

The Impact of Foreign Entry Liberalization on Firms' Investment Efficiency

Gan Lin, Haijun Deng*

School of Management, University of Shanghai for Science and Technology, Shanghai 200093, China

* Corresponding author: Haijun Deng (Email: haijun_ddd@163.com)

Abstract: This study examines the impact of foreign entry liberalization on local firms' investment efficiency. Taking the implementation of the Negative List of Foreign Investment Entry as a policy shock, we construct a staggered difference-in-differences model based on data from China's A-share-listed firms between 2010 and 2022 for empirical analysis. Our findings found that (1) the liberalization of foreign investment entry reduces firms' investment efficiency (2) From the perspective of firm heterogeneity, liberalization of foreign investment entry exacerbates overinvestment in firms located in the central region, and firms facing high financing constraints. (3) The mechanism test shows that the inhibitory effect of foreign investment liberalization on the investment efficiency of enterprises comes from the intensification of the degree of market competition and the enhancement of environmental uncertainty. This study provides a new microscopic explanation for the mechanism of changes in China's enterprise investment efficiency from the perspective of foreign investment liberalization, which is of policy revelation significance for further optimizing the policy of introducing foreign investment and improving enterprise investment efficiency.

Keywords: Foreign entry liberalization, Investment efficiency, Overinvestment, Underinvestment.

1. Introduction

In today's globalized economy, foreign entry liberalization is a pivotal strategy for fostering national economic growth. As a key theoretical and practical innovation in China's new era, foreign entry liberalization has accelerated alignment with international norms and advanced standards while deepening reforms and enhancing openness. The Special Administrative Measures for Foreign Investment Entry (Negative List), a vital policy instrument for foreign entry liberalization, significantly influences the conditions and modalities of foreign investors' market entry in China. By delineating special administrative measures concerning equity and senior management, the Negative List establishes a clear framework and guidance for foreign investment, reflecting China's enhanced liberalization and transparency in foreign investment policy, which fosters a fairer and more transparent investment environment for both domestic and foreign firms.

However, with the deepening of foreign entry liberalization in China, firms encounter more opportunities alongside heightened market competition and a complex investment landscape. This may prompt firms to adopt suboptimal investment strategies to sustain market positions or continually adjust decisions to mitigate risks, ultimately leading to investment inefficiency and resource allocation inefficiencies. Investment efficiency, a microindicator of market resource allocation efficiency, is directly correlated with a firm's economic value and shareholders' wealth growth and significantly impacts macroeconomic health. Thus, examining the influence of foreign entry liberalization on a firm's investment efficiency holds both theoretical and practical relevance in guiding firm strategies.

The regional and temporal variations in implementing the Negative List create an advantageous quasinalatural experimental setting for this study. Using a sample of A-share listed firms from 2010-2022, we employ Richardson's (2006) method to assess firm-level investment efficiency. We then

use the gradual rollout of the "Negative List" from 2013 to 2018 as a proxy variable for foreign entry liberalization, constructing a staggered difference-in-differences model to analyze its effects on investment efficiency.

This study makes several contributions. First, Prior studies on a firm's investment efficiency have focused primarily on firm-specific attributes. This study, however, examines the influence of foreign entry liberalization on a firm's investment efficiency, enriching our understanding of macro-level policy's economic effects on micro-level firms. Given China's ongoing opening-up, it offers valuable insights for applying the Negative List. Second, by leveraging a firm's microdata, we analyze the heterogeneous impact of foreign entry liberalization on investment efficiency and establish a theoretical framework for its mechanism. This framework clarifies the pathway through which foreign entry liberalization influences firm investment efficiency at the microlevel, deepening our understanding of the mechanism and providing theoretical support for policy formulation and optimization.

2. Institutional Background and Research Hypothesis

2.1. Institutional Background

There are two main measures for controlling foreign investment access: the positive and the negative list. China has long used the positive list model, its access rules are often ambiguous, overlapping and conflicting, and it makes the entry of foreign-invested entities subject to complicated and lengthy administrative approvals, interfering with the independent decision-making of foreign investment subjects.

To further enhance the opening up to the outside world and build a more convenient and freer environment for foreign investment, China has actively adopted a negative list This model explicitly lists the areas in which foreign investment is prohibited or restricted and grants foreign investors the right to invest freely in other unspecified areas, which has

significantly improved the level of liberalization of foreign investment. The model was piloted in the Shanghai FTZ in 2013, and subsequently piloted in 11 FTZs in Fujian, Tianjin and Guangdong in 2015 and 2017. In 2018, this model was fully promoted nationwide, aligned with the current international rules in the form of a separate release.

2.2. Literature and Research Hypothesis

Jensen and Meckling (1976) proposed the principal-agent framework, which reveals the agency problem between owners and managers of firms, whereby managers utilize informational advantages and power to gain personal benefits through inefficient investments. This theory inspired the free cash flow theory (Jensen, 1986), which advocates the distribution of the firm's surplus capital to shareholders. However, managers tend to invest their funds in less profitable projects out of self-interest, leading to overinvestment. Additionally, according to the theory of risk aversion, shareholders and executives tend to choose low-risk, low-return investment projects and abandon projects that have higher NPV but are accompanied by greater risk, thus reducing the firm's investment efficiency (Holmstrom, 1982; Hirshleifer and Thakor, 1992). Narayanan (1985) proposed short-termism, which argues that during a limited tenure, managers may make inefficient investments in pursuit of short-term gains. First, a mover advantage in market competition explains the competitive advantages of first-to-market firms over later entrants, such as technology patents, access to resources and cost advantages. According to customer lock-in theory, on the other hand, the initial entry of firms into the market can increase the switching cost of customers, thus maintaining long-term market exclusivity and bringing more advantages for the long-term development of firms.

After starting to gradually implement the Negative List, more types and numbers of foreign-invested entities will enter the market, changing its original pattern. Scherer and Huh (1992) noted that in the face of the entry of foreign capital, firms generally adopt a "compromise strategy" or "frontal competition strategy". Dixit (1980) suggested that under a fixed market capacity, firms may adopt a preemptive strategy to achieve resource and cost advantages through overinvestment to preemptively force competitors to quit the market to maintain their own market share. Cohen and Levinthal (1990) noted that even if the NPV is negative, overinvestment can also provide firms with first-mover advantages and improve their talent and technology absorption capacity. From the perspective of industrial economics, Dixit and Pindyck (1994) posited that the excess production capacity of firms may lead to predominance and threaten potential competitors through price or output competition, thus preventing them from entering the market.

Furthermore, with respect to the pilot process of the Negative List, the differences in timing and region provided a favorable quasi-natural research environment for this study.

Some scholars have shown that the intensification of market competition leads to the inefficient investment of firms, although this may also be a rational response of firms to strategic considerations (Besanko and Wu, 2013; Raith, 2001).

Additionally, foreign entry liberalization also causes some fluctuations in the economic environment. The large-scale entry of foreign capital will change the market environment of local firms to a certain extent and bring uncertainty to the production and business activities of firms. This volatility and unpredictability of the environment will affect the business activities of firms. Bloom (2007) proved that environmental uncertainty is positively correlated with firms' investment deviation and that environmental uncertainty will lead firms' managers to be more cautious in investing. On the one hand, Almeida and Campello (2007) noted that to cope with the risks of emergencies caused by the environmental uncertainties brought about by large-scale foreign investment, firms must balance future expenditures with current investments and retain more cash, thus resulting in insufficient investment. Moreover, Banerjee (1992), Dixit et al. (1994), and Paraskevopoulos and Pitelis (1995) noted that in the face of uncertainty in the external environment, firms may choose to adopt behavior that reduces the risk of misjudgment. Abrahamson and Rosenkopf (1993) noted that when certain behaviors are recognized and implemented by most firms, other firms may be "forced" to follow the crowd, which affects investment efficiency. Therefore, this study proposes the following hypothesis:

Foreign entry liberalization intensifies market competition and environmental uncertainty, thus reducing a firm's investment efficiency.

3. Research Design

3.1. Sample Select

This study takes the implementation of the Negative List as a proxy variable for foreign entry liberalization. We manually collect data on the regions participating in the pilot and the pilot time according to the policy documents issued by the National Development and Reform Commission, the Ministry of Commerce and other relevant departments from 2013 to 2018. It is then matched with the data of A-share listed firms from the CSMAR database. Samples from the financial industry, STs and delisted firms are excluded. Samples with missing key variables are removed and the tail of key variables is reduced by 1%. In the end, we obtain a final sample of 3,343 listed firms with 28,929 observations.

3.2. Model Settings

In this study, we construct an investment efficiency model based on Richardson (2006) to measure a firm's investment efficiency as follows:

$$Invest_{i,t} = \beta_0 + \beta_1 Invest_{i,t-1} + \beta_2 Growth_{i,t-1} + \beta_3 Lev_{i,t-1} + \beta_4 Cash_{i,t-1} + \beta_5 Age_{i,t-1} + \beta_6 Size_{i,t-1} + \beta_7 Return_{i,t-1} + \sum Year + \sum Industry + \varepsilon_{i,t} \quad (1)$$

Furthermore, with respect to the pilot process of the Negative List, the differences in timing and region provided a favorable quasi-natural research environment for this study.

In this context, we establish the following staggered difference-in-differences model:

$$INV_{it} = \beta_0 + \beta_1 Treat_i \times Post_t + \beta_2 Control_{it} + \lambda_i + \mu_t + \varepsilon_{it} \quad (2)$$

$$OVERINV_{it} = \beta_0 + \beta_1 Treat_i \times Post_t + \beta_2 Control_{it} + \lambda_i + \mu_t + \varepsilon_{it} \quad (3)$$

$$UNDERINV_{it} = \beta_0 + \beta_1 Treat_i \times Post_t + \beta_2 Control_{it} + \lambda_i + \mu_t + \varepsilon_{it} \quad (4)$$

$Treat_i$ is a policy dummy variable, and we assign a value of 1 if the region where firm “i” is located belongs to the Negative List pilot area and a value of 0 otherwise. $Post_t$ is a policy time dummy variable, which takes a value of 1 after the Negative List policy starts the pilot phase and 0 otherwise. β_1 represents the net effect of the policy, which is the main focus of this study. $Control_{it}$ denotes a series of control variables. Other variables are defined in the Appendix.

4. Regression Results Analysis

4.1. Parallel Trend Test

The results of the parallel trend test are shown in Figure 1. Before foreign entry liberalization, the regression coefficients of both the treatment and the control groups were 0 within the 95% confidence interval, indicating no systematic difference between the two groups before implementing the policy. However, in the regression years after foreign entry liberalization, the regression coefficients of both the treatment and the control groups are positive and significant, which further validates the conclusion of this study, that foreign entry liberalization significantly reduces a firm’s investment efficiency.

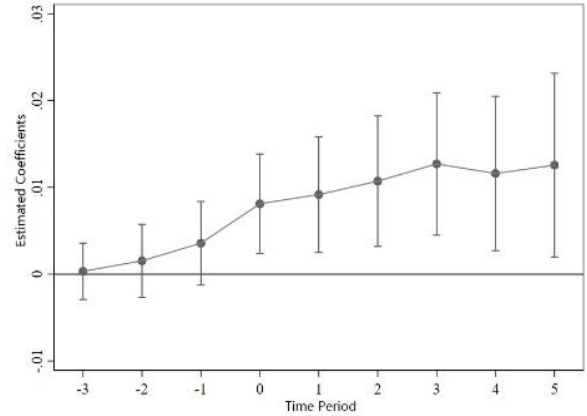


Figure 1. Parallel test

4.2. Baseline Results

Using Models (1) – (3), this study examines the impact of foreign entry liberalization on a firm’s investment efficiency. Table 1 reports the baseline results, foreign entry liberalization reduces the investment efficiency of firms, which not only intensifies overinvestment but also worsens the underinvestment of firms. In the following analysis, we will analyze the heterogeneity of this effect among firms and the possible causes of this effect.

Table 1. Baseline results

	INV		OVERINV		UNDERINV	
	(1)	(2)	(3)	(4)	(5)	(6)
Treat _i ×Post _t	0.0058*** (0.0016)	0.0054*** (0.0015)	0.0113*** (0.0038)	0.0112*** (0.0037)	0.0020** (0.0009)	0.0017* (0.0009)
LEV		0.0261*** (0.0044)		0.0516*** (0.0102)		0.0022 (0.0026)
SIZE		0.0068*** (0.0011)		0.0154*** (0.0026)		0.0014* (0.0007)
ROA		0.0794*** (0.0064)		0.1397*** (0.0190)		0.0289*** (0.0048)
ADM		0.0545*** (0.0095)		0.1176*** (0.0253)		0.0265*** (0.0059)
INDEP		0.0001 (0.0001)		0.0000 (0.0002)		0.0001* (0.0001)
TOP		0.0007*** (0.0001)		0.0012*** (0.0001)		0.0003*** (0.0000)
Cons	0.0335*** (0.0010)	-0.1784*** (0.0253)	0.0440*** (0.0023)	-0.4098*** (0.0581)	0.0275*** (0.0006)	-0.0275* (0.0158)
Control _{it}	NO	YES	NO	YES	NO	YES
Time Fixed Effects	YES	YES	YES	YES	YES	YES
Firms Fixed Effects	YES	YES	YES	YES	YES	YES
Observation	28915	28915	10016	10016	18079	18079
R ²	0.2557	0.2793	0.3636	0.3958	0.3283	0.3392

The t statistics in parentheses are calculated on the basis of clustered standard errors at the firm level. The asterisks indicate 1% (***), 5% (**), and 10% (*) levels of significance.

5. Further Analysis

5.1. Heterogeneity Test

5.1.1. Regional heterogeneity

We divided firms into central, western and eastern regions for regression, and the impact of foreign investment liberalization on the investment efficiency of enterprises in different regions is studied. The regression results are shown

in Table 2.

The interaction coefficient of columns (4) and (5) in Table 2 is significantly positive at the statistical level of 10%, indicating that the liberalization of foreign investment has intensified the degree of over-investment of enterprises in the central region; meanwhile, the interaction coefficient of column (9) in Table 2 is significantly positive at the statistical level of 5%, indicating that the introduction of foreign investment has also intensified the degree of under-investment in the western region. The central region has undertaken many labor-intensive industries and traditional manufacturing industries from the eastern region. As such enterprises usually lack advanced technology and high value-added products, it is difficult for them to directly compete with foreign capital after entering, and they face greater

competitive pressure. Therefore, enterprises in this region may increase investment to improve their technical level or production capacity, resulting in excessive investment. In contrast, limited by geographical location, open concept, institutional constraints and other factors, the business environment of western China is far from that of the eastern coastal areas and the international advanced level. The eastern region is more able to attract foreign investment, thus aggravating the uneven distribution of resources between the eastern and western regions. The low degree of openness, low administrative efficiency, too many approval items, and weak service level will limit the attraction of the western region, which will affect the investment efficiency of the western region to a certain extent.

Table 2. Heterogeneity regression results for firm's region

	Eastern			Central			Western		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	INV	OVERIN V	UNDER INV	INV	OVERI NV	UNDER INV	INV	OVERIN V	UNDER INV
Treat _i *Post _t	0.0032*	0.0069	0.0011	0.0114*	0.0222*	-0.0034	0.0065	-0.0092	0.0095**
	(0.0017)	(0.0042)	(0.0010)	(0.0058)	(0.0119)	(0.0033)	(0.0051)	(0.0132)	(0.0040)
Control _{it}	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cons	-0.1814***	-0.4509***	-0.0110	-0.1807**	-0.2541*	-0.0299	-0.2092***	-0.4341***	-0.0639
	(0.0318)	(0.0728)	(0.0195)	(0.0711)	(0.1348)	(0.0420)	(0.0667)	(0.1346)	(0.0424)
Time Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firms Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observation	20143	6977	12519	4761	1658	2993	4000	1359	2547
R ²	0.2975	0.4165	0.3514	0.2574	0.3537	0.3370	0.2479	0.3749	0.3154

The t statistics in parentheses are calculated on the basis of clustered standard errors at the firm level. The asterisks indicate 1% (***), 5% (**), and 10% (*) levels of

significance.

5.1.2. Financing constraints

Table 3. Heterogeneity regression results of firms' financing constraints

	High			Low		
	(1)	(2)	(3)	(4)	(5)	(6)
	INV	OVERINV	UNDERINV	INV	OVERINV	UNDERINV
Treat _i ×Post _t	0.0066***	0.0171***	0.0014	0.0038*	0.0052	0.0024*
	(0.0022)	(0.0058)	(0.0013)	(0.0022)	(0.0057)	(0.0014)
Control _{it}	YES	YES	YES	YES	YES	YES
Cons	-0.1324***	-0.3967***	-0.0051	-0.2753***	-0.5472***	-0.0503*
	(0.0470)	(0.1107)	(0.0249)	(0.0411)	(0.1014)	(0.0259)
Time Fixed Effects	YES	YES	YES	YES	YES	YES
Firms Fixed Effects	YES	YES	YES	YES	YES	YES
Observation	14509	4835	8849	14387	4513	8928
R ²	0.3330	0.4478	0.3930	0.3300	0.4365	0.3770

The t statistics in parentheses are calculated on the basis of clustered standard errors at the firm level. The asterisks indicate 1% (***), 5% (**), and 10% (*) levels of significance.

Referring to the method of Hadlock and Pierce (2010), we tested the heterogeneity of enterprise financing constraints by constructing an SA index and using it to measure the degree of financing constraints. Table 3 reports the impact of foreign entry liberalization on the investment efficiency of enterprises facing different financing constraints. The result indicates that implementing the Negative List significantly improves the degree of inefficient investment of firms with high financing constraints and aggravates the excessive investment of such

firms. However, there is no significant effect on the lack of investment in such firms. Additionally, the implement of the Negative List aggravates the underinvestment of firms with low financing constraints but has no significant effect on their overinvestment.

Harrison and McMillan (2003) and Hericourt and Poncet (2009) noted that financing constraints may cause firms to miss investment opportunities because they cannot obtain financial support, thus increasing the level of inefficient investment. Foreign investment through direct capital injection or transnational cooperation can ease the capital restrictions of local firms and bring more investment opportunities. Banerjee and Munshi (2004) and Cole (2009)

also emphasized that foreign investment can improve the financing environment of local firms and correct capital market distortions. Therefore, firms with higher financing constraints may aggressively use external capital to expand, resulting in excessive investment. In contrast, firms with lower financing constraints have stronger financial support and are more likely to carry out production and operation activities using their own cash flow. With the continuous improvement of foreign entry liberalization and the increasing pressure of market competition, such firms may be more inclined to adopt conservative strategies to cope with the uncertain market environment and competitive pressure, exacerbating underinvestment.

5.2. Mechanism Test

5.2.1. Market competition

This study uses the main business income to calculate the enterprise's Herfindahl index (HHI) to measure the degree of industry competition. Column (1) of Table 4 reports the regression results of the interaction terms on market competition, and its coefficient is significantly negative at the 5% statistical level, indicating that foreign entry liberalization improves market competition and can affect a firm's investment efficiency. The hypothesis proposed in this study is further confirmed.

5.2.2. Environmental uncertainty

The large-scale introduction of foreign capital could meet the growing market demand in China, and at the same time, would bring in foreign capital to China. This may also have a greater impact on the market environment of local firms. As rational economic agents, firms prefer to increase investment when the policy uncertainty is low to reduce the loss caused by the irreversibility of investment (McDonald and Siegel, 1986; Ingersoll and Ross, 1992; Julio and Yook, 2012). In this study, referring to the practice of Ghosh & Olsen (2009), the standard deviation of the sales revenue of an enterprise in the past five years is used to measure environmental uncertainty. Column (2) of Table 4 reports the regression results of the interaction terms on environmental uncertainty. The coefficient of the interaction terms is significantly positive at the 10% statistical level, indicating that the liberalization of foreign investment caused by foreign entry liberalization enhances environmental uncertainty, reducing a firm's investment efficiency. The hypothesis proposed in this study is further confirmed.

Table 4. Mechanism analysis regression results

	(1)	(2)
	Market competition	Environment uncertainty
Treat _i ×Post _t	-0.0071** (0.0032)	0.0778* (0.0431)
Control _{it}	YES	YES
Cons	-0.0170 (0.0993)	-6.7684*** (0.9641)
Time Fixed Effects	YES	YES
Firms Fixed Effects	YES	YES
Observation	25385	24331
R ²	0.7480	0.4309

The t statistics in parentheses are calculated on the basis of clustered standard errors at the firm level. The asterisks indicate 1% (***), 5% (**), and 10% (*) levels of

significance.

6. Conclusions

Based on data from China's A-share-listed firms between 2010 and 2022. This study constructs a staggered difference-in-differences model to examine the impact of foreign entry liberalization on local firms' investment efficiency. Our findings reveal that foreign entry liberalization reduces firms' investment efficiency and from the perspective of firm heterogeneity, it exacerbates overinvestment in enterprises located in central region and firms facing high financing constraints. Mechanism tests indicate that foreign entry liberalization inhibits investment efficiency by intensifying market competition and increasing environmental uncertainty. This study provides valuable insights for both governments and enterprises: Firstly, while clarifying the boundaries of government actions, the Negative List should appropriately delegate power to market entities, ensure fair competition, maintain market order, compensate for market failures, and achieve a "free and orderly" environment. Secondly, the financial system should be strengthened and financing channels should be improved, reducing the financing costs of SMEs, which would help enterprises make more effective long-term investment planning and alleviate the impact of financing constraints on the investment efficiency. Finally, enterprises should also strengthen their risk assessment and response capabilities. When foreign capital enters a market, the impact of uncertainty should be reduced through market research, multidimensional risk assessment and flexible business adjustment.

Appendix

Variable Definitions

Variables	Definition
Invest _{i,t}	Firm i's level of investment at time t
Invest _{i,t-1}	New investment expenditures of enterprises in the last period
Growth _{i,t-1}	Tobin's Q of the firm for the last period
Lev _{i,t-1}	Firm's gearing ratio in the last period
Cash _{i,t-1}	Firm's cash holdings in the last period
Age _{i,t-1}	Firm's age in the last period
Size _{i,t-1}	Firm's asset size in the last period
Return _{i,t-1}	Firm's stock return in the last period
INV	Firm's investment efficiency. Values greater than 0 indicate overinvestment and less than 0 indicates underinvestment. Larger absolute values indicate less efficient investment.
OVERINV	Overinvestment
UNDERINV	Underinvestment
SIZE	Natural logarithm of total assets
INDEP	Number of independent directors/total number of directors
ADM	Administrative Expenses/Operating Income
ROA	Net Profit/Total Assets
TOP	Number of shares held by top 10 shareholders/Total shares
LEV	Liabilities at the beginning of the year/Total assets at the beginning of the year

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