Directed Financing of Innovation: From IPO Reforms to Venture Capital*

Celine (Yue) Fei† Ulrich Hege‡ Xiao Jia§

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Abstract

We study the impact of new entrepreneurial IPO markets on the technology direction and frequency of venture capital (VC) financing rounds. We exploit the regulatory differentiation between favored and opposed business activities for new IPO listings in China's two most important market introductions, ChiNext in 2009 and STAR in 2019, and use deep learning methods to build a treatment intensity measure of textual closeness between mandatory business descriptions of startups and granular business activities in IPO rules. Using a difference-in-differences design, we find that after the launch of ChiNext and STAR, VCs invest more in companies with business activities favored by the listing rules, and less in companies with business activities opposed by them. In addition, VCs change their investment policies by expanding funding rounds for companies with performance credentials in the form of patents, trademarks, and certificates, but at the same time prefer companies with a less established record.

Key Words: IPO Reforms; Venture Capital; Directed Innovation; Technology Policy; Deep Learning; China
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†Department of Economics, University of Mannheim; Email: yue.fei@univ-mannheim.de; Address: L7, 3–5, Mannheim, Germany, 68161.

‡Toulouse School of Economics; Email: ulrich.hege@tse-fr.eu; Address: 1, Esplanade de l'Universite, Toulouse, France, 31080.

§School of Economics, Huazhong University of Science and Technology; Email: jiaxiao@hust.edu.cn; Address: Luoyu Road 1037, Wuhan, China, 430074.

1 Introduction

Innovative entrepreneurial firms stand as crucial drivers of economic growth (see Botelho, Fehder, and Hochberg (2021) for a recent survey) but face critical challenges to obtain capital. Policymakers in many countries have created new stock exchanges for high-tech start-ups, often characterized by less restrictive listing requirements, with the goal of fostering the financing of innovation. Existing evidence shows that functioning stock markets contribute greatly to investments in innovation and R&D of publicly listed companies (Brown, Fazzari, and Petersen, 2009; Moshirian, Tian, Zhang, and Zhang, 2021), and theory papers have argued that exits through initial public offerings (IPOs) are essential to fostering a thriving venture capital market (e.g., Hellmann, 2006; Rajan, 2012).

However, surprisingly, evidence is sparse on such feedback effects of new entrepreneurial stock exchanges on private markets that fund start-ups prior to their listing. This paper aims to fill this gap by studying the following research questions: First, how do VCs' funding flows change in react to the creation of new listing venues? In particular, can IPO markets act as a decentralized, market-based tool of directed financing of innovation by steering VC investments to the technology-based priorities for IPO listings determined by policymakers? And how do VCs change their investment policies concerning selection, monitoring and advising? More specifically, we study the changes in patents, trademarks, and certificates for VC-backed companies before and after the new entrepreneurial stock exchanges are available.

We study these questions in the context of China's new markets since they provide a particularly suitable laboratory for our purposes. We focus on the two most salient and consequential new market launches, ChiNext in 2009 and STAR in 2019, that in addition to reshaping China's public equity landscape[1] offer two key advantages for identifying a causal link between public and private capital markets. First, the timing and exact conditions of their launch were highly unpredictable, which mitigates concerns about reversed causality or unobserved variables. The long delays and many halts and freezes prior to the introduction of ChiNext and STAR made it difficult, if not impossible, for VC investors to predict the

[1]The combined number of companies listed on ChiNext and STAR in 2024 and their total market capitalization exceeded the same numbers for the Main Board and the SME Board, see Section 2.

timing of their launches or to try to influence the launch dates.[2]

Second, the listing rules for ChiNext and STAR exhibit regulatory heterogeneity, allowing for the identification of heterogeneous treatment intensities. For ChiNext, the China Securities Regulatory Commission (CSRC), the regulator, issued in March 2010 guidelines[3] specifying encouraged or "supported" business activities – primarily in the areas of high tech and innovation – as well as restricted or "opposed" sectors, such as those with overcapacity and redundant facilities. While STAR operates under a registered IPO system, the CSRC remains influential in guiding technological and innovative enterprises, and in January 2019, released guidelines on the types of companies encouraged to list on STAR, without imposing industry restrictions.

Building on recent advances in difference-in-difference methods with continuous treatment (e.g., Callaway, Goodman-Bacon, and Sant'Anna, 2024; Hombert, Schoar, Sraer, and Thesmar, 2020) and state-of-the-art deep learning models on textual analysis (i.e., Sentence BERT), we use the relatedness between companies regulated mandatory business descriptions and the business activities that are "favored" or "opposed" in the listing rules to identify a portfolio company's treatment intensity. Specifically, we build two measures regarding the textual closeness between a company's business description and the IPO guidance determining the company's desirability for a listing. First, we develop a key-word-based measure of the proportion of sub-business activity categories that are "supported" or "opposed". Second, we construct a Sentence-BERT-based measure of the cosine similarity between the text vectors extracted from company business descriptions and the regulatory documents. That is, we ask the machine to mimic an investor who reads the IPO listing regulation and the startup's business description and make a judgment on how much the regulator would like the company for listing. One could view the first as a superficial, quantity-based understanding and the second as a deeper, quality-focused assessment of the portfolio company's business and IPO listing regulations.

[2]Moreover, while we do not exclude the possibility that other factors, such as macroeconomic conditions and increases in the number of startups, can cause an increase in VC investments, the exact timing of ChiNext and STAR's launch is not determined by these factors but rather by policy and administrative procedures.

[3]The publication of these guidelines followed a market trial phase for ChiNext starting in October 2009 but was instrumental for the effective take-off of the new market.

Our main findings are as follows. We show that ChiNext and STAR have caused an increase in private VC financing rounds for companies with "supported" business activities. In the preferred specification based on matches in sub-business categories, we find that a one p.p. increase in a company's exposure to *% Supported* activities leads to a 4.83 (14.80) percentage point increase in the number of VC financing rounds received by the company after the launch of ChiNext (STAR). Conversely, we find that a one p.p. increase in a company's exposure to *% Opposed* activities leads to a 1.28 percentage point decrease in the number of VC financing rounds on ChiNext.[4] The results for the second measure based on text vector (cosine) similarity *Similarity Supported* are even stronger: a one p.p. increase in *% Supported* results in a 5.61 (54.80) percentage point increase in the number of VC financing rounds after ChiNext's (STAR's) launch. The coefficients on *Similarity Opposed* is also larger, albeit significant only in Poisson specifications, not in OLS specifications. The fact that we find a stronger response of VC investments when looking at the textual similarity-based measure appears to be consistent with the notion that VCs are sophisticated investors that are able to discern the actual meaning of descriptions of business activities.

From a technology policy perspective, the strong response of VCs willing to direct more investments to companies that better match the technologies and activities favored by IPO listing rules are evidence that exit markets can be an effective tool for *directed financing of innovation*, i.e. to steer investments in a decentralized, market-based entrepreneurial financing system towards technologies that are aligned with policy objectives.

If the introduction of new markets influences VCs' investment policies, then VCs should put stronger emphasis on performance indicators that facilitate the listing process regarding investors and regulators in their selection and management of portfolio companies. In line with this idea, we find evidence that the introduction of new markets contributes to more "standardization" of VC-backed start-ups, i.e. VCs appear to put more emphasis on efforts to obtain certification of the innovative contributions of their portfolio companies. Specifically, we look at three dimensions or measures of standardization: patents, trademarks, and certificates. We find for all three dimensions that after the launch of ChiNext, VCs sig-

[4]There are no "opposed" categories for STAR.

nificantly increase the fraction of investments in companies that obtain such certifications. Similarly, we find for STAR that VCs significantly increase investments in companies that obtain patents and certificates.

Finally, we explore a third possible transmission channel of new listing markets on VC investment policies, their effect on the profile of selected companies and dynamic funding strategies towards exit. We dub this third channel the "growth" channel. We find that VCs direct more of their funds to younger and less mature companies after the launch of ChiNext and STAR, an effect that is especially for STAR with its relaxed listing requirements.

Overall, we find that the introduction of the entrepreneurial public market has a causal impact on the technology direction and number of venture capital deals. Specifically, it leads VCs to redirect funding flows in line with the government's industrial policy priorities expressed in listing guidelines. Moreover, we find that venture capitalists change their behavior regarding the selection of portfolio companies and the value creation through monitoring and advising. VCs invest more into younger and less mature companies, but at the same time they expand the size and frequency of funding rounds and take more care to boost achievements in terms of verifiable performance indicators (patents, trademarks, certificates) to take advantage of the exit opportunities created by new entrepreneurial public markets.

Our paper is related to a number of strands in the literature. First, our paper adds to the literature on the link between IPOs and venture capital financing. Our empirical results confirm the hypotheses in the theory literature on the relationship between entrepreneurial IPO markets and venture capital funding. Michelacci and Suarez (2004) develop a theory that explains the feedback effects that we investigate, arguing that if young firms can go public earlier, then limited capital by relationship investors (VC) can be more quickly be redirected towards new start-ups. Jovanovic and Szentes (2013) argue that the scarcity of venture capitalists gives VCs disproportionate and ultimate inefficient bargaining power, an effect that can be mitigated if more liquid exit markets allow market entry into the VC sector. Explaining the role of IPOs on entrepreneur incentives, Black and Gilson (1998) argue that venture capital will be more important in stock market-centered financial systems, because it provides successful entrepreneurs with the option to reacquire control from the

venture capitalist after an IPO. Concerning VC incentives, Piacentino (2019) shows that VCs' concern to build reputation contributes to the functioning of IPO markets since VCs are incentivized to certify the quality of the start-ups that they take public, and hence to bring high-quality firms to the market.

Our findings also add to empirical work on the impact of better developed stock markets (Nahata, Hazarika, and Tandon, 2014), persistent benefits from earlier IPOs for VC performance (Nanda, Samila, and Sorenson, 2020) and the grandstanding role of IPOs (Gompers, 1996). In addition, Ewens and Farre-Mensa (2020) show a potential feedback role from the private capital market to the IPO market (which is the reverse of our research question). We contribute to the literature by showing VCs not only respond to more IPO exist options by increasing investments, but also their choice between the selection versus monitoring.

Second, our regulatory closeness measure also contributes to the literature on textual analysis in finance (Eisfeldt and Schubert, 2024). Early research uses the bag-of-words approach, which is used in our first measure, that conduct direct comparison between texts (i.e., Hoberg and Phillips, 2016). Related to firm-level regulatory exposure, Calomiris, Mamaysky, and Yang, 2020 construct measures by searching with the word root "regulat" as well as regulatory concept words in corporate earnings calls. Our second measure uses the word embedding approach that reflects the semantic relationship of words and does not require exact overlap in words. Lowry, Michaely, and Volkova (2020) employ LDA model on IPO prospectuses to study the role of regulators in the IPO process. Kalmenovitz, Lowry, and Volkova, 2021 and Kalmenovitz (2023) further use the method on the Federal Register and firm's 10-K reports to build up proxies for regulatory burdens. We add to this literature by providing a new deep learning method of measuring firm-level regulatory exposure by mapping the similarity of company business descriptions and regulatory documents.

Third, our work is related to cross-country comparative studies on the relationship between stock market development and the role of financing innovations and startups, and in particular Bernstein, Dev, and Lerner (2020) who find that the entrepreneurial stock exchanges with lower listing requirements for start-ups across various countries boosted IPO volume rather than diverting candidates from first-tier markets. Our paper is also related

to the literature on financial development and publicly listed companies' long-run rates of R&D investment, particularly in small firms (Brown, Martinsson, and Petersen, 2013) and external equity on young, but not mature, firms (Brown, Fazzari, and Petersen, 2009). More recently, Bae, Bailey, and Kang (2021) show a negative relation between stock market concentration and innovation, and Moshirian, Tian, Zhang, and Zhang (2021) find a positive relation between stock market liberalization and innovation. Our paper adds to this literature by documenting the effect on private capital markets and on the direction of innovation.

The paper is organized as follows. Section 2 discusses the institutional background on new markets and venture capital in China. Section 3 presents the data and our empirical strategy. In Section 4 we discuss the methodology and empirical strategy. The empirical results are presented in Section 4. Section 5 concludes.

2 Institutional Background

2.1 Entrepreneurial Public Markets in China

China stands out among larger economies by the depth and frequency of its experiments with ambitious stock market and IPO listing reforms (more details on the history of the Chinese stock market can be found in the Internet Appendix). Over nearly three decades, seven stock market boards were introduced successively,[5] and there were eight reforms regarding the IPO pricing method, as discussed by Qian, Ritter, and Shao (2024). This rich succession of quasi-experiments allows us to identify causal impacts of new entrepreneurial listing markets on venture capital funding.

We focus on ChiNext and STAR because they were not only the most consequential new markets for entrepreneurial start-ups, but also provide unique quasi-experimental laboratory conditions for this study. They are characterized by deep changes in listing rules: ChiNext

[5]In addition to the main board and the three boards discussed below, the Zhongguancun Science Park in Beijing was a testing ground for an OTC trading system around 2006 and was expanded nationwide and formalized as the National Equities Exchange and Quotations (NEEQ) in December 2013. More recently, the Beijing Stock Exchange (BSE), which was launched in September 2021.

is the first entrepreneurship-oriented listing board characterized by substantially relaxed listing requirements, specifically designed to facilitate listings of innovative companies, and it arguably changed the game for these companies in ways that earlier reforms did not. Similarly, STAR is the first stock board using a registration-based IPO system[6], which dramatically increased the strategic options and exit choices for startups.

Next, ChiNext and STAR provide an excellent quasi-natural experimental setting because of the lack of predictability of the time of their launch and the ultimate listing rules, as we will discuss next. It took over a decade for CSRC, the stock market regulator, to go from the first concept for ChiNext as the first entrepreneurship-oriented stock market to the actual launch, and the same implementation cycle from initial concept to launch took seven years for STAR. The length of the gestation period relative to typical VC investment cycles means that VCs could not successfully bet on the launch date when making first round investments. Similarly, the listing priorities at the heart of our study could only vaguely be predicted prior to the market launch, and hence VCs could not really predict them in their pre-launch investment decisions.

As early as March 1998, a rudimentary sketch for a Chinese entrepreneurial stock market board was under discussion, starting with a proposal by Siwei Cheng, a prominent economic reformer and official. The initial plan was to introduce a secondary board targeting "high-tech companies", similar to the Growth Enterprise Market in Hong Kong. The idea was then postponed because of the dotcom bubble in 2000 to 2001. After several adjustments, the Shenzhen SME Board was inaugurated on May 27, 2004 as an intermediate step, with the same listing requirements as the main boards. Since listing requirements were not relaxed, in particular the hard financial criteria on profits, revenues, and capitalization that typically constitute the main hurdle for growth-oriented young companies, start-ups found it difficult to meet the conditions of the SME Board.

There was another long delay before ChiNext was finally launched, partly explained by the 2008 global financial crisis. After a small-scale experiment in September 2009, ChiNext was eventually launched on 23 October 2009. Importantly, ChiNext finally relaxed listing

[6]China used an approval system for IPO until the current reform starting from 2019; see Internet Appendix and Qian, Ritter, and Shao (2024) for more details.

requirements, concerning five financial key metrics: profits, revenues, assets, intangibles, and market capitalization as shown in Table IB.1.[7] As discussed by Bernstein, Dev, and Lerner (2020), the relaxed listing requirement (i.e., the Main Board and SME Board) remained a stable, reliable feature of ChiNext.

Other boards with different IPO systems were introduced after ChiNext, but it was only the STAR market in 2019 that created the second truly successful entrepreneurial market in China. Unsurprisingly, the STAR market was again only launched after many debates and delays (Tu and Huang, 2023): the first idea for a registration-based stock market board that eventually gave rise to STAR can be traced back to the 18th National CCP (Chinese Communist Party) Congress in 2012. In November 2013, the discussion on a registration-based IPO system was officially introduced to the Third Plenary Session of the CCP Central Committee, but the Shanghai Stock Exchange did not publicly confirm that it was working on this project until March 2015. On November 5, 2018, President Xi Jinping announced the launch of the STAR Market as a new board of the Shanghai Stock Exchange and a pilot registration-based IPO system, and STAR was eventually established on June 13, 2019.

Both ChiNext and STAR were designed to benefit the development of high-tech and growth sectors. However, the exact positioning of their sectoral targets differs to a certain degree. ChiNext emphasized the support for innovation in business models, services, and business formats, as well as the integration of new models, new formats, and new applications into traditional industries. The STAR market, on the other hand, has a stronger focus on hardware technology and firms belonging to a new generation of information technology, as well as on high-end equipment, new materials, new energy, and environmental protection, and strategic new industries.

As of December 2023, 1,333 companies were listed on ChiNext, with a total market value of 11.37 trillion RMB (around 1.59 trillion USD), and 581 companies with a total market capitalization of 6.34 trillion RMB (around 0.89 trillion USD) were in 2024 listed on STAR.

[7]For example, the requirement for net profits on ChiNext is that they must be positive for two years prior to the listing and be larger than 10 million RMB (cumulative), compared with three years and larger than 30 million RMB for the SME and the Main Board, and it can also be met with a combination of net profits positive for one year and larger than 5 million RMB and revenue larger than 50 million RMB.

By comparison, 1,511 companies are listed on the Main board and the SME board, with a market value of 19.63 trillion RMB (2.75 trillion USD).

2.2 The Venture Capital Market in China

While venture capital started late in China, it has achieved rapid development in the past twenty years and has attracted worldwide attention. After the bursting of the Internet bubble, important drivers of its rapid development were the full implementation of new legislation on shareholdings, policies explicitly oriented to encourage entrepreneurship, the rapid expansion of mobile Internet and digital services, and the accelerated pace of structural change in China's economy. As a result, in less than two decades the Chinese venture capital sector has grown to match its US counterpart in number and volume of funding rounds.

The emergence of venture capital in China can be divided into three main phases: (1) an early period: 1999-2004; (2) a development period: 2005-2012; (3) and an adjustment period: after 2013. In the early period (1999-2004), internet companies represented by Tencent, Alibaba, and Sina were investment hotspots for venture capitalists. As the legal preparation of the limited partnership format and domestic stock market were not ready, only investors with foreign backgrounds were active in China. Until May 2005, only a small fraction of shares were allowed to trade on the Shanghai and Shenzhen stock exchanges (Calomiris, Fisman, and Wang (2010), Li, Wang, Cheung, and Jiang (2011)), which means that VC investments could not be exited through the domestic IPO market in a profitable way before May 2005. In addition, limited partnerships were not legally introduced until 2006, which meant that funds initially relied almost entirely on foreign contract models.

As a cornerstone of the development period (2005-2012), the National Development and Reform Commission issued policies to promote the rapid development of the venture capital market in 2005. The official launch of the ChiNext market in 2009 created a new venue for VC-backed equity market listings that facilitated venture capital exits. In 2013, the government made it clear that the China Securities Regulatory Commission (CSRC) was responsible for the supervision and management of private capital markets and hence, of

VC funds. In 2016, the government issued registration standards and procedures for private capital fund managers.

There are differences and similarities between the venture capital sector in China and in Western countries. Among the more salient differences, China's venture capital firms are relatively small on average. The average size of AUM (assets under management) is US$20 million, mainly focusing on early-stage investment. The average size of private equity investment funds is US$42 million, mainly focusing on growth investment. By comparison, the average size (AUM) of US VC funds is US$99 million, and that of US PE funds is US$240 million, according to SEC data. Second, the boundary between venture capital and private equity is blurred. There are no formal leveraged buyout funds due to prohibitive regulations in the banking sector. Thus, PE funds are mainly growth funds that use little financial leverage. Moreover, the same GP firm, and sometimes the same fund, may conduct both VC and PE investments. Thus, in this paper, we do not distinguish between venture capital and private equity deals (and call them venture capital investments since venture-type funding situations clearly dominate).

In terms of similarities, the organizational form of China's venture capital funds is comparable to that of partnerships in developed markets, comprising three players: ultimate investors (LPs), intermediaries (GPs), and portfolio companies. Ultimate investors, called limited partners (LPs), include institutional and individual investors. Teh investment intermediaries are VC funds and their general partners (GPs). Many funds have a closed-end structure with a limited lifetime, frequently ten years.

Finally, profitable exits in China are still more difficult and less frequent compared to the United States. An important feature for the purpose of our study is that IPO exits clearly dominite thorughout the entire short) history of Chinese VC: In China, M&As account for only about 1% of exits and they typically attain only low valuations, while they account for 22% of exits in the U.S. and in the last two decades typically achieved among the highest valuations. This illustrates that obstacles for VC exits are still an essential friction in China that are first-order concern for VCs, explaining why relaxing the hurdles on exit markets was a preeminent policy concern during the entire period we study. The creation of a multi-

tiered system of public equity markets that offer smooth and liquid exit conditions for venture capital was and is viewed as a crucial lever for financial development.

3 Data, Textual Measures, and Identification Strategy

3.1 Data

To be included in our sample, we require that portfolio companies have at least one round of equity financing by VCs during the sample period and be non-financial companies (including real estate, investment firms, and others). Our main sample for the analysis on ChiNext consists of the universe of VC-backed portfolio companies in the National Enterprise Credit Information Publicity System (NECIPS) database from the third quarter of 2005 to the fourth quarter of 2012. For our analysis regarding STAR, the sample consists of a company-quarter panel from the first quarter of 2013 to the fourth quarter of 2022, using Zero2IPO as the data source.[8] Furthermore, when analyzing company age, we also require that company age should exceed the 1% percentile of the company age with a positive number of VC funding rounds in the analysis sample (i.e., age$\geq$-0.25 for the ChiNext sample and age$\geq$0 for the STAR sample).

Overall, our company sample for ChiNext consists of a company-quarter panel covering 65,557 companies. The company sample for STAR consists of a company-quarter panel covering 28,468 companies. We further consolidate data on the business description, patents, trademarks, certificates, and VC investment received by the portfolio company. Table A1 in the Appendix provides additional details on the data and variables used in the analyses.

[8]Note that we only use data from Zero2IPO for the analysis on STAR, as Zero2IPO in recent years has substantially improved its data coverage and started to incorporate NECIPS information. We acknowledge that the sample size is smaller in Zero2IPO compared to the universe of firms in NECIPS, but this is unlikely to lead to sample selection bias in recent years of the STAR analysis.

3.2 Textual Closeness between Regulatory Documents and Business Descriptions

We develop two distinct measures for the closeness between the listing guideline describing "supported" and "opposed" business activities and company business descriptions. For both measures, we use textual data from three sources: the registry business description of companies from NECIPS, the IPO regulatory document from CSRC, and standardized detailed business descriptions from the Business Scope Standardized Expression System (BSSES). The IPO regulatory documents explicitly mention supported and opposed categories of business activities (details in subsection 3.4). We employ two analytical methods to provide a comprehensive measurement of regulatory textual closeness between the company's business description and the IPO regulatory document. The first one is the % of sub-business activities that are especially supported or cautiously opposed using key-word analysis of the company's registered business descriptions. The second one is the cosine similarity between text vectors of the company's registered business descriptions and the official descriptions of business activity categories that are either especially supported or cautiously opposed.

3.2.1 Keyword-based matching method

For our first measure, we implement keyword-based matching to measure the proportion of a company's registered business activities that are supported or opposed by the IPO regulation. Specifically, we split each company's registry business description into sub-business activities using multiple delimiters following the rigid rules that guide the set of possible sectoral business activities in NECIPS. Then, we use the set of keywords for the supported or opposed business activities written in the IPO regulation (as shown in Table 2) as the dictionary. Suppose company i's business description T_i includes n_i sub-business activities (s_{ij}, $j = 1, 2, ..., n_i$). We define an indicator $I(s_{ij})$ that equals 1 if s_{ij} contains at least one keyword from the dictionary of supported activities and 0 otherwise.

The company-level variable *% Supported* based on keyword matching is then calculated

as:

$$\%\ Supported_i = \frac{\sum_{j=1}^{n_i} I(s_{ij})}{n_i}$$

where $\sum_{j=1}^{n_i} I(s_{ij})$ is the total number of sub-business activities containing keywords from the dictionary of supported activities, and n_i is the total number of sub-business activities of the company. This calculation yields the *% Supported* variable representing the proportion of a company's registered business activities that overlap with regulatory supported activities. Similarly, using the dictionary of the opposed activities, we construct the variable *% Opposed* for the proportion of a company's registered business activities that overlap with regulatory opposed activities.

3.2.2 Cosine similarity method

Our second measure is based on semantic comparison between a company's registry business description and the IPO regulatory document using sentence-BERT (SBERT) and cosine similarity.

First, to fully capture the meaning of the supported or opposed business activities written in the IPO regulation, we expand the dictionaries in the keyword analysis using the BSSES. To be more specific, we search the keyword in the BSSES System and collect data on the list of standardized, detailed business descriptions. For example, when searching "New Energy", one obtains 384 subcategories of business activities related to new energy, from production to marketing.

Second, we use the sentence-BERT model for embedding. That is, the sentence-BERT model allows us to meaningfully transform a company's registry business description and the standardized detailed business descriptions into vectors. As discussed in Reimers and Gurevych (2019), the sentence-BERT model uses siamese and triplet network structures to derive semantically meaningful sentence embedding.

Finally, we calculate the cosine similarity between the vectors representing the company's registry business description and the standardized detailed business descriptions, take the median of cosine similarity values in each category of "supported" or "opposed" business

activities, and pick the maximum closeness among all "supported" or "opposed" categories in the IPO regulation document.

We illustrate the algorithm behind our measure with the following example. Take the nine categories of especially supported business activities for ChiNext, denoted by, $S_j, j \in [1, 9]$ for instance. For each supported business activity S_j, we obtain a list of standardized, detailed business descriptions $S_{j1}, ..., S_{jn}$ (for instance, n is 384 in the "New Energy" category). Let T_i denote the business description of company i. We calculate a cosine similarity value between T_i and each $S_{jk}, k \in [1, n]$, after embedding using Sentence-BERT. Then, for the jth category of "supported" business activities, we use the median of the n cosine similarity values.

$$median_sim(T_i, S_j) = \text{Median}_{k\in[1,n]} \left\{\cos\left(\text{SBERT}(T_i), \text{SBERT}(S_{jk})\right)\right\},$$

And the variable *Similarity Supported* is calculated using the following equation:

$$Similarity\ Supported_i = \max_{j\in[1,9]} \left\{median_sim(T_i, S_j)\right\},$$

Where cos(.) represents cosine similarity calculation and SBERT(.) represents the vector of text after SBERT transformation. Note that our results remain consistent using mean instead of median. We choose median for the purpose of eliminating the effect of outliers due to "too general" detailed business descriptions (example: technology transfer).

Similarly, using the dictionary of the opposed activities, we construct the variable *Similarity Opposed* for the cosine similarities between text vectors of the registry business description and the official descriptions of the cautiously opposed businesses.

3.3 Descriptive Statistics

[INSERT Table 1 AROUND HERE]

Table 1 presents summary statistics for the variables. Statistics for the variables in the ChiNext analysis are reported in Panel A. The table shows that, on average, firms receive 0.04 rounds of equity financing. Based on the keyword-based matching method to measure

the proportion of a company's registered business activities that are supported or opposed by the IPO regulation, about 6% of the sample firms' business descriptions overlap with the key business activities supported by the regulations; 18% of the sample firms' business descriptions overlap with the key business activities cautiously opposed by the regulations. Using the cosine similarity measure as a more comprehensive measurement for the level of business activities supported or opposed by the IPO regulation, the average *Similarity Supported* value is 31% for the sample firms, and the average *Similarity Opposed* value is 33% for the sample firms.

Statistics for the variables in the STAR analysis are reported in Panel B. On average, the sample firms receive 0.1 rounds of equity financing. 37% of the sample firms' business descriptions overlap with the key business activities supported by the regulations, and the average value for *Similarity Supported* is 37% for the sample firms, slightly higher than the averages in the ChiNext sample.

[INSERT Figure 2 AROUND HERE]

Figure 2 illustrates the time trend of venture capital financing using data from Zero2IPO. The vertical axis represents the number of VC financing rounds, including total, early and late rounds, received by all companies within each year-quarter. The horizontal axis represents the year-quarters from 2000 to 2022. The graph shows a significant increase in the total number of VC investments after establishing entrepreneurial boards, despite the temporary drops potentially due to the stock market crashes in 2008 and 2015. However, the investigation of the factors driving the upward trends calls for more accurate identification. In particular, we observe a certain decrease in VC deals after the launch of STAR. Combined with a positive response in the supported categories, this finding implies that our findings are unlikely to be driven by overall funding trends in the VC sector.

3.4 Identification Strategy

Following recent literature using the difference-in-difference method to study the impact of policy reforms, we exploit cross-sectional variations in companies' exposure to the reform due to regulatory heterogeneity to identify the heterogeneous treatment effects (e.g., Callaway, Goodman-Bacon, and Sant'Anna, 2024; Hombert, Schoar, Sraer, and Thesmar, 2020; Ewens and Farre-Mensa, 2020). In this section, we describe the regulatory specifications for IPOs on ChiNext and STAR, respectively, that create regulatory discrimination and hence heterogeneity in treatment and discuss why they provide opportunities for valid identification strategies. In particular, we construct two measures of treatment intensity based on the textual distance of portfolio company business descriptions to the description of the regulation.

The IPO process on ChiNext is fully regulated by the China Securities Regulatory Commission (CSRC). In 2010, CRSC established specific guidelines on the types of business activities that define whether a company is encouraged to list on ChiNext or face restrictions when attemtping to do so. In particular, to identify the impact of ChiNext, we leverage the regulatory heterogeneity in business activities stated in the *Guidelines for the Further Details of Issuance Sponsorship for Companies Listing on ChiNext* (henceforth, ChiNext Listing Guidelines) put into effect in March 2010, shortly after the very first few of IPO trial listings on ChiNext in October 2009.

[INSERT Table 2 AROUND HERE]

The ChiNext Listing Guidelines spell out nine business activity categories that are especially supported ones, mainly related to high technologies and innovations. Moreover, there are seven business activity categories listed as the cautiously opposed ones, mainly those with overcapacity and redundant construction. A detailed description of these categories can be found in Table 2. We construct two measures to capture the textual closeness of the observation company's business activities to the supported/opposed categories. Details in section 3.

Regarding the STAR market, in spite of the transition to a registration-based IPO system, the CSRC also published specific guidelines on the types of companies that are encouraged to list on STAR (the CSRC does not set up restricted business activities regarding listings on STAR), with the aim to support high and new technologies. In particular, we build text-based treatment intensity measures based on the *Implementation Opinions on Establishing the Science and Technology Innovation Board and Piloting the Registration-Based IPO System on the Shanghai Stock Exchange* (henceforth, STAR Listing Opinions) which was released on January 28th, 2019 at the beginning of the establishment of the STAR market.

The STAR Listing Opinions especially encourage the listing of ten business activity categories. Some categories overlap with the supported ones on ChiNext, such as New Materials, New Energy, and Energy Conservation and Environmental Protection. Some categories are unique to STAR and reflect recent technology development, such as Big Data, Cloud Computing, and Artificial intelligence. A detailed description of these categories can be found in Table 2. As for the analysis on the impact of ChiNext, we build up two measures to capture the textual closeness of the observation company's business activities to the supported categories.

As we discuss in detail in Section 2, the long delays in the political and administrative process prior to the introduction of ChiNext and STAR suggest that VC investors were not successful in lobbying for the two boards; if they would have had more weight, both boards would have been launched much earlier. This implies that reverse causality is unlikely to be relevant. For the same reason, unobserved variables are unlikely to cause the effects of ChiNext, especially when we look at a short time period such as a three-year window in our main empirical analysis. While we do not exclude the possibility that other factors, such as macroeconomic conditions and increases in the number of startups, can cause an increase in VC investments, these factors cannot decide the exact timing of ChiNext's and STAR's launch. This is because, as we discuss below, rounds of policy debates and adjustments occurred, delaying the introduction of ChiNext/STAR. Therefore, it would have been exceedingly challenging for startups or their investors to foresee the passage of ChiNext/STAR well in advance and make substantial adjustments to their actions in anticipation of this

development.

4 Empirical Results

4.1 Difference-in-Differences Specifications

We exploit the variation in the text-based treatment intensity to conduct a series of difference-in-differences regressions. Given the stipulated complementarity between IPO and VC markets, we anticipate that the introduction of the ChiNext and STAR entrepreneurial boards will either increase (decrease) the likelihood of VC firms investing in companies operating in "supported" ("opposed") categories. More specifically, we study the ChiNext/STAR's effect on a startup's propensity to receive VC/PE funding before IPO using the following specifications, where a startup's treatment intensity is measured by its textual closeness to the ChiNext Listing Guidelines/STAR Listing Opinions (i.e., the Regulatory Textual Closeness$_i$ variable).

$$\begin{aligned} Y_{it} = \beta_0 + \beta_1 \text{Post}_i \times \text{Regulatory Textual Closeness}_i + \beta_2 \text{Regulatory Textual Closeness}_i \\ + \gamma_t + \eta_{st} + \theta_j + \epsilon_{it}\,, \end{aligned} \tag{1}$$

where the sample is a company $\times$ quarter panel, i identifies company, and t the quarter of a year. The dependent variable Y_{it} is the number of VC $\times$ round company i receives in quarter t. For ChiNext, the sample of financing rounds ranges from the third quarter in 2005 to the fourth quarter in 2012, and the *Post* indicator identifies all company $\times$ quarter observations in or after the fourth quarter of 2009. For STAR, the sample of financing rounds ranges from the first quarter in 2013 to the third quarter in 2023, and the *Post* indicator identifies all company $\times$ quarter observations in or after the first quarter of 2019. In Equation (2), we include quarter fixed effects (γ_t), province-quarter (η_{st}) and industry (θ_j) fixed effects (we drop the non-interacted *Post* indicator as it would be absorbed by the time

fixed effects, and we do not include industry-quarter fixed effects because they would absorb the time-variation in company business activities). The province-year fixed effects control for time trends of factors that affect all companies in the same province. The industry fixed effects control for the time-invariant factors that affect all companies in the same industry.

In an alternative specification, we include company fixed effects μ_i so as to study within-company effects, i.e. the difference in receiving VC funding for the same company before and after the introduction of entrepreneurial boards:

$$Y_{it} = \beta_0 + \beta_1 \text{Post}_i \times \text{Regulatory Textual Closeness}_i + \beta_2 \text{Regulatory Textual Closeness}_i + \gamma_t + \mu_i + \epsilon_{it} \,. \tag{2}$$

By including company fixed effects μ_i, Equation (2) estimates *within-company* effects over the VC investment cycle of firms, whereas Equation (1) estimates cross-sectional *cross-company* effects.

When using measures of company-level VC funding size as the dependent variable, we need to add a caveat that we use syndicate size as a proxy for the (mostly unobserved) investment amount and that we cannot exclude that a given round could be divided among more investors with smaller average stakes. However, the importance of this caveat is limited since in practice, it is rare that the number of participating investors in a financing round is not (weakly) increasing in the amount of funds raised.[9]

4.2 Validity of Identifying Assumptions

Our first identifying assumption is that companies whose registered business descriptions are textually closer to the regulatory texts (i.e., the ChiNext Listing Guidelines/the STAR Listing Opinions) are treated more intensively by the regulation. While all companies could,

[9]VC data are notoriously incomplete concerning investment amounts (as such information is often confidential), and our data is no exception. Syndicate size this is the best measure we could have to account for changes in VC funding.

in theory, benefit from the easier access to an IPO exit with the new entrepreneurial boards ChiNext and STAR, we expect that it is easier (harder) to list companies whose business activities are more "supported" (or "opposed") by the listing regulation.

[INSERT Table 3 AROUND HERE]

Table 3 Panel A shows the relation between our text-based treatment intensity measure and listing on ChiNext where we observe a positive and statistically significant (at the level of 1%) association between the textual closeness to the "supported" business activities in the ChiNext Listing Guidelines and IPO via ChiNext for both the *% Supported* sub-business activities and the cosine similarity between text vector measures. Overall, the variation in the textual similarity predicts the linear probability of listing on ChiNext more than three times more strongly than the variation in the % of sub-business activities. For instance, in the specification in column (3) with the controls of company age, SOE indicator, and province fixed effects, a one p.p. increase in the % of sub-business activities predicts a 2.28% increase in the linear probability of listing on ChiNext. In comparison, in the specification in column (6) with all controls present, a one p.p. increase in the textual similarity predicts a 7.30% increase in the linear probability of listing on ChiNext. Similarly, we observe a negative and statistically significant association (at the 1% level) between the textual closeness to "opposed" business activities in the ChiNext Listing Guidelines. The coefficients for the textual similarity measure are almost five times as large as the coefficients for the *% Opposed* sub-business activity measure.

Panel B shows the relationship between our text-based treatment intensity measure and the STAR listing. As with ChiNext, we observe a positive association between the textual closeness to the "supported" business activities in the STAR Listing Opinions and both measures of an IPO through STAR. While the measure using *% Supported* sub-business activities is only statistically significant at the level of 10% in the specification with control variables, the measure using the text vector cosine similarity is statistically significant at the level of 1%. In terms of economic magnitude, the cosine similarity-based measure also provides much higher predictive power – more than 13 times as large compared to the %

Supported sub-business activities measure, indicating that listing on the STAR market is related to a deeper understanding of the business activities of the underlying company.

The second identifying assumption is that the distribution of "supported", "opposed" and other business activities in the ChiNext Listing Guidelines (or STAR Listing Opinions) does not perfectly coincide with the pre-trend of VC investments across these business activities prior to the introduction of ChiNext (or STAR). In other words, the ChiNext Listing Guidelines (or STAR Listing Opinions) are designed by CRCS to induce a directional shift in the sector allocation of VC investments. We argue that the validity of this assumption is highly plausible for three reasons. First, we can rule out that VCs could perfectly anticipate the Guidelines and proactively aligned their investments with the forthcoming regulation: in fact, there was a substantial element of surprise; the timeline of discussions and rulemaking prior to the launch of ChiNext (STAR) market made it nearly impossible for VC investors and portfolio companies to correctly anticipate the exact timing and content of the ChiNext Listing Guidelines (STAR Listing Opinions). This introduces a sufficiently strong exogenous shock in the launch announcement for our identification to be valid.

[INSERT Figure 3 AROUND HERE]

Second, Figure 3 plots the interaction terms between the text-based treatment intensity measure and semester-year indicators so that we allow the effects of the treatment variable to vary over time for ChiNext. The pre-ChiNext coefficients are close to zero before the second semester of 2009 when ChiNext was launched. While there is a drop (instead of an increase) in VC financing in favor of "supported" business activities in the second half of 2009 and first half of 2010 when the Guidance is published, VC financing clearly increases after the first semester of 2010 when the Guidelines were finally published. The delayed response of VCs is likely due to an imperfect and noisy interpretation of the ChiNext by VCs that only disappeared wen the final regulation document was published in 2010. The drop is not significant for the % of sub-business activity measure but is statistically significant for the cosine similarity measure. This observation appears to lend support to our argument because the cosine similarity measure probably represents a more precise picture of the actual

business activities.

[INSERT Figure 4 AROUND HERE]

Figure 4 plots the equivalent figure for STAR and again shows a significant pre-STAR trend. The increase in VC financing rounds in "supported" business categories starts in the second semester of 2018 when President Xi delivered the speech that marks the formal launch of STAR. Given the importance of the president's speech in Xi's political regime, it is not surprising that we start to observe reactions from VCs after the president's speech instead of the official publication of the regulation document.

Third, a potential concern is that our results might be driven by other factors or policies aiming to promote entrepreneurship and VC financing during the sample period. Therefore, we use the explicit written text in the ChiNext Listing Guidelines (or STAR Listing Opinions) to measure the regulatory discrimination and heterogeneity across sectors. This approach reduces the concern that any unobserved factors could drive our results, unless by chance such other factors were to coincide perfectly with the classifications of "supported" and "opposed" business activities in the regulation document. In other words, as long as the treatment intensity of other policies or factors does not perfectly coincide with the treatment intensity according to the textual analysis of the ChiNext and STAR regulations, our identifying assumption is valid.

Our analysis does not claim to show that ChiNext and STAR were the *only* drivers of changes in the direction of VC funding. But our results allow us conclude that the direction and structuring of VC financing changes upon the introduction of the two entrepreneurial boards, and that the listing documents significantly contributed to the directional change in VC financing.

To further address any concerns about confounding influences, we start our sample period for ChiNext in 2005 because 2005 marked the start of share trading and of liberalization of Chinese stock markets. We end the sample period in 2013 to exclude confounding effects from the introduction of the OTC-like National Equities Exchange and Quotations (NEEQ)

market in 2013. For STAR, we start in 2013, after the launch of NEEQ, and we stop in 2023 because the full registration reform started only on Feb 17, 2023.[10] Thus, our choice of sample period carefully reflects concerns about confounding major policy changes that could contaminate our difference-in-differences results and is specifically intended to alleviate them. We are not aware of other relevant major policy changes inside our carefully delimited sample periods.

4.3 Evidence on the Direction of VC Investments

[INSERT Table 4 AROUND HERE]

Table 4 presents the results of estimating Equation (1) and Equation (2) for ChiNext. Panel A shows the results using % sub-business activities as the treatment intensity variable. Columns (1) to (4) report results for OLS specifications where the first three columns add quarter (γ_t), province-quarter (η_{st}), and industry (θ_j) fixed effects step by step. The results lend support to the hypothesis that ChiNext has promoted (restricted) private VC financing rounds to companies in the "supported" ("opposed") business activities: the coefficient on the interaction term *Post* $\times$ *% Supported* (*% Opposed*) is positive (negative) and statistically significant at 1% in all specifications. Take Column (3) as an example where we control for the full set of fixed effects, we find a β of 4.83 (p <0.01), indicating that one percent increase in *% Supported* results in a 4.83 percentage point increase in the number of VC financing rounds received by the company after ChiNext's launch. In terms of magnitudes, we find a β of -1.28 (p <0.01), indicating that one p.p. increase in *% Opposed* results in a 1.28 percentage point decrease in the number of VC financing rounds received by the company after the ChiNext launch.

In Column (4), we include portfolio company fixed effects μ_i and we observe a similar effect of ChiNext's launch on companies in "supported" and "opposed" business categories

[10]Related regulation document: Operational Guidelines for the Pilot Reform of the Share-trading Business of Listed Companies (effective date: May 8, 2005). Interim Measures for the Administration of National Equities Exchange and Quotations Co., Ltd. (Effective date: 01-31-2013). The Full Implementation of the Stock Issuance Registration System Rules (effective date: February 17, 2023).

(β of *% Supported* = 4.46, p <0.01; β of *% Opposed* = −1.34, p <0.01). Columns (5) to (8) report results using Poisson specifications, to account for the recent recommendation to use Poisson regression in the presence of many zeros (Cohn, Liu, and Wardlaw, 2022; Edmans, 2023), and show that our conclusions remain robust to this change in estimators. Coefficients on the interaction term *Post* × *% Supported* (*% Opposed*) remain positive (negative) and economically and statistically significant at 1% in all specifications.

Panel B shows the results when we use cosine similarity between text vectors as the treatment intensity variable. Columns (1) to (4) report OLS results, and columns (5) to (8) report Poisson results. Coefficient signs are the same across different specifications but have higher statistical significance in Poisson specifications. Concerning magnitudes, we find for example in Column (7) where we control for the full set of fixed effects in the Poisson regression a β of 1.42 (p <0.01) for *Post* × *Similarity Supported*, indicating that a ten-percent increase in *Similarity Supported* results in a 15.53% ($(e^{1.42\times0.1}-1)\times100$) increase in the expected number of VC financing rounds after the ChiNext launch. In comparison, the coefficient before *Post* × *% Supported* in column (7) in Panel A is 0.87, implying that VCs respond to the deeper information of the regulation as measured by cosine textual similarity 1.63 times more than in the simple key-word-based *% Supported* measure. Results using other specifications and results for the "opposed" business categories support the same conclusion: VCs respond to both textual similarity and key-word-based measures, with a greater response to the former.

[INSERT Table 5 AROUND HERE]

Table 5 presents the results of estimating Equation (1) and Equation (2) for STAR.[11] Overall, the results for STAR are similar to those for ChiNext. Our findings support the hypothesis that STAR has boosted private VC financing to companies in the "supported" business activities, with a greater investment response to the deeper information contained in the cosine textual similarity measure. For example, in Column (7) where we control for

[11] When we conduct the analysis for STAR, we calculate the treatment intensity measures purely using the regulation for STAR, which implies that we consider companies more likely to list on either the ChiNext or the mainboard as the control group.

the full set of fixed effects in the Poisson regression, we find a β of 0.90 ($p < 0.01$) for *Post* $\times$ *% Supported* in Panel A. This indicates that a ten percent increase in *% Supported* results in a 9.42% increase in the expected number of VC rounds after the STAR launch. In comparison, in Column (7) in Panel B, the coefficient for *Post* $\times$ *Similarity Supported* is 4.85, 5.39 times larger than the coefficient for *Post* $\times$ *% Supported*. Compared to the results for ChiNext, the response to *% Supported* is close to the coefficient in the same specification for ChiNext (0.90 and 0.87) while the response to *Similarity Supported* is 4.32 ($4.85 \div 1.42$) times larger than the coefficient in the same specification for ChiNext.

Column (8) shows the Poisson regression results for the within company specification (Equation (2)). We find that a 10% increase in *% Supported* leads to 12.19% increase in VC financing, and 10% increase in *Similarity Supported* to a 80.58% increase in VC financing (Panel B). The within-company results again suggest that the estimated VC response is stronger when we use the deeper information contained by textual similarity measures.

The positive and large difference in VC funding between "supported" and other business categories in response to the launch of STAR is even more interesting when considering the overall decreasing pattern in VC investment after the economic slowdown since 2015.[12] China experienced a significant economic slowdown in 2015, marking a critical moment for its economic transition. The country's GDP growth rate fell to 6.9%, the lowest level in 25 years (NBS, 2016; Magnier et al., 2016). The economic slowdown reduces the total amount of VC financing, as presented in Figure 2. However, our regression results in Table 5 and dynamic results in Figure 4 show that companies with businesses that consist to a larger degree of activities "supported" by STAR receive more VC financing than other companies. This observation lends further support to our conclusion that we are able to identify the impact of the STAR launch instead of an overall economic or financial trend (which, in light of the degrading growth prospects, would have implied a decrease in VC financing).

[12]The big increase in 2014 and 2015 is most likely due to the "mass entrepreneurship and innovation" movement, first introduced by Premier Li Keqiang during the Summer Davos Forum in September 2014, followed by the State Council issuing the "Opinions on Vigorously Promoting Mass Entrepreneurship and Innovation" in June 2015.

4.4 Standardization and Performance Certification

In this section, we examine whether VCs change their policies regarding the "standardization" (Rajan (2012)) and performance certification after the launch of entrepreneurial boards. Rajan (2012) suggests that standardization, the process of making key personnel replaceable, is needed to attract arm's length investments and is valuable when companies go public. Thus, the improved prospect for an IPO exit on the new entrepreneurial boards should lead VCs to adopt policies that favor standardization, both when selecting companies and when advising and monitoring them. Similarly, VCs should strive to enhance verifiable certification of performance indicators (patents, trademarks, and certificates) that increase the salability of portfolio companies and their capacity to attract outside investors. However, an alternative hypothesis on certification, proposed by Bernstein, Dev, and Lerner (2020), is that the more relaxed IPO requirements of entrepreneurial boards induce VCs to lower selection standards concerning verifiable performance measures. Thus, we investigate whether VCs's policies regarding patents, trademarks, and certificates change after the launch of ChiNext and STAR, and in which direction.

[INSERT Table 6 AROUND HERE]

Protecting the intellectual property of their innovation efforts through patents can be seen as an effort to standardize the company and at the same time is a verifiable performance metric for the innovation effort. Table 6 shows the results on the impact of ChiNext and STAR on VC investments in regard to the number of patents obtained by a company prior to the financing round. We study whether VCs' choice in this regard changes after the launch of ChiNext and STAR.

In Panel A, we ask whether VCs move from investing in companies without prior patenting activity to companies that have prior patent. Indeed, we find that after the launch of ChiNext and STAR, VCs direct more investments to companies that hold patents than to companies without patents. Columns (1) to (4) show the results for ChiNext and columns (5) to (8) for STAR, and odd-numbered columns ((1), (3), (5), (7)) cross-sectional results

(without company fixed effects) whereas even-numbered columns show within-company effects. The coefficients for the interaction term between *Post* and *I(Patent)*, our independent variable of interest, are positive and always statistically significant at the 1% level, for OLS and Poisson regressions. For economic magnitudes, the difference between the number of VC financing rounds for companies with at least one patent and companies without patents increases by 33.64% for ChiNext (column (3)), and by 49.18% for STAR (column (7)).

In Panel B, we limit the sample to companies with at least one patent and study whether VCs prefer companies with a higher or lower number of patents. *Patent (Acc)*, the variable of interest, is the cumulative number of patents granted at the time of VC financing. The independent variable of interest, is negative and statistically significant at 1% in all specifications (except in column (1), $p < 0.05$). This means that VCs invest more frequently in companies with fewer patents at the time of investment after the launch of ChiNext and STAR. Results are again robust for cross-sectional and within company effects and OLS and Poisson regressions. To see the economic effects, one more patent of the portfolio company (at the time of VC investment) leads to a 1.98% decrease in the number of VC financing rounds after the launch of ChiNext (column (3)) and a 1.00% decrease after the launch of STAR (column (7)). Takeing both panels together, VCs shift investments towards companies with a proven but not yet too established track record of generating patents.

[INSERT Table 7 AROUND HERE]

We next look at trademarks as a second measure of business standardization and performance certification. Table 7 explores how the launch of ChiNext and STAR affects the number of VC financing rounds received by companies as a reaction of their number of trademarks. Panel A examines the shift in investments from companies without valid trademarks to those with valid trademarks. Columns (1) to (4) present the results for ChiNext, showing that VCs invest more in companies with trademarks compared to those without trademarks with coefficients. The results are strong (coefficient for *Post* $\times$ *I(Trademark)*) for cross-sectional effects (Columns (1) and (3)) and within-company effects (Columns (2) and (4)). To see the economic magnitudes, Column (3) shows that the difference between the num-

ber of VC deals for companies with at least one trademark and those without trademarks increases by 16.18%. The results for STAR in Columns (5) to (8) are smaller in magnitude and statistically significant only for within-company effects in column (6) (OLS regression).

Panel B limits the sample again to companies with at least one prior trademark, and looks at the effect of the cumulative number of prior trademarks. We find strong results for both ChiNext and STAR, and in this specification actually somewhat stronger for STAR than for ChiNext, with VCs investing more in companies with fewer trademarks at the time of investment. The interaction term *Post* × *Trademark (Acc)* is mostly statistically significant and the coefficients negative.Taken together, our findings for trademarks suggest the same patterns as for patents: VCs shift investments to companies with some certification from trademarks, but the prefer companies with a smaller footprint in the number of trademarks.

[INSERT Table 8 AROUND HERE]

Finally, we look at certificates of portfolio companies, by whichwe refer to a broad class of certifications, official licenses or accreditations that validate a company's qualifications, capabilities, and compliance with industry standards, enabling them to operate in sectors like construction, technology, or professional services.[13] Table 8 shows our findings, again for ChiNext (Columns (1) to (4)) and for STAR (columns (5) to (8)). Panel A shows that VCs invest more in companies with certificates compared to those without certificates (interaction term *Post* × *I(Certificate)*), with effects that are significant both statistically and economically in all specifications except one (column (3)).

In Panel B, we look at the cumulative number of certificates acquired prior to a founding round, again only looking at the subsample with some certificates. Results are significant only for STAR but not for ChiNext. For the STAR introduction, the negative coefficients for *Post* × *Certificate_Acc* show the same pattern as for patents and trademarks, namely that VCs invest more in companies with a smaller footprint of prior certificates. The contrast in the findings for ChiNext and STAR might be due to differences in the listing requirements,

[13]For example, in construction, certificates may include qualification licenses, while in IT or manufacturing, they often involve quality standards like ISO certifications.

with the more flexible listing requirements of STAR allowing VCs to put less emphasis on verifiable certificates.

To summarize, we find consistent results for all three metrics of standardization and performance certification, patents, trademarks and certificates: entrepreneurial boards provide incentives to invest in companies with some credentials of business standardization and certification, but at the same time VCs exhibit a preference for the record of such verifiable performance indicators not be be too established at the time of investments.

The latter effect could indicate that the new listing markets entail a shift toward a less stringent evaluation threshold in terms of verifiable business maturity, reflecting a potential trade-off between standardization and risk appetite.

4.5 Company Characteristics at IPO

Finally, we compare company characteristics at the time of their IPO listing to investigate the question whether companies listed on ChiNext (STAR) are different from those listed on the main and SME boards (and ChiNext). In particular, we test the idea that the new stock exchanges allow younger, less profitable but high-growth companies to list (Bernstein, Dev, and Lerner, 2020), an idea that we call the "growth" hypothesis.

[INSERT Table 9 AROUND HERE]

Table 9 reports the results for ChiNext. The various specifications present results for different samples: for the entire sample period prior to STAR (1990 - 2019) in Columns (1) and (2), and for the period after the introduction of ChiNext (2009 - 2019) only in the other columns, where we differentiate the sample further by sequentially excluding reverse mergers and companies that had received prior "warnings" ("ST" and "*ST"). In odd-numbered columns, we control for IPO year fixed effects only , whereas even-numbered columns add controls for province (and year for financial performance analysis) fixed effects.

Panel A shows that ChiNext-listed companies are around -1.33 to -1.42 years younger

at the time of their IPO compared with Main Board- and SME Board-listed companies ($p < 0.01$). Panels B to D considers the pre-IPO financial indicators of ChiNext-listed companies relative to companies listed on the older boards. Specifically, we investigate the key variables outlined in the listing requirement changes (see Table IB.1), including net profit, revenue, and net assets. The results strongly support the notion that ChiNext-listed companies exhibit financial characteristics that can be characterized as "weaker" compared to their counterparts on the Main Board and SME Board, as they have significantly smaller net profits, revenues, and net assets. For example, the difference in net profits between ChiNext-listed companies and companies on the Main Board/SME Board is in the range between 278.13 and 343.17 million RMB (Panel B, looking at net profits in the three years prior to the IPO).

Panels E and F examine growth rates in net profts and revenue, respectively (we do not study the growth rate in net assets as it is not contained in the listing requirements). We find that ChiNext-listed companies have a 25-30% higher growth rate of net profits and of around a 12-13% higher growth rate in revenues. The differences for all metrics, age, financial indicators on profits and size, and growth rates, are statistically significant at the 1% level in all specifications.

[INSERT Table 10 AROUND HERE]

Table 10 reports the results for STAR where the comparison sample now also includes ChiNext-listed companies. Our findings also support the "growth" hypothesis that companies listed on STAR are younger, less mature when measured by net profits, revenue, and net assets; and exhibit higher growth rates of net profits and revenues. Indeed, we find a difference in company age that is twice as large compared with ChiNext (Panel A). Similarly, we find not only substantially lower net profits (Panel B), revenues (Panel C) and net assets (Panel D) for STAR-listed companies relative to the comparison sample, but we also find for all three financial indicators a strong increase in the difference relative to those observed for the ChiNext introduction, with again all metrics and specifications being significant at the 1% level.

In summary, we confirm that the company characteristics concerning each, financial indicators and growth involve exactly in line with the lower standards set in the listing requirements that notably relax the bar on the *level* of net profits, revenue, and met asset. On the other hand, the listing requirements put a higher bar on the *growth rate* of net profits and revenues, and accordingly we observe that companies listed on ChiNext/STAR grow indeed more rapidly. Moreover, as the listing requirements are lower for STAR (due to its registration nature) than for ChiNext, we find an even stronger shift in these metrics for STAR than for ChiNext. We also find that STAR lists even younger companies than ChiNext, even though the listing requirements concerning company age are unchanged, probably because the lower requirements on financial indicators allow to take companies public at a younger age.

Overall, our evidence supports the idea of a "risk of expropriation" (Bernstein, Dev, and Lerner (2020)), that is the newly introduced exchanges cater to a different segment of companies that are younger, less profitable but also promise higher growth.

In a final analysis, we extend the time window of investigation to the post-IPO period. Table IB.2 to Table IB.5 show that companies listed on ChiNext and STAR continue to be less profitable and smaller after IPO and to grow more rapidly, especially in regard to revenues. Our findings are in line with those of Bernstein, Dev, and Lerner (2020) that companies listed on new second-tier exchanges tend to experience accelerated growth in the aftermath of their initial public offerings (IPOs).

5 Conclusion

This paper studies the impact of new entrepreneurial stock markets on the direction and frequency of venture capital financing. We establish causal inferences on this link in the context of China's two most important and successful new market launches, ChiNext in 2009 and STAR in 2019, exploiting the fact that these market introductions offer a particularly suitable quasi-experimental setting for our study. ChiNext and STAR are also important since together comprise today more listed companies and a higher combined market capitalization

than the major Chinese stock exchanges, the Main Board and Shenzhen SME Board.

Two features of ChiNext and STAR are particularly useful for our study. First, the timing and exact conditions of the launch of ChiNext and STAR were highly unpredictable, mitigating concerns about reversed causality and simultaneity. Second, the listing rules for ChiNext and STAR create heterogeneous treatment intensities since they explicitly differentiate between technologies and sectors that represent "supported" business activities and are prioritized for IPOs, and other business activities that are not or even actively discouraged from seeking listings.

We use this differentiation across business activities to construct two measures of heterogeneous treatment intensities, based on the relatedness between companies mandatory business descriptions and the priority business activities enumerated in the listing guidelines. Our first measure is a keyword-based metric of the proportion of sub-business activity categories that are "supported" or "opposed". Our second measure relies on deep learning methods, using a Sentence-BERT approach to measure the cosine similarity between the text vectors extracted from company business descriptions and the regulatory documents, letting the machine learning algorithm mimic the perspective of a VC investor who reads the IPO listing regulation and the startup's business description.

We show that the ChiNext and STAR launches caused an increase in private VC financing rounds directed to companies in "supported" business activities. For ChiNext, we also document the opposite movement of VCs investing less in companies with "opposed" business activities (there are no "opposed" business activities for STAR). We find that the results for the deep learning-based measure of text similarity are even stronger, possible showing that this measure more accurately reflects the understanding of VCs about the alignment of companies' activities with the regulatory priorities.

We also investigate whether the introduction of new markets influences VC investment policies and leads to a greater focus on verifiable performance indicators that facilitate the listing process. We find that VCs significantly increase the fraction of investments in companies that have obtained patents, trademarks and trade-related certificates, but at the same time prefer companies with smaller footprints of these verifiable performance indicators. We

also explore another transmission channel of new listing markets on VC investment policies, the "growth" channel that redirects funding flow to younger companies with stronger growth potential. We find indeed evidence that VCs redefine their investment strategies by channeling a larger share of funds to younger and less mature companies that exhibit stronger growth but weaker financial indicators.

We believe that our findings that VC strongly respond to listing rules and redirect investment flows to companies that match the technology priorities set by the regulator and away from discouraged activities are important from the perspective of technology policy. Our analysis shows that exit markets are effective in guiding directed financing of innovation, i.e. to steer decentralized entrepreneurial financing decisions in the direction of technology policy priorities. This is transmission channel for technology and industrial policy is a policy tool that has not been studied so far, and that may take different forms in other jurisdictions.

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Figures

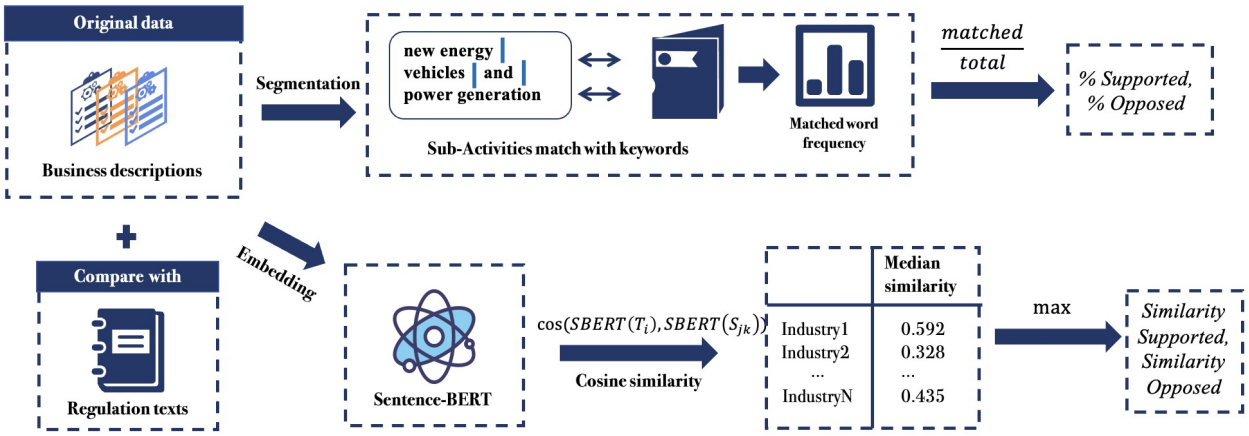


Figure 1: Flowchart of building up regulatory textual closeness

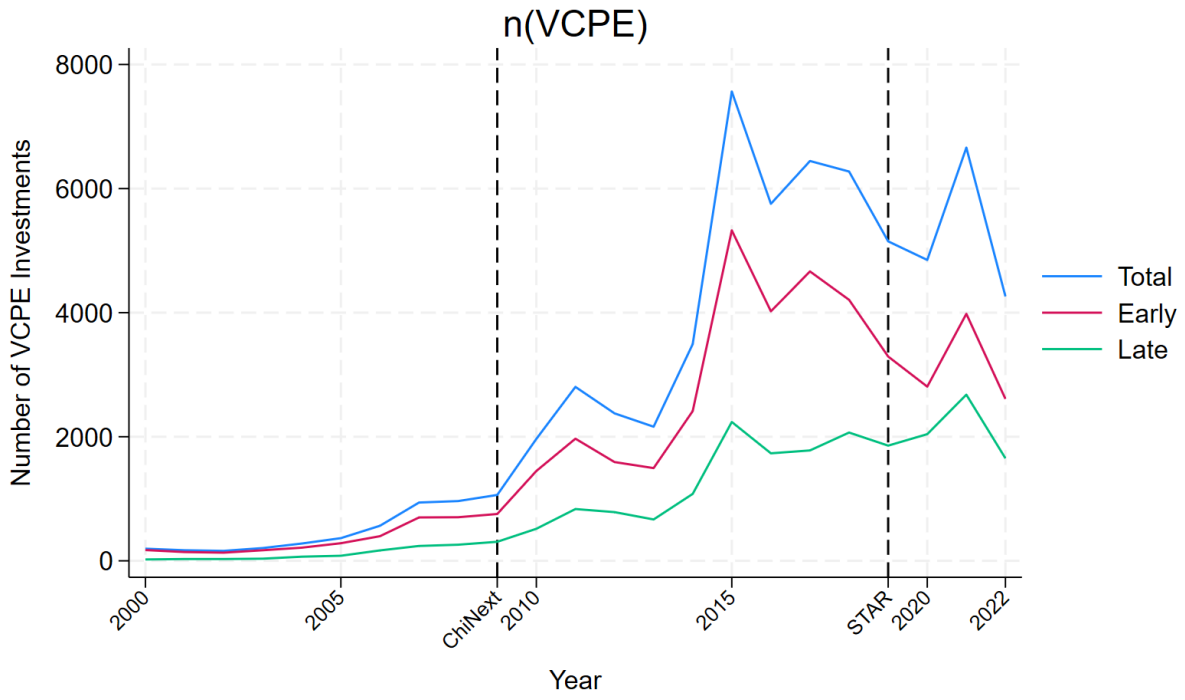
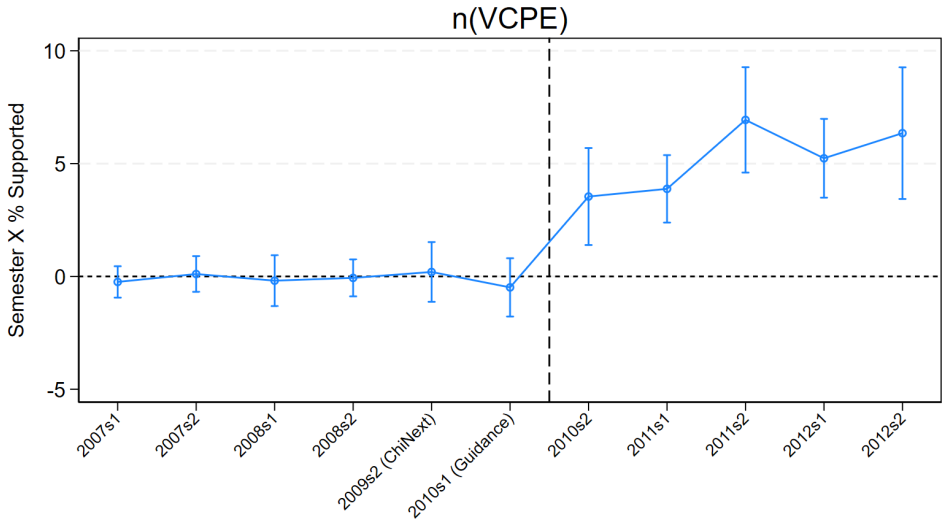
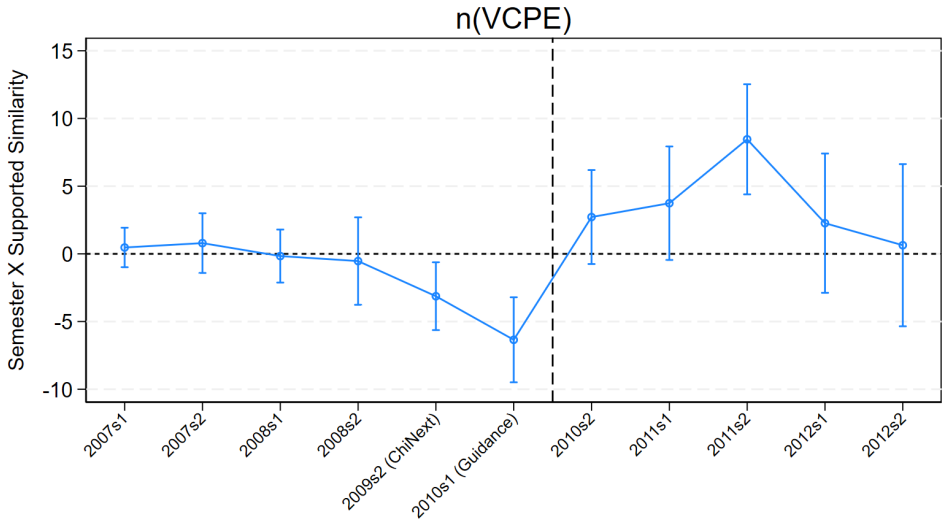


Figure 2: Time trends on raising VC financings during 2000 -2022

Note: This figure illustrates the time trend of venture capital financing using data from Zero2IPO. The vertical axis represents the number of VC financing rounds received by all companies within each year-quarter. The horizontal axis represents the year-quarters from 2000 to 2022. The blue solid line represents the total number of VC financing. The red dashdot line indicates the early rounds of VC financing (i.e., Pre-A, A, and A+ rounds). The green dashed line represents the late rounds of VC financing (i.e., Pre-B, B, B+, and up to Pre-IPO).



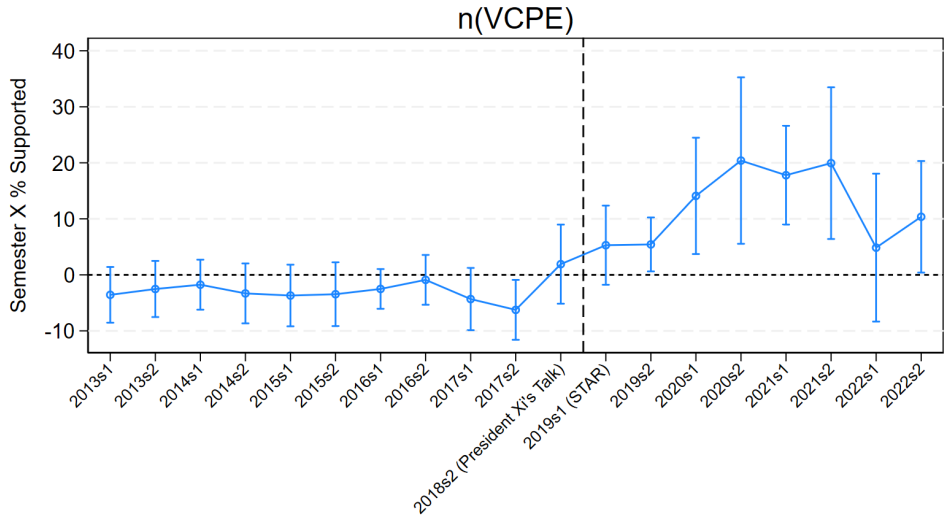
(a) Using % of Sub-Business Activities



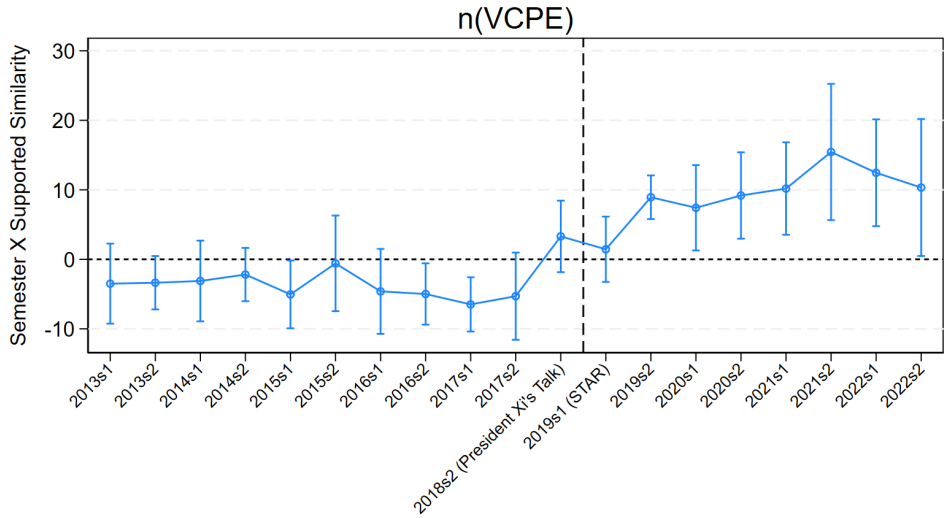
(b) Using Description Textual Similarity

Figure 3: Dynamics on raising VC financings around ChiNext

Note: The figure shows the results of estimating a dynamic version of our diff-in-diff analysis examining ChiNext's effect on the number of VC financings of startups with respect to percentage of supported business activities. For Panel (a), we estimate the following equation: $Y_{it} = \alpha + \Sigma_{k=-6}^{5}\beta_k \mathrm{d}_k \times \%\ \mathrm{Supported}_{k,i} + \delta \times \%\ \mathrm{Supported}_i + \gamma_t + \eta_{st} + \theta_j + \epsilon_{it}$. i identifies company, and t identifies year-quarters. The dependent variable (Y_{it}) is the number of VC financing the company i receives in year-quarter t. d_k's are the dummies indicating the semester of the observation relative to the release of the *Guidance* in March 2010 (set as the reference period $t = 0$). For Panel (b), we estimate a similar specification where we use *Supported Similarity* instead of *% Supported*. All regressions include year-quarter fixed effects (γ_t), which subsume the non-interacted d_k indicators as well as company province-year-quarter (η_{st}) and industry (θ_j) fixed effects (we do not include industry-year-quarter fixed effects because they would subsume the time-variation in company business activities). Observations belonging to the semester prior to ChiNext's launch (the first semester of 2009) are excluded. The plot presents the point estimates and 95% confidence intervals of the differences between the coefficients on the interaction terms *Semester* $\times$ *% Supported*, where standard errors are clustered at the province level.



(a) Using % of Sub-Business Activities



(b) Using Description Textual Similarity

Figure 4: Dynamics on raising VC financings around STAR

Note: The figure shows the results of estimating a dynamic version of our diff-in-diff analysis examining STAR's effect on the number of VC financings of startups with respect to percentage of supported business activities. For Panel (a), we estimate the following equation: $Y_{it} = \alpha + \Sigma_{k=-6}^{5}\beta_k \mathrm{d}_k \times \%\ \text{Supported}_{k,i} + \delta \times \%\ \text{Supported}_i + \gamma_t + \eta_{st} + \theta_j + \epsilon_{it}$. i identifies company, and t identifies year-quarters. The dependent variable (Y_{it}) is the number of VC financing the company i receives in year-quarter t. d_k's are the dummies indicating the semester of the observation relative to the release of *Opinions* in January 2019 (set as the reference period $t = 0$). For Panel (b), we estimate a similar specification where we use *Supported Similarity* instead of *% Supported*. All regressions include year-quarter fixed effects (γ_t), which subsume the non-interacted d_k indicators as well as company province-year-quarter (η_{st}) and industry (θ_j) fixed effects (we do not include industry-year-quarter fixed effects because they would subsume the time-variation in company business activities). Observations belonging to the semester prior to President Xi's Talk (the first semester of 2018) are excluded. The plot presents the point estimates and 95% confidence intervals of the differences between the coefficients on the interaction terms *Semester* $\times$ *% Supported*, where standard errors are clustered at the province level.

Tables

Table 1: Summary Statistics for Key Variables

This table provides summary statistics for the primary variables in our analysis. Panel A reports the summary statistics for variables in analysis related to ChiNext, and Panel B for variables related to STAR. Variable definitions are provided in Table A1.

Panel A: Summary Statistics for variables in ChiNext analysis								
Variables	N	Mean	S.D.	Min	25th per.	Median	75th per.	Max
n(VCPE Investments)	1,979,460	0.04	0.27	0.00	0.00	0.00	0.00	28.00
% Supported	1,966,710	0.06	0.14	0.00	0.00	0.00	0.00	1.00
% Opposed	1,966,710	0.18	0.25	0.00	0.00	0.00	0.33	1.00
Similarity Supported	1,966,380	0.31	0.07	-0.02	0.26	0.32	0.37	0.55
Similarity Opposed	1,966,380	0.33	0.07	-0.02	0.28	0.33	0.37	0.62
Post × % Supported	1,966,710	0.02	0.09	0.00	0.00	0.00	0.00	1.00
Post × % Opposed	1,966,710	0.07	0.17	0.00	0.00	0.00	0.00	1.00
Post × Similarity Supported	1,966,380	0.11	0.16	-0.02	0.00	0.00	0.27	0.55
Post × Similarity Opposed	1,966,380	0.12	0.16	-0.02	0.00	0.00	0.29	0.62
Age	1,324,243	5.65	5.58	-0.25	1.50	4.00	8.00	63.50
Round	813,488	1.11	0.39	1.00	1.00	1.00	1.00	21
Patent_Acc	56,400	3.11	7.05	0.00	0.00	0.00	3.00	99
Post × Patent_Acc	56,400	2.42	6.68	0.00	0.00	0.00	1.00	99
I(Patent)	1,979,460	0.03	0.17	0.00	0.00	0.00	0.00	1.00
Post × I(Patent)	1,979,460	0.01	0.10	0.00	0.00	0.00	0.00	1.00
Trademark_Acc	187,500	2.68	7.93	0.00	0.00	0.00	2.00	194
Post × Trademark_Acc	187,500	2.05	7.36	0.00	0.00	0.00	1.00	194
I(Trademark)	1,979,460	0.09	0.29	0.00	0.00	0.00	0.00	1.00
Post × I(Trademark)	1,979,460	0.03	0.18	0.00	0.00	0.00	0.00	1.00
Certificate_Acc	312,420	1.13	3.63	0.00	0.00	0.00	1.00	152
Post × Certificate_Acc	312,420	0.87	3.34	0.00	0.00	0.00	1.00	152
I(Certificate)	1,979,460	0.16	0.36	0.00	0.00	0.00	0.00	1.00
Post × I(Certificate)	1,979,460	0.06	0.23	0.00	0.00	0.00	0.00	1.00
Panel B: Summary Statistics for variables in STAR analysis								
Variables	N	Mean	S.D.	Min	25th per.	Median	75th per.	Max
n(VCPE Investments)	1,125,200	0.10	0.70	0.00	0.00	0.00	0.00	89
Similarity Supported	1,125,200	0.37	0.06	0.09	0.34	0.38	0.41	0.53
Post × Similarity Supported	1,125,200	0.15	0.18	0.00	0.00	0.00	0.36	0.53
% Supported	1,125,200	0.07	0.13	0.00	0.00	0.00	0.10	1.00
Post × % Supported	1,125,200	0.03	0.09	0.00	0.00	0.00	0.00	1.00
Age	912,152	7.58	5.99	0.00	3.00	6.25	10.75	64.25
Round	604,110	1.81	1.33	1.00	1.00	1.00	2.00	18.00
Patent_Acc	634,280	7.92	14.58	0.00	0.00	1.00	9.00	100
Post × Patent_Acc	634,280	6.01	13.97	0.00	0.00	0.00	3.00	100
I(Patent)	1,125,200	0.56	0.50	0.00	0.00	1.00	1.00	1.00
Post × I(Patent)	1,125,200	0.23	0.42	0.00	0.00	0.00	0.00	1.00
Trademark_Acc	811,320	7.94	16.14	0.00	0.00	1.00	8.00	200
Post × Trademark_Acc	811,320	6.09	15.18	0.00	0.00	0.00	4.00	200
I(Trademark)	1,125,200	0.72	0.45	0.00	0.00	1.00	1.00	1.00
Post × I(Trademark)	1,125,200	0.29	0.45	0.00	0.00	0.00	1.00	1.00
Certificate_Acc	773,960	4.75	11.10	0.00	0.00	1.00	5.00	200
Post × Certificate_Acc	773,960	3.59	10.47	0.00	0.00	0.00	2.00	200
I(Certificate)	1,125,200	0.69	0.46	0.00	0.00	1.00	1.00	1.00
Post × I(Certificate)	1,125,200	0.28	0.45	0.00	0.00	0.00	1.00	1.00

Table 2: Supported and Opposed Business Activities for lisitng on ChiNext and STAR

This table shows the detailed description of the business activity categories that are especially supported or cautiously opposed in the *Guidelines for the Further Details of Issuance Sponsorship for Companies Listing on ChiNext* (ChiNext Listing Guidelines), and the business activity categories that are especially supported in the *Implementation Opinions on Establishing the Science and Technology Innovation Board and Piloting the Registration-Based IPO System on the Shanghai Stock Exchange* (STAR Listing Opinions).

Nine especially supported business activity categories for ChiNext	New Energy
	New Materials
	Information Technology
	Biotechnology and New Pharmaceuticals
	Energy Conservation and Environmental Protection
	Aerospace
	Marine
	Advanced Manufacturing
	High-Tech Services
Seven cautiously opposed business activity categories for ChiNext	Textiles and Apparel
	Power, Gas, and Water Production and Supply
	Real Estate, Civil Engineering and Construction
	Transportation
	Alcohol, Food, and Beverages
	Finance
	General Services
Ten especially supported business activity categories for STAR	Next-generation Information Technology
	High-end Equipment
	New Materials
	New Energy
	Energy Conservation and Environmental Protection
	Biopharmaceuticals
	Internet
	Big Data
	Cloud Computing
	Artificial Intelligence

Table 3: Listing on Entrepreneurial Stock Market Boards and the Regulatory Textual Closeness of the Company

This table reports OLS regression results on the correlation between a company's listing outcome and its regulatory textual closeness to the listing documents for ChiNext (Panel A) and STAR (Panel B). In Panel A, the sample is portfolio companies that received at least one round of VC financing during the third quarter of 2005 to the fourth quarter of 2012 (data source: NECIPS). In Panel B, we limit to companies that received at least one round of VC financing during the first quarter of 2013 to the fourth quarter of 2022 (data source: Zero2IPO). The dependent variable is *I(ChiNext)* in Panel A and *I(STAR)* in Panel B, which is a dummy variable equal to one if the company is listed on the corresponding stock market board ($\times$ 100 for demonstration purposes). In columns (1) to (3), the key independent variables are *% Supported* and *% Opposed* for Panel A (and only *% Supported* for Panel B), which are the percentage of sub-business activities in the registry business description that contain key words of especially supported or cautiously opposed businesses. In columns (4) to (6), the key independent variables are *Similarity Supported* and *Similarity Opposed* for Panel A (and only *Similarity Supported* for Panel B), which are the cosine similarity between text vectors of the registry business description and the official descriptions of the especially supported or cautiously opposed businesses. More variable definitions are provided in Table A1. Standard errors clustered at the province level are reported in parentheses. Province fixed effects are indicated in each column. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Dependent Variable: I(ChiNext) $\times$ 100 (NECIPS Sample)						
% Supported	2.27***	2.24***	2.28***			
	(0.19)	(0.19)	(0.19)			
% Opposed	-0.56***	-0.56***	-0.58***			
	(0.10)	(0.11)	(0.11)			
Similarity Supported				7.68***	7.62***	7.30***
				(0.56)	(0.56)	(0.56)
Similarity Opposed				-2.44***	-2.32***	-2.79***
				(0.60)	(0.60)	(0.60)
Age at 2012 Q4			0.07***			0.06***
			(0.00)			(0.00)
I(SOE)			-0.31**			-0.22*
			(0.13)			(0.13)
Observations	65557	65557	65557	65546	65546	65546
R^2	0.003	0.004	0.007	0.004	0.006	0.008
Panel B: Dependent Variable: I(STAR) $\times$ 100 (Zero2IPO Sample)						
% Supported	0.70	0.52	0.98*			
	(0.57)	(0.58)	(0.57)			
Similarity Supported				13.60***	13.08***	12.93***
				(1.25)	(1.31)	(1.31)
Age at 2019 Q1			0.21***			0.21***
			(0.01)			(0.01)
I(SOE)			-0.38			0.19
			(0.84)			(0.84)
Observations	28130	28130	28124	28130	28130	28124
R^2	0.000	0.003	0.014	0.004	0.006	0.017
Province FE	No	Yes	Yes	No	Yes	Yes

Table 4: Regulatory Textual Closeness to IPO and Raising VC Financing: ChiNext

This table investigates differences in the impact of ChiNext on VC financing for companies with different degrees of supported and opposed business activities. Specifically, we estimate a difference-in-differences model of Equation 1 where the sample is a company×quarter panel from the third quarter of 2005 to the fourth quarter of 2012 (data source: NECIPS). The dependent variable is the number of VC deals received by the company in the observation's quarter (× 100 for demonstration purposes in OLS regressions). In Panel A, the treatment variables are *% Supported* and *% Opposed* which represent the percentage of sub-business activities in the registry business description that contain key words related to especially supported or cautiously opposed businesses. In Panel B, the treatment variables are *Similarity Supported* and *Similarity Opposed*, which are the cosine similarities between text vectors of the registry business description and the official descriptions of the especially supported or cautiously opposed businesses. The *Post* indicator identifies all company×quarter observations after the first quarter of 2010 (i.e., the release of the *ChiNext Listing Guidelines*). More variable definitions are provided in Table A1. Columns (1) to (4) report the results of OLS regressions. Columns (5) to (8) report the results of Poisson regressions. All regressions include quarter fixed effects (which subsume the non-interacted *Post* indicator). Province-quarter, industry, and company fixed effects (which subsume the non-interacted *% Supported* and *% Opposed*) are indicated in each column. Robust standard errors clustered at the province level are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.	n(Deals) ×100				n(Deals)			
	OLS				Poisson			
Panel A: Using % of Sub-Business Activities								
Post × % Supported	4.46***	4.83***	4.83***	4.46***	0.76***	0.84***	0.87***	0.80***
	(0.52)	(0.67)	(0.67)	(0.52)	(0.09)	(0.12)	(0.13)	(0.10)
Post × % Opposed	-1.34***	-1.28***	-1.28***	-1.34***	-0.21***	-0.20***	-0.19***	-0.21***
	(0.31)	(0.27)	(0.27)	(0.31)	(0.06)	(0.06)	(0.06)	(0.06)
% Supported	-0.82***	-0.96***	-1.52***		-0.29***	-0.34***	-0.48***	
	(0.16)	(0.19)	(0.22)		(0.06)	(0.06)	(0.07)	
% Opposed	0.03	0.01	0.39***		0.01	0.00	0.09***	
	(0.09)	(0.09)	(0.11)		(0.03)	(0.03)	(0.03)	
Observations	1966710	1966710	1966710	1966710	1966710	1965032	1965032	1966710
R^2/Pseudo R^2	0.007	0.008	0.009	0.024	0.034	0.040	0.046	0.080
Panel B: Using Description Textual Similarity								
Post × Similarity Supported	4.47	5.61**	5.61**	4.47	1.24**	1.50***	1.42***	1.12**
	(2.67)	(2.66)	(2.66)	(2.67)	(0.51)	(0.50)	(0.46)	(0.46)
Post × Similarity Opposed	-2.52	-2.72	-2.72	-2.52	-1.19***	-1.22***	-1.17***	-1.09***
	(2.20)	(2.01)	(2.01)	(2.20)	(0.40)	(0.36)	(0.33)	(0.37)
Similarity Supported	-3.34***	-3.86***	-4.87***		-1.08***	-1.25***	-1.42***	
	(0.85)	(0.85)	(1.05)		(0.28)	(0.27)	(0.29)	
Similarity Opposed	4.52***	4.60***	3.70***		1.47***	1.49***	1.25***	
	(0.71)	(0.67)	(0.88)		(0.23)	(0.21)	(0.24)	
Observations	1966380	1966380	1966380	1966380	1966380	1964702	1964702	1966380
R^2 /Pseudo R^2	0.006	0.008	0.009	0.023	0.033	0.039	0.045	0.080
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Quarter FE	No	Yes	Yes	No	No	Yes	Yes	No
Industry FE	No	No	Yes	No	No	No	Yes	No
Company FE	No	No	No	Yes	No	No	No	Yes

Table 5: Regulatory Textual Closeness to IPO and Raising VC Financing: STAR

This table investigates differences in the impact of STAR on VC financing for companies with different degrees of supported and opposed business activities. Specifically, we estimate a difference-in-differences model of Equation 1 where the sample is a company×quarter panel from the first quarter of 2013 to the fourth quarter of 2022 (data source: Zero2IPO). The dependent variable is the number of VC deals received by the company in the observation's quarter (× 100 for demonstration purposes in OLS regressions). In Panel A, the treatment variables are *% Supported* which represent the percentage of sub-business activities in the registry business description that contain key words related to especially supported businesses. In Panel B, the treatment variable is *Similarity Supported* , which is the cosine similarities between text vectors of the registry business description and the official descriptions of the especially supported businesses. The *Post* indicator identifies all company×quarter observations after the first quarter of 2019 (i.e., the release of the *STAR Listing Opinions*). More variable definitions are provided in Table A1. Columns (1) to (4) report the results of OLS regressions. Columns (5) to (8) report the results of Poisson regressions. All regressions include quarter fixed effects (which subsume the non-interacted *Post* indicator). Province-quarter, industry, and company fixed effects (which subsume the non-interacted *% Supported* and *% Opposed*) are indicated in each column. Robust standard errors clustered at the province level are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.	n(Deals) ×100				n(Deals)			
	OLS				Poisson			
Panel A: Using % of Sub-Business Activities								
Post × % Supported	16.75***	14.80***	14.80***	16.75***	1.08***	0.87***	0.90***	1.15***
	(2.92)	(3.55)	(3.55)	(2.92)	(0.16)	(0.22)	(0.23)	(0.19)
% Supported	-0.48	0.54	-1.00		-0.06	0.07	-0.09	
	(0.64)	(1.11)	(1.01)		(0.08)	(0.14)	(0.13)	
Observations	1125200	1125200	1125200	1125200	1125200	1120177	1120177	1116680
R^2 /Pseudo R^2	0.004	0.007	0.007	0.047	0.031	0.046	0.051	0.202
Panel B: Using Description Textual Similarity								
Post × Similarity Supported	60.85***	54.80***	54.80***	60.85***	5.12***	4.60***	4.85***	5.91***
	(6.82)	(5.02)	(5.02)	(6.82)	(0.68)	(0.47)	(0.48)	(0.75)
Similarity Supported	4.35	3.45	-10.26**		0.55	0.44	-1.22**	
	(3.21)	(3.35)	(4.65)		(0.41)	(0.42)	(0.50)	
Observations	1125200	1125200	1125200	1125200	1125200	1120177	1120177	1116680
R^2/Pseudo R^2	0.005	0.007	0.008	0.047	0.036	0.050	0.052	0.204
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Quarter FE	No	Yes	Yes	No	No	Yes	Yes	No
Industry FE	No	No	Yes	No	No	No	Yes	No
Company FE	No	No	No	Yes	No	No	No	Yes

Table 6: Patents Granted to the Portfolio Company and Raising VC Financing

The table investigates how the impact of ChiNext/STAR on VC financing varies with patents possessed by the portfolio company. The sample is a company×quarter panel, and in columns (1) to (4), it covers the third quarter of 2005 to the fourth quarter of 2012 (data source: NECIPS) while in columns (5) to (8), it ranges over the first quarter of 2013 to the fourth quarter of 2022 (data source: Zero2IPO). In addition, we limit the sample of portfolio companies with at least one patent granted during the sample period in Panel B. The dependent variable is the number of VC deals received by the company in the observation's quarter (× 100 for demonstration purposes in OLS regressions). The independent variable *I(Patent)* in Panel A is a dummy variable that equals one if the company has at least one patent granted throughout the sample period. The independent variable *Patent_Acc* in Panel B represents the accumulated number of granted patents up to the observation quarter. In columns (1) to (4), the *Post* indicator identifies all company×quarter observations after the first quarter of 2010 (i.e., the release of the *ChiNext Listing Guidelines*). In columns (5) to (8), the *Post* indicator identifies all company×quarter observations after the first quarter of 2019 (i.e., the release of the *STAR Listing Opinions*). More variable definitions are provided in Table A1. Columns (1), (2), (5), and (6) report the results of OLS regressions. Columns (3), (4), (7), and (8) report the results of Poisson regressions. All regressions include quarter fixed effects (which subsume the non-interacted *Post* indicator). Province-quarter, industry-quarter, and company fixed effects (which subsume the non-interacted *I(Patent)* and *Patent_Acc*) are indicated in each column. Robust standard errors clustered at the province level are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.	n(Deals) ×100		n(Deals)		n(Deals) ×100		n(Deals)	
	ChiNext				STAR			
	OLS		Poisson		OLS		Poisson	
Panel A: Full Sample								
Post × I(Patent)	6.06***	10.84***	0.29***	0.81***	5.77***	8.50***	0.40***	0.67***
	(0.60)	(0.79)	(0.06)	(0.08)	(1.10)	(1.06)	(0.11)	(0.10)
I(Patent)	0.66***		0.20***		1.86***		0.23***	
	(0.19)		(0.06)		(0.28)		(0.03)	
Observations	1979460	1979460	1968488	1979460	1125200	1125200	1117158	1116680
R^2/Pseudo R^2	0.014	0.024	0.058	0.080	0.010	0.048	0.065	0.205
Panel B: The sample of companies with at least one patent								
Post × Patent_Acc	-0.22**	-0.31***	-0.02***	-0.03***	-0.17***	-0.23***	-0.01***	-0.02***
	(0.09)	(0.10)	(0.01)	(0.01)	(0.04)	(0.04)	(0.00)	(0.00)
Patent_Acc	0.24***	0.33***	0.03***	0.02**	-0.01	0.04	-0.00	0.00
	(0.07)	(0.09)	(0.00)	(0.01)	(0.03)	(0.04)	(0.00)	(0.00)
Observations	55740	56400	41036	56400	634280	634280	624812	629320
R^2/Pseudo R^2	0.069	0.046	0.175	0.211	0.013	0.048	0.071	0.208
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Quarter FE	Yes	No	Yes	No	Yes	No	Yes	No
Industry-Quarter FE	Yes	No	Yes	No	Yes	No	Yes	No
Company FE	No	Yes	No	Yes	No	Yes	No	Yes

Table 7: Trademarks Possessed by Portfolio Company and Raising VC Financing

The table investigates how the impact of ChiNext/STAR on VC financing varies with trademarks possessed by the portfolio company. The sample is a company×quarter panel, and in columns (1) to (4), it covers the third quarter of 2005 to the fourth quarter of 2012 (data source: NECIPS) while in columns (5) to (8), it ranges over the first quarter of 2013 to the fourth quarter of 2022 (data source: Zero2IPO). In addition, we limit the sample of portfolio companies with at least one valid trademark during the sample period in Panel B. The dependent variable is the number of VC deals received by the company in the observation's quarter (× 100 for demonstration purposes in OLS regressions). The independent variable *I(Trademark)* in Panel A is a dummy variable that equals one if the company has at least one valid trademark throughout the sample period. The independent variable *Trademark_Acc* in Panel B represents the accumulated number of valid trademarks up to the observation quarter. In columns (1) to (4), the *Post* indicator identifies all company×quarter observations after the first quarter of 2010 (i.e., the release of the *ChiNext Listing Guidelines*). In columns (5) to (8), the *Post* indicator identifies all company×quarter observations after the first quarter of 2019 (i.e., the release of the *STAR Listing Opinions*). More variable definitions are provided in Table A1. Columns (1), (2), (5), and (6) report the results of OLS regressions. Columns (3), (4), (7), and (8) report the results of Poisson regressions. All regressions include quarter fixed effects (which subsume the non-interacted *Post* indicator). Province-quarter, industry-quarter, and company fixed effects (which subsume the non-interacted *I(Trademark)* and *Trademark_Acc*) are indicated in each column. Robust standard errors clustered at the province level are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.	n(Deals) ×100		n(Deals)		n(Deals) ×100		n(Deals)	
	ChiNext				STAR			
	OLS		Poisson		OLS		Poisson	
Panel A: Full sample								
Post × I(Trademark)	2.18***	4.05***	0.15**	0.38***	1.19	2.15**	-0.03	0.03
	(0.38)	(0.53)	(0.06)	(0.09)	(0.76)	(0.80)	(0.05)	(0.04)
I(Trademark)	0.47***		0.15***		2.48***		0.34***	
	(0.11)		(0.03)		(0.28)		(0.07)	
Observations	1979460	1979460	1968488	1979460	1125200	1125200	1117158	1116680
R^2/Pseudo R^2	0.014	0.024	0.058	0.079	0.009	0.047	0.062	0.201
Panel B: The sample of companies with at least one trademark								
Post × Trademark_Acc	-0.05*	0.05	-0.01***	-0.00	-0.04***	-0.05***	-0.05	-0.58*
	(0.03)	(0.03)	(0.00)	(0.00)	(0.03)	(0.04)	(0.00)	(0.00)
Trademark_Acc	0.07**	0.02	0.01***	-0.00	-0.01	-0.09***	-0.00	-0.01***
	(0.03)	(0.05)	(0.00)	(0.01)	(0.02)	(0.03)	(0.00)	(0.00)
Observations	187350	187500	162896	187500	811320	811320	802145	806600
R^2/Pseudo R^2	0.034	0.035	0.129	0.148	0.011	0.048	0.064	0.208
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Quarter FE	Yes	No	Yes	No	Yes	No	Yes	No
Industry-Quarter FE	Yes	No	Yes	No	Yes	No	Yes	No
Company FE	No	Yes	No	Yes	No	Yes	No	Yes

Table 8: Certificates Granted to the Company and Raising VC Financing

The table investigates how the impact of ChiNext/STAR on VC financing varies with certificates possessed by the portfolio company. The sample is a company×quarter panel, and in columns (1) to (4), it covers the third quarter of 2005 to the fourth quarter of 2012 (data source: NECIPS) while in columns (5) to (8), it ranges over the first quarter of 2013 to the fourth quarter of 2022 (data source: Zero2IPO). In addition, we limit the sample of portfolio companies with at least one certificate granted during the sample period in Panel B. The dependent variable is the number of VC deals received by the company in the observation's quarter (× 100 for demonstration purposes in OLS regressions). The independent variable *I(Certificate)* in Panel A is a dummy variable that equals one if the company has at least one certificates granted throughout the sample period. The independent variable *Certificate_Acc* in Panel B represents the accumulated number of granted certificates up to the observation quarter. In columns (1) to (4), the *Post* indicator identifies all company×quarter observations after the first quarter of 2010 (i.e., the release of the *ChiNext Listing Guidelines*). In columns (5) to (8), the *Post* indicator identifies all company×quarter observations after the first quarter of 2019 (i.e., the release of the *STAR Listing Opinions*). More variable definitions are provided in Table A1. Columns (1), (2), (5), and (6) report the results of OLS regressions. Columns (3), (4), (7), and (8) report the results of Poisson regressions. All regressions include quarter fixed effects (which subsume the non-interacted *Post* indicator). Province-quarter, industry-quarter, and company fixed effects (which subsume the non-interacted *I(Certificate)* and *Certificate_Acc*) are indicated in each column. Robust standard errors clustered at the province level are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. Var.	n(Deals) ×100		n(Deals)		n(Deals) ×100		n(Deals)	
	ChiNext				STAR			
	OLS		Poisson		OLS		Poisson	
Panel A: Full sample								
Post × I(Certificate)	0.89***	2.20***	0.02	0.19**	3.83***	5.82***	0.22**	0.42***
	(0.28)	(0.42)	(0.05)	(0.08)	(0.66)	(0.72)	(0.10)	(0.10)
I(Certificate)	0.50***		0.16***		3.09***		0.41***	
	(0.09)		(0.03)		(0.35)		(0.03)	
Observations	1979460	1979460	1968488	1979460	1125200	1125200	1117158	1116680
R^2/Pseudo R^2	0.014	0.024	0.057	0.079	0.010	0.047	0.066	0.202
Panel B: The sample of companies with at least one certificate								
Post × Certificate_Acc	0.01	0.06	-0.01	-0.00	-0.19***	-0.15**	-0.02***	-0.01**
	(0.07)	(0.08)	(0.01)	(0.01)	(0.05)	(0.06)	(0.00)	(0.00)
Certificate_Acc	0.06*	0.16**	0.01**	0.01	0.02	-0.09**	0.00	-0.01***
	(0.03)	(0.07)	(0.01)	(0.01)	(0.03)	(0.04)	(0.00)	(0.00)
Observations	312300	312420	292480	312420	773960	773960	765064	769600
R^2/Pseudo R^2	0.027	0.032	0.106	0.122	0.011	0.048	0.065	0.207
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Quarter FE	Yes	No	Yes	No	Yes	No	Yes	No
Industry-Quarter FE	Yes	No	Yes	No	Yes	No	Yes	No
Company FE	No	Yes	No	Yes	No	Yes	No	Yes

Table 9: Company Characteristics at IPO: Main/SME Boards versus ChiNext

The table reports the results of OLS regressions examining how companies listed on ChiNext differ from those listed on the main boards in terms of company characteristics at the time of IPO. In columns (1) and (2), the sample includes all companies listed from 1990 to June 2019 (up until the introduction of the STAR market). Columns (3) to (8), the sample include companies listed from 2009 (when ChiNext was introduced) to June 2019. In columns (5) and (6), the sample further excludes reverse mergers through IPO (following Qian, Ritter, and Shao (2024)). In columns (7) and (8), the sample further excludes companies that once had warnings ("ST" and "*ST"). Data source: Wind. The dependent variable in Panel A is company age at IPO, which is the number of years since the official registered founding date in NECIPS. In Panels B to F, the dependent variables are net profit, revenue, net assets, net profit growth rate, revenue growth rate over three years prior to IPO. The key independent variable *ChiNext* is a dummy variable that equals one if the company is listed on ChiNext. IPO Year, Province, and Year fixed effects are indicated in each column. t statistics are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1990 - 2019		2009 (Intro. of ChiNext) - 2019 (Intro. of STAR)					
	All		All		No Reverse Mergers		No STs	
Panel A: Dependent Variable: Company Age								
ChiNext	-1.35***	-1.42***	-1.35***	-1.37***	-1.33***	-1.34***	-1.38***	-1.40***
	(-5.92)	(-6.27)	(-5.28)	(-5.30)	(-5.19)	(-5.17)	(-5.22)	(-5.25)
IPO Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	Yes	No	Yes	No	Yes
N	3502	3502	2018	2018	1996	1996	1895	1895
adj. R^2	0.519	0.532	0.116	0.121	0.116	0.120	0.111	0.114
Panel B: Dependent Variable : Net Profit Three Years Prior to IPO (in million yuan)								
ChiNext	-278.13***	-343.17***	-278.13***	-313.86***	-283.48***	-319.25***	-298.14***	-333.27***
	(-4.06)	(-5.01)	(-6.80)	(-7.58)	(-6.86)	(-7.65)	(-6.88)	(-7.62)
N	13600	13600	8072	8072	7984	7984	7580	7580
adj. R^2	0.023	0.041	0.022	0.033	0.022	0.033	0.022	0.034
Panel C: Dependent Variable : Revenue Three Years Prior to IPO (in billion yuan)								
ChiNext	-2.83***	-3.39***	-2.83***	-3.30***	-2.87***	-3.35***	-3.00***	-3.47***
	(-6.49)	(-7.84)	(-7.42)	(-8.60)	(-7.47)	(-8.65)	(-7.43)	(-8.56)
N	13622	13622	8072	8072	7984	7984	7580	7580
adj. R^2	0.034	0.065	0.041	0.062	0.042	0.062	0.042	0.063
Panel D: Dependent Variable : Net Asset Three Years Prior to IPO (in billion yuan)								
ChiNext	-1.74***	-2.07***	-1.74***	-1.92***	-1.77***	-1.95***	-1.85***	-2.03***
	(-4.14)	(-4.92)	(-5.71)	(-6.23)	(-5.75)	(-6.26)	(-5.74)	(-6.23)
N	13456	13456	8065	8065	7977	7977	7574	7574
adj. R^2	0.017	0.033	0.016	0.023	0.016	0.023	0.016	0.024
Panel E: Dependent Variable : Net Profit Growth Rate Three Years Prior to IPO (in %)								
ChiNext	31.82**	32.56**	31.82***	36.13***	31.58***	35.99***	24.83***	28.51***
	(2.36)	(2.40)	(4.31)	(4.83)	(4.24)	(4.77)	(3.93)	(4.46)
N	11930	11930	7607	7607	7527	7527	7164	7164
adj. R^2	0.012	0.019	0.009	0.020	0.009	0.020	0.008	0.020
Panel F: Dependent Variable : Revenue Growth Rate Three Years Prior to IPO (in %)								
ChiNext	12.94	15.93	12.94***	13.32***	12.82***	13.23***	12.07***	12.51***
	(0.66)	(0.80)	(13.17)	(13.65)	(12.96)	(13.46)	(12.32)	(12.85)
N	11887	11887	7605	7605	7525	7525	7163	7163
adj. R^2	0.005	0.009	0.058	0.104	0.058	0.105	0.057	0.102
IPO Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes	No	Yes

Table 10: Company Characteristics at IPO: Main/SME/ChiNext Boards versus STAR

The table reports the results of OLS regressions examining how companies listed on STAR differ from those listed on ChiNext and the main boards in terms of company characteristics at the time of IPO. In columns (1) and (2), the sample includes all companies listed from 1990 to 2023. In columns (3) to (8), the sample include companies listed from 2019 (when STAR was introduced) to 2023. In columns (5) and (6), the sample further excludes reverse mergers through IPO (following Qian, Ritter, and Shao (2024)). In columns (7) and (8), the sample further excludes companies that once had warnings ("ST" and "*ST"). Data source: Wind. The dependent variable in Panel A is company age at IPO, which is the number of years since the official registered founding date in NECIPS. In Panels B to F, the dependent variables are net profit, revenue, net assets, net profit growth rate, revenue growth rate over three years prior to IPO. The key independent variable $STAR$ is a dummy variable that equals one if the company is listed on STAR. IPO Year, Province, and Year fixed effects are indicated in each column. t statistics are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1990 - 2023		2019 (Intro. of STAR) - 2023					
	All		All		No Reverse Mergers		No STs	
Panel A: Dependent Variable: Company Age								
STAR	-2.63***	-2.62***	-2.63***	-2.58***	-2.63***	-2.58***	-2.60***	-2.54***
	(-9.73)	(-9.63)	(-8.42)	(-7.98)	(-8.42)	(-7.98)	(-8.30)	(-7.85)
IPO Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	Yes	No	Yes	No	Yes
N	5283	5283	1899	1899	1899	1899	1887	1887
adj. R^2	0.502	0.507	0.048	0.054	0.048	0.054	0.047	0.053
Panel B: Dependent Variable : Net Profit Three Years Prior to IPO (in million yuan)								
STAR	-357.85***	-441.08***	-357.85***	-462.08***	-357.85***	-462.08***	-360.48***	-459.14***
	(-4.76)	(-5.77)	(-3.97)	(-4.99)	(-3.97)	(-4.99)	(-3.97)	(-4.92)
N	11539	11539	7594	7594	7594	7594	7546	7546
adj. R^2	0.007	0.018	0.004	0.018	0.004	0.018	0.004	0.018
Panel C: Dependent Variable : Revenue Three Years Prior to IPO (in billion yuan)								
STAR	-2.28***	-3.04***	-2.28***	-3.26***	-2.28***	-3.26***	-2.29***	-3.23***
	(-4.02)	(-5.28)	(-3.71)	(-5.19)	(-3.71)	(-5.19)	(-3.70)	(-5.10)
N	11522	11522	7577	7577	7577	7577	7529	7529
adj. R^2	0.009	0.026	0.002	0.023	0.002	0.023	0.002	0.024
Panel D: Dependent Variable : Net Asset Three Years Prior to IPO (in billion yuan)								
STAR	-2.44***	-3.32***	-2.44***	-3.59***	-2.44***	-3.59***	-2.45***	-3.54***
	(-3.58)	(-4.81)	(-2.96)	(-4.24)	(-2.96)	(-4.24)	(-2.95)	(-4.16)
N	11539	11539	7594	7594	7594	7594	7546	7546
adj. R^2	0.004	0.020	0.003	0.022	0.003	0.022	0.003	0.023
Panel E: Dependent Variable : Net Profit Growth Rate Three Years Prior to IPO (in %)								
STAR	72.98***	81.84***	72.98***	84.17***	72.98***	84.17***	71.68***	82.94***
	(3.22)	(3.52)	(2.66)	(2.96)	(2.66)	(2.96)	(2.60)	(2.90)
N	11451	11451	7512	7512	7512	7512	7464	7464
adj. R^2	0.002	0.002	0.002	0.001	0.002	0.001	0.002	0.001
Panel F: Dependent Variable : Revenue Growth Rate Three Years Prior to IPO (in %)								
STAR	111.97***	111.89***	111.97***	112.09***	111.97***	112.09***	112.68***	113.39***
	(4.82)	(4.70)	(3.90)	(3.77)	(3.90)	(3.77)	(3.90)	(3.79)
N	11428	11428	7488	7488	7488	7488	7440	7440
adj. R^2	0.002	0.001	0.002	-0.000	0.002	-0.000	0.002	-0.000
IPO Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes	No	Yes

Appendix

Table A1: Variable Definitions

Variable	Definition
Age	The number of years since the registered founding quarter at the observation year-quarter.
Age at 2012 Q4	company age (in terms of years) at the fourth quarter in 2021
Age at 2019 Q1	company age (in terms of years) at the first quarter in 2019
I(ChiNext)	A dummy that equals one if the company is listed on ChiNext, and zero otherwise.
I(STAR)	A dummy that equals one if the company is listed on STAR, and zero otherwise.
I(SOE)	A dummy that equals one if the company is state-owned, and zero otherwise.
n(Deals)	the number of venture capital financings received by a company in the observation year-quarter
Post	A dummy that equals one if the company×year-quarter observation in or after the fourth quarter of 2009 (in the ChiNext sample) or the first quarter of 2019 (in the STAR sample), and zero otherwise.
% Supported	The percentage of sub-business activities in the registry business description that contain key words of regulatory-supported businesses.
% Opposed	The percentage of sub-business activities in the registry business description that contain key words of regulatory-opposed businesses.
Similarity Supported	The cosine similarity between text vectors of the registry business description and the official descriptions of the especially supported businesses.
Similarity Opposed	The cosine similarity between text vectors of the registry business description and the official descriptions of the especially opposed businesses.
Round	The sequence of VC financing round received by a company in the observation year-quarter.
1(Patent)	A dummy that equals one if the company has ever been granted a patent in the sample period, and zero otherwise (withdrawn patents are excluded) .
Patent_Acc	The accumulated number of patents received by a company in the observation year-quarter.
1(Trademark)	A dummy that equals one if the company has ever been granted a trademark in the sample period, and zero otherwise (invalid trademarks are excluded).
Trademark_Acc	The accumulated number of trademarks received by a company in the observation year-quarter.
1(Certificate)	A dummy that equals one if the company has ever been granted a certificate in the sample period, and zero otherwise.
Certificate_Acc	The accumulated number of certificates received by a company in the observation year-quarter.

Internet Appendices

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Internet Appendix A: Institutional Background

A Brief History of the Development of the Chinese Stock Market

China entered a centrally planned economic era shortly after WWII until 1978, and no financial markets existed during this period. Modern financial markets in China emerged in the 1980s: the Shenzhen Special Economic Zone began over-the-counter share trading in 1986. The Shanghai Stock Exchange (SSE) was reestablished in 1990, followed by the Shenzhen Stock Exchange (SZSE) in 1991. These developments marked the beginning of China's contemporary financial market era.

The main board consists of Shanghai Stock Exchange (SSE) established in November 1990 and Shenzhen Stock Exchange (SZSE) established in April 1991. The main board focuses on supporting high-quality enterprises with mature business models and stable operating performance.

In 1992, the China Securities Regulatory Commission (CSRC) was established to implement a nationwide system that controls the equity issuance process. Between 1990 and June 1999, IPO allocation follows a *quota-based IPO system*, where the total IPO volume each year is pre-determined and allocated to each province and industry. Between July 1990 and 2019, the Securities Law was introduced with the application of the *approval-based IPO system*: enterprises can apply for listing if they meet the listing conditions, but IPOs were still under the approval of CSRC.

In 1999, the Communist Party Central Committee and the State Council issued the "Decision on Strengthening Technological Innovation, Developing High-tech Industries, and Achieving Industrialization", proposing a special section for high-tech enterprises on the existing stock exchanges to promote high-tech industries. However, the plan was postponed due to the burst of the technology stock bubble on NASDAQ, as the central leadership believed that China's capital market was not yet mature enough for new sections.

In October 2003, the Third Plenary Session of the 16th Central Committee of the Communist Party of China (CPC) issued the "Decision on Several Issues Concerning the Im-

provement of the Socialist Market Economy System", which proposed the establishment of a multi-level capital market system and the promotion of the construction of China's second board market. In 2004, SZSE established the Small and Medium Enterprise Board (SME Board). While the name of the SME Board gives the impression that small firms are more likely to list there, it shares the exact same listing requirements and IPO procedure as the main boards. Instead of lowering the listing requirements, the SME Board steers small firms to list through a mechanism called "window guidance" in the IPO filing procedure, which means that the officers at the China Securities Regulatory Commission (CSRC) decide whether the company is listed on the SME board or the main board. In March 2014, the "window guidance" mechanism was eliminated so companies could choose their listing venue. Moreover, the SME board was integrated into the main board in 2021.

In March 2008, the central government clearly stated that ChiNext would be launched to promote the development of innovative and growth-oriented enterprises. However, due to the global financial crisis in the same year, the plan to establish ChiNext was postponed again. Finally, China's second board market, ChiNext, was inaugurated in SZSE on 23 October 2009.

On November 5, 2018, President Xi Jinping announced at the opening ceremony of the first China International Import Expo held in Shanghai that a science and technology innovation board, the STAR Market, would be established on SSE, and a registration-based IPO system would be piloted. This move aims to support the development of Shanghai as an international financial center and a hub for technological innovation, while continuously improving the fundamental capital market system.

On January 30, 2019, the CSRC issued "Implementation Opinions on the Establishment of the Science and Technology Innovation Board on the Shanghai Stock Exchange and the Pilot Registration System". On June 13, 2019, the STAR Market was officially launched, and the registration system was piloted. In August 2020, the first batch of enterprises listed on the SZSE ChiNext Market adopted a registration-based IPO System. On 17 February 2023, the main board adopted a *registration-based IPO System*.

Approval versus registration system

The approval-based IPO system is mainly designed to protect investors from investment risks, so the system requires the approval of CSRC to ensure that the timing and the offer price of the IPO do not cause issues for the current market or prospective investors. However, the approval system has caused long waiting times for IPOs, and the government occasionally suspended IPOs for the goal of investor protection and facilitating capital formation (Huang and Tian, 2024; Cong, Lee, Qu, Shen, et al., 2020). Also, a cap on the P/E ratio generally applies to the offer price, resulting in high underpricing and indirect equity financing costs (Qian, Ritter, and Shao, 2024). Furthermore, it's very difficult for firms outside the manufacturing industry to meet the strict listing requirements. Firms, especially high-tech firms, respond by going public on exchanges outside the main board. Alternatively, they choose to attain listing status through reverse mergers (Lee, Qu, and Shen, 2019), resulting in a high "shell value" of listed firms, which largely reduces the stock price informativeness.

The registration system aims at overcoming these issues. By changing to a U.S.-style registration system, companies gain easier access to the capital market: firms do not need to be profitable before listing, nor get approval from CSRC for IPOs; the offer price is not subjective to a P/E cap; more disclosure is required; dual-class share scheme or weighted voting rights are allowed. Qian, Ritter, and Shao, 2024 show that under the registration system, institutional demand decreases, but IPOs still receive high first-day returns.

Internet Appendix B: Additional Tables

Table IB.1: Listing Requirements: Main/SME Boards, ChiNext, and STAR

Panel A: Main/SME Boards versus ChiNext during May, 2009 to June, 2020	
Main Boards / SME Board	**ChiNext**
May 1st, 2009 to May 13, 2014	
Listing Requirement 1	
Operated at least three years	Operated at least three years
Listing Requirement 2	
In the three years prior to IPO, net profits have been positive AND the accumulated sum of net profits $\geq$ 30 million yuan.	In the two years prior to IPO, net profits have been positive AND the accumulated sum of net profits $\geq$ 10 million yuan AND the growth rate of net profits is positive; OR, In the year prior to IPO, net profits $\geq$ 5 million yuan AND revenue $\geq$ 50 million yuan AND In the two years prior to IPO, the growth rate of revenue $\geq$ 30%;
Listing Requirement 3	
In the three years prior to IPO, the accumulated sum of net cashflow from operation $>$ 50 million yuan OR, In the three years prior to IPO, the accumulated sum of revenue $>$ 300 million yuan	-
Listing Requirement 4	
In the year prior to IPO, there are no unrecovered losses	In the year prior to IPO, net assets $\geq$ 20 million yuan AND no unrecovered losses.
Listing Requirement 7	
In the year prior IPO, intangible assets $\leq$ 20% of net assets	-
Listing Requirement 6	
Capitalization before IPO issuance $\geq$ 30 million yuan	Capitalization after IPO issuance $\geq$ 30 million yuan
May 14, 2014 to June 5, 2018	
Unchanged	"the growth rate of net profits is positive", "net profits $\geq$ 5 million yuan", and "the growth rate of revenue $\geq$ 30%" of Requirement 2 are removed
June 6, 2018 to June 12, 2020	
For the issuance of depositary receipts within China by innovative enterprises, remove	
Requirement 2 no unrecovered losses (Requirement 4)	Requirement 2 no unrecovered losses in Requirement 4

Panel B: ChiNext versus STAR during March, 2019 to Feb 1, 2023		
Main Boards / SME Board	**ChiNext**	**STAR**
Mar 1, 2019 to Jun 11, 2020		
Main Board and ChiNext apply the approval system; STAR market applies the registration system		
Listing Requirement 1		
Operated at least three years	Operated at least three years	Operated at least three years
Listing Requirement 6		
Capitalization before IPO issuance $\geq$ 50 million yuan	Capitalization after IPO issuance $\geq$ 30 million yuan	Capitalization after IPO issuance $\geq$ 30 million yuan
Listing requirements 2-5 of main Board and ChiNext unchanged Listing requirements of STAR depend on the estimated market valuation		
If the estimated market valuation is $\geq$ 1 billion	Net profit for the last 2 years is positive, and cumulative net profit is no less than 50 million. Alternatively, net profit for the last year is positive, and operating revenue in the last year $\geq$ 100 million.	
If the estimated market valuation is $\geq$ 1.5 billion	operating revenue in the last year $\geq$ 200 million, and R&D investment $\geq$ 15% in the accumulative operating revenue in the last 3 years.	
If the estimated market valuation is $\geq$ 2 billion	operating revenue $\geq$ 300 million in the last year, and net cash flow from operation $\geq$ 100 million in the last 3 years.	
If the estimated market valuation is $\geq$ 3 billion	operating revenue $\geq$ 300 million in the last year.	
If the estimated market valuation is $\geq$ 4 billion	flexible rules are applied (such as huge market size, pharmaceutical companies with core products, or technical advantages).	

Table IB.2: Profits and Revenue after IPO: Main/SME Boards versus ChiNext

The table reports the results of OLS regressions examining how companies listed on ChiNext differ from those listed on the main boards in terms of post-IPO profits and revenue. In columns (1) and (2), the sample includes all companies listed from 1990 to June 2019 (up until the introduction of the STAR market). Columns (3) to (8), the sample include companies listed from 2009 (when ChiNext was introduced) to June 2019. In columns (5) and (6), the sample further excludes reverse mergers through IPO (following Qian, Ritter, and Shao (2024)). In columns (7) and (8), the sample further excludes companies that once had warnings ("ST" and "*ST"). Data source: Wind. The dependent variable in Panels A to C is the net profit over the window of one, one to three, or three to five years after the company's IPO year (excluded), as specified in each panel. The dependent variable in Panels D to F is the revenue over the same time windows. The key independent variable *ChiNext* is a dummy variable that equals one if the company is listed on ChiNext. IPO Year, Province, and Year fixed effects are indicated in each column. t statistics are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1990 - 2019		2009 (Intro. of ChiNext) - 2019 (Intro. of STAR)					
	All		All		No Reverse Mergers		No STs	
Dep. Var.	Net Profit (in million yuan)							
Panel A: within one year after IPO								
ChiNext	-370.12**	-172.48	-370.12***	-182.42	-378.48***	-189.57	-399.55***	-190.08
	(-2.01)	(-0.94)	(-2.64)	(-1.27)	(-2.67)	(-1.31)	(-2.69)	(-1.26)
N	3500	3500	2018	2018	1996	1996	1895	1895
adj. R^2	0.019	0.095	0.012	0.091	0.013	0.091	0.013	0.094
Panel B: one to three years after IPO								
ChiNext	-433.37***	-178.32	-433.37***	-216.69*	-443.18***	-225.26*	-477.70***	-236.43*
	(-2.67)	(-1.11)	(-3.48)	(-1.70)	(-3.52)	(-1.75)	(-3.62)	(-1.75)
N	7002	7002	4036	4036	3992	3992	3790	3790
adj. R^2	0.025	0.110	0.013	0.087	0.013	0.087	0.014	0.090
Panel C: three to five years after IPO								
ChiNext	-493.82**	-219.62	-493.82***	-264.53*	-501.04***	-266.96*	-556.25***	-290.37*
	(-2.16)	(-0.97)	(-3.19)	(-1.67)	(-3.21)	(-1.67)	(-3.39)	(-1.73)
N	6662	6662	3694	3694	3650	3650	3458	3458
adj. R^2	0.025	0.117	0.010	0.090	0.010	0.090	0.011	0.095
Dep. Var.	Revenue (in billion yuan)							
Panel D: within one year after IPO								
ChiNext	-3.82***	-3.16**	-3.82***	-3.38***	-3.89***	-3.46***	-4.06***	-3.55***
	(-2.95)	(-2.42)	(-3.75)	(-3.19)	(-3.78)	(-3.22)	(-3.77)	(-3.15)
N	3500	3500	2018	2018	1996	1996	1895	1895
adj. R^2	0.027	0.083	0.031	0.070	0.032	0.070	0.032	0.071
Panel E: one to three years after IPO								
ChiNext	-4.48***	-3.73***	-4.48***	-4.02***	-4.56***	-4.11***	-4.79***	-4.23***
	(-4.05)	(-3.36)	(-5.34)	(-4.61)	(-5.39)	(-4.66)	(-5.39)	(-4.59)
N	7003	7003	4036	4036	3992	3992	3790	3790
adj. R^2	0.029	0.089	0.031	0.076	0.031	0.077	0.032	0.078
Panel F: three to five years after IPO								
ChiNext	-5.12***	-4.25**	-5.12***	-4.57***	-5.13***	-4.57***	-5.55***	-4.86***
	(-3.09)	(-2.54)	(-5.69)	(-4.86)	(-5.66)	(-4.81)	(-5.81)	(-4.87)
N	6660	6660	3694	3694	3650	3650	3458	3458
adj. R^2	0.028	0.082	0.045	0.084	0.045	0.085	0.047	0.087
IPO Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes	No	Yes

Table IB.3: Growth Rate of Profits and Revenue after IPO: Main/SME Boards versus ChiNext

The table reports the results of OLS regressions examining how companies listed on ChiNext differ from those listed on the main boards in terms of company characteristics at the time of IPO. In columns (1) and (2), the sample includes all companies listed from 1990 to June 2019 (up until the introduction of the STAR market). Columns (3) to (8), the sample include companies listed from 2009 (when ChiNext was introduced) to June 2019. In columns (5) and (6), the sample further excludes reverse mergers through IPO (following Qian, Ritter, and Shao (2024)). In columns (7) and (8), the sample further excludes companies that once had warnings ("ST" and "*ST"). Data source: Wind. The dependent variable in Panels A to C is the net profit growth rate over the window of one, one to three, or three to five years after the company's IPO year (excluded), as specified in each panel. The dependent variable in Panels D to F is the revenue growth rate over the same time windows. The key independent variable *ChiNext* is a dummy variable that equals one if the company is listed on ChiNext. IPO Year, Province, and Year fixed effects are indicated in each column. t statistics are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1990 - 2019		2009 (Intro. of ChiNext) - 2019 (Intro. of STAR)					
	All		All		No Reverse Mergers		No STs	
Dep. Var.	Net Profit Growth Rate (in %)							
Panel A: within one year after IPO								
ChiNext	-8.01	-7.46	-8.01	-7.48	-8.18	-7.80	-1.10	1.80
	(-0.90)	(-0.81)	(-1.56)	(-1.37)	(-1.58)	(-1.41)	(-0.38)	(0.59)
N	3486	3486	2018	2018	1996	1996	1895	1895
adj. R^2	0.018	0.030	0.009	0.007	0.010	0.007	0.015	0.034
Panel B: one to three years after IPO								
ChiNext	12.83	7.40	12.83	5.52	12.51	3.92	12.97	6.86
	(0.70)	(0.39)	(0.89)	(0.36)	(0.87)	(0.25)	(0.96)	(0.47)
N	6999	6999	4036	4036	3992	3992	3790	3790
adj. R^2	-0.000	0.003	-0.002	-0.005	-0.002	-0.006	-0.002	-0.008
Panel C: three to five years after IPO								
ChiNext	88.29	28.68	88.29***	84.02***	92.10***	87.31***	45.98**	50.36**
	(0.23)	(0.07)	(3.29)	(2.94)	(3.42)	(3.04)	(2.10)	(2.16)
N	6662	6662	3694	3694	3650	3650	3458	3458
adj. R^2	-0.001	0.002	0.006	0.012	0.006	0.012	0.005	0.014
Dep. Var.	Revenue Growth Rate (in %)							
Panel D: within one year after IPO								
ChiNext	5.75***	5.45***	5.75***	5.31***	5.62***	5.14***	5.92***	5.42***
	(3.03)	(2.78)	(4.53)	(3.96)	(4.40)	(3.81)	(4.50)	(3.89)
N	3487	3487	2018	2018	1996	1996	1895	1895
adj. R^2	0.033	0.038	0.040	0.053	0.041	0.055	0.036	0.047
Panel E: one to three years after IPO								
ChiNext	10.93***	9.89***	10.93***	9.17***	10.86***	8.99***	10.29***	8.42***
	(6.31)	(5.52)	(7.68)	(6.09)	(7.58)	(5.92)	(7.12)	(5.51)
N	7001	7001	4036	4036	3992	3992	3790	3790
adj. R^2	0.016	0.024	0.024	0.034	0.024	0.033	0.022	0.032
Panel F: three to five years after IPO								
ChiNext	11.83***	10.71***	11.83***	11.13***	12.20***	11.60***	11.09***	10.91***
	(4.49)	(3.94)	(6.04)	(5.37)	(6.22)	(5.58)	(5.54)	(5.15)
N	6660	6660	3694	3694	3650	3650	3458	3458
adj. R^2	0.011	0.024	0.015	0.033	0.016	0.034	0.014	0.031
IPO Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes	No	Yes

Table IB.4: Profits and Revenue after IPO: Main/SME/ChiNext Boards versus STAR

The table reports the results of OLS regressions examining how companies listed on STAR differ from those listed on ChiNext and the main boards in terms of company characteristics at the time of IPO. In columns (1) and (2), the sample includes all companies listed from 1990 to 2023. In columns (3) to (8), the sample include companies listed from 2019 (when STAR was introduced) to 2023. In columns (5) and (6), the sample further excludes reverse mergers through IPO (following Qian, Ritter, and Shao (2024)). In columns (7) and (8), the sample further excludes companies that once had warnings ("ST" and "*ST"). Data source: Wind. The dependent variable in Panel A (Panel B) is the net profit over the window of one year (one to three years) after the company's IPO year (excluded), as specified in each panel. The dependent variable in Panel C (Panel D) is the revenue over the same time windows. The key independent variable $STAR$ is a dummy variable that equals one if the company is listed on STAR. IPO Year, Province, and Year fixed effects are indicated in each column. t statistics are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1990 - 2023		2019 (Intro. of STAR) - 2023					
	All		All		No Reverse Mergers		No STs	
Dep. Var.	Net Profit (in million yuan)							
Panel A: within one year after IPO								
STAR	-408.97*	-505.46**	-408.97	-548.87**	-408.97	-548.87**	-411.36	-542.76*
	(-1.95)	(-2.37)	(-1.52)	(-1.96)	(-1.52)	(-1.96)	(-1.51)	(-1.93)
N	2831	2831	1586	1586	1586	1586	1574	1574
adj. R^2	0.005	0.010	0.001	0.005	0.001	0.005	0.001	0.005
Panel B: one to three years after IPO								
STAR	-400.86***	-450.39***	-400.86**	-479.74**	-400.86**	-479.74**	-411.46**	-481.96**
	(-2.99)	(-3.31)	(-1.97)	(-2.24)	(-1.97)	(-2.24)	(-2.00)	(-2.22)
N	4292	4292	1268	1268	1268	1268	1252	1252
adj. R^2	0.039	0.043	0.014	0.008	0.014	0.008	0.014	0.008
Dep. Var.	Revenue (in billion yuan)							
Panel C: within one year after IPO								
STAR	-2.91*	-3.79**	-2.91	-4.16**	-2.91	-4.16**	-2.92	-4.10**
	(-1.87)	(-2.39)	(-1.62)	(-2.25)	(-1.62)	(-2.25)	(-1.62)	(-2.20)
N	2831	2831	1586	1586	1586	1586	1574	1574
adj. R^2	0.010	0.020	-0.000	0.009	-0.000	0.009	-0.000	0.010
Panel D: one to three years after IPO								
STAR	-2.87**	-3.58***	-2.87**	-3.82***	-2.87**	-3.82***	-2.92**	-3.82***
	(-2.23)	(-2.75)	(-2.53)	(-3.21)	(-2.53)	(-3.21)	(-2.54)	(-3.18)
N	4292	4292	1268	1268	1268	1268	1252	1252
adj. R^2	0.031	0.038	0.010	0.008	0.010	0.008	0.010	0.008
IPO Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes	No	Yes

Table IB.5: Growth Rate of Profits and Revenue after IPO: Main/SME/ChiNext Boards versus STAR

The table reports the results of OLS regressions examining how companies listed on STAR differ from those listed on ChiNext and the main boards in terms of company characteristics at the time of IPO. In columns (1) and (2), the sample includes all companies listed from 1990 to 2023. In columns (3) to (8), the sample include companies listed from 2019 (when STAR was introduced) to 2023. In columns (5) and (6), the sample further excludes reverse mergers through IPO (following Qian, Ritter, and Shao (2024)). In columns (7) and (8), the sample further excludes companies that once had warnings ("ST" and "*ST"). Data source: Wind. The dependent variable in Panel A (Panel B) is the net profit growth rate over the window of one year (one to three years) after the company's IPO year (excluded), as specified in each panel; the dependent variable in Panel C (Panel D) is the revenue growth rate over the same time windows. The key independent variable *STAR* is a dummy variable that equals one if the company is listed on STAR. IPO Year, Province, and Year fixed effects are indicated in each column. t statistics are reported in parentheses. *, **, and *** denote significance at the 90%, 95%, and 99% confidence levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1990 - 2023		2019 (Intro. of STAR) - 2023					
	All		All		No Reverse Mergers		No STs	
Dep. Var.	Net Profit Growth Rate (in %)							
Panel A: within one year after IPO								
STAR	-2.80	-3.06	-2.80	-5.93	-2.80	-5.93	-1.52	-4.71
	(-0.41)	(-0.44)	(-0.33)	(-0.67)	(-0.33)	(-0.67)	(-0.18)	(-0.53)
N	2831	2831	1586	1586	1586	1586	1574	1574
adj. R^2	0.018	0.015	0.018	0.013	0.018	0.013	0.018	0.013
Panel B: one to three years after IPO								
STAR	-33.55	-41.04	-33.55	-46.84**	-33.55	-46.84**	-36.47*	-51.00**
	(-1.32)	(-1.59)	(-1.56)	(-2.09)	(-1.56)	(-2.09)	(-1.74)	(-2.34)
N	4292	4292	1268	1268	1268	1268	1252	1252
adj. R^2	-0.000	-0.001	0.000	0.012	0.000	0.012	0.001	0.011
Dep. Var.	Revenue Growth Rate (in %)							
Panel C: within one year after IPO								
STAR	432.22***	395.58***	432.22***	369.45**	432.22***	369.45**	437.20***	374.84**
	(3.64)	(3.25)	(2.73)	(2.23)	(2.73)	(2.23)	(2.74)	(2.25)
N	2830	2830	1585	1585	1585	1585	1573	1573
adj. R^2	0.004	-0.004	0.005	-0.009	0.005	-0.009	0.005	-0.009
Panel D: one to three years after IPO								
STAR	9.53***	9.09***	9.53***	9.21***	9.53***	9.21***	9.65***	9.13***
	(3.47)	(3.28)	(3.32)	(3.09)	(3.32)	(3.09)	(3.36)	(3.06)
N	4292	4292	1268	1268	1268	1268	1252	1252
adj. R^2	0.020	0.031	0.030	0.048	0.030	0.048	0.031	0.048
IPO Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province FE	No	Yes	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes	No	Yes