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Does privatization reform alleviate ownership discrimination? Evidence from the Split-share structure reform in China

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his paper investigates the institutional origins of ownership discrimination in ban lending through a staggered uasi-natural experiment China's Split-share Structure eform State- wned Enterprises S Es have an advantage over non-S Es in securing external nancing to protect investment opportunities from cash ow uctuations his nancing privilege declined signi cantly after the reform, which mandatorily converted S Es' non-tradable state-owned shares into tradable shares, sharply increasing the li elihood of further privatization Consistent evidence also exists in terms of ban lending behaviors urther, we show both direct and indirect evidence that the effects were more pronounced among S Es under higher threats of privatization *e.g.*, rms with larger increases in tradable shares, smaller wor force, and in industries peripheral to national strategy he evidence suggests that ban s proactively prefer S Es for the perceived safety of loans under implicit government guarantee when this privilege disappeared after the reform, ban s reacted by allocating credits more fairly his paper provides new evidence on the bright side of share structure reforms in mitigating credit misallocation and enlightens policy ma ers to practical resolutions to the nancing inef ciency in emerging capital mar ets

A growing strand of literature has indicated that in transition economies, where state-owned ban s dominate the nancial system, accessibility to credit unfairly tilts towards State-owned Enterprises S Es , a trend that cannot be explained by fundamental factors See, for example, randt and Li, Cull and *Di,l* Song et al , Speci cally, despite being comparatively inef cient in operations rossman and art, oyc o et al , Shleifer, , S Es typically receive disproportionately larger shares of ban credit than non-S Es Johnson and Woodruff, ehr et al , his phenomenon, widely referred to as "*Ownership Disl*

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ef ciency he ownership discrimination, if existing, may pose severe detriments to non-S Es, as a general lac of stable long-term funding sources incur higher costs and force them to see trade credit, costly private borrowing, and other informal nancing channels Dinh, e and iu,

Despite the abundant evidence of S Es' comparatively higher leverage ratio and crude expansion of nancing in the last decades accio et al , Cull and u, egginson and Wei, , it remains an open uestion whether non-S Es, on the other side, truly *suffer from discrimination*, or simply *choose* conservative nancial strategies ou et al , , possibly for endogenously lower debt-capacity f discrimination really exists, what are its institutional origins? Do creditors prefer S Es for the merits of the *state-owned property structure itself* *i.e.*, state-player-dominated rms have higher values and outperform those with dispersed private ownership structure , or rather for the *implicit government guarantee* en oyed by S Es? urther, do ban s *proactively* prefer S Es for perceived safer lending, or *passively* do so, as a compromise to the government pressure of "policy lending"?

o answer these interesting and largely unsolved uestions, this paper comprehensively investigates the institutional origins of ownership discrimination by ta ing advantage of a staggered uasi-exogenous reform in China his landmar reform, namely the Split-share Structure eform, dismantled the dual-share structure and introduced liberalized legitimacy in the trading rights of state-owned shares he reform was mandatorily enacted without rms' freedom of choosing whether and when to convert their non-tradable shares he institutional setting ts neatly in our research mission, *i.e.*, uncovering the real origins of ownership discrimination, for two ma or reasons on one hand, the reform does not directly change rms' ownership identity on the other hand, the probability of privatization increases sharply, as non-tradable shares are switched to tradable ones sing a staggered Difference-in-Differences Diff-in-Diff design, we nd salient decline in ownership discrimination after the reform otably, since the de ure nature of ownership structure remains after the reform, this evidence indicates that ownership discrimination isn't due to the intrinsic superiority of state-owned property structure itself, but rather originates from the anticipation of the implicit government guarantee, which is largely eliminated after the reform

egarding the existence of ownership discrimination, some seemingly salient facts such as lower static debt ratio and shorter maturity structures of non-S Es could be misleading, as non-S Es may choose conservative leverage far below debt capacity n this paper, we instead focus on the discrepancy between S Es and non-S Es in their capability of ac uiring external nancing to offset cash ow uctuations and protect current investments Cash ow shoc s serve as a good "touch stone" of rms' nancial accessibility notwithstanding the potential intention of low-leverage policy, all rms would strive to mitigate unintended cash ow shoc s and avoid sacri cing current [illegible] ban s more mar et-oriented and reduces political lending nterestingly, another prominent feature of the privatization reform in China is that it occurred around the same period as the public listing of state-owned ban s, which helps us to address this concern and to pin down the ma or driving force he results show that it is the changes in *firms*, rather than in *banks*, that explains the alleviated ownership discrimination after the reform, indicating that the crux of discrimination lies in the expectation that "S Es never fail" when this privilege is sha en by the reform, ban s proactively react by ad usting credit allocations and attaching a lower weight to ownership in loan granting umerous studies and media reports arbitrarily attribute so-called "policy lending" to ban s' passive compromise to government manipulation and blame credit misallocation on the irrationality of the ban ing sector ur ndings, however, imply that ban s seem to be rather rational in ma ing lending decisions, with the implicit government guarantee expectations ta en into consideration

China provides an ideal context for investigating the ownership discrimination As a representative transition economy, China has the salient characteristics of con ict between a swiftly booming economy, ongoing privatization reforms, and an immature nancial system, offering a uni ue environment to test the existence and impacts of ownership discrimination Allen et al , Liao et al , Dollar and Wei, Song et al , irst, there is a long-established boundary between state-owned and non-state owned enterprises in China wnership type is clear and crucial ore importantly, the lin age between S Es and the government is deep, and the latter has been arguably criticized for its "paternal love" towards S Es Second, the Split-share Structure eform in China – occurred in our sample period, providing a uni ue angle on the evolution of ownership discrimination and its policy implications hird, given China's rising importance in the world economy, the implications from the reform provide helpful enlightenment for resolving credit misallocation and related nancial system de ciencies in transition economies

his paper contributes to the growing body of literature on ownership discrimination by providing novel insights into its institutional origins and mechanisms rior studies have found that S Es rely more on domestic ban s in external nancing Dollar and Wei, , whereas non-S Es nance the ma ority of their investments and wor ing capital needs through retained earnings, informal networ s, and inter- rm credit Lardy, Dinh, e and iu, Song et al , he nancial repression is also manifested by higher precautionary cash holdings and lower capital intensity of non-S Es egginson et al , Song et al , Cultural and historical factors only partially explain this phenomenon Arrow, Shleifer and ishny and Sapienza attribute the different nancing sources between S Es and non-S Es to the relationship between government and rms and the political nature of transition economies A counterview by ou et al argue that ban s and rms simply perform credit-rationing n this paper, we complement this strand of research using a uasi-exogenous policy shoc to distill its real effects and institutional origins

he investigation into the pattern of credit allocation is also related to the broad literature on nancial constraints —especially the determinants and conse uences of ac uiring external nancing in frictional capital mar ets—by nancially-constrained rms, such as Small-and- edium-sized Enterprises S Es azzari et al , hide, Alti, eatty et al , oncet et al , Denis, Cumming and ou, As has been widely discussed in these studies, one should note that it is dif cult to pinpoint the absolute magnitude of a rm's nancial constraints, which is not our research pursuit ather, our paper aims to gauge the impacts of ownership types on the relative accessibility to credits through collectively tracing rms' investment and nancing reactions to cash ow shoc s o identify the pure effects of ownership discrimination and exclude possible disturbing factors, we employ a uni ue exogenous policy shoc and illustrate the dynamics of credit allocation culture evolutions n this sense, our wor is more institutional- and policy-relevant ence, we go beyond the existence of ownership discrimination and provide abundant evidence on its real attributions and political implications We also contribute to the nascent studies on the role of ban s whether ban s deliberately choose to prefer S Es, or passively do so as a compromise to policy lending nterestingly, we show that ban s seem to "rationally" choose S Es for the government bailout expectations when it disappears, ban s uic ly react by allocating credit more fairly A recent wor by uan et al nds supportive evidence that loan decisions of ban s show no evidence of severe compromise to local governments' economic stimulus plans, as speculated by some media and academic wor he ndings in this paper substantially deepen our understanding of the real crux of credit misallocation

his paper also complements the literature on gauging the effectiveness of privatization reform in emerging mar ets erotti and an i en, egginson and Sutter, an, ouba ri et al , Extensive wor shows that privatization improves rms' performance Chen et al , ai et al , Du and Liu, an et al , , enhances mar et valuation Lin and Su, , triggers positive stoc mar et reactions er man et al , Calomiris et al , , reduces information asymmetry ul et al , , and prevents overinvestment Liu and Siu, A more related paper by Chen et al also investigates the Split-share Structure eform and uncovers a reduction in rms' average cash holdings and average corporate saving rate, and an increase in investments hey attribute the effects to the removal of mar et frictions, alignment of interests and reduced nancial constraints ur paper, from the angle of ownership-induced credit misallocation, examines rms' investments and nancing reactions to cash ow shoc s in a methodologically comprehensive multi-e uation model, and illustrates the heterogeneous effects among rms

n the macro level, the paper provides abundant political implications t identi es the role of the share structure reforms in accelerating mar et maturation, especially in emerging mar ets n the one hand, we alert governments to the detrimental consequences of credit allocation inef ciencies under implicit government bailout protection for S Es n the other hand, by disentangling

Statistics show that S Es nance more than of their investments through ban loans for non-S Es, this percentage is less than Song et al ,

or the estimations of a rm's level of nancial constraints from different perspectives, see azzari et al ertler and ilchrist luc and Lynch iddle and ilary Almeida and Campello , among others the impact of ban ing mar etization from rm-level share structure reform, our ndings provide a practical strategy for the governments see ing cure for credit misallocation he Split-share Structure eform in China sets a good example of achieving this aim without radically changing rms' ownership structures it instead exposes S Es to the monitoring by the capital mar et through transformation of their non-tradable shares to tradable ones inally, the paper may enlighten policy ma ers to potential solutions of S E nancing dif culty, which is among the most intractable dilemmas faced by governments worldwide

he remainder of the paper is organized as follows Section introduces the institutional bac grounds of the ownership structure in China and the Split-share Structure eform Section describes the empirical approach and datasets Section discusses the empirical results Section provides further tests and Section shows robustness chec s Section concludes

2.1. Ownership structures and the existence of ownership discrimination

Corporate ownership structure plays a crucial role in social credit allocation, asset pricing ef ciency, and economic well-being, especially in transition economies State-ownership was proposed more than sixty years ago, with the primary purpose of addressing monopoly power in social utility sectors, achieving social welfare goals, and combating mar et failure Lewis, eade, Stiglitz and Weiss, reenwald and Stiglitz, ai et al , Lin et al , ver the subse uent half-century, multiple forms of nationalization evolved n the real sector, governments exert ultimate control over S Es by holding an overwhelmingly large percentage of state-owned shares n the nancial sector, the nancial system is dominated by state-owned ban s La orta et al , , further facilitating governmental interference in credit allocation S Es are supposed to serve political ob ectives such as social security, welfare, and infrastructure constructions where social bene ts exceed costs As a compensation, S Es have relatively relaxed pro t-generating goals commensurately, their managerial incentives are largely unaligned with value maximization uyghebaert and uan,

n the institutional landscape of China, the ownership structure is especially crucial China had long featured a highly government-dominated nancial system with state-owned ban s as the primary source of social nancing, which laid the early foundations for the long-lasting and deeply rooted dominance of state ownership ar et mechanism was rst introduced in during the third plenary session of the Eleventh Central Committee of the Communist arty of China owever, in the early s, the dawn of the Chinese mar et economy, state-owned and collective-owned enterprises still dominated the economy Jefferson and Su, he government undervalued mar et power and advocated a highly centralized regime, according to the guideline of "large in size and collective in nature" he central government owned, operated, and dominated S Es Admittedly, in this early stage of the economy, when pricing mechanisms and resource allocations were immature, S Es' af liations with the government remained somewhat reasonable in terms of propping up the embryonic-stage industry prosperity owever, controversy gradually emerged S Es came under re for worsening ef ciency, managerial ossi cation and corruption, while en oying overwhelmingly higher proportion of social credits Cull and u, egginson and Wei, an s were blamed for their favoritism towards S Es Entrepreneurs of non-S Es openly complained of their inferiority when " noc ing on ban s' doors" he sharp discrepancy between S Es and non-S Es in nancing conditions, namely the "ownership discrimination", grew to receive wide attention and was regarded as the most important side-effect of the state-ownership-dominated economy

n response, the government began to tentatively push S Es towards mar et orientation and emphasize " on- ublic Sectors of the Economy S E " and the slogan of "the state regulates the mar et the mar et guides enterprises", which essentially transformed S Es from state-operated rms to state-owned but self-sustaining enterprises hereafter, reforms on S Es were gradually introduced to clarify the managerial compensation, responsibilities, and incentive schemes Jefferson and Su, , *e.g.*, the transformation of pro t to tax and the introduction of enterprise contract responsibility system n the mid- s, the government allowed private and foreign shareholders to ta e sta es in rms while maintaining control rights, and implemented a furlough policy *Xiagang* that helped S Es to get rid of redundant labor forces aws i, owever, the wave of mild, incomplete and mostly short-sighted reforms didn't thoroughly cure the persisting problems

y pulling together the evolution of political regime into an integrated landscape, we can detect how the salient nature of credit allocation in China gradually too shape he highly centralized economic system, as the starting point of China's economy, set the tone for the nancial sector in the following years—the original aim of the capital mar et was to raise money for S Es, *i.e.*, the economic bac bones S Es have en oyed soft-budget constraints Cull and u, egginson and Wei, and are implicitly sheltered from default, fostering their relentless borrow from the nancial mar ets We thus ma e the rst hypothesis

he phenomenon of ownership discrimination exists, i e , S Es have preferential accessibility to credits

As exposited in the introduction, we examine the existence of ownership discrimination by comparing the abilities to resist cash ow shoc s between S Es and non-S Es using a dynamic multi-e uation model atchev et al , We will elaborate on the

During the conference, the central government set the ma or principle of economic development as "A lanned Economy Supplemented by ar et egulation"

During an interview, the famous private entrepreneur Liu Chuanzhi appealed to the government by saying, " or private rms, the biggest reform bonus would be for the government to create a very transparent, fair, and e uitable competitive environment in the capital mar et "

he slogan was put forth in , during the hirteenth ational Congress of the Communist arty of China methodologies and identi cation strategies in Section

2.2. The split-share structure reform in China

China offers a representative bac ground to examine the institutional origins of ownership discrimination t has clear boundaries between state-owned and non-state owned enterprises, and has experienced numerous policy shoc s on rms' ownership structure spanning the past years, among which the most in uential is the Split-share Structure eform that commenced in and mostly nished in Li et al ,

Section has elaborated on a series of inherited problems encountered by S Es in their operations Despite that the Chinese government had long been aware of the expanding losses of S Es and the resulting scal burdens on local governments, it was extraordinarily cautious about privatization, which lagged far behind the other strands of mar etization reforms rom the very beginning, the government tin ered with the problem by attempting to modernize S Es' operations while maintaining the state ownership he futility of its short-term palliative solutions Lau et al , nally fueled the pace of large-scale *de facto* privatization in , of cially named "*transformation*" *Gaizhi* for ideological reasons an, , almost halved the number of S Es through shareholding conversion nstead of radically selling state-owned shares, the government chose the form of "corporatization" Wei et al , allowing S Es to raise e uity by public offering eanwhile, the government reserved control rights by retaining a large sta e in about of S Es uyghebaert and uan, , and these shares were strictly restricted by the regulatory authorities and could not be freely traded in the secondary mar et to avoid mar et turbulence Sun and ong, irms maintained a uni ue *split-share structure*, de ned as the coexistence of two classes tradable and non-tradable domestic shares with otherwise identical rights nly tradable shares could be traded by investors non-tradable shares were unlisted, and transactions could only be conducted through negotiations between the counterparties he persistent transaction barriers between the two types of shares put rms in a dilemma of con icting share-pricing mechanisms the dominant role of the government in corporate management through its controlling holdings of non-tradable state-owned shares still left the rms unmotivated to improve their performance A series of short-term reforms was phased in to repair the system, but mostly failed in the end

he Chinese government came to realize the importance of implementing a thorough reform to dismantle the dual share structure n January , , the State Council issued the document *Some Opinions of the State Council on Promoting the Reform, Opening, and Steady Growth of Capital Markets* ne year later, on April , , the China Securities egulatory Commission CS C issued *the Notice of the China Securities Regulatory Commission on Piloting the Share-Trading Reform of Listed Companies*, which announced the of cial start of the Split-share Structure eform During the reform, state-owned shares, as well as other types of non-tradable shares, were converted into tradable shares ollowing the guidelines, rms chose their conversion date, drew up and voted for the proposals, hired uali ed security rms, and accomplished the reform Extensive studies have documented substantial achievements of the reform, such as enhanced corporate governance, better ris management, and superior stoc performance of listed S Es Liao et al , Li et al , irth et al , Liu et al ,

he reform opened up a full-share circulation environment in the secondary mar et and endowed S Es with liberalized legitimacy in trading state-owned shares As such, the S Es' privileged position eroded with the rising expectation of privatization through sales of tradable state-owned shares after the reform Even though the conversion of non-tradable shares to tradable shares did not immediately change rms' ownership structures, the reform essentially exposed S Es to erce mar et competition and substantial threats of being privatized n this vein, their implicit protection from ban ruptcy and corporate ta eover became far less certain his wea ened their advantages in securing favorable nancing from ban s, the bond mar et, *etc.*, which, after the reform, would udge them rather by uality and growth prospects esides, S Es' internal control and external monitoring by shareholders may also be strengthened as the holders of tradable shares are generally more incentivized to improve rms' performance, governance, and ris management Accordingly, we propose ypothesis

he Split-share Structure eform reduces ownership discrimination and enhances credit allocation ef ciency

he investigation into *Hypothesis 2* is largely related to our research agenda of answering why creditors prefer S Es from the standpoint of lenders such as ban s , they prefer S Es either for the superiority of state ownership structure itself *i.e.* they believe that state ownership is the optimal organization form in a transition economy li e China, as the government acting as owner can improve rm value and reduce agency problems , or for the implicit government guarantee *i.e.*, lenders are attracted by government bailout protection on S Es, even if they are worse in uality We describe these two plausible connotations of ownership discrimination derived from *Hypothesis 2* as follows

Creditors prefer SOEs as they believe state-player-dominated ownership structures are superior to private ones.

According to an , during this wave of privatization, more than of small S Es were privatized or restructured As estimated by the ational ureau of Statistics, three uarters of large and medium industrial S Es were privatized n addition, city-level statistics show that about of S Es were privatized by an et al ,

he establishment of the Shanghai and Shenzhen Exchange in the early s enabled more than large and medium-sized S Es to be listed on the primary mar et for e uity nancing

Liao et al argue that the absolute dominance of S E non-tradable shareholders is wiped out and external monitoring through corporate ta eovers are virtually in effects after the reform

Creditors prefer SOEs for the perceived implicit government guarantee behind SOEs.

Arguably, *Hypothesis 2a* relates to the long-lasting debate in academia regarding the merits and shortcomings of public and private ownership, which is a ey dichotomy in shaping the basic structure of an economy see, for example, ardhan and oemer, , Shleifer and ishny, Stiglitz, egginson and etter, egginson, Some wor advocates the merits of state-ownership, especially in underdeveloped economies with wea investor protections and law enforcements he state ownership, to some extent, enhances rm value, strengthens social and economic stability, curbs the agency problem of large shareholders' expropriation on minority shareholders, and reduces the probability of low-price-disposal of assets by the local governments ewbery and ollitt, Wei and arela, Chen et al , off and Stiglitz, u, ess et al , n contrast, *Hypothesis 2b* is unrelated to the value udgement of ownership structure, but refers to the inherent bene ts en oyed by S Es governments will bail them out if they run into distress Along this line, even though ban s also deem S Es as less productive and lower in uality, they still prefer them, for the perceived "safer loans"

ypically, these two competing hypotheses are highly intertwined and hard to distinguish As noted earlier, this reform helps untangle the two possible institutional origins of ownership discrimination by transforming non-tradable state-owned shares to tradable ones, the reform increases the prospect of further privatization and cripples the "unbrea able" status of S Es, while not altering the ownership type *per se* esides, this reform is mandatorily implemented without freedom for rms to endogenously choose whether and when to convert non-tradable shares As such, if ban s prefer S Es for the merits of state-owned property structure *Hypothesis 2a* , we should not observe salient changes in ban 's lending preferences since ownership type remains unchanged f *Hypothesis 2* is identi ed, it essentially usti es the proposition that credit misallocation stems from the expected implicit government guarantee, which becomes largely uncertain after the reform *Hypothesis 2b* his hypothesis is highly compatible with the condition in China, where the government has a long history of owning, operating, and dominating S Es he lin age between local governments and S Es was even strengthened after the wave of "regionally decentralized authoritarianism DA ", which delegates of cial af l-iations with and regulatory power over S Es to the provincial, municipal prefecture, and county township governments Du and Liu, an et al , S Es' dual economic and political orientations largely determine the cadre assessments and promotion opportunities of local of cials herefore, local governments have a strong tendency to protect S Es by closely interfering with ban s, guiding loans towards state-owned sectors and rescuing nancially distressed S Es n the other hand, shareholders of S Es may also abuse the easy access to credits and irrationally expand lending for private bene t esides, S Es' boards of directors are usually led by former party secretaries or retired politicians, elected by their largest shareholder *i.e.* the governments he "paternal love" of the local governments for S Es may in turn encourage ban s to lend "ris less money" to them accio et al ,

owever, there is one possible counterargument that the non-mar etization of the ban ing sector, rather than rms, should be responsible for the existence of ownership discrimination n this sense, the alleviation of ownership discrimination after the Split-share Structure eform essentially results from the mar etization of the ban ing sector ndeed, China's four largest ban s are state-owned, dominate the nancial system, and are primarily oriented at supporting S Es oyreau-Debray and Wei, t is probable that the "umbilical cord" between state-owned ban s and state-owned enterprises facilitates S Es' occupation of disproportional credits, eopardizing mar et ef ciency randt and Li, Allen et al ,

o exclude this alternative explanation, we consider the mar etization reform of China's ban ing sector starting in , which was aimed at rescuing the deteriorating operations and non-performing loans of state-owned ban s his reform was also part of the protocols when China oined the W in —the Chinese government promised to open the ban ing sector to competition within ve years China Construction an CC red the rst shot t re-capitalized, introduced strategic investors, underwent nancial restructuring, and ultimately listed its shares on the ong ong and Shanghai Stoc Exchange he other three state-owned ban s nalized mar etization in succession eanwhile, a series of oint-stoc commercial ban s burgeoned We include the indicator of the ban ing-sector reform in the empirical design details in Section , and show that the observed effects of the Split-share Structure eform remain even after controlling for the wave of ban ing sector reform, suggesting that the latter is not the dominant power he discussion also translates into the policy implications in order to mitigate ownership discrimination, which one should ma e a change

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he opponents, in contrast, argue that private rms have much better ris -sharing, resource allocation ef ciency, and higher productivity Johnson and Woodruff, ehr et al , sing samples of rms in different countries, a large strand of literature has uncovered many side effects of state ownership bad ris management, lower investment ef ciencies, and inactiveness in blazing new trails in highly competitive mar ets egginson and etter, D an ov and urrell, Allen et al , esides, the lac of legal protection for minority and outside shareholders, tunneling, and managerial per s also erode S Es' value Shleifer, Shleifer and ishny, aner ee, art et al , Levine,

he starting time and designated nishing time of the reform were set forth by the China Securities egulatory Commission CS C on August irth et al , an et al ,

S Es perform import roles in cadre assessments Local of cials' political pursuits hinge critically on S Es' contribution of pro t dividend remittances and tax revenues, reduction of unemployment rates, and fundamental constructions, among others

With olitical interventions in S Es' operations, managerial compensation pac ages remain largely opa ue and unaligned with mar et incentives See, for example, Allen et al ,

hese four state-owned ban s are an of China, ndustry and Commercial an of China, Construction an of China, and Agriculture an of China

Allen et al point out that China scores poorly on creditor rights, investor protection, accounting standards, and anti-corruption measures compared with other countries ban s or rms? he evidence suggests the latter—the crux of credit misallocations lies more on the side of rms, rather than ban s n the following sections, we will comprehensively expound on these issues

3.1. Empirical methodology

3.1.1. A multi-equation model

Although it is tempting to ta e the existence of ownership discrimination as a given, we have to be very cautious n reality, a rm's leverage is distinct from its overall debt capacity, especially when there is excess li uidity in the mar et A non-S E may choose to maintain a leverage far below its debt capacity As we have expounded in the introduction, our ma or focus is the differential reactions of investment and nancing behaviors to abrupt cash ow shoc s between S Es and non-S Es Cash ow shoc s *CF* serve as an ideal "touch stone" of a rm's nancial accessibility rms unable to ade uately ful ll nancial needs have no choice but to cancel or postpone their planned investments ence, from a dynamic perspective, corporate investments and nancing decisions have a hedging effect When rms encounter cash ow shoc s particularly negative shoc s , they have two options *Option A) Adjusting investment decisions* on the edge of nearly exhausted cash ow, a rm without sustainable nancing may be compelled to terminate certain investments, abandon valuable pro ects, and thus relin uish pro ts Alternatively, *Option B) Adjusting financing decisions* the rm could see to expand lending to maintain current investments Apparently, rms should prefer *Option B*, as it is a much less costly strategy for accommodating uctuations in cash ow and minimizing negative impacts on corporate investment opportunities f ownership discrimination exists, we expect non-S Es' investment behaviors to be more sensitive to cash ow shoc s, whereas nancing behaviors should be less sensitive to cash ow shoc s, since their disadvantageous status in nancing decisions *Option B* forces them to ad ust investment decisions instead *Option A* Along this line, we examine the existence and magnitude of ownership discrimination by comparing rms' multifaceted nancial reactions to cash ow uctuations collectively in a multi-e uation model proposed by atchev et al he model bears the advantage of re ecting the interdependent nature of nancial policies sub ect to the constraint of "sources of cash e ual uses of cash", as well as this interdependent of nancial decision-ma ing along periods, which facilitates our investigation into nancing and investments behaviors as a whole Speci cally, the ex-post constraints that sources of funds must e ual uses of funds can be expressed as

3.1.2. The tests on the existence of ownership discrimination

he multi-e uation model ac nowledges the interdependent and intertemporal nature of rms' nancial decisions on both ends how rms ad ust their investments during cash ow shoc s coef cients of *CAPX* on *CF* , and how they raise funds for mitigating the shoc s coef cients of incremental short- and long-term ban loans, Δ*SLOAN* and Δ*LLOAN*, on *CF*

We gauge the existence of ownership discrimination by comparing the capabilities to resist cash ow shoc s between S Es and non-S Es with the model f non-S Es have inferior access to ban loans, we should detect higher response of *CAPX* and lower ad ustments of Δ*SLOAN* and Δ*LLOAN* to cash ow shoc s, suggesting lower exibly in nancing to protect investments *Hypothesis 1* Accordingly, we incorporate an interaction term of *CF* and the ownership dummy variable *SOE* into e *i.e.*, *SOE*CF* to identify the differences between these two types of rms

3.1.3. The tests on the impacts of the reform

o assess the effects of the Split-share Structure eform on ownership discrimination, we employ the Diff-in-Diff methodology by introducing a dummy variable, *REF*, which e uals when the rm has already undergone the reform in a particular year and otherwise We focus on the triple interaction term *SOE*CF*REF* to detect the impacts of the reform if the reform effectively reduces the discrimination, we should nd a signi cantly positive coef cient of *CAPX* on *CF*SOE*REF*, offsetting its negative coef cient on *SOE*CF*. esides, on the nancing side, the coef cients of Δ*SLOAN* and Δ*SLOAN* on *CF*SOE*REF* should both be positive, opposite to their coef cients on *SOE*CF*, indicating a reduction in S Es' comparative advantage in credit mar et

elatedly, from the angle of ban lending behaviors, we could also directly detect the changes in ban s' loan-granting preferences after the reform based on a similar Diff-in-Diff design y examining the coef cients of ban lending characteristics including the amount, maturity, interest rate, collateral, *etc.* on the interaction term of the S E indicator *SOE* and post-reform dummy *REF* , we could further gauge whether the reform effectively achieves the purpose of ef cient credit re-allocation Details will be provided in Section

3.2. Data and descriptive analysis

he annual nancial data and rms' actual controller data of Chinese A-share listed rms on Shanghai and Shenzhen stoc mar ets are derived from the CS A and ESSE database, the leading and most commonly used nancial data providers in mainland China he data on Split-share Structure eform is derived from the "Split-share Structure eform Dataset" of the ESSE database We restrict the sample period to around four years before and after the Split-share Structure eform, spanning from to Chinese listed rms were not re uired to disclose actual controllers' information in their Annual eport until and the data available is relatively complete after for most listed rms or a rm to be included in our sample, the rm must be normally operated without articular ransfer or Stop rading S issues and have available information on the speci c nishing time of the reform bservations with missing values for the dependent and independent variables are deleted inancial rms are excluded since their capital structure and nancial decisions are typically different from non- nancial rms After deleting the outliers, in total , valid observations are obtained

We gauge the ownership types of the rms based on the "nature of actual controllers" from the CS A database irms with state-owned shares as controllers or directly owned by the central and local government institutions are regarded as State-owned Enterprises S Es ther rms, controlled by private shareholders, foreign entities *etc.*, are categorized as non-State-owned Enterprises non-S Es he dummy variable *SOE* e uals to one when the rm is S E in the speci c year and zero otherwise

able reports the descriptive analyses of the dependent and independent variables We scale the variables by total assets for normalization he sample consists of rms, including S Es and non-S Es for the entire sample period, and rms that switched ownership in certain years during the period otably, out of the rms underwent a change from S Es to non-S Es in the same year as it underwent the Split-share Structure eform As shown in anel A of able , the percentage of capital expenditure to total assets varies averages with a maximum of he average cash ow over total assets is ur summary statistics are basically similar to those in prior research

As we mainly focus on the differences in nancial accessibility and nancing behaviors of S Es and non-S Es, in anel of able , we report the summary statistics of these two subsamples and the -statistics of their differences We nd a signi cantly higher percentage of capital expenditure to total assets for non-S Es, indicating their active investments and higher aspiration to expand capital spending, which, if absent of discrimination, should be favorably received by the mar et cconnell and uscarella, n sharp contrast, the cash ow of non-S Es are lower than S Es by in total assets, signi cant at the level, with a higher uctuation on-S Es' size of incremental short-term and long-term nancing are both lower than those of S Es, but their asset sales are signi cantly higher We ustify this evidence as a manifestation of the inferior nancing conditions for non-S Es lac ing of easy access to ban loans, they have to see asset sales to avoid cash ow exhaustion he differences in leverage are consistent with the

n the regressions with interaction terms, the separate variables and interactions of variables in the triple-interaction term are all included, *i.e.*, *CF*, *SOE*, *REF*, *SOE*CF*, *CF*REF*, *SOE*REF* are all controlled

Since the changes in cash ow and other variables cover two periods and the lagged values of the variables are involved in the regressions, the effective data set used in the multi-e uation analysis spans from to

o remove any possible outlier effects, we cannot winsorize the continuous variables in the regression because the model re uires the matching of cash in ow and out ow herefore, we directly cut the outliers of the continuous variables at the st and th percentiles

Descriptive analysis of variables
his table provides a summary statistics of the main variables in the paper, including the capital expenditure, cash ow, incremental short- and long-term loans *etc.* anel A reports the sample size, mean, standard deviation, minimum and maximum values All the values are divided by total assets of the speci c rm in the year as de ned in able anel divides the sample into two groups based on the ownership ean comparison tests are conducted for each variable with -values listed in the last column *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * $p <$ ** $p <$ *** $p <$

anel A Summary Statistics of the full sample					
ariable	bs	ean	Std Dev	in	ax
CAPX	,				
CF	,			–	
ACQUI	,				
ASSETSALES	,				
EQUI	,				
DIV	,				
ΔSLOAN	,			–	
ΔLLOAN	,			–	
ΔOTHERSD	,			–	
ΔOTHERLD	,			–	
ΔCASH	,	–		–	
MB	,				
SIZE	,				
SOE	,				
ROE	,			–	

anel ean comparison tests between S Es and non-S Es						
ariables	on-S Es $N =$		S Es $N =$		Diff	-value
	ean	Std Dev	ean	Std Dev		
CAPX					***	
CF					– ***	–
ACQUI					p	

prior literature esides, non-S Es are smaller in size, but higher in mar et-to-boo ratio *MB* , implying favorable growth opportunities verall, we can tentatively infer that S Es generally underperform non-S Es whereas en oy more privileged access to nancial mar et We will elaborate on it in the following sections

4.1. Ownership discrimination in China

efore introducing the time node of the Split-share Structure eform, we rst get a avor of the existence and magnitude of the ownership discrimination in China based on the dynamic model in e

We start with a pilot regression with all rms in the sample to illustrate the patterns of rms' investment and nancing decisions in reaction to cash ow shoc s he formatting of variables' coef cients, -statistics, and the ad usted -s uares are reported in a slightly special manner each row of the table corresponds to each of the e uations in the regression model, which includes the lagged value of ten dependent variables and control variables rm size, mar et-to-boo ratio, and E We also control for year and industry xed effects or brevity, we present only the core results of interest he multi-e uation model is estimated under the constraints in e

Since several dependent variables in the model have a minus sign, in the table, their signs for the coef cients and -values are ad usted accordingly for easy reading he results are shown in anel A of able We nd that on the whole, when a rm experiences a positive negative cash ow shoc e uivalent to of total assets, its capital expenditure increases decreases by around he coef cients of incremental short-term and long-term loans are – and – , respectively, both signi cant at the level, suggesting increased ban lending in response to cash ow plummets he same is true for other nancing channels, such as an increase in asset sales he results ustify our discussion in Section that when cash ow uctuates, rms tend to reach out for nancing *Option B* rather than slashing promising investments *Option A* n this vein, do S Es have an advantage in see ing external nancing to smooth the impacts of cash ow uctuations?

o detect the existence of ownership discrimination, we introduce an interaction term of ownership dummy *SOE* and cash ow

CF into the multi-e uation model esults are shown in anel of able n the regression with *CAPX* as dependent variable, the coef cient of the interaction term *SOE*CF* is − , signi cantly negative at level As for rms' nancing behaviors, in the e uations with Δ*SLOAN* and Δ*LLOAN* as dependent variables, the coef cients of *SOE*CF* are both signi cantly negative at level, indicating that S Es eventually ta e out more loans than non-S Es following cash ow uctuations S Es' higher availability of ban loans guarantees exibility in expanding leverage, mitigating the cash ow shoc s on investments n other words, higher sensitivity of nancing to cash ow offsets sensitivity of investments to cash ow n contrast, non-S Es have no choice but to revisit *Option A*, *i.e.*, to downsize or abandon investment pro ects Supportive evidence also exists in the e uation of incremental cash holding, *i.e.* S Es are less motivated in cash holding management, li ely due to their more exible nancing environment verall, the evidence proves *Hypothesis 1*

4.2. Privatization reform and ownership discrimination

he Split-share Structure eform provides an ideal uasi-natural experiment to uncover the underlying economic connotations of ownership discrimination irms' ownership types are unaffected, but they're exposed to higher ris s of privatization when their non-tradable shares are converted to tradable shares As such, if ban s prefer S Es for the simple reason that they believe the state-owned property structure is superior, we should not observe any changes after the reform, as it doesn't immediately alter rms' identity of ownership *per se* otherwise, if ownership discrimination stems from the implicit government guarantee behind S Es, it should be evidently reduced, as the reform greatly undermines the certainty of such protection

o test *Hypothesis 2* and the two sub-hypotheses, we use a staggered Diff-in-Diff setting by interacting the time dummy variable *REF* with the *SOE*CF* term and construct a triple interaction term, *SOE*CF*REF*, in the multi-e uation model esults are reported in able ocusing on the rst e uation with the rm's capital expenditure *CAPX* as dependent variable, we nd a positive coef cient on *SOE*CF*REF*, opposite to the negative coef cient of *SOE*CF* also shown in anel A of able he coef cient of the triple interaction term is and signi cantly positive at the level *Hypothesis 2* is identi ed he signi cant results suggest that ownership discrimination diminishes along with wea ened government bailout expectation As such, the *Hypothesis 2b* is more li ely to be true

Supportive evidence also lies in the side of rms' nancing behaviors n the e uations with incremental short-term ban loans Δ*SLOAN* and incremental long-term loans Δ*LLOAN* as dependent variables, coef cients on *SOE*CF*REF* are both positive, *i.e.*, signi cant at level and , respectively, opposite to those on *SOE*CF*, suggesting that the reform narrows the gap between S Es and non-S Es in ta ing out ban loans during cash ow shoc s

Consistently, we also observe changes in corporate savings rates after the reform from the last e uation of able the negative coef cient of *REF*CF* suggests reduced sensitivity of cash holding to cash ow shoc s, a widely used proxy for corporate savings rates he reduction is more pronounced among non-S Es manifested as the negative coef cient of the triple interaction term, opposite to that of *REF*CF* , consistent with the evidence in Chen et al t serves as supplementary evidence of rms' reduced propensity of excess cash accumulation after the reform, especially for non-S Es, possibly for enhanced nancing environment he coef cients in other e uations also exhibit aligned evidence with prior studies

4.3. Parallel test and placebo test on the identification strategy

n order to verify the staggered privatization reform as a valid uasi-exogenous shoc , we conduct a dynamic test on the parallel-trend assumption by examining the patterns of ownership discrimination around the time of the reform We conduct multi-e uation regressions similar to the baseline model in able , while replacing the *REF* variable in the triple interaction term with a series of indicators *REF(−2)*, *REF(−1)*, *REF(0)*, *REF(1)*, and *REF(2+)*, which e uals to one if it is two years prior to, one year prior to, the current year of, one year after, two and more years after the rm's region has undergone the reform, respectively, and zero otherwise f it is the reform that triggers the mitigated discrimination, we should observe signi cant coef cients of the triple interaction terms only after the shoc s esults in Appendix able A validate this prediction he coef cients of pre-event periods suggest that the treatment and control groups are reasonably comparable salient impacts of the reform on ownership discrimination gradually appear in post-event periods, both economically and statistically signi cant, supporting our interpretation that the reform indeed leads to a pronounced decrease in ownership discrimination, and the effects persist for at least two years

o further verify the parallel trend assumption, we trac the dynamics of the changes in ownership discrimination between the treated and untreated rms Speci cally, we divide the sample period into eight sub-periods, with − representing four or more years before the reform and representing four or more years following the reform umbers in the middle represent one year in each period We plot the point estimate of the triple interaction term for each sub-period as well as the associated con dence interval, and normalize the point estimate immediately before the event date to zero for easy comparison As shown in Appendix ig A , the treatment group and control group share a common trend before the exogenous event with insigni cant differences, whereas after the event, the reduced ownership discrimination becomes prominent and remains for the following four or more periods afterward he gure further validates the uasi-natural experiment, and indicates the effectiveness and persistence of the reform in mitigating the unfairness in credit accessibility

or instance, in the rst e uation with CA as the dependent variable, the coef cient of S E* E is signi cantly positive, consistent with Chen et al , which validates our empirical ndings wnership discrimination and split-share structure reform

his table illustrates the effects of the Split-share Structure eform on the ownership discrimination by introducing the rm-level nishing time of the reform E and construct a triple interaction term, C *S E* E he reform time dummy E e uals when the rm has already undergone the reform in the year and otherwise Each row in the table corresponds to each of the e uations in the multi-e uation model Control variables include the lagged values of the ten dependent variables, rm size, mar et-to-boo ratio, E etc We also control for industry and year xed effects or brevity, only core results are presented As several dependent variables in the model have a minus sign speci cally in the rst, second, fth and tenth e uations , their signs for the coef cients and t-values in the table are ad usted accordingly to ma e the results more intuitive he Ad usted -s uares for the e uations are reported in the last column Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

Dependent variables		ndependent variables									
	SOE*CF*REF	SOE*CF	SOE*REF	CF*REF	CF	REF	SOE	CONTROL	YEAR & IND FE		Ad
CAPX	**	– * –	*	– *** –	***	– *** –	– –	ES	ES	,	
ACQUI	– –	– *** –		– *** –	***		– *** –	ES	ES	,	
ASSETSALES	***	– *** –	– *** –		– *** –	***	***	ES	ES	,	
STKISSUE	***	– *** –	– –	– *** –	***	– *** –	– *** –	ES	ES	,	
DIV	– ** –			– *** –	***	– –	– *** –	ES	ES	,	
ΔSLOAN	**	– *** –		***	– *** –	– *** –		ES	ES	,	
ΔLLOAN		– ** –	– –	– –	– *** –	***		ES	ES	,	
ΔOTHERSD	– *** –	***	– –	***	– *** –	– *** –	– –	ES	ES	,	–
ΔOTHERLD		– –	– –	***	– *** –	– ** –		ES	ES	,	
ΔCASH	***	– *** –	– –	– *** –	***	***		ES	ES	,	

We then conduct a placebo test on the timing of the reform Speci cally, we conduct times simulations to generate a series of random years in the range of the real reform years, and accordingly, construct a “false” reform indicator *REF* to re-estimate the benchmar model for times We then plot the empirical cumulative distribution function and density of the estimated coef cients on *SOE*CF*REF* in Appendix ig A As expected, the distribution of the estimated coef cients on the placebo reform indicator is centered around zero our benchmar estimate from able plotted as a vertical line at the value lies outside the range of coef cients estimated in the simulation practice, proving the credibility of our ndings

4.4. *Who is responsible for ownership discrimination? Banks vs. firms*

We have uncovered reduced ownership discrimination after the reform a ing a step further, an interesting but yet not fully explored challenge is whether the results stemmed from the privatization mar etization of *the lenders* ban s , rather than *the borrowers* rms his counterargument posits that ban s are *compelled* by local governments to tilt towards S Es, while this policy lending is largely alleviated after ban ing sector mar etization n most of the studies on credit misallocation, it is hard to fully exclude this alternative explanation We argue that in this paper, the staggered Diff-in-Diff setting largely alleviates this concern, as the post-reform indicator, *REF*, varies among rms n this section, we provide further evidence by ta ing advantage of the mar etization reform on China’s ban s, which happened almost around the same period We measure the mar etization process of the whole ban ing sector with the loans extended by listed ban s over the total ban loans in the economy *REFBank* , and include the triple interaction term *SOE*CF*REFBank* into the baseline model

able reports the results n the e uation with capital expenditure as dependent variable, the coef cient on *SOE*CF*REFBank* is insigni cant, and the coef cient on *SOE*CF*REF* remains signi cantly positive, indicating that the alleviation of ownership discrimination is unli ely to be caused by mar etization of the ban ing sector rather, ban s seem to rationally ad ust their credit allocations when the real-sector Split-share Structure eform cripples the government bailout expectations on S Es he evidence also indirectly implies that before the reform, ban s proactively rather than compelled to favor S Es for “safer” loans herefore, the political implications for policyma ers may be that the resolution of the long-lasting credit allocation distortions in the capital mar et lies more on the side of rms, rather than ban s

4.5. *Direct evidence of accessibility to bank loans*

n this section, we aim at directly gauging the in uences of the Split-share Structure eform on the differential accessibility to ban loans between S Es and non-S Es We extract a documentation of the loans issued by Chinese ban s from the CS A database his dataset covers the information on ban loans, including the loan covenant, the borrowers’ names and stoc D, the lending ban s, *etc.* o examine the effect of the reform, we perform a Diff-in-Diff design based on the staggered reform as an exogenous shoc , similar to that in the baseline regressions We employ the logarithm of the loan amount *LnAmount* , loan term *LnTerm* , the interest rate *Rate* , and a dummy indicator of whether the loan is bac ed by collateral *Collateral* as dependent variables, respectively, and regress them on the interaction of the S E indicator *SOE* and post-reform dummy *REF* , and both of the separate terms We follow the literature to include a series of control variables in the regressions, including an indicator of whether the lending ban is among the “ ig our” ban s *Bank4* , whether the loan pac age is syndicated *Syndicated* , whether the loan is uoted in local currency *Currency* , as well as the category of the loan purpose declared by the borrower *LoanPurpose* raham et al , Demiroglu and James, Cer ueiro et al , Ertan et al , Detailed de nitions of the variables are reported in able A oreover, consistent with our baseline model, we also control for the rm-level nancial characteristics *i.e.* the lagged values of cash ow *CF* and the ten dependent variables in the baseline model, plus rm size, mar et-to-boo ratio and E We also include industry and year xed effects in the regressions able shows the regression results

We nd a salient decline in the differences between S Es and non-S Es in terms of loan amount, maturity, interest rate, and collaterals after the reform, with coef cients signi cant at the or level, and the signs are opposite to those of the coef cients on the ownership indicator *SOE* he evidence indicates that S Es’ privileged accessibility to ban lending manifested as larger-scale loan amount, longer loan terms, lower borrowing costs, and less collateral re uirements prominently diminishes after the Split-share Structure eform, which is in line with the ndings in our baseline model

a en together, the direct evidence on the side of ban lending powerfully complement our ma or ndings in the previous sections that the Split-share Structure eform ameliorates the inferior lending status for non-S Es he reform proves to serve as an effective catalyst to mitigate ownership discrimination towards non-S Es and enhance the ef ciency of the nancing environment

See Chetty et al or La errara et al for similar practice of simulations in their placebo tests

We than the anonymous referee for encouraging us to complement our ndings with direct evidence of ban lending behaviors

he China Listed irm’s an Loan esearch Series of the CS A database provides comprehensive documentation of ban lending to listed rms, which is collected from the announcements of the rms Despite the possible limitations of incomplete coverage of entire ban loans and missing variables especially the interest rates , the dataset arguably provides helpful evidence on the changes in ban lending towards listed rms in our sample period he real origins of the privatization reform he rms *vs.* the ban ing sector

his table includes the impacts of the ban ing sector's privatization mar etization reform We denote a variable E an indicating the ratio of loans extended by ban s that have already gone public to all ban loans Similar to the rm's privatization reform indicator, E , we construct the triple interaction term, C *S E* E an , and include the other interaction terms in the regression he results of the multi-e uation regressions are reported with only the core results presented for brevity Control variables include the lagged values of the ten dependent variables, rm size, mar et-to-boo ratio, E etc We also control for industry and year xed effects De nitions of variables and table structures are exactly the same as able As several dependent variables in the model have a minus sign speci cally in the rst, second, fth and tenth e uations , their signs for the coef cients and t-values in the table are ad usted accordingly to ma e the results more intuitive he Ad usted -s uares for the e uations are reported in the last column Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

Dependent variables	ndependent variables									
	*SOE*CF*REF*	*SOE*CF*	*SOE*REF*	*CF*REF*	*SOE*CF*REFBank*	*SOE*REFBank*	*CF*REFBank*	*CONTROL*	*YEAR & IND FE*	Ad
CAPX	**	– * –	***	– *** –		– * –		ES	ES	,
ACQUI			*	– *** –	– ** –	– * –	***	ES	ES	,
ASSETSALES	***	– –	– *** –		– –	– –	– –	ES	ES	,
STKISSUE	***	– *** –		– *** –		– ** –	– ** –	ES	ES	,
DIV	– ** –		***	– *** –	– –	– ** –		ES	ES	,
ΔSLOAN	***				– *** –		***	ES	ES	,
ΔLLOAN	*	– –	– –	– –	– –	– –	– –	ES	ES	,
ΔOTHERSD	– *** –	***	– –	***	**	– * –	– ** –	ES	ES	,
ΔOTHERLD	– –		– –	***		*		ES	ES	,
ΔCASH	***	– *** –	– –	– *** –	– –	– –	– –	ES	ES	,

5.1. Negative cash flow shocks

ne may doubt that a rm's reactions to cash ow may be asymmetrical for positive and negative shoc s ndeed, our proxy for ownership discrimination is more about rms' access to external funds after negative cash ow shoc s than about retiring debt after positive cash ow shoc s herefore, in this section, we perform a robustness chec by restricting the sample to the observations with negative cash ow shoc s *CF* < or brevity, we put the results in Appendix able A As shown in anel A, the interaction of the ownership dummy nsolvency ris s and ownership discrimination

his table reports the impacts of the reform on rms with high or low insolvency ris s he two subsamples are divided based on the median value of the Z-scores Each row in the table corresponds to each of the e uations in the multi-e uation model Control variables include the lagged values of the ten dependent variables, rm size, mar et-to-boo ratio, E etc We also control for industry and year xed effects or brevity, only core results are presented As several dependent variables in the model have a minus sign speci cally in the rst, second, fth and tenth e uations , their signs for the coef cients and t-values in the table are ad usted accordingly to ma e the results more intuitive he Ad usted -s uares for the e uations are reported in the last column Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

Dependent variables	ndependent variables										
	igh Z-score					–	Low Z-score				
	*SOE*CF*REF*	*SOE*CF*	*CONTROL*	*YEAR & IND FE*	Ad		*SOE*CF*REF*	*SOE*CF*	*CONTROL*	*YEAR &IND FE*	Ad
CAPX	**	– **	ES	ES				–	ES	ES	
		–						–			
ACQUI		– ***	ES	ES				– ***	ES	ES	
		–						–			
ASSETSALES	***	– ***	ES	ES			–		ES	ES	
		–					–				
STKISSUE	***	– ***	ES	ES			–	***	ES	ES	
		–					–				
DIV	– ***	*	ES	ES			–	–	ES	ES	
	–						–	–			
ΔSLOAN	**	– ***	ES	ES			–	– ***	ES	ES	
		–					–	–			
ΔLLOAN	–	–	ES	ES			*	– *	ES	ES	
	–	–						–			
ΔOTHERSD	– ***	***	ES	ES	–			***	ES	ES	
	–										
ΔOTHERLD	*	– **	ES	ES							

5.3. Privatization probability and ownership discrimination

5.3.1. The composition of shares and the effects of Split-share structure reform

he primary goal of the Split-share Structure eform is to dismantle the dual-share structure by converting state-owned shares and other types of non-tradable shares into tradable shares We can therefore infer that the decrease in the percentage of non-tradable shares is a determinant of the extent to which the reform impacts a rm see also Liao et al olders of newly-converted shares are free to sell those shares based on their evaluation of rms' performance more converted shares transferred into tradable ones ma es it easier for outsiders to ta e over rms without the protection of non-tradable state-owned shares We thus reasonably expect that the effects of the reform should be more evident among rms with a larger surge in the percentage of tradable shares, since they generally experience more intense shoc s in the state control dilution and face higher threats of privatization after the reform

We divide all rms into two subsamples according to the ratio of the non-tradable shares transferred among total shares able shows that the effects of the reform exist only in the high-conversion-ratio group in the lower-conversion-ratio group, the coef cient of the capital expenditure on the triple interaction term is insigni cant his evidence is consistent with our prediction and further usti es the effects of the reform

5.3.2. Industrial characteristics and the effects of the Split-share structure reform

We ma e a further investigation into the heterogeneous effects of the reform on rms in different industries Some industries are considered as strategically important for the country, since they bear crucial roles in social security, industrialization, and national power he mar et tends to expect that even if the rms in nationally-strategic industries undergo the Split-share Structure eform, the government will retain actual control over these rms for the sa e of national competence As such, the impacts of the reform should be comparatively wea er We divide the sample into sub-groups of nationally-strategic industries mining, water, electricity, public transportation, and energy and the rest, and re-conduct the baseline regressions esults are shown in able We nd evidence consistent with our predictions

5.3.3. Two alternative proxies for the likelihood of further privatization

enerally, if the state holds predominantly higher shares of a rm ex-ante, investors and ban s may believe that the rm is tightly controlled by the government an et al , , and thus the conversion of non-tradable shares should not easily lead to substantive alternation of ownership type Accordingly, we split the ownership indicator *SOE* into strongly- and wea ly-controlled subgroups *Strong* and *Weak* Speci cally, following an et al , for an S E, if the government's direct shareholding is higher than in the scal year of the reform, *Strong* e uals one and *Weak* e uals zero otherwise, *Weak* e uals one and *Strong* e uals zero or non-S Es, both are zero We replace the interaction terms in the baseline model with these two dummies and construct the interaction terms separately esults are shown in able A of the nline Appendix We nd stronger impact of the reform on ownership discrimination among rms with wea er government control, which is in line with our main arguments

Another proxy for the li elihood of privatization is the scale of wor force eople usually believe that in fear of massive layoffs and social instability, the government would be very cautious in switching a rm with a large wor force into a private one, even if they accomplish the transformation of non-tradable shares o test this prediction, we divide the sample into two groups based on the ratio of each rm's headcount to the total number of employees of all listed rms in the city where it is head uartered in the speci c year he results are shown in nline Appendix able A We nd that the signi cant effects of the reform only exist among rms with smaller wor force, which presumably possess a higher possibility of realized privatization

verall, the evidence reinforces our ndings that stronger threats of privatization lead to more thorough reductions in ownership discrimination after the reform

5.4. External financing dependence, privatization, and ownership discrimination

f the Split-share Structure eform indeed reduces ownership discrimination and improves the external nancing environment for S Es and non-S Es, rms in industries that rely more on external nancing should bene t more We posit that rms belonging to industries with higher external dependence should exhibit more pronounced effects of the reform relative to the nancially self-suf cient rms We follow a an and Zingales to construct industry-level External inancing Dependence *FD* proxy *FD* measures the percentage of a rm's capital needs that cannot be met by internal nancing t is de ned as the industrial average capital expenditure minus the operating cash ow divided by the capital expenditure We divide rms into two subsamples based on *FD*, and re-conduct the multi-e uation regressions for both of the sub-groups esults in able are aligned with our predictions

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here is a compulsory loc up period, *i.e.*, a deliberately prolonged gap before the transferred tradable shares are eligible to be sold after the reform eanwhile, a large part of the tradable stoc s is under constraints of selling price, shares, *etc.* he loc up period and selling constraints are aimed at maintaining the stability of the mar et by avoiding large supply shoc s, while in effect impeding the effective mar etization and privatization process of S Es herefore, when we evaluate the scale of non-tradable shares transferred into tradable ones, we consider the difference between the ratio of unconstrained tradable shares to total shares after the reform and the ratio of tradable shares to total shares before the reform

ollowing a an and Zingles , the denominator and numerator are summed for all years to avoid annual uctuations the median rather than the mean value is used here to avoid the impacts of outliers

5.5. Heterogeneous effects of the reform: direct evidence

n the previous sections, we have illustrated the heterogeneous effects of the Split-share Structure eform among rms with different characteristics, such as the level of insolvency ris s, the threats of being privatized, and the external nancing dependence, among others n this section, we supplement these ndings using the direct evidence from the perspective of ban lending behaviors, and examine whether the actual amount of funding he effects of the reform on rms in strategic and non-strategic industries

his table examines the cross-sectional variation among rms in different industries he mining, water, electricity, public transportation, energy industries are categorized as nationally-strategic industries thers are regarded as non-nationally-strategic industries Each row in the table corresponds to each of the e uations in the multi-e uation model Control variables include the lagged values of the ten dependent variables, rm size, mar et-to-boo ratio, E etc We also control for industry and year xed effects he table structures are exactly the same as able or brevity, only core results are presented As several dependent variables in the model have a minus sign speci cally in the rst, second, fth and tenth e uations , their signs for the coef cients and t-values in the table are ad usted accordingly to ma e the results more intuitive he Ad usted -s uares for the e uations are reported in the last column Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

Dependent variables	ndependent variables										
	ation-strategic-industry					–	on-nation-strategic-industry				
	*SOE*CF*REF*	*SOE*CF*	*CONTROL*	*YEAR & IND FE*	Ad		*SOE*CF*REF*	*SOE*CF*	*CONTROL*	*YEAR & IND FE*	Ad
CAPX			ES	ES			**	– – **	ES	ES	
ACQUI	– –		ES	ES			– –	– – ***	ES	ES	
ASSETSALES	*	– – *	ES	ES				– –	ES	ES	
STKISSUE	– –		ES	ES			***	– – ***	ES	ES	
DIV	– –		ES	ES				– – ***	ES	ES	
ΔSLOAN	– –	– – **	ES	ES				– – ***	ES	ES	
ΔLLOAN		– –	ES	ES				– –	ES	ES	
ΔOTHERSD			ES	ES			– *** –	***	ES	ES	
ΔOTHERLD		– –	ES	ES				– –	ES	ES	
ΔCASH		– – **	ES	ES			***	– – ***	ES	ES	

and uang , *etc.* We re uire at least nonmissing observations of cash ow within the estimation window We replace the variable *CF* with the cash ow volatility *CVCF* and re-conduct the baseline regressions esults in able show a signi cantly positive coef cient of *SOE*CVCF*REF* in the rst e uation with *CAPX* as the dependent variable , similar to that in the baseline model he results based on the alternative proxy further strengthen our main ndings

6.2. Propensity-Score-Matched (PSM) alternative control groups

o address the concern that rms with different ownership structures are not fundamentally comparable, we employ the ropensity Score atching S approach to match the S Es in our sample with fundamentally similar non-S Es We then re-estimate the baseline regressions using the matched sample As rms' characteristics may change after the reform, the selection of the matched non-S E group is based on characteristics at the end of , the last-year-end before the reform was announced Speci cally, the dependent variable is an indicator of state ownership *SOE* We include the set of control variables in the baseline model when estimating the logistic regression Each of the S Es is matched with up to two non-S Es with the nearest estimated propensity score with replacement ote that since some rms from the pool of potential matched non-S Es can be suitable for multiple S Es, we eventually construct a sample consisting of S Es and non-S Es

able A in the Appendix reports the univariate comparisons of the pre-treatment rm-level characteristics between the two types of rms As shown in the results, none of the observed differences between S Es and matched non-S Es is statistically signi cant, proving that the propensity score matching process removes meaningful observable differences After forming the relatively comparable S control group, we re-estimate the baseline regression model using S Es and matched non-S Es he results are reported in able We nd that the effects of the Split-share Structure eform continue to hold

We follow the practice of the previous studies to use a ve-year window in the estimation of the coef cient of variation he results are robust if we use other estimation windows of four or six years, or if we use the standard deviation of the residuals from time-series models to deal with the seasonality of cash ow shoc s

External nancing dependence and the effects of the reform
We divide the sample into two groups based on the industry-level dependence of external nancing of the rms a an and Zingales, he industry-level External inancing Dependence D is calculated as the percentage of rms' capital needs that cannot be gained by internal nancing We divide the sample into two groups based on the median of D Each row in the table corresponds to each of the e uations in the multi-e uation model Control variables include the lagged values of the ten dependent variables, rm size, mar et-to-boo ratio, E etc We also control for industry and year xed effects or brevity, only core results are presented As several dependent variables in the model have a minus sign speci cally in the rst, second, fth and tenth e uations , their signs for the coef cients and t-values in the table are ad usted accordingly to ma e the results more intuitive he Ad usted -s uares for the e uations are reported in the last column Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

Dependent variables	ndependent variables										
	igh external nancing dependence					–	Low external nancing dependence				
	*SOE*CF*REF*	*SOE*CF*	*CONTROL*	*YEAR & IND FE*	Ad		*SOE*CF*REF*	*SOE*CF*	*CONTROL*	*YEAR & IND FE*	Ad
CAPX	**		ES	ES				– –	ES	ES	
ACQUI	– –		ES	ES				– *** –	ES	ES	
ASSETSALES	– –	– ** –	ES	ES			***	– *** –	ES	ES	
STKISSUE	***		ES	ES			***	– *** –	ES	ES	
DIV	– –	– –	ES	ES			– *** –		ES	ES	
ΔSLOAN			ES	ES			**	– *** –	ES	ES	
ΔLLOAN		– –	ES	ES			– –	– –	ES	ES	
ΔOTHERSD	– *** –	– –	ES	ES			– *** –	***	ES	ES	
ΔOTHERLD	– –		ES	ES					ES	ES	
ΔCASH	***	– –	ES	ES			***	– ***	ES	ES	

6.3. Additional control variables

ne possible concern may be that the changes in other aspects of the rms rather than in the lenders' preference may also affect rms' investments and nancing behaviors after the reform Speci cally, by transferring the non-tradable shares to tradable shares and opening the door to further privatization of S Es, the reform reduces the con icting interests between controlling shareholders in S Es, the ma or controller is the government agents and private shareholders, and facilitates the incorporation of more information on rms' performance into the stoc mar et As such, the reform may demotivate the government to subsidize S Es, especially those with higher probability of further privatization Also, the reform may improve corporate governance, spur technological innovation, increase stoc price informativeness, and reduce the agency costs of rms Jiang et al , ou et al , Cumming and ou, Chen et al , an et al , o rule out these confounding effects, we conduct a series of tests by introducing further control variables into the baseline regressions and examining whether our evidence still holds

irst, we exclude the alternative explanation that the mitigated gap between S Es and non-S Es in their responses of *CAPX* to cash ow shoc s lies not in enhanced credit allocation, but in the reduction in S Es' nancial subsidies from the government Chinese local governments have a long history of close intervention with S Es by means of favorable subsidies Ec aus, öller and Zhang, We collect the government subsidy dataset from the inancial Statement Annotations Series of the CS A Database, and standardize the subsidy amounts by rm's total assets We incorporate *Subsidy* and its interactions with the ownership indicator *SOE* , the reform indicator *REF* , and the triple interaction term into the baseline model

Second, we consider whether the observed effects of the reform in our main ndings are due to the increase in S Es' motivation of technology innovations We construct a variable *Pat* as the logarithm of one plus the total number of invention and utility model

Alternative proxy for cash ow shoc s cash ow volatility

We use the cash ow volatility C C to proxy for cash ow shoc s in the multi-e uation model, and re conduct our baseline regressions C C is calculated as the coef cient of variation in a rm's uarterly cash ow over the past ve years uarters preceding each of the sample years he coef cient of variation is the standard deviation of operating cash ow scaled by the absolute value of the mean over the same egression results using propensity-score-matched sample

sing the ropensity-Score- atched S subsample, this table estimates the impacts of the Split-share Structure eform on the ownership discrimination in China or brevity, we don't report the detailed coef cients on these variables hen we reconduct the multi-e uation regression of rms' investment and nancing behaviors on cash ow shoc s atchev et al , Each row in the table corresponds to each of the e uations in the multi-e uation model nly core results are presented Control variables include the lagged values of the ten dependent variables, rm size, mar et-to-boo ratio, E etc We also control for year and industry xed effects As several dependent variables in the model have a minus sign speci cally in the rst, second, fth and tenth e uations , their signs for the coef cients and t-values in the table are ad usted accordingly to ma e the results more intuitive he Ad usted -s uares for the e uations are reported in the last column Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

Dependent variables	ndependent variables									
	*SOE*CF*REF*	*SOE*CF*	*SOE*REF*	*CF*REF*	*CF*	*REF*	*SOE*	*CONTROL*	*YEAR & ID FE*	Ad
CAPX	**	–	– *	– ***	***		**	ES	ES	
		–	–	–						
ACQUI		–		– ***	***		–	ES	ES	
		–		–			–			
ASSETSALES		–	–		– ***	–	–	ES	ES	
		–	–		–	–	–			
STKISSUE	–		–	–	– ***	***		ES	ES	
	–		–	–	–					
DIV	–	– *	–	– ***	***			ES	ES	
	–	–	–	–						
ΔSLOAN	–	–	–	***	– ***		*	ES	ES	
	–	–	–		–					
ΔLLOAN		–	–	–	– ***			ES	ES	
		–	–	–	–					
ΔOTHERSD	–	*	–	***	– ***		–	ES	ES	–
	–		–		–		–			
ΔOTHERLD			–	***	– ***	–		ES	ES	
			–		–	–				
ΔCASH	– **	**	–	– *	***	***		ES	ES	
	–		–	–						

patents that are applied for by a rm and eventually granted to a rm in a year e and ian, an et al , We follow the literature to use the four-year-ahead innovation output variable in the regression, as the observable outputs of innovation usually ta e years to emerge e and ian, obustness chec ruling out confounding effects

his table shows the robustness of the effects of the Split-share Structure eform on the ownership discrimination by excluding the effects of other possible changes on government subsidy, rms' innovation, agency costs, and stoc price informativeness etc after the reform he government subsidy Subsidy is measured as the total amount of government subsidies divided by rm's total assets We proxy for rms' innovation as the logarithm of one plus the total number of invention and utility model patents that are applied for by a rm and eventually granted to a rm in a year A e and ian, an et al , We include the four-year-ahead proxy for innovation he measurement of stoc price informativeness nfo is the logit transformation of - , where is estimated by regressing each rm's daily stoc return on the value-weighted mar et return, industry return and their lagged values for each year We measure the agency con icts as the degree of separation of control and cash ow rights SE We include these variables and their interactions with the ownership indicators and reform indicators into the regressions, denoted as "ADD C L" in the eighth column of the table including nfo, A , SE , their interactions with S E and E , and the triple interaction terms S E* A * E , S E* nfo* E , S E*SE * E or brevity, we don't report the detailed coef cients on these variables hen we reconduct the multi-e uation regression of rms' investment and nancing behaviors on cash ow shoc s atchev et al , Each row in the table corresponds to each of the e uations in the multi-e uation model nly core results are presented Control variables include the lagged values of the ten dependent variables, rm size, mar et-to-boo ratio, E etc We also control for year and industry obustness chec regression results with additional controls of other events

his table reports the impact of the Split-share Structure eform on the ownership discrimination with additional control variables of other events, i e the alue-added ax A reform indicator Dum A , and foreign ban entry indicator Dum he dummy variable Dum A e uals if the rm belongs to the speci c industry and city that has already underwent the A eform in the year, and otherwise he dummy variable Dum e uals if the rm is located in the city that has already been open to foreign ban s in the year, and otherwise or brevity, we don't report the detailed coef cients on these variables hen we reconduct the multi-e uation regression of rms' investment and nancing behaviors on cash ow shoc s atchev et al , Each row in the table corresponds to each of the e uations in the multi-e uation model nly core results are presented Control variables include the lagged values of the ten dependent variables, rm size, mar et-to-boo ratio, E etc We also control for year and industry xed effects As several dependent variables in the model have a minus sign speci cally in the rst, second, fth and tenth e uations , their signs for the coef cients and t-values in the table are ad usted accordingly to ma e the results more intuitive he Ad usted -s uares for the e uations are reported in the last column Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

Dependent variables	ndependent variables											
	SOE*CF*REF	SOE*CF	SOE*REF	CF*REF	CF	REF	SOE	Dum_VAT	Dum_FB	CONTROL	YEAR & IND FE	Ad
CAPX	**	– * –	*	– *** –	***	– *** –	– –	– –	– –	ES	ES	,
ACQUI	– –	– *** –		– *** –	***		– *** –	– –	– –	ES	ES	,
ASSETSALES	***	– *** –	– *** –		– *** –	***	***	– –	**	ES	ES	,
STKISSUE	***	– *** –	– –	– *** –	***	– *** –	– *** –	– –		ES	ES	,
DIV	– ** –			– *** –	***	– –	– *** –	– ** –	**	ES	ES	,
ΔSLOAN	**	– *** –		***	– *** –	– *** –				ES	ES	,
ΔLLOAN		– ** –	– –	– –	– *** –	***		– –	– –	ES	ES	,
ΔOTHERSD	– *** –	***	– –	***	– *** –	– *** –	– –	– –	– –	ES	ES	,
ΔOTHERLD		– –	– –	***	– ***	– **		–	–	ES	ES	,

We include these two indicators of events *Dum_FB* and *Dum_VAT* into the baseline regressions to address the disturbing impacts of these policy shoc s, and report the results in able he evidence shows that our ndings still hold

Last, we consider the massive economic stimulus plan issued by the Chinese government in ovember , with a magnitude of trillion e uivalent to billion SD at that time , which may affect ban loans and trigger spillover effects on rms' nancial decisions uyang and eng, urde in and Weidenmier, Wen and Wu, ollowing the literature, we regard and as the stimulus period Wen and Wu, and re-conduct the baseline regressions using the pre-stimulus sample period Since the large wave of Split-share Structure eform was largely concentrated in — , this subsample essentially covers more than of the privatized rms in our sample We report robust results in anel A of nline Appendix able A

urther, the -trillion economic stimulus plan features salient imbalance in industry distribution preferential stimulus pac age was provided to *Agriculture, Forestry, Machinery, Building materials, Real Estate, Metallurgy, Construction, Transportation, Medicine, Geological exploration and water conservancy, Education and broadcasting, Social service, Information technology,* and *Financial insurance industries.* Accordingly, we delete rms of these ey supported industries from the full sample and re-conduct the baseline regressions he results shown in anel of nline Appendix able A provide supportive evidence to our ndings he results suggest that even after excluding the impacts of the massive stimulus pac age, the mitigated ownership discrimination after the reform remains prominent

n this paper, we go beyond the widely debated existence and impacts of ownership discrimination and examine its institutional origins based on a uasi-natural experiment in China—the Split-share Structure eform Speci cally, we employ a multi-e uation model that holds cash sources e ual to cash uses and re ects the interdependent nature of rm's nancial decisions over time to provide solid evidence of credit misallocation between S Es and non-S Es sing a staggered Diff-in-Diff design with the reform as an exogenous shoc , we show that the advantageous nancing status of S Es is signi cantly wea ened after the conversion of rms' non-tradable shares to tradable shares, which increased their probability of being privatized nterestingly, we nd that the reform on rms, rather than the near-simultaneous mar etization of the ban ing sector, ta es the ma or effects he ndings indicate that the implicit government guarantee is li ely to be the origin of ownership discrimination

urther, we provide supportive evidence from the perspective of the lenders we show that S Es' favorable accessibility to ban credits larger-scale loan amounts, longer terms, lower borrowing costs and less collateral re uirements is indeed mitigated after the Split-share Structure eform We proceed to show that the impacts of the reform are more pronounced among rms with higher ratios of converted shares, rms in non-strategic industries, rms with smaller wor forces, and rms that experience looser ex-ante state control

Clarifying the institutional origins of ownership discrimination and the real effects of privatization reforms has practical implications for our understanding of the capital mar ets ur wor provides concrete evidence of the positive role played by the reform in improving credit allocation ef ciency in the nancial sector and fostering growth of non-S Es in the real sector n this respect, the ndings should be of interest to both academia and policyma ers

De nition of the variables

ariables	Description
CASH	he cash and cash e uivalents in the nancial statement of cash ows divided by total assets
LLOAN	he long-term ban loans in the alance Statement divided by total assets
SLOAN	he short-term ban loans in the alance Statement divided by total assets, including short-term ban loans and the long term loans maturing in less than one year
OTHERLD	he short-term liabilities in the alance Statement other than the long-term ban loans divided by total assets
OTHERSD	he lon-term liabilities in the alance Statement other than the short-term ban loans divided by total assets
STKISSUE	Sale of common and preferred stoc divided by total assets
DIV	Dividends per share multiplied by the shares divided by total assets
ASSETSALES	he sales of assets divided by total assets
CAPX	he increase of xed assets + he increase of construction in process + he increase of intangible assets + he increase of deferred tax assets divided by the total assets
ACQUI	Ac uisitions divided by total assets
SIZE	he log value of total assets
MB	ar et value of e uity - oo value of e uity + oo value of total as-sets divided by boo value of total assets
NWC	otal current assets - Cash and e uivalents - otal current liabilities - Debt in current liabilities divided by total assets

continued on next page

efer to the press conference with the theme of "Economics, social development, and macro-control of China" by Zhang ing, director of the ational Development and eform Commission, on arch , he webpage is http lianghui people com cn npc continued

ariables	Description
CF	perating income before depreciation - et interest expense - Cash taxes - Change in net wor ing capital divided by total assets
SOE	A dummy variable indicating the ownership of the rm or state-owned rms S E = and otherwise
REF	A dummy variable which e uals when the rm has already undergone the Split-share Structure eform and otherwise
REFBank	he ratio of loans extended by listed ban s to the total ban loans in the economy
LnAmount	he logarithm of the total amount of the loan
LnTerm	he logarithm of loan term
Rate	he interest rate of the loan
Collateral	A dummy variable which e uals if the loan is bac ed by collaterals and otherwise
Bank4	A dummy variable which e uals if the lending ban is among the " ig our" ban s in China, *i.e.* the ndustrial and Commercial an of China, the China Construction an , the Agricultural an of China, the an of China, and otherwise the category of the loan purpose declared by the borrower *LoanPurpose*
Syndicated	A dummy variable which e uals if the loan pac age is syndicated and otherwise
Currency	A dummy variable which e uals if the loan is uoted in local currency and otherwise
LoanPurpose	A series of indicators on the category of the loan purpose declared by the borrower According to the database, the purpose is categorized into supporting the ordinary operation, supporting business expansion and new pro ects, international trading and import export, debt payoff, nancial restructuring, and others
Strong	or an S E, if the direct shareholding by the government is higher than in the scal year of the reform, *Strong* e uals or non-S Es, it e uals
Weak	or an S E, if the direct shareholding by the government is lower than or e ual to in the scal year of the reform, Wea e uals or non-S Es, it e uals
CVCF	he cash ow volatility, measured as the coef cient of variation in a rm's uarterly cash ow over the past ve years uarters preceding each of the sample years he coef cient of variation is the standard deviation of operating cash ow scaled by the absolute value of the mean over the same period
FD	External nancing dependence, measured as the percentage of a rm's capital needs that cannot be met by internal nancing
Subsidy	he total amount of government subsidies en oyed by the rm standardized by the total assets of the rms
Pat	he measure of rm's innovation, calculated as the logarithm of one plus the total number of invention and utility model patents that are applied for by a rm and eventually granted to a rm in a year
Info	irm's stoc price informativenss, calculated as rst regressing each rm's daily stoc return on the value-weighted mar et return, industry return and their lagged values for each year, and then ta e logit transformation of -
Sep	he degree of the separation of control rights and cash ow rights
Dum_FB	A dummy indicator of the foreign ban entry in China, which e uals if the rm's location has already gained access to foreign ban s by the end of the year and otherwise
Dum_VAT	A dummy indicator of the A reform, which e uals if the rm's location has already nished the A reform by the end of the year, and otherwise

his table provides a brief introduction of the variables in the model and empirical analysis according to e All the variables are divided by total assets as a means of standardization following the practice of atchev et al

A parallel test

Dependent variables	ndependent variable							Ad
	*SOE*CF*REF (−2)*	*SOE*CF*REF (−1)*	*SOE*CF*REF (0)*	*SOE*CF*REF (1)*	*SOE*CF*REF (2+)*	*CONTROL*	*YEAR & IND FE*	
CAPX			*	*	***	ES	ES	,
ACQUI			– –			ES	ES	,
ASSETSALES		**	– –	*		ES	ES	,
STKISSUE	***	***	***	***	***	ES	ES	,
DIV		– –			– –	ES	ES	,
ΔSLOAN		– –				ES	ES	,
ΔLLOAN	– ** –	– –	– –	– –	– –	ES	ES	,
ΔOTHERSD	– *** –	– –	– *** –	– *** –	– *** –	ES	ES	,
ΔOTHERLD	**		***		**	ES	ES	,
ΔCASH	**	***	***	***	***	ES	ES	,

his table estimates the dynamic effect of the privatization reform on our proxy for ownership discrimination, i e the reaction of rms' investments to cash ow shoc s All variables are as de ned in able A in Appendix We conduct the multi-e uation regressions similar to the baseline model in able , while replace the E variable in the triple interaction term with a series of indicators E − , E − , E , E , and E + , which e uals to one if it is two years prior to, one year prior to, the current year of, one year after, two and more years after the rm has underwent the reform, respectively and zero, otherwise Each row in the table corresponds to each of the e uations in the multi-e uation model or brevity, we omit the separate terms in the interactions, and control variables including the lagged values of the ten dependent variables, rm size, mar et-to-boo ratio and E etc We also control for year and industry xed effects As several dependent variables in the model have a minus sign speci cally in the rst, second, fth and tenth e uations , their signs for the coef cients and t-values in the table are ad usted accordingly to ma e the results more intuitive he Ad usted -s uares for the e uations are reported in the last column Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

Subsample of negative cash ow shoc s

anel A he ownership discrimination

Dependent variables	ndependent variables					
	SOE*CF	CF	SOE	CONTROL	YEAR & IND FE	Ad
CAPX	– *** –	***	– *** –	ES	ES	
ACQUI	– * –	***	– *** –	ES	ES	
ASSETSALES	– *** –	– *** –	– –	ES	ES	
EQUI	*	– *** –	– *** –	ES	ES	
DIV	– –	***	– *** –	ES	ES	
ΔSLOAN	– *** –	– *** –	– * –	ES	ES	
ΔLLOAN	– *** –	– *** –	– * –	ES	ES	
ΔOTHERSD	***	– * –	***	ES	ES	
ΔOTHERLD	**	– *** –	***	ES	ES	
ΔCASH	**	***		ES	ES	

anel he effects of the Split-share Structure eform on the ownership discrimination

Dependent variables	ndependent variables									
	SOE*CF*REF	SOE*CF	SOE*REF	CF*REF	CF	REF	SOE	CONTROL	YEAR & IND FE	Ad
CAPX	**	– ** –	**	– *** –	***	– *** –	– *** –	ES	ES	
ACQUI	– –	– –	– –	– *** –	***	– –	– –	ES	ES	
ASSETSALES	***	– *** –		– ** –	– *** –	**	– –	ES	ES	
STKISSUE	– –	**	– –	***	– *** –	– –	– –	ES	ES	
DIV	– –	– –		– *** –	***	– *** –	– ** –	ES	ES	
ΔSLOAN	– –	– *** –		***	– *** –		– ** –	ES	ES	
ΔLLOAN		– –	– –	– –	– *** –	*	– –	ES	ES	
ΔOTHERSD	– *** –	***	– *** –	***	– *** –	***	***	ES	ES	
ΔOTHERLD				**	– *** –	– –		ES	ES	
ΔCASH	– * –	*	– * –	***	***	***		ES	ES	

his table re-estimate the regression results using the subsample of negative cash ow shoc s Each row in the table corresponds to each of the e uations in the multi-e uation model anel A re-estimates the existence of ownership discrimination in able anel re-estimates the impacts of the reform on the discrimination in able Control variables include the lagged values of the ten dependent variables, rm size, mar et-to-boo ratio, E etc We also control for industry and year xed effects or brevity, only core results are presented As several dependent variables in the model have a minus sign speci cally in the rst, second, fth and tenth e uations , their signs for the coef cients and t-values in the table are ad usted accordingly to ma e the results more intuitive he Ad usted -s uares for the e uations are reported in the last column Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

he privatization reform and ban lending subsample tests

Dependent variable *Ln(Amount)*	igh *Z*-score	Low Z-score	igh changes	Low changes
*REF*SOE*	– ***	–	– **	*
	–	–	–	
SOE	***	***	***	–
				–
REF	***	**		–
				–
C L	ES	ES	ES	ES
ndustry E & ear E	ES	ES	ES	ES
Ad				
Dependent variable *Ln(Amount)*	***vs.*** on-strategic-industry	Strategic-industry	igh dependence	Low dependence
*REF*SOE*	– **	–	– ***	
	–	–	–	
SOE	***	***	***	–
				–
REF	***	–		**
		–		
C L	ES	ES	ES	ES
ndustry E & ear E	ES	ES	ES	ES
	,			
Ad				

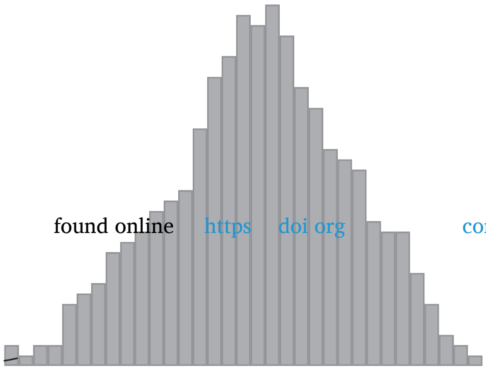
his table reports the heterogeneous effects of the Split-share Structure eform on the scale of ban lending among rms with different characteristics We rst split the full sample into two subsamples according to the level of insolvency ris s, changes in non-tradable shares, whether the industry is among the nationally-strategic industries, and the external nancing dependence, respectively n each subsample, we regress the logarithm of loan amount LnAmount on the interaction of the ownership indicator S E and the reform time dummy E , and both of the separate terms Control variables include the indicators of whether the loan is issued by " ig our" ban s an , whether the loan pac age is syndicated Syndicated , whether it is uoted in local currency Currency , and the category of the loan purpose declared by the borrower Loan urpose We also control for the lagged values of cash ow C and the ten dependent variables in our baseline model CA , AC , ASSE SALES, S SS E, D , ΔSL A , ΔLL A , Δ E SD, Δ E LD, ΔCAS , plus rm size, mar et-to-boo ratio, E and industry dummies etc We control for year and industry xed effects or brevity, only core results are presented he ad usted -s uares are reported Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

ropensity score matching-post-match differences

ariable	S E	on-S E	Diff	*t*-value
ACQUI			–	
ASSETSALES				–
STKISSUE			–	
DIV				–
ΔSLOAN			–	
ΔLLOAN		–	–	
ΔOTHERSD			–	
ΔOTHERLD		–	–	
ΔCASH	–			–
MB				–
SIZE			–	
ROE			–	

his table presents the statistics of post-match differences between S E and matched non-S Es, including the sample average of rm characteristics, the sample-mean differences on-S Es minus S Es between the two groups and the -statistics All variables and table structures are exactly the same as those in able Coef cients are reported with t-statistics in parentheses *** denotes test statistical signi cance at the level ** denotes test statistical signi cance at the level * denotes test statistical signi cance at the level * p < ** p < *** p <

Dynamics of the Differential eaction of nvestment to Cash ow Shoc s etween S Es and on-S Es Around the eform – , period as



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he Distribution of the C ef cients in the laceb est

aner ee, A , theory of misgovernance J , –
ai, C , Lu, J , ao, ow does privatization wor in China? J Econ –
ai, C , Li, D D , Wang, , Enterprise productivity and ef ciency: when is up really down? J Comp Econ –
Arrow, economics to about racial erspect ,
ban ruptcy –
–
Almeida, , Campello, , constraints, asset tangibility, and corporate investment ev inanc Stud , –
, economic growth in inanc , –

Albrecht, W D , ichardson, , ncome smoothing by economy sector J us inanc Acc , –
Allen, , ian, J , ian, Law, nance, and China J Econ
Alti, A , ow sensitive is investment to cash ow when nancing is frictionless? J inanc ,
Altman, E , inancial ratios, discriminant analysis and the prediction of corporate J inanc ,
J , What has say discrimination? J Econ –
Z , Comp ,
A Econ
for J
Debate xford ress,
monitoring, and ev
ehr, oth, , constraints of lending ,
er man, Cole, u, mproving governance where the state is the controlling China Eur
, rights matter? a enactment J ,

hide, A , he hidden costs of stoc mar et li uidity J inanc Econ , –
iddle, C , ilary, , Accounting uality and rm-level capital investment Account ev , –
ouba ri, , Cosset, J C , uedhami, , Saffar, W , he political economy of residual state ownership in privatized rms evidence from emerging mar ets J Corp inan , –
oyc o, , Shleifer, A , ishny, , rivatizing ussia press
oyreau-Debray, , Wei, S -J , itfalls of a State-Dominated inancial System he Case of China ational ureau of Economic esearch, Wor ing aper
randt, L , Li, , an discrimination in transition economies ideology, information, or

Liao, L , Liu, , Wang, , China's secondary privatization perspectives from the split-share structure reform J inanc Econ , –
Lin, , oreign ban entry and rms' access to ban credit evidence from China J an inanc , –
Lin, C , Su, D , ndustrial diversi cation, partial privatization and rm valuation evidence from publicly listed rms in China J Corp inan , –
Lin, J , Cai, , Li, Z , Competition, policy burdens, and state-owned enterprise reform Am Econ ev , –
Liu, , Siu, A , nstitutions and corporate investment evidence from investment-implied return on capital in China J inanc uant Anal , –
Liu, C , chida, , ang, , Controlling shareholder, split-share structure reform and cash dividend payments in China nt ev Econ inanc , –
Liu, , Liu, , egginson, W L , Wei, Z , he effect of property rights on capital structure evidence from a natural experiment Available at SS ,
asulis, W , Wang, C , ie, , Agency problems at dual-class companies J inanc , –
cconnell, J J , uscarella, C J , Corporate capital expenditure decisions and the mar et value of the rm J inanc Econ , –
eade, J E , lanning and the rice echanism acmillan
egginson, W , rivatization and nance Annual eview of inance Economics , –
egginson, W L , etter, J , rom state to mar et a survey of empirical studies on privatization J Econ Lit , –
egginson, W L , Sutter, L , rivatisation in developing countries Corporate overnance An nternational eview , –
egginson, W L , Wei, Z , State ownership, soft-budget constraint and cash holdings evidence from China's privatized rms J an inanc , –
egginson, W L , llah, , Wei, Z , State ownership, soft-budget constraints, and cash holdings evidence from China's privatized rms J an inanc , –
inton, A , Schrand, C , he impact of cash ow volatility on discretionary investment and the costs of debt and e uity nancing J inanc Econ , –
oosa, , orecasting the Chinese uan- S Dollar exchange rate under the new Chinese exchange rate regime nt J us Econ , –
ewbery, D , ollitt, , he restructuring and privatisation of ritain's CE —was it worth it? J nd Econ , –
uyang, , eng, , he treatment-effect estimation a case study of the economic stimulus pac age of China J Econ , –
erotti, E C , an i en, , rivatization, political ris and stoc mar et development in emerging economies J nt oney inanc , –
oncet, S , Steingress, W , andenbussche, , inancial constraints in China rm-level evidence China Econ ev , –
a an, , Zingales, L , ower in a theory of the rm J Econ , –
aws i, homas , ecent Developments in China's Labour Economy Wor ing aper
öller, L , Zhang, Z , undling of social and private goods and the soft budget constraint problem J Comp Econ , –
Sapienza, , he effects of government ownership on ban lending J inanc Econ , –
Shleifer, A , State versus private ownership Social Sci Electronic ublishing , –
Shleifer, A , ishny, W , he politics of mar et socialism J Econ erspect , –
Shleifer, A , ishny, W , he rabbing and overnment athologies and their Cures arvard niversity ress
Song, Z , Storesletten, , Zilibotti, , rowing li e China Am Econ ev , –
Stiglitz, J E , Whither Socialism ress, Cambridge
Stiglitz, J E , Weiss, A , Credit rationing in mar ets with imperfect information Am Econ ev , –
Sun, , ong, W , China share issue privatization the extent of its success J inanc Econ p , – es
an, , ian, , Zhang, , Zhao, , he real effect of partial privatization on corporate innovation evidence from China's split share structure reform J Corp inan ,
ian, L , Estrin, S , etained state shareholding in Chinese LCs does government ownership always reduce corporate value? et