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Received: 15 January 2022 | Revised: 21 April 2022 | Accepted: 22 April 2022

DOI: 10.1002/mde.3631

RESEARCH ARTICLE

WILEY

Product market competition and controlling shareholders' tunneling: Evidence from China

Xiaoli Guo[1] | Sicen Chen[2] | Wei Yu[3] | Chengyi Liu[4]

[1]School of Management, Xiamen University, Xiamen, China

[2]Xiamen National Accounting Institute, Xiamen, China

[3]School of Business, Ningbo University, Ningbo, China

[4]School of Economics, Xiamen University, Xiamen, China

Correspondence
Chengyi Liu, School of Economics, Xiamen University, Xiamen, China.
Email: lcychengyi@gmail.com

This paper provides evidence supporting the disciplinary role of product market competition in controlling shareholders' tunneling. We use the regulation-induced IPO suspensions in China as shocks to product market competition. With a generalized DID design, we find that reduced product market competition threat, induced by rivals' IPO suspension, increases incumbents' inter-corporate loans by 0.4 percentage points (pp) and the probability of committing a capital occupation violation by 3.1 pp. The effect of IPO suspension on tunneling is weakened when the product market is highly competitive and more pronounced for companies with problematic agency problems and loose governance mechanisms. Furthermore, we document a reverse effect when IPO suspensions end. This study contributes to the literature on product market competition's disciplinary role by presenting evidence supporting a plausibly causal effect of competition and controlling shareholders' tunneling.

1 | INTRODUCTION

The disciplinary role of product market competition in mitigating managerial slack is well documented in the literature (e.g., Dasgupta et al., 2018; Giroud & Mueller, 2010). However, little is known about the effect of competition on agency conflicts between companies' controllers and minority investors. This paper studies the role of product market competition in controlling shareholders' tunneling in the context of China, where the risk of controllers' expropriation of minority shareholders is a crucial problem in corporate governance due to concentrated ownership and a weak institutional environment[1] (Jiang et al., 2010; Wang & Xiao, 2011).

We use a quasi-natural experiment of IPO suspensions as a shock to competition threat to incumbents to draw the plausibly causal effect of product market competition on tunneling. The IPO system in China is administration-centric and approval-based,[2] utterly different from the disclosure-centric and registration-based system in the United States. Firms seeking a public listing in the Chinese domestic market must go through a multi-step and tightly controlled process administered by the China Securities Regulatory Commission (CSRC) and might take approximately 3 years to prepare. The IPO system in China is dominated by the CSRC. The CSRC occasionally suspends all IPO activities to facilitate capital market reform or alleviate the concern that new issues draw capital from incumbent stocks (Piotroski & Zhang, 2014). The IPO suspensions are unpredictable for listed firms and informative mutual funds, much less for rivals, due to no public warnings, irrelevance to IPO applicants' characteristics, and the lengthy and uncertain IPO process (Cong & Howell, 2021).

There are several advantages to choosing the setting of IPO suspensions. First, prior studies proxy for competition using market concentration (where interpret more concentrated markets as less competitive), but the industrial organization's literature shows that the relationship between concentration and competition is theoretically unclear (Dedman & Lennox, 2009). Second, extensive literature has shown that access to the capital market via an IPO provides issuing firms significant competitive advantages (Chemmanur et al., 2010), exposing IPO applicants' peers to a higher level of competitive threat. On the contrary, rivals' IPO suspension decreases imminent competition threat for incumbent firms. Third, we use the setting of IPO suspension instead of directly studying the effect of IPO cases. A common concern in the IPO literature is that the rival firm's IPO is likely endogenous, making causal inferences challenging to draw.

To empirically test the effect of IPO suspensions on tunneling, we construct the treatment group of listed companies standing in the same three-digit CSRC industries with IPO applicants affected by the suspensions. Those companies with non-suspended peers are regarded as the controlling group. The paper investigates quarterly changes in controlling shareholders' tunneling behavior before and

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after the recent three IPO suspensions. The proxies of tunneling include (1) inter-corporate loans with related parties, which are measured by other receivables with related parties scaled by total assets (Jiang et al., 2010), and (2) controlling shareholders' capital occupation behaviors detected by the CSRC (Jiang et al., 2015).

We use a generalized difference-in-difference estimator and control for the fixed effects of the company and calendar quarter. By including company fixed effects in our regressions, we identify the relationship between IPO suspension and tunneling exploiting only within-company changes in tunneling behavior following the suspensions. This fixed-effects design helps mitigate the concern that systematic differences between companies' line of business, management practices, or other time-invariant company characteristics confound the relationship between product market competition and tunneling. The inclusion of calendar quarter-fixed effects helps mitigate the concern that the relationship between suspension and tunneling is confounded by factors such as changes in monitoring code among three suspensions, stock of receivables due to the business cycle, etc.

Our baseline results are consistent with the hypothesis that rivals' IPO suspensions lead to reduced competition threat of incumbents, which results in more controlling shareholders' tunneling. Specifically, the reduced product market competition induced by IPO suspensions leads to a (1) 0.4 percentage points (pp) increase in inter-corporate loans, representing an 11.4% change relative to the in-sample standard deviation, and (2) 3.1 pp increase in the probability that a company commits a capital occupation violation, equaling 12% of the in-sample standard deviation of sanction. We find no evidence of a pre-treatment trend in tunneling before the suspensions, supporting the validity of the parallel-trend assumption and a causal interpretation of the relationship.

This paper conducts three sets of cross-sectional regressions to strengthen our inference and better understand the relationship between rivals' IPO suspensions and incumbents' tunneling. First, we follow Haushalter et al. (2007) and exploit cross-sectional variation in the extent of product market competition, using (1) the technology similarity with peers and (2) the correlation of a firm's monthly stock returns with an equally weighted industry return index. We predict and find that the effect of rivals' IPO suspensions on imminent competition threat is limited when the product market is highly competitive, resulting in a weakened effect of IPO suspensions on controllers' tunneling. Second, we propose that reduced competition threat gives greater opportunities to controllers who are more likely to extract from listed companies. Following Jiang et al. (2010), we construct two variables to measure the severity of the tunneling problem: (1) the nature of property rights, that is, whether the ultimate controller is a state-owned entity, and (2) the separation between controlling rights and cash-flow rights of controllers. The results support our prediction that the effect of IPO suspensions on tunneling is more pronounced for companies with problematic tunneling. Third, we propose and verify that the impact of IPO suspensions on tunneling would weaken when the incumbent listed companies are followed by more analysts or audited by the big four international accounting firms. Further, we conduct several additional analyses and robustness tests to corroborate our inference and find our results hold. These results are consistent with the hypothesis that rivals' IPO suspensions lead to increased incumbents' tunneling.

This paper contributes to several strands of literature. First, we provide evidence supporting the disciplinary role of product market competition. While the part of product market competition in deterring managers' self-serving behaviors is well-documented in the literature (Dasgupta et al., 2018; Giroud & Mueller, 2010; Tian & Twite, 2011), little is known about the effect of product market competition on agency conflicts between controlling shareholders and minority investors. The paper adds to the literature by providing evidence that the controlling shareholders will extract more from the companies along with reduced product market competition threat.

Second, the paper complements the literature studying the governance mechanism of tunneling. The literature has kept growing since Johnson et al. (2000) pioneered the concept of "tunneling" and related theories. Prior studies provide evidence of effective governance channels of tunneling behaviors, such as acquisition market (Bae et al., 2002), legal environment (Atanasov, 2005), information disclosure (Cheung et al., 2006; Wang et al., 2019), institutional ownership (Jiang et al., 2010), financial constraints (Peng et al., 2011) and board structure (Cai et al., 2019; Yu et al., 2021). This study complements this literature by highlighting the disciplinary role of product market competition in deterring controlling shareholders' tunneling.

Third, the present research adds value to the literature on the IPO peer effect. Most previous papers have the consensus that rival firms experience declines in values around IPOs because they suffer from the increased strength of newly public firms (Braun & Larrain, 2009; Chemmanur et al., 2021; Cong & Howell, 2021; Fei, 2021; Hao et al., 2020; Hsu et al., 2010). However, Spiegel and Tookes (2020) recently pointed out the possibility that IPOs presage changes in industry instead of inducing them. There is a potentially important reason that IPOs occur when industry conditions are deteriorating. The unpredictable setting of IPO suspensions in China alleviates the endogeneity concern, such as IPO firms' timing to list and draw a plausibly causal effect.

The rest of the paper proceeds as follows. Section 2 describes sample selection and our identification strategy and presents summary statistics. Section 3 reports the empirical results, including results of the baseline regression, heterogeneity analyses, and robustness tests. Section 4 concludes the paper.

2 | HYPOTHESIS DEVELOPMENT

2.1 | IPO suspensions in China

The IPO system in China is administration-centric and approval-based, utterly different from the disclosure-centric and registration-based system in the United States. Firms seeking a public listing in the Chinese domestic market must go through a multi-step and tightly controlled process administered by the CSRC and might take

approximately 2 years to prepare. The most salient characteristic of the Chinese IPO system is that the CSRC only allows firms that they believe have development potential to go public according to its judgment on the value of the focal firm.

Firms going public face substantial uncertainty in the Chinese IPO system, which is lengthy and subject to administrative review. One primary source would be the regulation-induced IPO suspensions. The CSRC occasionally suspends all IPO activities beyond the application submission step to facilitate capital market reform (Piotroski & Zhang, 2014). Or, the suspensions might be to avoid drawing capital from incumbent to newly listed stocks (e.g., Braun & Larrain, 2009; Tian & Twite, 2011). During the suspension period, there would be no new approval of IPO applications by the CSRC, and firms approved before the suspension but not listed may face a pending listing and have to postpone their access to the capital market. There have been nine suspensions before 2016, and the duration varies from 4 to 13 months.

Although the incidence of historical suspensions suggests that market participants know a suspension is possible, the timing of when suspension starts or ends is not predictable. The government's suspensions are an exogenous administrative intervention and are not related to the IPO applicants' characteristics (Cong & Howell, 2021; Shi et al., 2018). There were no public warnings beforehand, and the end of a suspension coincides with the announcement that it is over. Furthermore, IPO applicants cannot predict the capital market reform or future market condition ex-ante, thus scheduling their IPO progress due to the lengthy and uncertain IPO process. Even for informative mutual funds or other market participants, predicting the suspensions in advance is also impossible. IPO suspensions can generate plausibly exogenous listing delays among firms already approved to go public.

Furthermore, the IPO suspensions can negatively impact firms, causing them to lose critical strategic opportunities like acquisitions or good-yielding investment projects and future development strategies due to the restricted access to the capital market (Shi et al., 2018). Simultaneously, the suspension delay can also increase market uncertainty about the firm, which is not conducive to future financing and investment plans.

2.2 | Hypothesis

The literature studying controller shareholders' tunneling has kept growing since Johnson et al. (2000) pioneered the concept of "tunneling" and related theories. In Johnson et al. (2000), they classify factors affecting controllers' tunneling into two categories: (1) factors related to motivations and (2) factors related to opportunities. Prior studies find that extensive blockholders control in most European and Asian companies (Jiang et al., 2010) and separation between control rights and cash-flow rights (Dahya et al., 2008) motivate controllers' tunneling behavior. On the other hand, the opportunities for tunneling depend on the internal governance mechanisms, such as information disclosure (Cheung et al., 2006), institutional ownership (Jiang et al., 2010), financial constraints (Peng et al., 2011), and board structure (Cai et al., 2019), and the external mechanisms, such as acquisition market (Bae et al., 2002), legal environment (Atanasov, 2005), and product market competition (Giroud & Mueller, 2010; Tian & Twite, 2011).

The paper proposes that controllers' extraction from minority investors will increase when rivals' IPOs are suspended. The prediction is based on two observations. First, as discussed earlier, rivals' IPO suspensions will reduce the competitive threat of incumbents. Successful IPO provides issuing firms competitive advantages over incumbents, such as relaxed financial constraints, greater investment flexibility, enhanced product credibility, and reduced information asymmetry (e.g., Chemmanur et al., 2010; Chen et al., 2020; Hsu et al., 2010; Liu and Ritter, 2011; Ritter, 2011; Shi et al., 2018; Yan & Wang, 2021). During a competitor's listing process, incumbents may face changing expectations about when the rival firm could be listed and the probability of an imminent competitive threat. The unpredictable IPO suspensions delay competitors' access to the capital market and the immediate competitive threat to incumbents.

Second, the reduced competitive threat will increase controllers' tunneling given the absent disciplinary role of competition. It is long argued in the literature that intense product market competition can be an effective force for mitigating agency problems. For instance, Giroud and Mueller (2010) find that the business combination laws weaken corporate governance and increase the opportunity for managerial slack by reducing the threat of a hostile takeover and thus competition in the industry. Tian and Twite (2011) point to a substitution effect between product market competitiveness and firm-level corporate governance. Dasgupta et al. (2018) provide evidence that the likelihood of forced CEO turnover and its sensitivity to performance rise along with the increased competition induced by industry-level tariff cuts. Therefore, when IPO suspensions reduce competition threat, controllers have a stronger motivation and can extract from minority shareholders. Consequently, the paper develops the following hypothesis.

> **H1.** Compared with firms without suspended peers, the tunneling problems of firms with suspended peers will be more acute during the suspension periods.

We base on Johnson et al.'s (2000) theoretical framework to provide the following inference: First, as discussed earlier, IPO suspensions increase controlling shareholders' tunneling because rivals' IPO suspensions reduce the competition in the product market. The logistic assumes that product market competition plays an influential role in tunneling. Therefore, the effect of IPO suspensions on controlling shareholders' tunneling is more substantial when the product market is more competitive. Consequently, the paper develops the following hypothesis H2.

> **H2.** The effect of IPO suspensions on controlling shareholders' tunneling is more substantial when the product market is more competitive.

Second, given the critical role of controllers' motivation in their tunneling decisions, we infer that reduced competition threat induced by IPO suspensions gives more fantastic opportunities for controllers who are more likely and more able to extract from listed companies. In other words, the effect of IPO suspensions on tunneling will be more substantial when controlling shareholders are highly motivated to extract from the companies. Therefore, the paper develops the following hypothesis.

H3. The effect of IPO suspensions on controlling shareholders' tunneling is more substantial when the tunneling problem is more severe.

Third, from the perspective of opportunities for controllers' tunneling, both internal and external governance mechanisms are helpful to deter controlling shareholders' tunneling behaviors, and different mechanisms may substitute for each other (e.g., Cai et al., 2019; Giroud & Mueller, 2010). Therefore, the effect of reduced competition threat on controllers' tunneling will be limited when governance mechanisms other than product market competition work in corporate governance. The paper develops the following hypothesis, H4.

H4. The effect of IPO suspensions on controlling shareholders' tunneling is more substantial when alternative governance mechanisms are less effective.

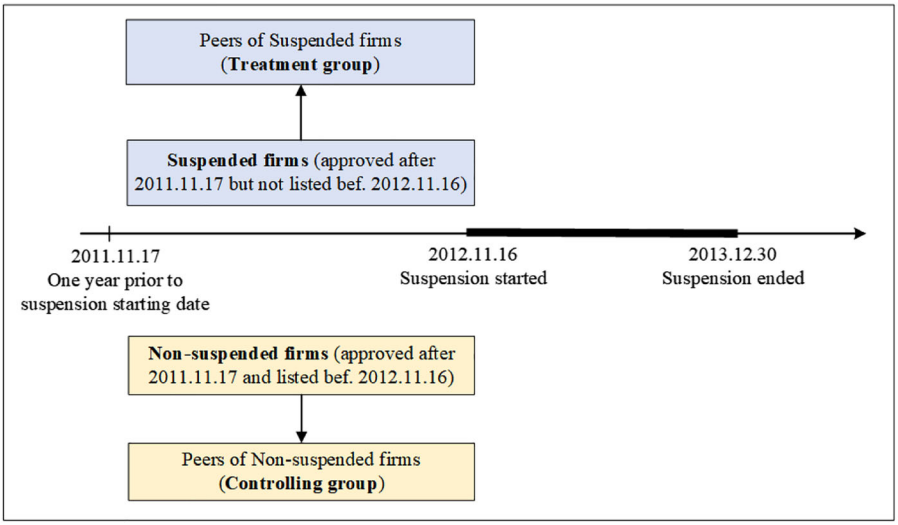
3 | DATA, SAMPLE, AND METHODOLOGY

3.1 | Data and sample

To examine the effect of rivals' IPO suspension on controllers' tunneling of incumbent listed companies, we first collect IPO application and approval data from the announcements of the CSRC. We keep IPO applicants approved by the CSRC during the past year before each suspension starts (Jia et al., 2021). These applicants are classified into two categories: (1) companies approved but not listed before the suspensions started ("*suspended firms*"), and 2) companies successfully listed before the suspensions started ("non-suspended firms").

Then, the treatment group is defined as companies standing in the same three-digit CSRC industries as suspended firms, and those with non-suspended peers are regarded as the controlling group. For those industries with suspended and non-suspended firms simultaneously, we classify other firms listed before the suspension as treatment firms because the effect of suspension on product market competition exists when any applicants are suspended. Figure 1 reports the procedure of sample selection.

While there are nine suspensions in history, we adopt the recent three, 2008, 2012, and 2015 suspensions specifically, since the current accounting standards came into force in 2007. We conduct a series of difference-in-difference analyses within a six-quarter window around the *beginning* date of each suspension. Firms' financial information is from the China Stock Market & Accounting Research (CSMAR) database. Finally, after excluding companies specially treated, companies in the financial industries, and companies missing



Notes: This figure reports the procedure of constructing the treatment group and controlling group by taking the 2012 IPO suspension as an example. The 2012 suspension started on Nov. 16, 2012, and ended on Dec. 30, 2013. IPO applicants approved to list after Nov. 17, 2011, but not listed before Nov. 16, 2012, are defined as "suspended firms," while IPO applicants approved to list after Nov. 17, 2011, and successfully listed before Nov. 16, 2012, are regarded as "non-suspended firms." Then, peers of suspended firms (non-suspended firms) are defined as the treatment group (the controlling group). Note that once one IPO applicant is suspended in an industry, other firms are treated as the treatment group. The specific process is presented in Section 3.1 in detail.

FIGURE 1 The sample selection process for the 2012 IPO suspension

the data necessary to construct control variables, the final sample ends with 16,248 company-quarter observations.

3.2 | Empirical design

We estimate the following generalized difference-in-difference regression to test whether rivals' IPO suspensions affect incumbents' tunneling:

$$y_{i,q} = \beta_1 SUSPEND_{i,q} + \alpha_i + \alpha_q + \gamma' X + \varepsilon_{i,q}, \quad (1)$$

where i and q indexes company and calendar quarter; $y_{i,q}$ is one of the two proxies for tunneling—*ORECTA* and *SANCTION*. We *first* proxy the controlling shareholders' tunneling behavior using the inter-corporate loans with related parties (*ORECTA*), measured by other receivables with related parties scaled by total assets (Jiang et al., 2010). While this proxy identifies a direct tunneling channel, there is an inevitable measurement error when treating all other receivables with controlling shareholders and their affiliates as inter-company loans unrelated to regular business. To alleviate the concern of measurement error, we follow Jiang et al. (2015) and adopt the *second* measure of tunneling, controlling shareholders' capital occupation behaviors detected by the CSRC (*SANCTION*). We acknowledge that the violations detected by the regulators are just the tip of the iceberg. However, the type of error falsely identifying a violation is minimized with this measurement. Combining the above two measures provides a whole picture of controlling shareholders' tunneling behavior, which considers completeness and accuracy.

SUSPEND is an indicator that equals one for *treated* companies (companies with suspended peers) *after* each suspension started. α_i and α_q are company and calendar quarter indicator variables, respectively. X is a vector of controls, including (1) natural logarithm of total assets (*Ln* [*ASSETS*]); (2) book-to-market ratio (*BM*); (3) net income scaled by total assets (*ROA*); (4) adjusted quarterly stock return (*RETURN*); (5) auditor type (*BIG4*); (6) block holder shareholdings (*BLOCK*); (7) long-term debt scaled by total assets (*LOAN*); and (8) legal environment index from Fan et al. (2016) (*LEGAL*). Regarding the variables reported on an annual basis, we assign the yearly figure to four quarters in the fiscal year. Besides, we cluster standard errors by listed companies and winsorize all continuous variables at the 1st and 99th percentiles.

Table 1 presents the descriptive statistics. The table shows that the average (median) other receivables with related parties account for 1.9% (0.9%) of total assets and 7.1% of the company-quarter in our sample have a capital occupation violation. This number is close to recent papers based on the Chinese context (e.g., Jiang et al., 2015). The table shows that the average company has a 2.3% ROA, 11.4% annual stock return, and 0.586 book-to-market ratios in terms of financial or market performance. In addition, 6.1% of observations are audited by the big four international accounting firms, and the average share ratio held by institutional investors is 40.2%. These descriptive statistics are similar to those reported in prior studies that examine Chinese company data (e.g., Jiang et al., 2010; Jian & Wong, 2008).

4 | EMPIRICAL RESULTS

4.1 | The effect of IPO suspension on product market competition

The validity of using the IPO suspensions as a shock of competition threat is based on the condition that when firms' IPO applications are suspended, their rivals will feel more minor competition threats. We believe this is reasonable because: First, as discussed earlier, a successful IPO provides issuing firms competitive advantages over incumbents, such as relaxed financial constraints, greater investment flexibility, enhanced product credibility, and reduced information asymmetry (e.g., Chemmanur et al., 2010; Hsu et al., 2010; Ritter, 2011; Shi et al., 2018). Especially in the context of China, only firms with excellent and continual accounting performance are

TABLE 1 Descriptive statistics

Variables	Mean	*SD*	P25	P50	P75	*N*
ORECTA	0.019	0.035	0.004	0.009	0.021	16,248
SANCTION	0.071	0.257	0.000	0.000	0.000	16,248
SUSPEND	0.403	0.490	0.000	0.000	1.000	16,248
SIZE	21.880	1.159	21.030	21.730	22.560	16,248
BM	0.586	0.235	0.385	0.576	0.769	16,248
ROA	0.023	0.042	0.004	0.015	0.034	16,248
RETURN	0.114	0.390	−0.107	0.039	0.252	16,248
BIG4	0.061	0.239	0.000	0.000	0.000	16,248
BLOCK	0.402	0.248	0.177	0.420	0.598	16,248
LOAN	0.044	0.086	0.000	0.001	0.052	16,248
LEGAL	8.010	1.830	6.649	8.000	9.375	16,248

Note: This table provides descriptive statistics for our sample. Detailed definitions are available in Section 3.2.

TABLE 2 The effect of IPO suspensions on product market competition: Industry-level regressions

Dependent variables:	HHI (1) Coefficient *t* statistic	HHI5 (2) Coefficient *t* statistic
SUSPEND	0.048*** (3.25)	0.045*** (3.50)
Industry indicator	Included	Included
Calendar quarter indicator	Included	Included
Adj. R^2	89.7%	89.8%
Observations	691	691

Note: This table presents the results from regressions of product market competition on an indicator variable for IPO suspensions at the industry level. HHI and HHI5 are the quarterly Herfindahl–Hirschman Index calculated using all peers or top-five sales peers. The *t* statistics are clustered at the industry level.
***Statistically significant at the two-tailed 1% level.
**Statistically significant at the two-tailed 5%.
*Statistically significant at the two-tailed 10% levels.

allowed to list during the sample period. Second, Jia et al. (2021) use the same setting as an external shock of competition threat. They find that existing public firms reduce M&A activities, tighten working capital, and engage in less disclosure to respond to the declining expectation of imminent threats. Their findings are consistent with the argument that IPO suspensions decrease product market competition.

Third, to provide direct evidence, we test the effect of IPO suspensions on product market competition. We measure competition with the quarterly Herfindahl–Hirschman Index (HHI) and predict that comparable to industries with non-suspended firms, the HHI of industries with suspended firms would increase during the suspension periods. It is reasonable since firms successfully listed (non-suspended firms) would increase industries' competition, thus decreasing HHI. The HHI here is calculated among the peers, i.e., without suspended or non-suspended firms. Table 2 reports the results. The dependent variables in Columns 1 and 2 are HHI calculated using all peers or top-five sales peers, respectively. The coefficients of *SUSPEND* are positive and significant at a 1% level, supporting the above prediction.

4.2 | Main results

Table 3 presents the results of Equation (1). Column 1 shows that the coefficient for *SUSPEND* is positive and significant at the 1% level (coef. = .004; *t* stat. = 3.31) when the dependent variable is *ORECTA*, suggesting that reduced competition threat induced by IPO suspension leads to a 0.4% increase in related-party inter-corporate loans. A rise of 0.4% represents an 11.4% increase relative to the in-sample standard deviation of *ORECTA*. Column 3 repeats the above analyses using *SANCTION* as the proxy for tunneling. We find that the coefficient for *SUSPEND* is significantly positive at the 1% level (coef. = .031; *t* stat. = 3.53), suggesting that the probability that a company commits a capital occupation violation increases by 3.1% after IPO suspensions. In economic terms, a 3.1% increase equals 12% of the in-sample standard deviation of *SANCTION*.

To mitigate endogeneity concerns and examine any observable violation of the parallel-trend assumption, we investigate the trend in our tunneling proxies before IPO suspension. In Columns 2 and 4, we replace *SUSPEND* with five indicator variables: *SUSPEND* [−2], *SUSPEND* [−1], *SUSPEND* [1], *SUSPEND* [2], and *SUSPEND* [3]. Each of these is an event-time indicator that equals one for the individual quarter around starting date of each suspension. All pre-treatment indicator variables are insignificant in Columns 2 and 4, where the dependent variables are *ORECTA* and *SANCTION*, respectively. Further, we find that the coefficients for *SUSPEND* [1], *SUSPEND* [2], and *SUSPEND* [3] are significantly positive. Figure 2 Panel a (b) presents the parallel trend of controlling shareholders' tunneling behavior using *ORECTA* (*SANCTION*). Overall, these results are consistent with our hypothesis.

4.3 | Cross-sectional regressions

4.3.1 | The extent of product market competition

We conduct three sets of cross-sectional regressions to strengthen our inference and better understand the relationship between IPO suspensions and tunneling. First, in H2, we infer that the effect of rivals' IPO suspensions on imminent competition threat is limited when the product market is highly competitive, resulting in a weakened effect of IPO suspensions on controllers' tunneling. Following Haushalter et al. (2007), we construct two different variables to proxy the extent of product market competition: (1) the technology similarity with peers, measured by the inverse of absolute deviation of a firm's capital-to-labor ratio from industry median value (*TECH SIMILARITY*); and (2) the correlation of a firm's monthly stock returns with an equally weighted industry return index (*STOCK CORR*). We then estimate a modified version of Equation (1) that includes an interaction term between the above two variables and *SUSPEND*.

Results are reported in Table 4. Columns 1–4 of Table 4 show that the coefficients of all interaction items are statistically significantly negative whenever we proxy controlling shareholders' tunneling with *ORECTA* or *SANCTION*. The effect of rivals' IPO suspensions on incumbents' tunneling is weakened when the product market is highly competitive (higher *TECH SIMILARITY* and greater *STOCK CORR*), which supports our H2.

4.3.2 | The severity of the tunneling problem

Second, according to H3, we examine how the severity of incumbents' tunneling problem affects the relationship between IPO suspensions and tunneling. Our inference is that reduced competition threat gives greater opportunities to controllers who are more likely to extract from listed companies. Prior literature shows that companies owned by non-state entities tend to have more severe tunneling problems

TABLE 3 The effect of IPO suspensions on controllers tunneling

	ORECTA		*SANCTION*	
Dependent variables:	**(1) Coefficient *t* statistic**	**(2) Coefficient *t* statistic**	**(3) Coefficient *t* statistic**	**(4) Coefficient *t* statistic**
SUSPEND	0.004*** (3.31)		0.031*** (3.53)	
SUSPEND [−2]		0.001 (0.56)		0.004 (0.27)
SUSPEND [−1]		−0.000 (−0.20)		0.001 (0.06)
SUSPEND [1]		0.005*** (2.77)		0.030* (1.85)
SUSPEND [2]		0.004** (2.14)		0.035** (2.30)
SUSPEND [3]		0.004** (2.34)		0.035** (2.23)
SIZE	−0.003 (−1.26)	−0.003 (−1.25)	0.000 (0.06)	0.000 (0.05)
BM	−0.007** (−2.43)	−0.008** (−2.44)	−0.004 (−0.25)	−0.004 (−0.24)
ROA	−0.031** (−2.34)	−0.031** (−2.34)	−0.043 (−1.21)	−0.043 (−1.20)
RETURN	−0.000 (−0.32)	−0.000 (−0.34)	−0.007 (−0.99)	−0.006 (−0.98)
BIG4	−0.009*** (−2.59)	−0.009*** (−2.60)	−0.063*** (−3.84)	−0.063*** (−3.83)
BLOCK	−0.015*** (−3.43)	−0.015*** (−3.43)	−0.042** (−2.20)	−0.042** (−2.20)
LOAN	−0.005 (−0.59)	−0.005 (−0.59)	−0.054 (−1.20)	−0.054 (−1.20)
LEGAL	−0.001*** (−8.05)	−0.001*** (−8.06)	−0.007*** (−6.75)	−0.007*** (−6.75)
Company indicator	Included	Included	Included	Included
Calendar quarter indicator	Included	Included	Included	Included
Adj. R^2	35.4%	35.4%	22.1%	22.1%
Observations	16,248	16,248	16,248	16,248

Note: This table presents the results from regressions of controllers tunneling on an indicator variable for IPO suspensions and control variables. See Section 2 for variable definitions. The *t* statistics are clustered at the company level.
***Statistically significant at the two-tailed 1% level.
**Statistically significant at the two-tailed 5%.
*Statistically significant at the two-tailed 10% levels.

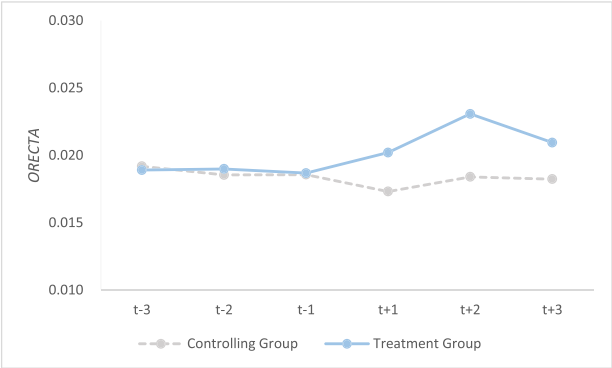
(Carreras Simó & Coenders, 2021; Jiang et al., 2010; Li et al., 2021). Moreover, international evidence shows that tunneling is most problematic when the largest shareholder's controlling right is much larger than their cash-flow right (Dahya et al., 2008; Li & Lin, 2021; Xie & Zhang, 2021). Therefore, we predict that the positive effect of suspension on tunneling is weakened for state-owned companies and companies with greater rights separation. We construct two variables to test this prediction: (1) *NonSOE*, which equals one for non-state-owned enterprises, and (2) *SEPARATION*, the difference between controllers' controlling rights and cash-flow rights from the CSMAR database. We then estimate a modified version of Equation (1) that includes an interaction term between the above two variables and *SUSPEND*.

Results are reported in Table 5. Columns 1–4 of Table 5 show that the coefficients of all interaction items are statistically significantly positive whenever we proxy controlling shareholders' tunneling with *ORECTA* or *SANCTION*. The effect of rivals' IPO suspensions on incumbents' tunneling is more pronounced when the companies are experiencing problematic tunneling (in non-state-owned enterprises and with greater rights separation), which supports our H3.

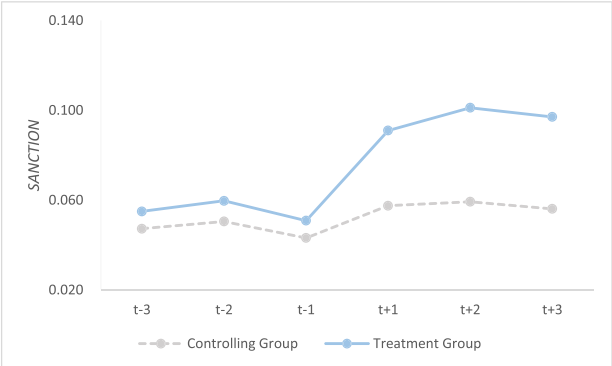
4.3.3 | The effectiveness of alternative governance mechanisms

Third, H4 proposes that the effect of IPO suspensions on tunneling would be weakened when the incumbent listed companies are followed by more analysts or audited by the big four international accounting firms because, on the one hand, the effectiveness of alternative monitoring mechanisms relies on the cost of information acquisition (Armstrong et al., 2014). Outside stakeholders are engaged more in monitoring when more analysts follow the firm, and the firm-specific information is easy to acquire and process. On the other hand, audit services supplied by reputed accounting firms could also effectively alleviate the tunneling behaviors, particularly in countries with a weak institutional environment (Choi & Wong, 2007; Kong et al., 2020). We identify two variables to proxy for governance mechanisms: (1) a variable measuring the number of analysts following companies, which takes the natural logarithm to mitigate the skewness issue; (2) an indicator equaling one for companies audited by the big four international accounting firms (Pan et al., 2021). We then estimate a modified version of Equation (1) that includes an interaction term between the above two variables and *SUSPEND*.

Panel A: Measuring tunneling using other receivables



Panel B: Measuring tunneling using capital occupation sanction



Notes: The figures present the parallel trend of controlling shareholders' tunneling. The x-axis represents time relative to the date when the suspensions started. The y-axis in panel A (B) represents the proxy for tunneling, *ORECTA* (*SANCTION*), for companies in each period.

FIGURE 2 The parallel trends of controlling shareholders tunneling

TABLE 4 Cross-sectional analyses: The extent of product market competition

	ORECTA		*SANCTION*	
Dependent variables:	**(1) Coefficient *t* statistic**	**(2) Coefficient *t* statistic**	**(3) Coefficient *t* statistic**	**(4) Coefficient *t* statistic**
SUSPEND	0.006*** (3.87)	0.006*** (4.13)	0.041*** (4.10)	0.043*** (4.24)
× *TECH SIMILARITY*	−0.002*** (−2.80)		−0.019** (−2.05)	
× *STOCK CORR*		−0.002** (−2.54)		−0.022** (−2.51)
TECH SIMILARITY	−0.000 (−0.63)		0.007 (1.35)	
STOCK CORR		−0.000 (−0.69)		0.002 (0.37)
Controls	Included	Included	Included	Included
Company indicator	Included	Included	Included	Included
Calendar quarter indicator	Included	Included	Included	Included
Adj. R^2	35.5%	35.5%	22.2%	22.2%
Observations	16,248	16,248	16,248	16,248

Note: This table reports the effect of the extent of product market competition on the relationship between IPO suspensions and tunneling. See Sections 2 and 3.2 for variable definitions. The *t* statistics are clustered at the company level.
***Statistically significant at the two-tailed 1% level.
**Statistically significant at the two-tailed 5%.
*Statistically significant at the two-tailed 10% levels.

TABLE 5 Cross-sectional analyses: The severity of the tunneling problem

Dependent variables:	*ORECTA* (1) Coefficient *t* statistic	*ORECTA* (2) Coefficient *t* statistic	*SANCTION* (3) Coefficient *t* statistic	*SANCTION* (4) Coefficient *t* statistic
SUSPEND	0.005*** (3.73)	0.006*** (4.26)	0.041*** (4.29)	0.043*** (4.35)
× *NonSOE*	0.003** (2.50)		0.027*** (2.83)	
× *SEPARATION*		0.003*** (3.29)		0.023*** (2.65)
NonSOE	0.000 (0.00)		0.000 (0.00)	
SEPARATION		0.000 (0.77)		0.001 (0.27)
Controls	Included	Included	Included	Included
Company indicator	Included	Included	Included	Included
Calendar quarter indicator	Included	Included	Included	Included
Adj. R^2	35.4%	35.5%	22.2%	22.2%
Observations	16,248	16,248	16,248	16,248

Note: This table reports the effect of the severity of the tunneling problem on the relationship between IPO suspensions and tunneling. See Sections 2 and 3.2 for variable definitions. The *t* statistics are clustered at the company level.
***Statistically significant at the two-tailed 1% level.
**Statistically significant at the two-tailed 5%.
*Statistically significant at the two-tailed 10% levels.

TABLE 6 Cross-sectional analyses: The effectiveness of alternative governance mechanisms

Dependent variables:	*ORECTA* (1) Coefficient *t* statistic	*ORECTA* (2) Coefficient *t* statistic	*SANCTION* (3) Coefficient *t* statistic	*SANCTION* (4) Coefficient *t* statistic
SUSPEND	0.005*** (3.85)	0.004*** (3.36)	0.041*** (4.08)	0.033*** (3.64)
× *# ANALYST*	−0.002** (−2.54)		−0.020** (−2.26)	
× *BIG4*		−0.003** (−2.07)		−0.026** (−2.32)
# ANALYST	−0.000 (−0.30)		0.004 (0.78)	
BIG4		−0.008** (−2.15)		−0.053*** (−3.49)
Controls	Included	Included	Included	Included
Company indicator	Included	Included	Included	Included
Calendar quarter indicator	Included	Included	Included	Included
Adj. R^2	35.5%	35.4%	22.2%	22.1%
Observations	16,248	16,248	16,248	16,248

Note: This table reports the effectiveness of alternative governance mechanisms on the relationship between IPO suspensions and tunneling. See Sections 2 and 3.2 for variable definitions. The *t* statistics are clustered at the company level.
***Statistically significant at the two-tailed 1% level.
**Statistically significant at the two-tailed 5%.
*Statistically significant at the two-tailed 10% levels.

Results are reported in Table 6. Columns 1–4 of Table 6 show that the coefficients of all interaction items are statistically significantly negative whenever we proxy controlling shareholders' tunneling with *ORECTA* or *SANCTION*. The effect of rivals' IPO suspensions on incumbents' tunneling is weakened when the companies have effective alternative external governance (followed by more analysts or audited by the big four accounting firms), which supports our H4.

4.4 | Robustness tests

4.4.1 | Propensity-score matched sample

We adopt the propensity-score matching method to further mitigate the endogeneity issue of our conclusion. Specifically, we construct a new treatment group that includes the most comparable competitors of suspended firms from the same three-digit CSRC industry, matched

TABLE 7 Robustness tests: A matched sample

	ORECTA		*SANCTION*	
Dependent variables:	**(1) Coefficient *t* statistic**	**(2) Coefficient *t* statistic**	**(3) Coefficient *t* statistic**	**(4) Coefficient *t* statistic**
SUSPEND	0.013*** (3.50)		0.137*** (3.34)	
SUSPEND [−2]		−0.002 (−0.45)		0.001 (0.01)
SUSPEND [−1]		−0.005 (−0.90)		0.003 (0.05)
SUSPEND [1]		0.009* (1.68)		0.155** (2.21)
SUSPEND [2]		0.012** (2.09)		0.151** (2.27)
SUSPEND [3]		0.012** (2.23)		0.117* (1.69)
SIZE	−0.005 (−0.92)	−0.005 (−0.92)	−0.014 (−1.11)	−0.014 (−1.10)
BM	−0.010 (−1.39)	−0.010 (−1.34)	−0.068 (−1.56)	−0.069 (−1.58)
ROA	−0.036 (−1.10)	−0.036 (−1.09)	−0.129 (−0.78)	−0.133 (−0.81)
RETURN	−0.002 (−0.73)	−0.002 (−0.71)	−0.019* (−1.66)	−0.020* (−1.68)
BIG4	−0.022** (−1.97)	−0.022* (−1.96)	−0.072** (−2.45)	−0.073** (−2.48)
BLOCK	−0.009 (−1.08)	−0.009 (−1.07)	−0.025 (−0.70)	−0.026 (−0.73)
LOAN	−0.011 (−0.98)	−0.011 (−0.98)	−0.130** (−2.01)	−0.130** (−2.01)
LEGAL	−0.001*** (−2.94)	−0.001*** (−2.93)	−0.008*** (−3.66)	−0.008*** (−3.66)
Company Indicator	Included	Included	Included	Included
Calendar quarter Indicator	Included	Included	Included	Included
Adj. R^2	52.0%	52.0%	32.2%	32.1%
Observations	3,498	3,498	3,498	3,498

Note: This table reports the effect of IPO suspensions on tunneling with a propensity score-matched sample. See Section 2 for variable definitions. The *t* statistics are clustered at the company level.
***Statistically significant at the two-tailed 1% level.
**Statistically significant at the two-tailed 5%.
*Statistically significant at the two-tailed 10% levels.

using suspended firms' total assets. Similarly, the controlling group consists of the most comparable competitors of non-suspended firms in the same way of matching. Finally, we get a new matched sample of 3,498 company-quarter observations and rerun Equation (1) in this sample. Results are reported in Table 7. The structure of Table 7 keeps the same as the baseline results (Table 3). Our baseline results hold.

4.4.2 | The reverse effect when IPO restarts

We show earlier in this paper that reduced product market competition induced by rivals' IPO suspensions increases controllers' tunneling. A reasonable inference for this argument is that the disciplinary role of competition would work again when the IPO procedure restarts and firms' rivals successfully issue new shares. Consequently, controllers' extraction from listed firms would decrease. We test the prediction in this section. Specifically, we rerun Equation (1) in the same way to define the treatment group (listed companies with suspended peers) and controlling group (listed companies with non-suspended peers) but using a different sample period.[3] Now, we compare three quarters before vs. after the date when suspensions *end*.

Table 8 reports the results. We construct a new indicator, *SUSPEND_END*, which equals one for treated companies in the quarters when suspensions end, to replace *SUSPEND* in Equation (1). The coefficients of *SUSPEND_END* are significantly negative, suggesting that controlling shareholders reduce tunneling when rivals successfully issue new shares and the market becomes competitive. The results from dynamic analysis also support our prediction.

4.4.3 | Placebo tests

Next, we conduct a falsification test to examine whether the IPO suspensions affect controllers' tunneling using randomly assigned industries with suspended firms. We define the treatment group as listed firms with suspended peers and firms without suspended peers as the controlling group. Therefore, to provide the results of placebo tests, we randomly assigned the industries with suspended firms and reran the baseline model. We predict that IPO suspensions will not affect controllers' tunneling in this situation, which is consistent with our hypothesis. In contrast, if a correlated omitted variable drives the relationship between IPO suspensions and controllers' tunneling, we should find that IPO suspensions are associated with controlling shareholders' tunneling even when we randomly assign the affected industries. Table 9 presents estimating Equation (1) on the sample of randomly assigned industries with suspended firms. Consistent with

TABLE 8 Robustness tests: The reverse effect of IPO restart

Dependent variables:	*ORECTA* (1) Coefficient *t* statistic	*SANCTION* (2) Coefficient *t* statistic
SUSPEND_END	−0.003*** (−3.19)	−0.040*** (−3.74)
SIZE	−0.003 (−1.39)	−0.009 (−1.10)
BM	−0.006 (−1.51)	−0.036 (−1.62)
ROA	−0.024** (−2.39)	−0.058 (−1.03)
RETURN	−0.000 (−0.09)	−0.003 (−0.26)
BIG4	−0.010 (−1.24)	−0.020 (−1.01)
BLOCK	−0.023*** (−3.99)	−0.009 (−0.40)
LOAN	−0.017** (−2.41)	−0.042 (−0.81)
LEGAL	−0.001*** (−6.44)	−0.004*** (−3.53)
Company indicator	Included	Included
Calendar quarter indicator	Included	Included
Adj. R^2	40.3%	33.0%
Observations	15,559	15,559

Note: This table reports the results of the regressions of tunneling on IPO restart (i.e., IPO suspension ends). The *t* statistics are clustered at the company level.
***Statistically significant at the two-tailed 1% level.
**Statistically significant at the two-tailed 5%.
*Statistically significant at the two-tailed 10% levels.

TABLE 9 Robustness tests: Placebo tests

Dependent variables:	*ORECTA* (1) Coefficient *t* statistic	*SANCTION* (3) Coefficient *t* statistic
SUSPEND_placebo	0.000 (0.08)	0.002 (0.41)
SIZE	−0.003 (−1.22)	0.001 (0.13)
BM	−0.008** (−2.53)	−0.007 (−0.43)
ROA	−0.032** (−2.35)	−0.044 (−1.22)
RETURN	−0.000 (−0.23)	−0.006 (−0.85)
BIG4	−0.009*** (−2.61)	−0.063*** (−3.86)
BLOCK	−0.015*** (−3.42)	−0.042** (−2.19)
LOAN	−0.004 (−0.58)	−0.053 (−1.18)
LEGAL	−0.001*** (−8.05)	−0.007*** (−6.75)
Company indicator	Included	Included
Calendar quarter indicator	Included	Included
Adj. R^2	34.5%	21.1%
Observations	16,248	16,248

Note: This table reports the results of placebo tests using randomly assigned industries with suspended firms. The *t* statistics are clustered at the company level.
***Statistically significant at the two-tailed 1% level.
**Statistically significant at the two-tailed 5%.
*Statistically significant at the two-tailed 10% levels.

our prediction, we find that IPO suspensions are not associated with controlling shareholders' tunneling (the coefficients of *SUSPEND_placebo* in Table 9 are statistically insignificant).

5 | DISCUSSION AND CONCLUSION

Traditionally, the agency literature focuses on the conflict between shareholders and managers. However, large block holders control most European and Asian companies. The highly concentrated ownership increases the controlling shareholders' incentive to monitor managers, simultaneously making tunneling behavior possible. Therefore, there is a growing literature studying the governance mechanisms of controllers' extraction from minority investors. In this paper, we add to this literature by highlighting the disciplinary role of product market competition.

We provide a plausibly causal effect of competition on tunneling by avoiding measuring competition with concentration ratios but adopting a quasi-natural experiment of IPO suspensions, leading to reduced competition threat. By providing supporting evidence of product market competition on tunneling, we show that product market competition plays a role in mitigating managers' slack and controllers' expropriation of minority investors. We look forward to future research that builds on our findings.

DATA AVAILABILITY STATEMENT

Data available on request from the authors.

ORCID

Chengyi Liu https://orcid.org/0000-0003-3921-4236

ENDNOTES

[1] On the one hand, all listed firms in China have a dominant shareholder with an average equity holding of around 40%, which makes tunneling behavior possible (Wang & Xiao, 2011). On the other hand, there is few channel for minority shareholders to take actions against insider misconduct under Chinese weak institutional environment, where the courts have little experience with private plaintiff-driven litigation, the security market regulators show limited authority, institutional ownership is low and takeover market is immature.

[2] Until July 2019, the Sci-Tech Innovation Board in Shanghai exchange was launched and the registration system was piloted for the first time.

[3] The sample size in Table 8 is different from the baseline regression due to the difference of the number of observations missing necessary data to construct control variables.

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How to cite this article: Guo, X., Chen, S., Yu, W., & Liu, C. (2022). Product market competition and controlling shareholders' tunneling: Evidence from China. *Managerial and Decision Economics*, 1–13. https://doi.org/10.1002/mde.3631