive policies by various nations, there is limited research on how the policy affects the performance and development of hidden champions; (2) Poor reproducibility: while Simon provided a standard for identifying hidden champions, this standard is not applied uniformly across studies (Schenkenhofer, 2022). For instance, although Simon's theory is German in origin, researchers in Germany use varying criteria to define and measure hidden champions (e.g., Johann et al., 2022; Mietzner et al., 2018; Rietmann, 2024). This inconsistency casts doubt on the identification of "true" hidden champions and undermines the reproducibility of research findings; (3) Endogeneity issues: hidden champion policy is often directed at either exceptional firms or those with high potential, which introduces challenges related to endogeneity, particularly the self-selection bias (Enke et al., 2023), in evaluating the policy. Given these three difficulties, accurately assessing the impact of hidden champion policy on firms' domestic business networks is challenging.

We aim to explore the previously posed question. Our focus is on China's hidden champion policy, which has been implemented for 9 years (2016-2024). Unlike general policies that often pursue broad economic growth or profitability (e.g., Grilli et al., 2023; Holweg, 2014; Mao et al., 2021), China's hidden champion policy is specifically designed to sustain the innovative strength of hidden champions and boost their position within domestic business networks. The goal of the hidden champion policy is to mitigate the adverse effects of foreign constraints, ensuring the ongoing development and stability of hidden champions. After collecting 16,805 firm-year observations and applying the difference-in-differences (DID) method along with rigorous endogeneity tests, we show that China's hidden champion policy helps boost firms' positions in domestic business networks.

Our research is based on data from China, where there is a unified and consistent understanding of who the hidden champions are. This means that anyone studying China's hidden champions will work with the same research sample. As a result, our findings are reproducible. This effectively addresses the second difficulty mentioned earlier. Additionally, this paper makes two contributions: (1) Our study extends Simon's (1992) theory by demonstrating the impact of policy on the success of hidden champions. This allows the hidden champion theory to move beyond its original premise of a free market, aligning it with the prevalent reality of government intervention. Furthermore, we draw on signaling theory to show that a hidden champion policy sends a credible signal to the market, which enhances the firm's positioning within the domestic business network. Last but not the least, this paper broadens the theoretical framework of hidden champion theory; (2) To tackle endogeneity issues stemming from the self-selection bias, we not only implemented the PSM-DID method but also employed a complex and sophisticated statistical design by artificially creating a control group based on Japan's hidden champion standard. This approach has

yielded findings that are relatively "clean," indicating robustness against potential biases.

Since the hidden champion theory does not address policy aspects at all, this limits the application of hypothetical-deductive logic in this paper. Drawing on Graebner et al. (2023), this paper adopts a question-driven logic: we identify the current theoretical limitations and present practical insights regarding the hidden champion policy, using empirical data to advance research and complement existing theory. The paper is organized as follows: Section 2 introduces relevant theoretical concepts; Section 3 discusses China's implementation of the hidden champion policy; Section 4 outlines the methodology; Section 5 presents the regression results; and Section 6 concludes.

2. Theoretical Review

2.1 Business Networks

As a specialized form of social network (Ebbers & Wijnberg, 2019), a business network is defined as "a complex, systemic web of interdependent exchange relationships within which firms and individual managers need to operate" (Henneberg et al., 2010, p. 355). Such a network encompasses business transactions, collaborations, competition, and other commercial activities (Abrahamsen et al., 2023; Prashantham et al., 2018; Sable et al., 2024). It enables firms to access a variety of resources, information, and opportunities that they might not be able to obtain on their own (Kerr & Coviello, 2020).

To assess whether a firm has boosted its position within a business network, it is crucial to analyze changes in its structural holes, which refer to gaps or weak connections in a network that present opportunities for establishing new relationships and accessing valuable information (Burt, 1992). According to Shipilov et al. (2023), these gaps reveal a firm's strategic positioning within its network. Boosting a firm's position within the business network means that by creating structural holes, the firm can more effectively leverage its internal capabilities, thereby enhancing its performance (Zaheer & Bell, 2005). The greater number of structural holes indicates a firm's ability to leverage its position for information and control advantages. Specifically: (1) Information advantage: Firms situated in structural holes have access to a diverse range of information due to their connections across different social circles. It enables firms to encounter various viewpoints, ideas, and experiences (Wen et al., 2021); therefore, fostering innovative thinking and the generation of new ideas and solutions (Wang et al., 2019); (2) Expansion of resource acquisition channels: by bridging connections between different social circles, firms can more readily acquire various resources, such as capital, human resources, and technology. This broadens their resource base, enhancing efficiency and competitiveness (Guo et al., 2021); (3) Increased influence: Firms positioned at the intersection of

different social circles can transmit information, resources, and ideas across these groups. This enhances their social status and influence within the network (Krijkamp et al., 2021).

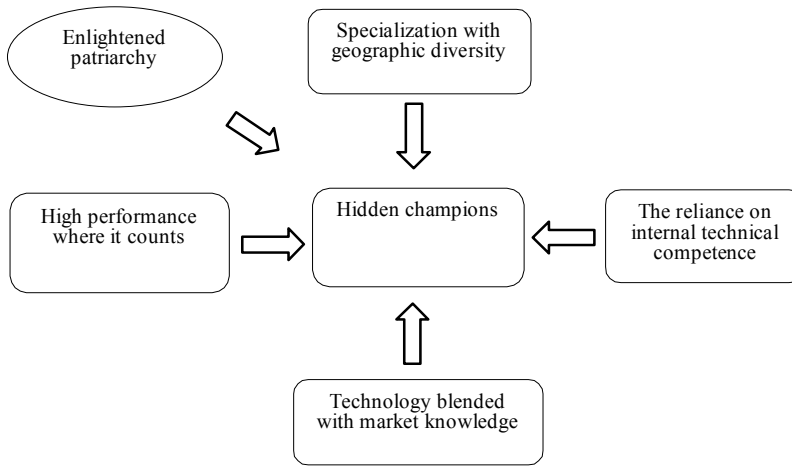
2.2 Hidden Champions

Hidden champions are firms that achieve a top-three ranking in their respective global niche markets or hold a leading market share within their continental domains (Simon, 1992). According to Simon, hidden champions are relatively small firms with annual revenues below 4 billion euros and possess relatively low brand visibility concerning their products and services. The three core characteristics of hidden champions are modest size, technical or market advantages in specific products, and limited public recognition. However, it is important to note that while these three characteristics are widely accepted, the specific quantitative standards vary depending on individual scholarly research (Schenkenhofer, 2022). For instance, probably due to economic development and inflation, Simon (2012) revised the definition of "modest size" to mean "below 5 billion euros." In Greece, "modest size" is defined as having "more than 20 and less than 250 employees" (Voudouris et al., 2000). In a recent paper, Rietmann (2024) studied German hidden champions with an average turnover of 195 million euros per year. The characteristic of "limited public recognition" is highly subjective, and therefore, both qualitative and quantitative studies on hidden champions often exclude it (e.g., Johann et al., 2022; Lei & Wu, 2022).

Simon's (1992) theory[2] offers a comprehensive explanation for the remarkable success of hidden champions, highlighting five key aspects: (1) Specialization with geographic diversity: hidden champions concentrate exclusively on a specific niche technological field and leverage their advantages across different nations; (2) High performance where it counts: they focus their efforts on addressing the most critical technological aspects valued by customers, while neglecting technologies deemed secondary or less important; (3) Technology blended with market knowledge: the firm's technology evolves in line with market changes, with a strong emphasis on developing localized technology and marketing networks; (4) Reliance on internal technical competence: they prioritize using internal capabilities to develop technology, rather than relying on external forces to address technical challenges; (5) Enlightened patriarchy: the firm emphasizes strategic location choices and fosters a robust employer-employee relationship. Figure 1 illustrates Simon's framework:

2. Some may be unsure whether to use "Simon's theory," "Simon's perspective," or "Simon's viewpoint" primarily because Simon's paper on hidden champions was published in the Harvard Business Review, which is not considered a "pure" academic journal. However, we do not think this is important. We will set aside this terminological issue for now and refer to it as "Simon's theory."

Figure 1. Simon's hidden champion theory



The hidden champion theory as reflected in Figure 1 is based on the free-market assumption, without any governmental intervention in the market. When Simon conducted his seminal research on Germany's hidden champions in the 1990s, the free-market assumption closely mirrored the economic landscape, making it a tenable and relevant perspective for that era. Since Simon, most of the studies on hidden champions have applied the same assumption, portraying the role of government as marginal (e.g., Kamp & Apodaca, 2023; Rietmann, 2024; Schlepphorst et al., 2024; Zhang et al., 2023). However, in contemporary business practice, many governments actively support the growth of their hidden champions through strategic policy initiatives. A notable example is the High-Tech Gründerfonds (HTGF), established in 2005 under the auspices of Germany's Federal Ministry for Economic Affairs and Energy, KfW Capital, and a consortium of 45 other firms. The HTGF is specifically designed to invest in and support technology-oriented startups, aiming to cultivate the next generation of hidden champions. It offers initial funding of up to 600,000 euros per firm, with potential total investments reaching 2 million euros, along with expert mentorship[3].

Schenkenhofer (2022) has clearly delineated the differences between hidden champions, Mittelstand firms, small and medium-sized enterprises, and small family-owned businesses, which are often considered closely related definitions. Moreover, hidden champions have been proven to have higher technological innovation output, with more inward oriented technological knowledge (Lampe et al., 2025). When examining hidden champion policies in China, Germany, and Japan, however, it becomes evident that no government specifically distinguishes among these differences. Similar to doing scholarly quantitative research on

3. High-Tech Gründerfonds official website, www.htgf.de, accessed in August, 2024.

hidden champions, government policies for hidden champions primarily focus on whether a firm is a leader in its niche market, rather than its "hidden" status or precise size. Consequently, debating whether a firm receiving government support as a hidden champion fits Simon's definition is meaningless: (1) empirically, scholars have yet to reach a consensus on a standardized measure for Simon's hidden champion; and (2) once a firm is included in a government's hidden champion policy, it is officially recognized as a hidden champion, a status that cannot be disputed by other, at least, domestic market participants.

Hidden champions, despite their success in specialized fields, encounter distinct challenges in developing and maintaining business networks, especially in the context of globalization and geopolitical tensions (Balogh et al., 2022). On one hand, their deep market specialization restricts the range of potential partnerships, as the niche nature of their industry may limit the number of firms with compatible interests and capabilities (Lehmann et al., 2019). On the other hand, hidden champions' business networks can become vulnerable under foreign constraints. For instance, in 2022, the United States added Yangtze Memory Technologies (YMT) Co., Ltd., a prominent Chinese hidden champion, to the U.S. export control "Entity List." This action restricts U.S. firms, as well as those utilizing American technology, from providing YMT with goods, technologies, and services without explicit U.S[4]. government approval. Consequently, YMT is compelled to shift away from its international business network and focus on developing a domestic network independent of American technology.

2.3 Signaling Theory

Signaling theory provides a framework for understanding how organizations overcome information asymmetry by sending credible signals (Spence, 1973). Spence (2002) emphasized that a signal's effectiveness hinges on its credibility, particularly when the cost of mimicking the signal is prohibitively high for low-quality actors. Signaling theory has been widely applied across multiple disciplines to explain how actors overcome information asymmetries. In strategic management and economics, signaling theory helps elucidate how firms convey unobservable qualities and capabilities to external stakeholders (Connely et al., 2011). For instance, Brealey et al. (1977) posit that an entrepreneur's willingness to invest personal capital in a project signals strong growth potential and profitability, thereby attracting external financing. Similarly, in venture capital contexts, backing from a top-tier fund serves as a powerful endorsement, signaling quality to subsequent investors and facilitating successful exits (Megginson & Weiss, 1991). Beyond private markets, government designations—such as grants, subsidies, or export promotion labels—can signal a firm's reliability to international buyers, easing market entry (Alvarez, 2004).

4. Source: https://www.digitimes.com/news/a20221216VL204/us-china-chip-ban-ymtc.html, accessed in September 2024.

Government designation functions as an effective signaling mechanism when a governmental body, acting as a trusted third party, confers a label or status upon firms that meet specific, publicly known criteria. Unlike market-generated signals, designation carries distinctive authority due to its basis in rigorous assessment. China's hidden champion policy could be understood as a formal government designation, which sends a multi-faceted signal to the entire business network about the awarded firms. As a highly effective signal, it marks unobserved quality, stability and national strategic importance of hidden champion firms.

The hidden champion designation exemplifies the following process: while these firms are typically "hidden" from broad market awareness despite their innovative capabilities and niche leadership, the policy actively counteracts this invisibility. By sending a credible signal to business networks, the designation reduces information asymmetries, enhances market recognition, and strengthens external trust. These effects collectively improve the firm's access to financial and relational resources, ultimately positioning it as a network hub that attracts higher-quality connections and secures a more central, influential role.

3. Empirical Context: Hidden Champion Policy in China

We examine our research questions using data on China's hidden champion policy, which has been in effect since 2016. This ongoing policy provides a valuable opportunity to track its impact on domestic business networks over time. This section includes a review of the development of the hidden champion policy in China to offer context for our empirical findings.

3.1 Profile of China's Hidden Champion Policy

Germany's hidden champions drew China's attention in the early 21st century. With increasing awareness of the technological, as well as trade, decoupling between China and the U.S. since the 2010s (Luo & Assche, 2023), China recognized the need for two key strategies: developing leading manufacturing firms in niche markets and ensuring the resilience of these firms' business networks against real and potential sanctions (Lucas et al., 2023; Murtinu, 2021). In response, the State Council and the Ministry of Industry and Information Technology (MIIT) introduced the hidden champion policy in 2016, aiming to cultivate one thousand hidden champions by 2025. The policy has evolved through three stages:

(1) Proposal stage (Pre-2016): The focus was on raising awareness and encouraging small and medium-sized enterprises to pursue specialization, refinement, differentiation, and innovation to become hidden champions in their fields; (2) Implementation stage (March 2016 - June 2019): During this period, the MIIT officially announced the first list of hidden champions, setting specific

targets, evaluation methods, and support mechanisms; (3) Development stage (Post June 2019 - now): The policy became more refined and targeted, with enhanced services and support for firms, increasing both in quantity and scope.

In China's hidden champion policy, hidden champions are defined as "firms that have long-term focus on specific segments of the manufacturing industry, possess internationally leading production technologies or processes, and hold top global market shares in their respective product markets[5]." To qualify for the designation of a hidden champion, a firm must meet four criteria: (1) It must be deeply involved in a particular niche market for at least 10 years, with over 70% of its total revenue derived from its primary business; (2) It must have a leading position in the global market share for its main product, ranking within the top 3 worldwide; (3) It must demonstrate international excellence in product quality; (4) It must have international leadership in production technology and processes, holding key intellectual property rights, and being involved in the contribution to technical standards within its relevant field.

One of the most notable features of China's hidden champion policy is its "application-approval" system. Each year, the MIIT organizes a selection process in which firms voluntarily apply for the designation of hidden champion. The MIIT then reviews these applications and designates a subset of firms as hidden champions. This approach underscores that the designation process is influenced by both market competition and governmental decisions. To understand this "application-approval" system, it can be likened to the Olympic selection process. Just as athletes apply to or are selected to join the national team, firms seek the hidden champion designation, with only a few being chosen. Thus, becoming a hidden champion involves receiving a formal state designation after demonstrating significant success.

It is important to note two key points about this "application-approval" system: (1) Excellence alone is not enough: Achieving prominence in a niche market does not guarantee recognition as a hidden champion by the MIIT. The selection process is akin to that of the Nobel Prize, where, although all nominees/applicants are distinguished, only the winners are announced. The list of nominees/applicants and the reasons for non-selection are not made public; (2) Support does not guarantee firm performance: Receiving the hidden champion designation results in government support, but it does not ensure improved firm performance. This is akin to joining the national Olympic team, which does not ensure winning medals.

All Chinese hidden champions are in the manufacturing sector. The MIIT has identified 86 sub-sectors across eight major areas for support and development. These areas include new-generation information technology (such as 5G and AI-relevant industries), equipment manufacturing, and new materials. This approach reflects China's economic reality: the nation supports key strategic industries

5. The information was accessed in September 2024 in MIIT's official website: https://www.miit.gov.cn/

deemed crucial (further details will be provided in Section 5), and firms facing sanctions are predominantly in manufacturing sectors.

Finally, while Simon's concept of hidden champions provides an abstract framework for firm development, China's hidden champion policy represents a concrete application of his ideas. Examining China's approach to hidden champions will not only enhance our understanding of Simon's theory but also contribute valuable insights to the broader research on hidden champions.

3.2 The Signaling Theory Perspective on Hidden Champions and Domestic Business Networks

Signaling theory helps elucidate how a hidden champion policy reshapes a firm's position within domestic business networks. The governmental designation functions as a powerful regulatory signal that elevates the firm's stature through four distinct mechanisms: mitigating information asymmetries, enhancing market awareness, strengthening external trust, and improving access to financial resources, thereby fundamentally reshaping the firm's relational and structural positioning.

Mitigate information asymmetries: The stringent, publicly disclosed criteria for designation—including technological sophistication, market leadership, and innovation capability—provide verifiable information about the firm's unobservable qualities. This process mitigates adverse selection problems that typically hamper network formation. Potential partners can rely on the government's due diligence as a substitute for costly private investigations, thereby lowering information search and verification costs. Consequently, the designation encourages more business partners to engage with the firm, increasing its network centrality and embeddedness.

Enhance market awareness: As market leaders in niche segments, hidden champions are typically not known to average consumers but instead supply high-quality products to a select group of closely collaborating business customers (Kamp & Apodaca, 2023). The hidden champion designation acts as a salient and credible status signal that elevates the firm's visibility and perceived importance. This label serves as a quality and resilience heuristic, distinguishing the firm as a recognized leader in its niche. Consequently, the firm transitions from an obscure player to an acknowledged node within the business network, facilitating new connections and strengthening existing collaborations.

Strengthen external trust: Trust is a critical facilitator of network relationships, particularly in contexts where cooperation involves substantial asset specificity or long-term commitments (Carney, 1998). The hidden champion designation serves as a trust-enhancing mechanism by providing an authoritative endorsement of the firm's reliability and excellence. This governmental endorsement increases trust among potential partners and reduces perceived risks of opportunism and relationship failure. Furthermore, the signal attracts higher-quality partners—such as leading suppliers, innovative startups, or

prestigious research institutions—that seek to align with designated firms to enhance their own status and ensure relationship stability. These partnership opportunities lead to preferential attachment, whereby the hidden champion firm becomes a hub for high-value connections within the business network.

Enlarge financial resources: Financial institutions are key actors in business networks, profoundly influencing firm growth and stability. The hidden champion designation sends a favorable signal to banks, venture capitalists, and other institutional investors regarding the firm's creditworthiness and growth potential (Berger & Udell, 1995). This designation reduces lenders' and investors' monitoring costs and perceived risk, leading to improved financing terms that strengthen the firm's cooperative network (Fang et al., 2022). Enhanced financial resources allow the firm to invest in network-deepening activities—such as R&D collaborations, strategic acquisitions, and long-term partnership development—thereby further solidifying its structural position within the network.

In summary, the hidden champion designation operates as a multifaceted signal that concurrently reduces information asymmetries, builds trust, and expands financial resources. Collectively, these dynamics propel the firm's ascent within the topological structure of its domestic business network, transforming it from a peripheral participant into a central and influential actor.

4. Methodology

4.1 Data Sources

Our research focuses on China, which is particularly relevant given recent developments. As a response to the growing decoupling between China and the United States in technology and trade (Luo & Assche, 2023), China is increasingly turning its attention to strengthening its domestic business networks. This shift is facilitated by the hidden champion policy. As aforementioned, the policy has been in effect for nine years by 2024, providing a substantial time frame to assess its impact. Additionally, existing research on hidden champions often suffers from subjective criteria for identifying these entities, leading to challenges in replicability (Schenkenhofer, 2022). In contrast, China's method of implementing the policy through an annual list of hidden champions has improved sample replicability and created favorable conditions for applying the difference-in-differences approach.

Our data is sourced from three primary locations:

(1) The Hidden Champions List: Since 2016, the MITT has annually published a list of firms designated as hidden champions, with exception of 2023. Being included on this list provides firms with benefits from the MIIT and other government bodies, while those not listed do not receive these advantages. This

creates a quasi-experimental framework for our study. To ensure comparability between groups, we focus on publicly traded firms.

(2) To evaluate the structural holes in a firm's business network, we examine its bidding contracts with an emphasis on suppliers and customers. We source these contracts from the Qichacha firm bidding inquiry platform (www.qcc.com), through which we have collected data between 2010 and 2022. This database provides comprehensive details on firms' bidding activities, including tender and bid documents, spanning over 200 million Chinese firms. Additionally, Qichacha offers access to firm prospectuses, annual and semi-annual reports, judicial records, and investment relationships. Utilizing this rich dataset, we construct a network encompassing both listed and unlisted firms.

Although our dataset does not encompass every type of transaction, the publicly available information effectively captures the major business dealings and competitive advantages of the firms in our sample. Specifically: (a) The data we use is both authentic and accessible. According to China's Tendering and Bidding Law, any project involving public interests, public safety, or state-funded investments exceeding RMB 2 million must follow public bidding procedures. Government procurement projects, which involve the acquisition of fixed assets by government agencies and related institutions, are also subject to open procurement and are publicly accessible. Research highlights the significance of government procurement data for businesses (Dai et al., 2021); (b) Since bidding and procurement processes in China are primarily focused on the domestic market, the participants in these transactions are generally domestic firms, with foreign companies rarely involved. Consequently, this dataset predominantly reflects the domestic network of Chinese firms.

(3) For control variables, we primarily rely on the China Stock Market & Accounting Research (CSMAR) database (http://cndata1.csmar.com/) for the financial data of listed firms. The CSMAR is a comprehensive database that offers extensive financial and human resource data related to publicly traded firms.

Data summary: to comply with the parallel trend requirement of the difference-in-differences method and address data limitations for the years 2023 and 2024, we have set our observation period from 2012 to 2022. During this period, the MIIT published seven batches of hidden champion (HC) lists. By integrating and cleaning these HC lists with data from Qichacha and CSMAR, we identified 221 hidden champions. This resulted in 1,290 "firm-year" observations for the treatment group, and a total of 16,805 "firm-year" observations across all firms.

4.2 Variable Construction

(1) Dependent variable: Constraints

To measure a firm's position within its domestic business network, we assess structural holes using the measure of constraints, which evaluates how a firm

leverages its position in the network to gain informational and control advantages (Burt, 2005).
To calculate constraints, we must first determine C_{ij}:

$$C_{ij} = (p_{ij} + \sum_{q \in N(i)-j} p_{iq} p_{qj})^2, i \neq q \neq j \quad (1)$$

C_{ij} represents the level of constraint that contact j poses on focal actor i; p_{ij} is proportion of an actor i's time and energy invested in a relation with j. The first term (p_{ij}) captures the direct proportion of firm i's time, energy, or resources invested in contact j. The second term

$$(\sum_{q \in N(i)-j} p_{iq} p_{qj})$$

captures the indirect proportion.[6] In a valued adjacency matrix A in which higher values represent a greater investment in energy, we construct p_{ij} from matrix A as Formula (2).

$$p_{ij} = \frac{a_{ij} + a_{ji}}{\sum_j (a_{ij} + a_{ji})} \quad (2)$$

In our work, we use bidding contracts to construct the business network. If firm i is firm j's customer or supplier, then a_{ij}=1, else a_{ij}=0.

$$Constraints_i = \sum_j C_{ij}, i \neq j \quad (3)$$

$Constraints_i$ means the sum of constraint (from a firm's business network) across all relationships of a firm. According to Formula (3), we can easily find that $Constraints_i$ is a positive number greater than 0. Additionally, a smaller value of $Constraints_i$ indicates a better position for the firm within the network. We refer to Burt (1992) for further details about equations (1)-(3).

(2) Independent variable: whether the firms entered the hidden champion list
The independent variable (Post) is defined as 1 if a firm appears on the hidden champion list published by the MIIT, and 0 otherwise.

6. In essence, equation (1) quantifies the total constraint that a single partner *j* exerts on the focal firm *i*, considering both their direct tie and all indirect ties routed through third parties. A higher c_{ij} means that partner *j* has substantial leverage over firm *i*, which reduces firm *i*'s ability to act as a broker between disconnected groups. By summing c_{ij} across all partners *j*, we obtain the overall network constraint, where a lower total value indicates a more advantageous network position with richer structural holes.

(3) Control Variables

To better estimate the relationship between hidden champions and a firm's constraints related to structural holes in the network, several control variables were included. Ownership Structure: This variable reflects the accumulation of horizontal power through the network (Grosman & Leiponen, 2018); Employees: The knowledge acquisition and sharing by employees can drive resource sharing within networks (Pedersen et al., 2011); Total Assets: The firm's total assets are a significant factor influencing its position within the business network (Shahzad et al., 2022); Government Subsidies: Support from the government, which is expected to enhance firm performance (Yi et al., 2021); R&D Investment: This represents how a firm manages and utilizes capital, information, and human resources to gain an advantage in the business network (Albino-Pimentel et al., 2022); Financial Constraints: This variable is measured by WW index. To measure a firm's financial constraints, we use the WW index, proposed by Whited and Wu (2006). The index measures a company's external finance constraints, identifying financial flexibility. The higher the WW index, the more constrained the company is. Financial constraints may negatively impact a firm's ability to leverage advantages within the business network (Shipilov, 2009); Return on Assets: This measure of profitability affects a firm's operational capability and networking potential (Swaminathan, 2009). Table 1 provides more details on these variables.

Table 1. Descriptive information on variables

Variable	Definition	Note
Dependent variable		
Constraints		A lower value of constraints indicates a better position in networks
Independent variable		
Post	Entering "the list of hidden champions" or not	after a firm entered the list, Post=1; otherwise, Post=0
Controls		
Ownership	Firm ownership	it is 1 if a firm is state-owned; otherwise, it is 0
lnEmp	Firm employees	ln(employees+1)
lnTa	Firm asset	ln(total asset+1)
lnSub	Firm subsidy	ln(subsidy+1)
lnRd	Firm R&D investment	ln(firm R&D investment+1)
FC	Financial constraints	WW index
ROA	Return on assets	(net profit / average total assets) × 100%

4.3 Econometric Model

The hidden champion (HC) policy is implemented progressively, with different firms being added to the HC list in various years. To assess the impact of the HC policy on firms' structural holes (Constraints), we employed a time-varying difference-in-differences (DID) method (Beck et al., 2010). This approach allows

us to analyze how the policy influences changes in Constraints over time. According to the principles of the DID model, we specify the following equation:

$$Constraints_{it} = \beta_0 + \beta_1 Post_{it} + \beta_2 Controls_{it} + \mu_i + \delta_t + \varepsilon_{it} \quad (4)$$

$Post_{it}$ is a dummy variable equal to 1 if firm i entered the HC list at year t and for subsequent years (i.e. post-entry), and zero otherwise. $Controls_{it}$ represents the other control variables that effect firm's structural holes, including firm ownership, return on asset, employment, total asset, R&D investment, subsidy from government and financial constraints. μ_i refers to firm-fixed effect, δ_t refers to time-fixed effect and ε_{it} denotes the error term. β_1 represents the relative effect of the HC policy on structural holes compared with control group. It is important to note that while equation (4) may resemble an ordinary least squares (OLS) regression, it represents a time-varying difference-in-differences (DID) regression (Beck et al., 2010). This is crucial for accurately capturing the effects of the HC policy over time.

5. Regression Results

5.1 Benchmark Regression

Table 2 illustrates the impact of being recognized as a hidden champion on firms' structural holes, based on equation (4). This regression analysis covers a comprehensive dataset that includes both listed hidden champions and listed non-hidden champions.

Table 2. Benchmark regression results

Variables	(1) Constraints	(2) Constraints	(3) Constraints	(4) Constraints
Post	-0.046*	-0.050*	-0.059**	-0.073**
	(-1.712)	(-1.846)	(-2.149)	(-2.402)
Ownership		-0.009	-0.010	-0.010
		(-0.811)	(-0.778)	(-0.714)
lnEmp		-0.017***	-0.014	-0.004
		(-2.645)	(-1.282)	(-0.335)
lnTa			-0.025**	-0.031***
			(-2.484)	(-2.789)
lnRd			0.002	0.003
			(0.515)	(0.645)
lnSub				-0.002
				(-0.866)
FC				-0.017***
				(-4.851)
ROA				0.013
				(1.414)
Constant	-0.371***	-0.217***	0.285	0.319*
	(-40.556)	(-3.598)	(1.631)	(1.684)
Firm FE	YES	YES	YES	YES

Year FE	YES	YES	YES	YES
R^2	0.008	0.009	0.011	0.013

Note: Standard errors of all regressions in this study are clustered at the firm level. T -values in parentheses.
*** signifies p<0.01, ** signifies p<0.05, and * signifies p<0.1.

Column (1) presents the results of the regression without any control variables. Since a smaller dependent variable indicates greater advantages for a firm within its domestic business network, it is evident that firms listed as hidden champions experience improved network advantages. Columns (2), (3), and (4) progressively add control variables to the regression model. The consistently significant and negative coefficient of the Post variable across these columns supports the conclusion that firms recognized as hidden champions boost their positions in domestic business networks.

5.2 Parallel Trend Test and Placebo Test

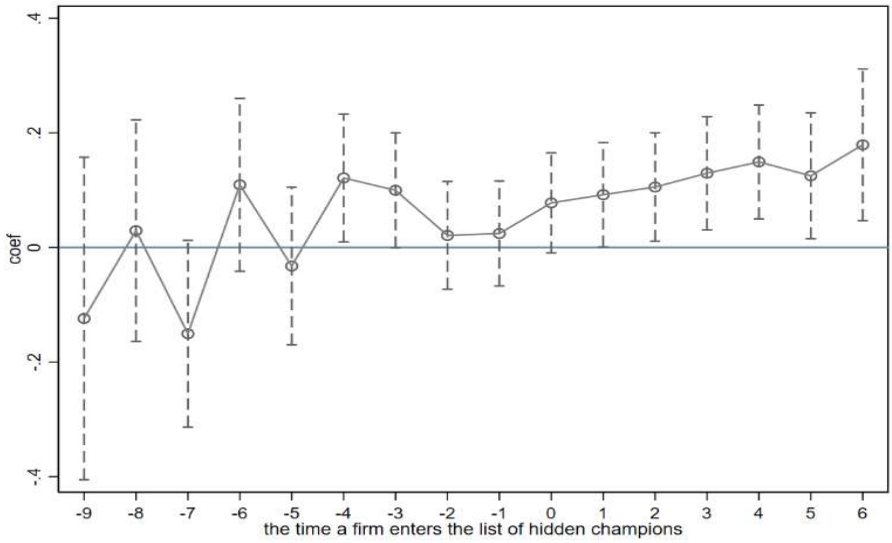
5.2.1 Parallel Trend Test

The parallel trend assumption is essential for applying the time-varying difference-in-differences (DID) model (Rambachan & Roth, 2023). This assumption requires that the trends of the treatment and control groups should be parallel before the policy intervention. To test this assumption, we introduce leads and lags for the initial dummy variable representing the hidden champion (HC) policy. Equation (5) is used to conduct parallel trend test.

$$\begin{aligned} Constraints_{it} = {} & \alpha_i + \beta_1 Before9_i + \beta_2 Before8_i + \beta_3 Before7_i + \beta_4 Before6_i \\ & + \beta_5 Before5_i + \beta_6 Before4_i + \beta_7 Before3_i + \beta_8 Before2_i + \beta_9 Before1_i \\ & + \beta_{10} Current_i + \beta_{11} After1_i + \beta_{12} After2_i + \beta_{13} After3_i + \beta_{14} After4_i \\ & + \beta_{15} After5_i + \beta_{16} After6_i + \gamma Controls_Var_i + firmfe + yearfe + \varepsilon_{ik} \end{aligned} \tag{5}$$

The time dummy variable includes observations for each firm during the *n* years before joining the HC list, the current year, and the n years following. Figure 2 presents the results of the parallel trend test, excluding the year immediately before firms were added to the HC list. This visualization helps estimate the dynamic impact of the HC policy on firms' structural holes, comparing it to the period before their inclusion (Beck et al., 2010; Jia, 2014). Before being listed as hidden champions, the confidence intervals for both the treatment and control groups overlap with zero, indicating no significant difference between them. After inclusion, however, the confidence intervals shift away from zero, and the mean values show a consistent increase. This suggests that the HC policy has caused a notable divergence in performance between the treatment and control groups. In summary, Figure 2 confirms that the parallel trend assumption holds and demonstrates the impact of the HC policy.

Figure 2. Parallel Trend Test



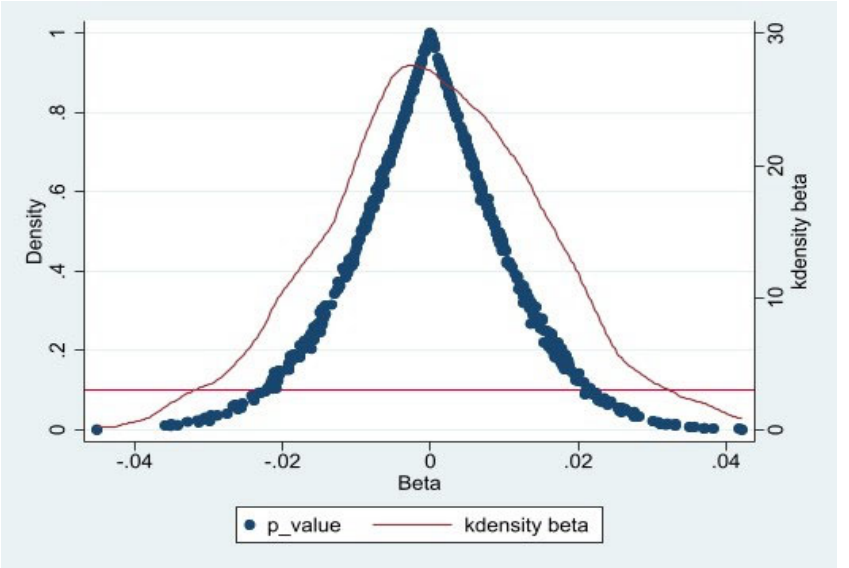
5.2.2 Placebo Test

Based on the results in Table 2, it is important to evaluate whether the hidden champion policy directly influences changes in a firm's domestic business network. Specifically, we need to assess whether firms not listed as hidden champions also experience shifts in their domestic business networks, or if such changes occur prior to a firm being listed as a hidden champion. If either scenario is true, it could undermine the robustness of our study's conclusions.

To address this, we conducted a placebo test. This involved randomly assigning samples into treatment and control groups, with arbitrary entry years for the treatment groups. This random assignment ensures that any observed effects are due to chance rather than actual policy impact. We repeated this process 500 times, generating 500 regression coefficients and their corresponding P-values.

Figure 3 illustrates the kernel density distribution and P-values for 500 coefficient estimates. The results show that the coefficients related to the placebo hidden champion policy are centered around zero and exhibit a normal distribution, with most results being statistically insignificant. This suggests that the baseline results of our study are not due to chance, reinforcing the conclusion that the hidden champion policy has a positive impact on firms' structural holes.

Figure 3. Placebo Test



5.3 Other Checks

5.3.1 Identifying the Assumption of the DID

Although we have utilized a time-varying difference-in-differences (DID) approach, we face a significant challenge with the self-selection bias. This issue arises because the explanatory variables are not randomly assigned but rather reflect deliberate individual choices (Enke et al., 2023).

This paper identifies two main sources of potential self-selection bias: (1) High-performing firms are more likely to engage actively in domestic business networks and to seek designation as hidden champions; (2) The MIIT selects firms for the HC list based on specific criteria, leading to a non-random selection process. Consequently, the treatment group tends to consist of higher-performing firms, while the control group contains more typical firms. This non-random selection can affect the reliability of the research findings.

To address these issues and improve the study's validity, we employ three methods to mitigate self-selection bias: propensity score matching (PSM) combined with the DID method, triple difference (DDD), and the creation of a new control group based on Japanese standards, as detailed in Section 5.3.2.

Additionally, to strengthen the identification process, three points are crucial: (1) A well-designed DID analysis seeks to have treatment and control groups that are as similar as possible; (2) Although the MIIT has the authority to select firms for the HC list and these firms are generally deserving, the list does not include all top-performing firms; (3) To ensure a comparable control group, it is important to show that many high-performing firms are present in both the HC list and the control group. This comparison is essential for forming a control group that closely mirrors the treatment group.

Our analysis also highlights the difficulties in comparing technologies across firms. Many firms apply for the HC list after the MIIT announces its selection criteria, which are based on specific product categories defined by classification codes. For example, Firm A, which produces photovoltaic inverters, and Firm B, which manufactures cranes, may both be leaders in their respective fields. However, their inclusion on the HC list is primarily influenced by the MIIT's selection criteria. As shown in Table 3, the top three industries identified by the MIIT in the first seven batches of the HC list illustrate this variation.

Table 3. Main industries involved in the MIIT's HC list

Year	**The industries ranked in the top three each year** (if there are more than three industries, it means there are tied rankings)
2016	metal products; energy and heavy equipment; chassis and engine systems
2017	optical components; textile and garment equipment; metal products; cotton spinning; energy and heavy equipment
2018	chassis and engine systems; rail transportation equipment; other textiles, instruments and meters
2019	electric motors; metal products; other chemical products
2020	chassis and engine systems; whole machinery for engineering; other household items; digital chip design
2021	chassis and engine systems; electronic chemicals; metal products; other electronics; other metal new materials
2022	general machinery; chemical products; optical components

Based on Table 3, it is evident that the list of hidden champions is not solely determined by a firm's competence or market dominance. The MIIT exhibits specific preferences when compiling the HC list. During the sample period, the MIIT selected a notably high number of hidden champions from the "chassis and engine systems" sector. This suggests that a firm's exclusion from the list may not reflect a lack of qualification, but rather that it is outside the industry's focus of the MIIT for that year. In other words, excellence in a field is necessary but not enough for inclusion on the hidden champion list. For instance, Firm A may be included as a hidden champion, while Firm B is not, despite Firm B's high performance in its sector. Thus, the inclusion of a firm on the hidden champion list can appear somewhat arbitrary, and there are still many highly qualified firms within the control groups NOT listed as hidden champions.

5.3.2 Endogeneity Concerns

To address the issue of the self-selection bias, we applied two methods of propensity score matching (PSM). The first method matches firms on a period-by-period basis, while the second transforms panel data into cross-sectional data for matching purposes. These techniques allowed us to pair hidden champion (HC) firms (the treatment group) with non-HC firms (the control group), helping to minimize systematic differences and bias in our DID estimation. After PSM process, the discrepancies between treatment and control groups became

insignificant in most variables as shown in Table 4. Panel A shows the result before matching, indicating significant differences in variables between the treatment and control groups. Panel B displays the result after PSM, narrowing differences in variables significantly. The PSM method ensures treatment groups with similar counterparts in control groups, which makes our DID estimation more reliable and unbiased.

Table 4. PSM Matching Results

	Treated	Control	Difference
Panel A: Before PSM matching			
Ownership	3.669	3.365	0.304**
lnEmp	8.339	7.674	0.665***
lnTa	23.088	22.485	0.603***
lnRd	19.525	18.388	1.137***
lnSub	17.702	16.847	0.855***
FC	-1.068	-1.028	-0.04***
ROA	0.057	0.028	0.029***
Panel B: After PSM matching			
Ownership	3.669	3.613	0.056
lnEmp	8.339	8.182	0.157
lnTa	23.088	22.921	0.085
lnRd	19.525	19.313	0.167
lnSub	17.702	17.523	0.179
FC	-1.068	-1.057	-0.011
ROA	0.057	0.050	0.007

Note: *** signifies $p<0.01$, ** signifies $p<0.05$, and * signifies $p<0.1$.

The PSM-DID results, shown in columns (1) and (2) of Table 5, indicate that the hidden champion policy positively impacts a firm's domestic business network. Additionally, we employed a triple difference (DDD) approach to isolate the specific effects of the HC policy on firm advantages in domestic business networks. Since the HC policy targets only manufacturing firms, we used firms from the service and mining industries as a control group, as they are unaffected by the HC policy. This method allowed us to better identify the net impact of the HC policy. The findings, presented in column (3) of Table 5, reveal a negative relationship between the HC policy and firms' structural holes in the network (i.e., Post*Manuf), further confirming the policy's beneficial effect.

Table 5. PSM-DID and DDD

Variables	(1) Constraints (year-match)	(2) Constraints (cross-section match)	(3) Constraints (DDD)
Post	-0.067**	-0.072**	0.288***
	(-2.172)	(-2.402)	(30.16)
Post*Manuf			-0.366***
			(-11.94)
Constant	YES	YES	YES
control variable	YES	YES	YES
Firm FE	YES	YES	YES
Year FE	YES	YES	YES

Note: Standard errors are clustered at the firm level. T-values in parentheses. *** signifies p<0.01, ** signifies p<0.05, and * signifies p<0.1.

Constructing a new control group: One major limitation of the propensity score matching (PSM) method is the absence of a standardized criterion for selecting which variables to include, leading to a degree of subjectivity. To address the self-selection bias more effectively, we strive to create a control group that closely mirrors the treatment group. However, since the MIIT does not disclose its application process, evaluation procedures, or a list of applicant firms, we are unable to use unsuccessful applicants as our control group. Additionally, using the Simon standard to classify all Chinese listed firms with annual revenues exceeding 5 billion euros (approximately 38 billion RMB) as hidden champions does not accurately reflect Chinese business practices. Therefore, we adopt the Japanese criteria for identifying "Global Niche Top Companies" (GNTs) to establish our control groups.

The Japanese Ministry of Economy, Trade, and Industry identifies GNTs as firms with notable market share and distinctive features in niche sectors. Since 2013, Japan has periodically published a "Top 100 GNTs in Japan" list[7], based on a quantitative assessment of profitability, strategic relevance, competitive advantage, and international presence.

To enhance the alignment of our control group selection, we apply Japanese criteria for GNTs to evaluate Chinese firms. We use 11 indicators from the Japanese perspective: operating profit margin, operating income growth rate, net profit growth rate, number of main business lines, procurement concentration, employee growth rate, sales per employee, R&D personnel ratio, R&D investment ratio, number of overseas subsidiaries, and overseas revenue ratio. These indicators effectively capture the key dimensions used to identify GNTs.

We calculate each firm's performance using the entropy method, where higher values indicate better performance. Firms are ranked based on these values, and we select the top 1,000, 1,100, 1,200, 1,300, 1,400, and 1,500 as benchmarks for identifying hidden champions. Our control group comprises

7. Official website of the Ministry of Economy, Trade and Industry of Japan: https://www.meti.go.jp/policy/mono_info_service/mono/gnt100/pdf/2020_gnt100_result.pdf

these high-performing Chinese firms, while the treatment group includes firms that are both high-performing and recognized as hidden champions in China. By using Japanese standards, which are **NOT** considered by the MIIT in their selection process, we ensure that our evaluation is **EXOGENOUS** and effectively minimizes self-selection bias.

The updated results, shown in Table 6, reveal significantly negative coefficients, consistent with our initial regression findings.

Table 6. Control group of Chinese GNTs

Variables	(1) 1000	(2) 1100	(3) 1200	(4) 1300	(5) 1400	(6) 1500
Post	-0.103**	-0.096**	-0.102**	-0.112**	-0.114**	-0.106**
	(-1.980)	(-1.965)	(-2.178)	(-2.446)	(-2.504)	(-2.430)
control variable	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Note: Standard errors are clustered at the firm level. T -values in parentheses. *** signifies p<0.01, ** signifies p<0.05, and * signifies p<0.1.

Regarding the concern of omitted variable endogeneity: While adopting Japan's GNT standard is reasonable, it is easy to address a criticism about its applicability given the significant differences between China and Japan in terms of economy, politics, and culture. The statistic essence of such criticism is whether omitted variables might still introduce endogeneity issues in our analysis. Mathematically:

$$Constraints_{it} = \beta_0 + \beta_1 Post_{it} + \beta_3 unobservable_{it} + \mu_i + \delta_t \tag{6}$$

To examine whether the coefficient β_1 remains robust despite potential unobservable variables, we employ the method developed by Oster (2019). Oster's approach assumes that if omitted variables are not related with the variables included in the model, the estimated coefficients will remain stable even in the absence of these omitted variables.

Oster's method involves two main steps. First, researchers estimate a theoretical maximum R-squared value, which is typically 1.3 times the R-squared of the baseline regression model. This value represents the model's potential explanatory power if all relevant omitted variables were included. Second, a Delta value is determined to assess the relative importance of unobserved variables compared to observed variables. A Delta value of 1 indicates that the unobserved and observed variables have equal importance. If Delta is greater than 1 or less than 0, it suggests that the unobserved variables are unlikely to have a significant impact on the dependent variable enough to alter the original coefficient's value or sign. Since Oster has already provided the mathematical details, we will not reiterate them here.

Applying Oster's method, we find that the Delta value in this study is 10.45, which is substantially greater than 1. This result indicates that omitted variable bias is unlikely to significantly affect the conclusions of our paper.

Bacon decomposition test for time-varying DID: According to Goodman-Bacon (Goodman-Bacon, 2021), time-varying DID regressions are variance-weighted average of many different "2x2" DIDs, each involving the comparison between a treated and an effective control group in a window before and after the treated receives treatment (Baker et al., 2022), namely, (1) the treatment group implements the policy first, while the control group implements it later(Earlier T vs. Later C); (2) the treatment group implements the policy, while the control group does not (T vs. Never treated); (3) the treatment group implements the policy later, while the control group implements it first (Later T vs. Earlier C); (4) the treatment group implements the policy, and the control group includes samples that have already taken policy during observation period (T vs. Already treated). Among these four scenarios, (1) and (2) reflect treatment effects that are subtracted from the changes of later-treated units. (3) and (4) introduce a "bad comparisons" problem that differs from a violation of the parallel-trend assumption.

The results are presented in Table 7. According to the second row of this table, the regression weight for the experimental group that made it onto the hidden champion list compared to the control group that did not, is 98.2%. Additionally, the proportion of problematic comparisons is very low. The Bacon decomposition test further confirms the robustness of our baseline regression results.

Table 7. Bacon decomposition test

DD comparison	Weight	Avg DD Est
(1) Earlier T vs. Later C	0.008	-0.027
(2) T vs. Never treated	0.982	-0.045
(3) Later T vs. Earlier C	0.005	0.106
(4) T vs. Already treated	0.005	-0.043

Note: The capital letter T represents treatment group; the capital letter C represents control group.

6. Conclusion

This paper is a question-driven paper, which is structured around a central research question: "Does the hidden champion policy boost the positions of firms within domestic business networks?" Addressing this question is challenging due to theoretical limitations, difficulties with reproducibility, and endogeneity issues. To explore this, we analyzed listed firms in China to assess the impact of the hidden champion policy on their performance. We collected data from 16,805

firm-year observations and found evidence that the policy does contribute to boost firms' position in domestic business networks. We utilized a variety of methods to mitigate endogeneity and verify the robustness of our results, and the findings have remained consistent.

One potential criticism of this study is that it contributes only minimally to theory because this criticism relies on the simplistic assumption that "introducing a policy will always improve firm performance." We contend that this perspective is both narrow and superficial. First, it is important to recognize that Simon's theory does not consider the impact of policy interventions, even though many nations—such as China, Germany, and Japan—have implemented policies affecting hidden champions. To address this gap, we need to refine Simon's theory through empirical research rather than relying on common sense alone. Second, the assumption that government policies will invariably enhance corporate performance is problematic. In reality, policies can be ineffective (e.g., Astebro & Chen, 2014) or even detrimental to firms (e.g., Wang et al., 2021). Third, addressing this issue cannot be based solely on case studies, as they often lack generalizability (Yin, 2009). Instead, employing quantitative methods is essential. However, quantitative studies face significant challenges, particularly concerning endogeneity issues. To answer our research question thoroughly, we must go beyond common sense and provide rigorous empirical evidence, which constitutes a substantial contribution.

Integrating hidden champion (HC) policy into the existing HC theory could open new avenues for future research. First, it would be valuable to explore how the five elements of Simon's theory can be combined with HC policy. For instance, examining how firms can use the HC policy to strengthen these five elements could provide new insights. Another potential direction is to conduct comparative studies across different nations, as HC policies vary internationally. Overall, incorporating policy into Simon's theory not only expands beyond the original focus on internal firm operations but also aligns with contemporary realities.

The practical implications outlined below are primarily directed at hidden champion firms—including those already designated and those with the potential to attain such status—as these recommendations are predicated on the premise that the firm either possesses or is actively building the core attributes of a hidden champion. However, several underlying principles—in particular the value of third-party certification in mitigating information asymmetry and the strategic importance of building resilient networks—offer broader lessons for non-HC firms. For instance, non-HC firms can benefit from pursuing alternative forms of credible certification (e.g., industry awards, partnerships with reputable clients) and from proactively diversifying their network portfolios to hedge against external disruptions. More specifically, our findings suggest a clear implication for non-HC firms: given that government designation functions as a powerful signal that substantially elevates a firm's network position, non-HC firms should

closely monitor policy priorities and strategically align their capability-building efforts with sectors targeted by government cultivation programs.

Practical implications for hidden champion include: Firstly, hidden champions typically have limited influence over national policies, both domestic and international. Given this constraint, they should consider the following actions: (1) Participate in designation activities: Hidden champions should actively engage in designation programs organized by their home nations, such as those in China or Japan; (2) Prepare for sanctions: Since hidden champions cannot control the imposition or timing of foreign constraints, they should proactively prepare for such scenarios. This includes maintaining a resilient domestic business network that is insulated from potential foreign constraints; (3) Enhance technological strength: Particularly in high-tech sectors, hidden champions should focus on improving their technological capabilities in niche markets. A hidden champion with a strong technological edge can withstand foreign constraints if it remains the sole producer of its specialized products.

Secondly, from the viewpoint of a sanctioning nation, it is important to recognize that sanctions should not be a panacea. Sanctions can have unintended consequences, including harming domestic firms by disrupting their overseas partnerships (Morgan et al., 2023). More critically, sanctions may drive firms in the targeted nation to develop independent business networks, inadvertently strengthening their competitive position. If sanctions fail to meet their objectives, they can result in the emergence of new competitors that challenge the sanctioning nation's own businesses. To address these challenges, we offer two key recommendations for sanctioning nations: (1) Listening to people's voices: It is essential to involve domestic firms and customers in the decision-making process when implementing sanctions, rather than relying solely on political judgments. Engaging with businesses can provide valuable insights and help mitigate potential negative impacts; (2) Encourage competition: Rather than depending on sanctions, sanctioning nations should focus on building and sustaining their own competitive advantages (Porter, 1998). If a nation lacks a competitive advantage in a niche market, the solution is not to block other nations from competing through sanctions but to continuously improve the competitiveness of its own firms. Without this approach, domestic consumers may face limited access to advanced products or be forced to settle for inferior and costly alternatives, which ultimately undermines the intended benefits of the sanctions.

Thirdly, from the perspective of the sanctioned nation, there are two key considerations: (1) Understand the nature of sanctions: Sanctioned nations should be aware that sanctions are not always accompanied by fair justifications or clear reasons. Recognizing this can help them better navigate the complexities of international relations and trade restrictions; (2) Transform sanction lists into development goals: Sanctioned nations should use the lists of targeted sectors provided by sanctioning nations as a guide for their own research and

development efforts. By focusing on the areas that are being restricted, these nations can prioritize their development efforts and turn the challenges imposed by sanctions into opportunities for growth.

This paper's conclusions raise several new questions that warrant further investigation. First, there is a need to understand the specific mechanisms through which the hidden champion policy affects domestic business networks. Due to space constraints, this paper does not explore these mechanisms in detail, but they are crucial for future research. Another key point is the focus on China, which presents a unique context. As the world's second-largest economy with a robust industrial system and a vast consumer market, China's hidden champions benefit from a well-established domestic business network, especially when navigating foreign constraints. Future research should examine whether China's approach can be applied to other nations, particularly those with smaller economies. Moreover, the effectiveness of various hidden champion policies worldwide merits further study. Two distinct models are observed: one exemplified by China and Japan, which employs a selective "best of the best" model, and another seen in Germany and the United States, which resembles a venture capital model. While this paper has demonstrated the success of the Chinese model, additional research is needed to assess the effectiveness of the German and American models (Johann et al., 2022). This would involve analyzing data from these nations to draw meaningful comparisons.

This paper integrates current practices with Simon's hidden champion theory to provide insights into how companies attain hidden champion status and how nations can utilize these champions to protect their technological sovereignty. It aims to lay a foundation for understanding these dynamics and hopes to inspire further research that will enhance our knowledge in this area.

References:

Abrahamsen, M. H., Halinen, A., & Naudé, P. 2023. The role of visioning in business network strategizing. *Journal of Business Research*, 154: 113334.

Albino-Pimentel, J., Dussauge, P., & Nayal, O. 2022. Intellectual property rights, non-market considerations and foreign R&D investments. *Research Policy*, 51: 104442.

Alvarez, R. 2004. Sources of export success in small and medium-sized enterprises: The impact of public programs. *International Business Review*, 13: 383-400.

Astebro, T., & Chen, J. 2014. The entrepreneurial earnings puzzle: mismeasurement or real. *Journal of Business Venturing*, 29: 88-105.

Baker, A. C., Larcker, D. F., & Wang, C. C. Y. 2022. How much should we trust staggered difference-in-differences estimates. *Journal of Financial Economics*, 144: 370-395.

Balogh, P., Gál, Z., Hajdú, Z., Rácz, S., & Scott, J. W. 2022. On the (geo)political salience of geographical imaginations: a central European perspective. *Eurasian Geography and Economics*, 63: 691-703.

Beck, T., Levine, R., & Levkov, A. 2010. Big bad banks? The winners and losers from bank deregulation in the United States. *Journal of Finance*, 65: 1637-1667.

Berger, A. N., & Udell, G. F. 1995. Relationship lending and lines of credit in small firm finance. *Journal of Business*, 68: 351-381.

Brealey, R., Leland, H. E., & Pyle, D. H. 1977. Informational asymmetries, financial structure, and financial intermediation. *Journal of Finance*, 32: 371-387.

Burt, R. S. 1992. *Structural Holes: the Social Structure of Competition*. Cambridge: Harvard University Press.

Burt, R. S. 2005. Brokerage and Closure: an Introduction to Social Capital. New York: Oxford University Press.

Carney, M. 1998. The competitiveness of networked production: the role of trust and asset specificity. *Journal of Management Studies*, 35: 457-479.

Connely, B. L., Certo, T., Ireland, R. D., & Reutzel, C. R. 2011. Signaling theory: A review and assessment. *Journal of Management*, 37: 39-67.

Cruz, J. D. 2022. US adds 36 Chinese high-tech companies on trade blacklist, *Tech Times (newspaper)*. USA (Dec 16).

Dai, X., Li, Y., & Chen, K. 2021. Direct demand-pull and indirect certification effects of public procurement for innovation. *Technovation*, 101: 102198.

Ebbers, J. J., & Wijnberg, N. M. 2019. The co-evolution of social networks and selection system orientations as core constituents of institutional logics of future entrepreneurs at school. *Journal of Business Venturing*, 34: 558-577.

Enke, B., Graeber, T., & Oprea, R. 2023. Confidence, self-selection, and bias in the aggregate. *American Economic Review*, 113: 1933-1966.

Fang, H., Wu, X., Shen, J. H., & Zhao, L. 2022. The impact of technology identification policy on firm innovation: evidence from China. *China Economic Review*, 76: 101866.

Galloni, A., & Lawder, D. 2024. Nothing off the table in US response to China overcapacity, Yellen says, *U.S. News & World Report*. USA (April 25).

Goodman-Bacon, A. 2021. Difference-in-differences with variation in treatment timing. *Journal of Econometrics*, 225: 254-277.

Graebner, M. E., Knott, A. M., Lieberman, M. B., & Mitchell, W. 2023. Empirical inquiry without hypotheses: A question-driven, phenomenon-based approach to strategic management research. *Strategic Management Journal*, 44: 3-10.

Grilli, L., Mrkajic, B., & Giraudo, E. 2023. Industrial policy, innovative entrepreneurship, and the human capital of founders. *Small Business Economics*, 60: 707-728.

Grosman, A., & Leiponen, A. 2018. Organizational transparency and power in firm ownership networks. *Journal of Comparative Economics*, 46: 1158-1177.

Guo, M., Yang, N., Wang, J., Zhang, Y., & Wang, Y. 2021. How do structural holes promote network expansion. *Technological Forecasting & Social Change*, 173: 121129.

Henneberg, S. C., Naude, P., & Mouzas, S. 2010. Sense-making and management in business networks — some observations, considerations, and a research agenda. *Industrial Marketing Management*, 39: 355-360.

Holweg, M. 2014. Where firm-level innovation and industrial policy meet: consensus roadmaps for low-carbon powertrain technologies. *Journal of Product Innovation Management*, 31: 33-42.

Jacobs, B. W., Singhal, V. R., & Zhan, X. 2022. Stock market reaction to global supply chain disruptions from the 2018 US government ban on ZTE. *Journal of Operations Management*, 68: 903-927.

Jia, R. 2014. The legacies of forced freedom: China's treaty ports. *Review of Economics and Statistics*, 96: 596-608.

Johann, M. S., Block, J. H., & Benz, L. 2022. Financial performance of hidden champions: evidence from German manufacturing firms. *Small Business Economics*, 59: 873-892.

Kamp, B., & Apodaca, I. R. d. 2023. Leveraging (in)formal early-mover and diligent-follower advantage mechanisms to attain international niche market leadership: insights from Basque "hidden champions". *Competitiveness Review*, 33: 1013-1045.

Kerr, J., & Coviello, N. 2020. Weaving network theory into effectuation: a multi-level reconceptualization of effectual dynamics. *Journal of Business Venturing*, 35: 105937.

Krijkamp, A. R., Knoben, J., Oerlemans, L. A. G., & Leenders, R. T. A. 2021. An ace in the hole: The effects of (in)accurately observed structural holes on organizational reputation positions in whole networks. *Journal of Business Research*, 129: 703-713.

Lampe, H. W., Block, J., Willeke, T., Clauss, T., & Steinmetz, H. 2025. Technological innovation of hidden champions: Evidence from patent data. *Journal of Product Innovation Management*, 42: 502-527.

Lehmann, E. E., Schenkenhofer, J., & Wirsching, K. 2019. Hidden champions and unicorns: a question of the context of human capital investment. *Small Business Economics*, 52: 359-374.

Lei, L., & Wu, X. 2022. Thinking like a specialist or a generalist? Evidence from hidden champions in China. *Asian Business & Management*, 21: 25-57.

Lucas, D. S., Bellavitis, C., & Park, U. D. 2023. A cloud's silver lining? The impact of policy interventions on new and maturing technology ventures' online recruitment. *Strategic Entrepreneurship Journal*, 17: 445-484.

Luo, Y., & Assche, A. V. 2023. The rise of techno-geopolitical uncertainty: Implications of the United States CHIPS and Science Act. *Journal of International Business Studies*, 54: 1423-1440.

Mao, J., Tang, S., Xiao, Z., & Zhi, Q. 2021. Industrial policy intensity, technological change, and productivity growth: Evidence from China. *Research Policy*, 50: 1-17.

Megginson, W. L., & Weiss, K. A. 1991. Venture capitalist certification in initial public offerings. *Journal of Finance*, 46: 879-903.

Mietzner, M., Proelss, J., & Schweizer, D. 2018. Hidden champions or black sheep? The role of underpricing in the German mini-bond market. *Small Business Economics*, 50: 375-395.

Morgan, T. C., Syropoulos, C., & Yotov, Y. V. 2023. Economic sanctions: evolution, consequences, and challenges. *Journal of Economic Perspectives*, 37: 3-30.

Murtinu, S. 2021. The government whispering to entrepreneurs: Public venture capital, policy shifts, and firm productivity. *Strategic Entrepreneurship Journal*, 15: 279-308.

Oster, E. 2019. Unobservable selection and coefficient stability: Theory and evidence. *Journal of Business & Economic Statistics*, 37: 187-204.

Pedersen, T., Reinholt, M., & Foss, N. J. 2011. Why a central network position isn't enough: the role of motivation and ability for knowledge sharing in employee networks. *Academy of Management Journal*, 54: 1277-1297.

Porter, M. E. 1998. *On Competition*. Boston: Harvard Business School Press.

Prashantham, S., Kumar, K., Bhagavatula, S., & Sarasvathy, S. D. 2018. Effectuation, network-building and internationalisation speed. *International Small Business Journal*, 37: 3-21.

Rambachan, A., & Roth, J. 2023. A more credible approach to parallel trends. *Review of Economic Studies*, 90: 2555-2591.

Rietmann, C. 2024. Digital pioneers in the periphery? Toward a typology of rural hidden champions in times of digitalization. *Journal of Small Business & Entrepreneurship*, 36: 281-301.

Sable, K., Dalborg, C., Friedrichs, Y. v., & Kallmuenzer, A. 2024. The importance of network coopetition for the robustness of micro-enterprises in times of crisis. *International Small Business Journal*, 42: 751-774.

Schenkenhofer, J. 2022. Hidden champions: a review of the literature & future research avenues. *Management Review Quarterly*, 72: 417-482.

Schlepphorst, S., Schlomer-Laufen, N., & Holz, M. 2024. Determinants of hidden champions: evidence from Germany. In J.-P. Buchler, & C. Hoon (Eds.), *Hidden Champions Case Compendium*. Germany: Springer.

Shahzad, F., Ahmad, M., Fareed, Z., & Wang, Z. 2022. Innovation decisions through firm life cycle: a new evidence from emerging markets. *International Review of Economics and Finance*, 78: 51-67.

Shipilov, A., Li, S. X., Bothner, M. S., & Truong, N. 2023. Network advantage: uncontested structural holes and organizational performance in market crises. *Strategic Management Journal*, 44: 3122-3154.

Shipilov, A. V. 2009. Firm scope experience, historic multimarket contact with partners, centrality, and the relationship between structural holes and performance. *Organization Science*, 20: 85-106.

Simon, H. 1992. Lessons from Germany's midsize giants. *Harvard Business Review*, 70: 115-122.

Simon, H. 2012. Hidden Champions-Aufbruch nach Globalia: Die Erfolgsstrategien unbekannter Weltmarktfuhrer. Frankfurt: Campus Verlag.

Spence, M. 1973. Job market signaling. *Quarterly Journal of Economics*, 87: 355-374.

Spence, M. 2002. Signaling in retrospect and the informational structure of markets. *American Economic Review*, 92: 434-459.

Swaminathan, V. 2009. Marketing alliance, firm networks and firm value creation. *Journal of Marketing*, 73: 52-69.

Voudouris, I., Lioukas, S., Makridakis, S., & Spanos, Y. 2000. Greek hidden champions: lessons from small, little-known firms in Greece. *European Management Journal*, 18: 663-674.

Wang, H., Tian, L., & Li, Y. 2019. A tale of two cultures: social networks and competitive advantage. *Asia Pacific Journal of Management*, 36: 321-347.

Wang, Q., Xu, X., & Liang, K. 2021. The impact of environmental regulation on firm performance: evidence from the Chinese cement industry. *Journal of Environmental Management*, 299: 113596.

Wen, J., Qualls, W. J., & Zeng, D. 2021. To explore or exploit: The influence of inter-firm R&D network diversity and structural holes on innovation outcomes. *Technovation*, 100: 102178.

Whited, T. M., & Wu, G. 2006. Financial constraints risk. *Review of Financial Studies*, 19: 531-559.

Yi, J., Murphree, M., Meng, S., & Li, S. 2021. The more the merrier? Chinese government R&D subsidies, dependence, and firm innovation performance. *Journal of Product Innovation Management*, 38: 289-310.

Yin, R. K. 2009. Case Study Research: Design and Methods (4th edition). USA: Sage Ltd.

Zaheer, A., & Bell, G. G. 2005. Benefiting from network position: firm capabilities, structural holes, and performance. *Strategic Management Journal*, 26: 809-825.

Zhang, C., Duan, Z., & Liu, X. 2023. The determinants of hidden champion enterprises: evidence from China. *Finance Research Letters*, 58: 104659.