



How does home and host-country policy uncertainty affect outward FDI? Firm-level evidence from China

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Received: 9 December 2021 / Accepted: 2 February 2023 / Published online: 31 March 2023
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Abstract

How the foreign direct investment behavior of enterprises changes in response to the risks and instability of government economic policy changes is a relevant issue which, however, has not been extensively studied yet. Accordingly, this paper establishes a linear probability regression model to study the foreign direct investment behavior of Chinese A-share listed companies in 13 countries between 2003 and 2020 and explores whether multinational companies change their OFDI decisions when the economic policy environment of China and trade-related countries are unstable. A firm heterogeneity analysis and phased discussions were conducted, and a robust conclusion was finally drawn. The results show that (1) China's economic policy uncertainty promotes China's foreign direct investment, while the host country's monetary policy uncertainty inhibits China's foreign direct investment. (2) The foreign direct investment decisions of enterprises are affected not only by the macroeconomic and policy environment of the two trading countries but also by their development characteristics. (3) Sino-US trade frictions and the financial crisis have different effects on China's foreign direct investment.

Keywords Economic policy uncertainty · Outward foreign direct investment · Firm heterogeneity · Sino-US trade friction

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1 Introduction

Since the early stage of policy formulation is often not open and transparent, it is difficult for investors to predict the long-term impact of an upcoming policy on investment, and it is difficult for the government to predict the final effect of the policy and its market impact after implementation (Bordo et al., 2016); Y. Li et al., 2019). Therefore, after a financial crisis, governments frequently change policies to stimulate the economy, which leads to an unstable policy environment and more severe macroeconomic fluctuations (Colombo, 2013; Karnizova & Li, 2014). Because governments of various countries have generally long played the role of government management and have adopted policy measures to intervene and adjust the economic market, compared with other factors, people tend to ignore the impact of policy environment fluctuations on the economy and trade. However, in recent years, the anti-globalization trend has intensified, international trade disputes have intensified, and the policy environment of various countries has increasingly fluctuated. People have begun to pay attention to the impact of economic policy environment fluctuations on trade markets, industrial development, and economic growth (Balciar et al., 2016).

After the global financial crisis in 2008, to break the depressed economic situation and promote economic development, countries introduced monetary easing, interest rate cuts, industrial nationalization and other policies (Dabrowski, 2010; Lenza et al., 2010; Ricci, 2014; Valadkhani et al., 2014). The United States strengthened the supervision of the financial system, expanded government spending and reduced taxes (Bianconi et al., 2012); Japan introduced four consecutive economic stimulus plans to subsidize public utilities and small and medium-sized enterprises (Sawabe, 2002); and European countries increased government investment and tax reductions to boost market confidence and stimulate economic growth (Fassin & Gosselin, 2011). In the short term, these economic policies have indeed alleviated the problem of capital liquidity, reduced the negative impact of the financial crisis, and helped stabilize the global macroeconomic situation. However, in the long run, the government bailout policies have actually increased inflation, leading to a decline in market demand and a slowing of economic recovery (Arce & Razzolini, 2018; Hryckiewicz, 2014). In recent years, the global policy environment and economic situation have not been positive. China has introduced various macroeconomic policies, revised the personal income tax law, and strictly regulated e-commerce companies and platforms, which, to a certain extent, expanded the uncertainties of economic policies (Li & Peng, 2017). Sino-US trade frictions have intensified into a trade war, and the leadership of many Western countries has changed, resulting in increasingly tense international trade relations (Lawrence, 2018). In addition, due to the large-scale outbreak of the new coronavirus pandemic and the surging trend of antiglobalization, it is particularly important to stabilize the economic policy environment (Pavlakis, 2020).

How do fluctuations in China's economic policy environment affect OFDI? Chinese (multinational) companies will be motivated to invest abroad when other countries' economic environments are more stable and their policies are less volatile. In addition to the impact of economic environment fluctuations and policy changes, will the development status and characteristics of enterprises also affect overseas investment? Will major international economic and financial events such as the financial

crisis and Sino-US trade frictions show policy fluctuations and will changes in the economic environment affect China's overseas investments? To answer these questions, this paper uses three-dimensional unbalanced panel data that include 2,341 Chinese A-share listed companies in 13 countries from 2003 to 2020. The three-dimensional data are reflected in the three levels of the enterprise-time-investment of host countries, unbalanced refers to the lack of corporate data in some years, and the linear probability regression model is used for empirical analysis. Second, this paper takes into account whether there is corporate heterogeneity in the relationship between economic policy uncertainty and OFDI. This paper conducts a heterogeneity test based on the scale of the host country, the degree of trade openness of the host country, corporate financing constraints, corporate size, and the nature of ownership. Finally, combined with important economic and trade events such as the financial crisis, the Chinese stock market crash in 2015, and Sino-US trade frictions in 2018, this paper analyzes the impact of policy fluctuations on foreign direct investment of enterprises under different international situations.

Reviewing the existing literature, the innovations of this paper are as follows. First, studies on the impact of China's monetary, fiscal, taxation and other policy changes on financial markets, the macroeconomy and enterprise development have been relatively thorough and in depth. Research on the impact of policy changes on overseas investment and trade markets, however, is far from sufficient. Although there are some studies that analyze the purpose and motivation of enterprises' OFDI, the research direction focuses on comparing the differences in the foreign direct investment behavior of enterprises in different provinces or different industries and has no relation to the policy environment of the corresponding country in which the enterprises invest (Ferri & Liu, 2009). In view of the above deficiencies, when studying the foreign direct investment behavior of enterprises, this paper not only considers the enterprise's own conditions, such as enterprise scale and profit rate, but also considers the influence of China's policies and the policies of the host country to more accurately and thoroughly explore the enterprise's own conditions. Outward direct investment decisions. Second, although there are some studies on the impact of the policy environment on international trade, the main line of research is on the impact of China's policy fluctuations on corporate investment, with less consideration of the host countries (Abdouli & Hammami, 2017). Even if other countries are considered, the host country's institutional distance, location advantages and other factors are considered from the perspective of Chinese multinational enterprises, while the policy uncertainty of the host country and the world are ignored. Therefore, to compensate for the lack of the above literature, this paper incorporates the policy environment of China and the host country into the framework of empirical analysis and explores the heterogeneity and stage differences of enterprises in this role, which enriches the research angle of the related literature. The reminder of this paper is organized as follows: the second section is a literature review; the third section presents the model and method, introducing the basic model, data sources and variable selection; the fourth section presents the results and discussion, including the basic empirical results, heterogeneity test, mechanism test and robustness analysis. The fifth section provides the conclusion and suggestions.

2 Literature review

2.1 The impact of the uncertainty of home country's economic policy on foreign direct investment

The current global economic and political environment is complex and volatile, with frequent changes in national economic policies. On the one hand, policy changes and instability increase investment costs and risks for firms, thus discouraging their investment behavior until the uncertainty disappears (Bernanke, 1983). On the other hand, when the policy environment changes, it is difficult for investors to judge the market's future direction and predict the ultimate effect of the policy, thus delaying investment (Bloom et al., 2007). Although economic policy uncertainty is not the leading cause of China's economic volatility, it can impact the consumer market and reduce residential demand, thus having a significant impact on China's financial markets, foreign trade, etc. (Holly et al., 2011; Li, 2020). In addition, although the ultimate effect of some policies is beneficial to the market, that is, the uncertainty generated by such policies can be regarded as good, but such uncertainty will still increase the business risk of enterprises. This is because, on the one hand, when the economic policy is highly uncertain, companies cannot accurately predict the future economic trend. Although it is not ruled out that a few companies will take advantage of uncertain opportunities to increase investment to obtain corresponding profits, but companies with high Venture capital projects may also increase the company's future financing costs and increase the company's loss expectations. Unexpected adjustments in macroeconomic policies will lead to increased uncertainty in business operations. At this time, the business risks of enterprises themselves and the risks of default in transactions and investments will increase (Tsai, 2018). Therefore, many scholars have extensively explored the impact of political environment fluctuations on international trade, overseas investment and economic development.

(Lensink et al., 2000) found that if a developing country has an unstable political situation and volatile policies, firms tend to hold cash and look for suitable investment opportunities in other countries, leading to frequent capital flight. (Nguyen & Kim, 2017), by examining data on outbound investments from eight countries in Southeast Asia, found that when the policy environment in the home country is unstable, multinational firms will accelerate their overseas assets and tend to invest in countries or regions with more stable policy environments to expand their overseas investments. Similarly, the results of (Ngai et al., 2001) suggest that when China's policy system is immature and imperfectly developed, firms will undertake FDI activities in other countries in search of a more suitable business environment. (Dibiassi et al., 2018; Hoang & Tran, 2021) Empirically, increased policy uncertainty in the Chinese economy will inhibit firms' physical investments such as opening factories and promote virtual assets such as financial investments.

However, on the other hand, (Julio & Yook, 2013) use the timing of U.S. presidential elections to indicate fluctuations in political uncertainty. They find that when the election date comes. Investors are aware of the impending change in the policy environment; U.S. direct investment abroad decreased by 13% compared to the previous period, gradually returning to its previous level only four months after the election.

Firms are not necessarily inclined to invest in other countries when the economic environment in their home country is turbulent. (Liu et al., 2021) analyzed in-depth the investment decisions of a representative firm in the context of the policy environment. They found that when China's policy is unstable, the cost for firms to obtain capital rises significantly, thus discouraging them from investing abroad. (Skokic et al., 2016) argue that the cost of recapitalization rises sharply when China's economic environment is turbulent, thus prompting firms to be more cautious in their outward FDI behavior.

2.2 The impact of economic policy uncertainty of host country on foreign direct investment

On the one hand, a mature and well-established institutional system in a country can attract many multinational enterprises to go there. However, on the other hand, with the increasingly strict national security review mechanism and the rise of trade protectionism, the severe institutional environment and review process in the host country also deter many multinational enterprises. (Bernanke, 1983; Hsieh et al., 2019; Nguyen & Kim, 2017).

(Busse & Hefeker, 2007) showed that multinational firms focus on the degree of democratization, government stability, and the presence of religious conflict or struggle when choosing an investment destination. This is also confirmed by (Warner & Zawahri, 2012), who found that democracies are more attractive to foreign direct investment than autocracies because they create a more stable and harmonious trade environment and business space that attracts foreign firms to invest in them. In addition, (Hansen & Headey, 2010) focused on the impact of partisan conflict on OFDI in the U.S. and showed that capital inflows to the U.S. decreased by 25% following widespread news coverage of partial conflict events compared to the previous period. (Feng & Mu, 2010) studied the overseas investment behavior of Chinese firms, and they found that the more mature a country's economic, institutional environment, the more robust its rule of law system, and the greater the advantage of the quality of its political system, the more Chinese multinational firms tend to make direct investments in that country. It can be seen that many scholars believe that the institutional stability of the host country can attract global enterprises to invest there.

However, some scholars argue that when a country's institutional environment is still immature, the freer its trade environment, the more liberal its trade policies, and the greater the market demand, instead, several firms will open affiliated companies in the country and conduct business management activities to capture the original market first. (Ahlquist & Prakash, 2010) found by studying investment data in developing countries that, on the one hand, harmonious and liberal democracies can attract overseas direct investment inflows, similar to the findings of (Shirodkar & Mohr, 2015); but on the other hand, democratic governments have limited autonomous decision-making capacity and always tend to protect local firms, thus providing limited policy protection and trade incentives to MNCs, thus weakening FDI to some extent. Similarly, (Anderson & Sutherland, 2015) investigate the investment events of Chinese firms in 196 countries or regions and find that when a country reaches a certain level of democracy, Chinese MNEs in overly democratic markets lack gov-

ernment macro-regulation reduce their outward FDI in that country. Moreover, (Bull et al., 2019) empirical study finds significant differences in the effect and degree of influence of policy regimes on OFDI in different types of countries such as developed and developing countries. However, the more stable a country's political environment is, the more willing Chinese firms are to invest directly in that country.

2.3 Main considerations based on the literature review

First, there is little literature on the impact of economic policy fluctuations on overseas investment. Most of the literature focuses on macro-level studies, i.e., the effect of the policy environment on the country's annual OFDI flows. However, the published Chinese OFDI data by the Ministry of Commerce are yearly data, and macro-level studies are hardly convincing due to the small amount of data, and the internal mechanism of the impact has not been fully explored. Second, up to now, there is also little literature to study the effect of policy environment fluctuations on overseas investment and its mechanism of action at the firm level based on the background of China's institutional system and the current situation of the trade market. Therefore, this paper explores the macro, and micro factors of Chinese firms' OFDI decisions and considers the role of firm heterogeneity and stage differences on this influence mechanism. Finally, when studying the impact of economic policy uncertainty, most of the literature only considers the policy environment in China while ignoring the policy impact of the host country. Some scholars have analyzed firms' OFDI purposes and motives. Still, the research focuses on comparing the differences in OFDI behavior of firms in different provinces or industries without exploring the policy environment of the host country. Moreover, even if host countries are considered, factors such as institutional distance and location advantages of host countries are considered from the perspective of Chinese MNEs, ignoring macroeconomic policy uncertainties in host countries and globally. Therefore, this paper incorporates both Chinese and host country policy environments into the empirical study to analyze the mechanisms of their effects in more depth.

3 Method

3.1 Model construction

To investigate the factors influencing Chinese firms' OFDI decisions, this paper uses a linear probability model for regression analysis. Because the dependent variable of this paper is whether the enterprises make outward OFDI, which is a dichotomous variable and obeys binomial distribution, it is reasonable and feasible to choose a linear probability regression model. In addition, since the research of this paper involves the outward OFDI behavior of Chinese enterprises in several countries over time and the research data are multidimensional panel data, the final model of this paper is a three-dimensional panel data linear probability regression model. This paper considers the economic policy uncertainty of both the home country and host country; it also takes into account the enterprises' characteristics and other factors that can affect

the decision of multinational companies to make a direct investment abroad in a given year. The model is built as follows:

$$OFDI_{ijt} = \alpha_0 + \alpha_1 CEPU_{t-1} + \alpha_2 FEPU_{j,t-1} + \alpha_3 \sum \text{Control} + \alpha_4 \sum \text{Year}_t + \alpha_5 \sum \text{Industry}_i + \varepsilon_{ijt} \quad (1)$$

In the above formula, the dependent variable is foreign direct investment (OFDI), which is a dichotomous variable. If enterprise i made direct investment in country j in year t , this variable takes the value of 1; otherwise, it takes the value of 0. This paper mainly studies the influencing factors of whether an enterprise conducts direct investment in a certain country in a certain year.

The independent variable is economic uncertainty, including China's economic policy uncertainty ($CEPU$) and the host country's economic policy uncertainty ($FEPU$). Specifically, $CEPU_{t-1}$ represents China's economic policy uncertainty in year $t-1$, and $FEPU_{j,t-1}$ represents the economic policy uncertainty of host country j . For specific indicator explanations and data sources, please refer to the "Data Sources" section below.

$\sum \text{Control}$ it is a control variable, i.e., it controls for factors that may impact the empirical study, including the macro country level and the firm micro level. With regard to the control variables, considering the possible differential impact of a given year on firms' investment, this paper controls for year fixed effects, and $\sum \text{Year}_t$ is a year dummy variable. In addition, to control for unobserved factors that do not vary by industry, this paper also contains industry fixed effects as an industry dummy variable.

In addition, China's foreign direct investment policy may also directly affect the foreign direct investment activities of Chinese enterprises. This paper takes this situation into account and sets it as a dummy variable and adds it to the benchmark model. The details are as follows. China's Foreign Direct Investment Policy (POLICY): If the Chinese government issued relevant foreign direct investment policies in that year, the variable is 1; otherwise, it is 0. It should be noted that the policies here only include relevant policies issued by the central government and various ministries and commissions and do not include policies by local governments and departments at the lower levels. The State Administration of Foreign Exchange and other departments issued a total of 13 relevant laws and regulations.

Considering that enterprises' FDI decisions are affected by many factors, this paper sets up control variables at the national macrolevel and the enterprise micro level (Hansen & Headey, 2010; Lawrence, 2018; Ngai et al., 2001). National macro-level control variables include China's three-year average GDP growth rate (CGDP), the host country's three-year average GDP growth rate (HGDP), the host country's natural energy resources (RE), the host country's relative wage level (RWAGE), and the host country's economic openness (OPEN). Firm-level control variables include financing constraints (SA), firm age (Age), capital structure (Leve), profitability (ROA), and ownership (Private). The definitions of the main variables and descriptive statistics are shown in Table 1 below.

Table 1 Definition of variables and descriptive statistics

Variables	Variable Name	Variable Definition	Average value	Median	Maximum value	Minimum value
Explained variables	$OFDI_{it}$	China's direct investment flows to country i in period t	0.0125	0.0002	1.0000	0.000
Core explanatory variables	$CEPU_{it}$	Economic policy uncertainty in China in period t	211.9653	170.6586	460.4856	64.9288
	$FEPUI_{it}$	Economic policy uncertainty in country i in period t	148.4862	134.7452	475.8856	49.4562
Control variables (country level)	$HGDP_{jt}$	Three-year average GDP growth rate of the host country	2.076	1.835	11.652	0.273
	$CGDP_{jt}$	China's three-year average GDP growth rate	6.568	5.864	8.656	3.682
	$POLICY_{it}$	If the Chinese government issued relevant foreign direct investment policies that year, this variable is 1, otherwise it is 0.	0.435	0.386	1	0
	RE_{jt}	The share of mineral and metal resources exported by country j in total merchandise exports in period t	10.1856	10.5485	11.12398	6.3845
	$RWAC_{jt}$	Per capita GDP of country j in period t	6.3265	3.0485	36.7696	1.4147
	$OPEN_{jt}$	Economic openness of country j in period t	59.4265	548,854	157.6562	22.7257
	SA_{it}	Financing constraints of firm i in period t	4.3845	4.0636	11.3254	1.2320
Control variables (firm level)	Age_{it}	The age of firm i in period t	8.8365	8	28	1
	$Leve_{it}$	Capital structure of firm i in period t	0.4541	0.4320	0.9145	0.0230
	ROA_{it}	Profitability of firm i in period t	0.0152	0.0358	0.2120	-0.2320
	$Private_{it}$	The nature of ownership of firm i in period t	0.5548	1	1	0

3.2 Data sources

This paper refers to determine whether an enterprise has OFDI based on its affiliates. The data are obtained from the CSMAR China Listed Companies Affiliated Transactions Research Database. Suppose an enterprise has registered subsidiaries, joint ventures, and associates outside of mainland China, and the proportion of controlling interests exceeds 10%. In that case, the enterprise is considered to have made outward direct investment in that particular year at the place of registration.

The corporate data used in this paper, such as debt ratio and profitability, are obtained from the CSMAR database of basic information of listed companies. In this paper, we refer to the processing method of and process the samples based on the following criteria: (1) exclude the samples of the S.T. category and P.T. category with abnormal financial or continuous losses for more than two years; (2) exclude financial listed companies; and (3) exclude the samples with missing indicator values or outliers.

The economic policy uncertainty indices used in this paper are all from the “Economic Policy Uncertainty Indices” jointly released by Stanford University, the University of Chicago and Northwestern University. Specifically, the CEPU index (Huang et al., 2016), compiled by Guangming Daily, is (Binder, 2017) based on the most representative mainstream media in various countries. The official website of the index is <http://www.policyuncertainty.com/>. At present, there are two authoritative Chinese economic policy uncertainty indices: one is based on the newspapers the “People’s Daily” and “Guangming Daily” in mainland China (Steven J. Davis et al., 2019), and the other is for Hong Kong and is compiled by the South China Morning Post (Binder, 2017). Although both describe China’s policy uncertainty, this paper’s position is that the economic policy uncertainty index compiled based on newspapers in mainland China more accurately reflects China’s actual policy environment, so this paper uses the mainland China data sources. The Economic Policy Uncertainty Indicator measures policy volatility in China. The construction method counts and filters the economic and policy-related emotional expression words in relevant news reports and then calculates the proportion of the selected articles in all articles. The index covers 21 countries or regions. In the selection of host countries, this paper excludes Ireland, Spain and Chile because Chinese companies have few foreign direct investment projects in these countries and data are missing. Therefore, the host country sample for this paper includes 13 countries, namely, Brazil, Russia, the United States, South Korea, Italy, Germany, India, the United Kingdom, the Netherlands, Australia, Canada, Japan, and France.

This paper matches the investment behaviors, investment years and investment countries of Chinese A-share listed companies. After collecting and screening, it finally constitutes a three-dimensional unbalanced foreign direct investment behavior of 2,341 A-share listed companies in 13 countries from 2003 to 2018. Panel data.

4 Results and discussion

4.1 Baseline regression results

In this section we illustrate and discuss the results of our empirical analysis. Table 2 reports the coefficients of the mixed regression (Column 1), the panel random effect regression (Column 2) and panel fixed effect regression (Columns 3 and 4). The regression results are shown in Column (1), Column (2) and Column (3) of Table 2. To alleviate the endogeneity problem, the variables of the three regression models are all lagged by one period. Considering that mixed regressions may miss variables, this paper tends to choose panel regression. Comparing the estimation results of the three regression models, it is found that the estimation results of Column (1) and Column (2) are basically the same. To further determine whether to use a random-effects panel model or a fixed-effects panel model, this paper uses the Hausman test. The null hypothesis is random effects, the test result is $\text{Prob} > \chi^2 = 0.0022$, and the P value is less than 0.05. Therefore, this paper chooses the fixed-effects model as the benchmark model for the empirical research, and Column (3) of Table 2 is the main regression result of the benchmark model in this paper.

Column (3) shows that, except for the control variables capital structure (Leve) and profitability (ROA), the other variables of the model are very significant, indicating that most of the variables selected in this paper are related to the dependent variable foreign investment. In addition, the coefficient values of most variables are in the range of 0.0001–0.001, which may be because, to match the company with the host country that invested in the current year, this paper constructs the three-dimensional panel data of the foreign direct investment of company i in country j in year t . Therefore, the probability of the dummy variable OFDI in the linear probability model is lower, that is, the value of the dependent variable is smaller.

The results suggest that when the level of policy uncertainty in China's economy rises (which implies that China's economic policies are more volatile, firms' development prospects are uncertain and expected investment returns are unstable), firms tend to avoid policy risks and shift their FDI. Therefore, the increase in economic policy uncertainty in the home country will have an inhibitory effect on corporate investment, which supports the basic prediction of real options theory. When the host country's policy is unstable, the host country's trade policy and tax policy fluctuate greatly, and the multinational enterprise review system is strict. To maintain a stable cash flow, enterprises tend to reduce direct investment in the country, thereby reducing investment risks.

In addition, Chinese enterprises' FDI decisions will be positively affected by the size of the host country's economy (GDP), per capita wage level (RWAGE), natural resource endowment (RE), and trade openness (OPEN). In addition, the financing constraint (SA) is negatively correlated with the decision-making of foreign direct investment of enterprises, indicating that capital financing restricts the decision-making of foreign direct investment of Chinese enterprises, which are less likely to invest. In addition, the age of the enterprise (Age) is positively correlated with the decision of the enterprise's foreign direct investment, which means that with the development of the enterprise itself, the more capital accumulation and technology accumulation of the enterprise, the richer the investment experience, so the probability of foreign direct investment to expand the enterprise territory is greater. The positive correlation between enterprise ownership (Private) and OFDI indicates that when other external conditions are the same, nonstate-owned enterprises are more inclined to carry out foreign direct investment activities than state-owned enterprises. The above analysis is basically consistent with the previous heterogeneity assumption. To further verify the above impact, the following will divide the subsamples according to the characteristics of enterprises to perform linear probability panel data regression.

Column (4) in Table 2 is the panel fixed effect estimation results for CEPU and FEPU without one period of lag. The only difference between Columns (3) and (4) in the model setting is that CEPU and FEPU in Column (4) do not lag by one period. According to the regression results of Column (4), we find that compared with Column (3) in Table 2, the CEPU of Column (4) is not significant, and the FEPU is significantly reduced. That is, when China's economic policy fluctuates, it will not immediately affect the investment behavior of enterprises in the current period but will affect the investment behavior of enterprises in the next period. When the foreign economic environment is turbulent, it has an impact on the investment behavior of enterprises in the current period and the next period, but the impact on the behavior

Table 2 Baseline regression results

	Mixed regression	Random effects	Fixed effects	
	(1)	(2)	(3)	(4)
CEPU	0.0095*** -20.098	0.0095*** -20.096	0.0082*** -17.107	0.0068 -6.7075
FEPU	-0.0091*** (-15.36)	-0.0091*** (-15.36)	-0.0093*** (-15.86)	-0.0023** (-2.38)
GDP	0.0279*** -53.578	0.0279*** -53.576	0.0276*** -52.807	0.0034 -0.0675
RWAGE	0.0022* -6.888	0.0022* -6.886	0.0021*** -6.487	0.0046 -0.1575
RE	0.0008*** -18.508	0.0008*** (18,51)	0.0008*** -17.857	4.0005*** (-371)
OPEN	0.0002*** -15.158	0.0002*** (15,16)	0.0002*** -14.437	0.0001*** (0.2,26)
SA	9.0053*** -38.648	9.0053*** -38.646	10.0064*** -43.407	10.065*** -43.8875
Age	0.0002* -4.868	0.0002*** -4.866	0.0003*** -7.827	0.0004*** -8.5875
Leve	0.0021 -1.608	0.0041 -1.606	0.0031 -1.607	0.0026 -1.6075
ROA	0.002 (-0.00)	0.004 (-0.00)	0.0029 (-0.28)	0.0026 (-0.28)
Private	0.0041*** -7.308	0.0041*** -7.306	0.0042*** -7.467	0.0076 -8.8975
Constant	-0.5476** (-59.10)	9.5476** (-59.10)	9.5376** (-58.00)	9.0336** (-0.30)
Industry dummy	NO	NO	Yes	Yes
Year dummy	NO	NO	Yes	Yes
N	302,682	302,682	302,682	302,682
F-value	865.45	815.45	949.84	956.54
WithinR ²	0.256	0,284	0.262	0.186

*Note: *, ** and *** indicate significant at the 10%, 5% and 1% levels, respectively, with t-statistics in parentheses*

of the next period is more significant. Therefore, the regression results verify that when China’s policy environment is volatile, companies tend to maintain a “wait and see” attitude. On the one hand, the formulation and implementation of government policies will take a certain amount of time, and the effect will also take some time to appear; on the other hand, compared with investing in China, overseas direct investment requires more time for preparation. Because investing in other countries involves an unfamiliar market environment and an unfamiliar trade rule system, it takes a some time to prepare for investment, such as investigating the market, reserving funds, becoming familiar with policies, and gathering resources. Finally, once a company has made a direct investment in a country, it needs to invest significant capital and manpower, so even if the country’s policy fluctuates, the company will not withdraw investment immediately but will rather choose to wait and see for a period of time. When China’s economic policy changes or the foreign policy environment is stable, regardless of whether foreign direct investment is made, multinational

companies will have a delayed reaction to wait and see the effect of the policy or prepare for investment.

4.2 Analysis of the regression results of enterprise heterogeneity

In this paper, the total sample is divided into different subsamples according to the firms' characteristics, and linear probability fixed-effects regression is performed. The regression results are shown in Table 3.

4.2.1 Financing constraint differences

We first divide the total sample into two subsamples based on the median of the financing constraints, and the regression results are shown in Columns (1) and (2) of Table 3. The CEPU coefficient of the two groups of data is significantly positive, and the FEPU coefficient is significantly negative. This means that regardless of the level of financing constraints of enterprises, the direction of the impact of economic policy fluctuations on enterprises' FDI decisions remains unchanged.

Comparing the regression results of the two subsamples, it can be seen that the coefficient of the financing constraint variable (SA) is negative and highly significant, indicating that when enterprises face greater financing difficulties, they will significantly reduce the amount of overseas investment. The regression coefficient of CEPU of enterprises with low financing constraints is significantly larger than that of enterprises with high financing constraints, indicating that compared with enterprises with high financing constraints when China's economic policy fluctuates, enterprises with low financing constraints are more likely to conduct FDI. The absolute value of the FEPU regression coefficient of low-financing-constrained enterprises is significantly larger than that of high-financing-constrained enterprises, indicating that when the host country's economic policy tends to be stable, low-financing-constrained enterprises are more likely to conduct foreign direct investment. When China's economic policy changes or trade policies are unclear, multinational companies tend to increase their cash holdings to reduce investment risks and ensure stable cash flow; however, it is more difficult for multinational companies to obtain funds from financial institutions such as banks, and financing channels are narrowed. Financing costs increase. In the context of the volatile policy environment, financial institutions predict that the probability of corporate financing default will increase, thereby improving financing conditions such as the amount of margin and the qualifications of guarantors, increasing the external financing cost of enterprises and resulting in a decline in the number of corporate investments.

In summary, when the EPU of the home country increases or the EPU of the host country decreases, compared with enterprises with high financing constraints, enterprises with low financing constraints are more inclined to invest in foreign direct investment.

4.2.2 Ownership differences

We divide the total sample into two subsamples, state-owned and nonstate-owned, according to the nature of enterprise ownership. Specifically, state-owned enterprises refer to state-owned or state-owned holdings, public institutions, and government agencies, while nonstate-owned enterprises include private enterprises and Sino-foreign joint ventures. According to statistics, there are 683 state-owned enterprises and 1,658 nonstate-owned enterprises among the 2,341 enterprises in the whole sample. The proportion of nonstate-owned enterprises is higher. According to the regression results of Columns (3) and (4) in Table 3, it can be seen that the regression coefficients of CEPU, the core explanatory variable of SOE samples and nonstate-owned enterprise samples, are significantly positive, and the regression coefficients of FEPU are both negative and highly significant. This shows that regardless of the ownership attributes of enterprises, fluctuations in the economic policy of the home country will encourage enterprises to make foreign direct investments, and when the policy environment of the host country is relatively stable, enterprises will be more likely to carry out direct investments in the country.

The coefficient of CEPU of nonstate-owned enterprises (0.91%) is significantly larger than that of state-owned enterprises, indicating that compared with state-owned enterprises when the economic policy of the home country fluctuates frequently, nonstate-owned enterprises are more inclined to conduct foreign direct investment. The absolute value of the FEPU regression coefficient of nonstate-owned enterprises is significantly smaller than the absolute value of the regression coefficient of state-owned enterprises, indicating that when the economic policy of the host country tends to be stable, nonstate-owned enterprises are more likely to conduct foreign direct investment. The different nature of ownership of enterprises means different modes of survival and development of enterprises, which will naturally affect the foreign investment behavior of enterprises. State-owned enterprises are dominated by the government, whose investment behavior includes political and social responsibility objectives, not just profit. (Hryckiewicz, 2014) posits that state-owned enterprises

Table 3 Regression results of financing constraints and ownership differences

	High S.A.	Low SA	State-owned enterprises	Non-State Owned Enterprises
	(1)	(2)	(3)	(4)
CEPU	0.0051*** (12.26)	0.0152*** (11.53)	0.0052*** (9.56)	0.0094*** (9.65)
FEPU	-0.0068*** (-12.65)	-0.0056*** (-8.18)	- (-11.78)	- (-8.15)
Industry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes
N	168,562	168,562	158,682	145,815
F-value	256.81	268.72	248.62	256.82
WithinR ²	0.268	0.246	0.276	0.268

*Note: * , ** and *** indicate significant at the 10%, 5% and 1% levels, respectively, with t-statistics in parentheses*

are often controlled by the government and have a large shareholding ratio. Because they are not constrained by other shareholders, state-owned enterprises are more risk averse. In addition, under the supervision of the government, the foreign direct investment behavior of state-owned enterprises will be more systematic and coordinated, and its investment behavior also reflects political goals and social responsibility. Nonstate-owned enterprises survive in a market-oriented environment, receive limited support from national policies, and have fewer opportunities to obtain the same investment guidance as state-owned enterprises. Most nonstate-owned enterprises achieve business by participating in fierce market competition, development and expansion. Therefore, nonstate-owned enterprises are more sensitive and cautious to changes in economic policies and market fluctuations because they need to adjust their development strategies in a timely manner according to changes in policies or environmental trends to gain advantages in market competition.

In summary, when the EPU of the home country rises or the EPU of the host country falls, nonstate-owned enterprises are more inclined to OFDI than state-owned enterprises.

4.3 Analysis of phased regression results

Furthermore, in light of different international trade situations, such as the financial crisis, the 2015 Chinese stock market crash, and the 2018 Sino-US trade friction, the impact of policy environment fluctuations on companies' overseas investment is assessed in different time periods. According to major global economic events, we divide the overall sample into three-character samples according to time periods: 2003–2007 (prefinancial crisis), 2008–2014 (during the financial crisis), and 2015–2020 (during the China-US trade war). According to the regression results in Table 4, in the early stage of the financial crisis, the CEPU coefficient was significantly positive, indicating that when China's economic policy environment fluctuated, enterprises tended to carry out direct investment activities abroad. The fact that the FEPU coefficient is not significant may be due to the opening of the international trade environment in 2001, China's loose trade policies, and the strong demand for overseas investment of enterprises. Therefore, enterprises actively carry out foreign direct investment without paying too much attention to the economic policies of the host country. According to the analysis, among the 988 foreign direct investment enterprises from 2003 to 2007, 546 were state-owned enterprises, indicating that during 2003–2007, many state-owned enterprises made overseas investments and carried out business management under the guidance and promotion of the government. Activities, known from firm heterogeneity studies, are less susceptible to economic policy uncertainty.

From 2008 to 2014, when the financial crisis broke out, both CEPU and FEPU suppressed the foreign direct investment of enterprises. Whether it was due to China's economic policy changes or fluctuations in the host country's policy environment, companies significantly reduced overseas investment activities. Comparing the first stage, it can be seen that before the financial crisis, the fluctuation of China's policy environment promoted the overseas investment of enterprises; after the financial crisis, however, the fluctuation of China's policy environment significantly inhib-

ited overseas investments of enterprises. After the outbreak of the financial crisis, although China was also affected by the financial crisis and the quality of the system declined, the economic environment of other countries was worse, and policy fluctuations were more frequent. The quality of the system and the overall willingness to hedge foreign investment were greatly reduced. By comparing the prefinancial period and the period of the financial crisis, it can be seen that during the financial crisis, multinational companies had difficulty predicting the complex international situation. To avoid overseas investment risks, they were more inclined to trust the policy stability of the Chinese government, even if China’s economic policies fluctuated greatly. They were also reluctant to invest abroad and chose instead to invest in China.

The period from 2015 to 2020 is the transition period between the late financial crisis and the early stage of Sino-US trade frictions. The international trade environment was complex and changeable. Although various remedial policies introduced by various countries during the financial crisis showed results in this stage, Sino-US trade frictions intensified. The regression results in Column (3) of Table 4 show that, from 2014 to 2018, the rise of CEPU promoted the foreign direct investment of enterprises (1.02%); and the decline of FEPU also promoted overseas investments of enterprises (-0.25%). In addition, the coefficient of CEPU is significantly larger than the absolute value of the coefficient of FEPU; that is, the foreign direct investment behavior of enterprises is significantly more affected by CEPU than in previous years but less affected by FEPU. This means that, compared with the first two stages, multinational companies paid greater attention to China’s economic policy environment but were less concerned about the stability of the host country’s economic policy. The reason is that with the expansion of the scale of foreign investment, enterprises accumulated rich investment resources and overseas experience, and the foreign direct investments of enterprise is a long-term. There will be no withdrawal of capital due to fluctuations in the host country’s economic policies. Among the newly added foreign direct investment enterprises from 2014 to 2018, nonstate-owned enterprises accounted for 74.31%. Compared with most state-owned enterprises that made overseas investments in 2003–2007, nonstate-owned enterprises received less policy support and were, therefore, more sensitive to uncertain changes in China’s economic policies. Once China’s policy environment fluctuates greatly, companies will seek a better investment environment and business space in other countries.

Table 4 Phased regression results

	2003–2007	2008–2014	2015–2020
	(1)	(2)	(3)
CEPU	0.0074*** (3.26)	-0.0021** (2.16)	0.0104*** (2.15)
FEPU	0.002 (0.41)	-0.0035*** (-3.41)	-0.0015*** (-2.71)
Industry dummy	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes
N	75,625	132,562	144,949
F-value	268.52	525.15	426.25
WithinR ²	0.265	0.156	0.282

*Note: * , ** and *** indicate significant at the 10%, 5% and 1% levels, respectively, with t-statistics in parentheses*

4.4 Robustness test

4.4.1 Complementary log-log model

Because this paper needs to match the year and country of corporate investment with each other, a three-dimensional unbalanced panel data containing the OFDI behavior of 2341 A-share listed companies in 13 countries from 2003 to 2020 is constructed. According to the descriptive statistics analysis, only 1.81% of the total sample has made OFDI, resulting in a sparse sampling. This paper adopts a complementary log-log model (clog-log) to avoid rare event bias, and the regression results are shown in column (1) of Table 5. According to the regression results, it can be seen that the core explanatory variables CEPU and FEPU are still significant and closer to the empirical results of the benchmark model, indicating that the original model does not have a severe rare event problem.

4.4.2 Endogenous problems

There may be a causal relationship between $OFDI_{t-1}$ and $OFDI_t$, and to mitigate the endogeneity problem, this paper includes $OFDI_{t-1}$ as an explanatory variable in the model. The regression results are presented in column (2) of Table 5. The regression results show that $OFDI_{t-1}$ is significantly and positively correlated with $OFDI_t$, indicating that if a firm has made direct investment in a country in the previous year, it is more likely to continue its direct investment activities in that country year. Because of the “self-learning ability” of enterprises, those who have made OFDI in the first period have more experience in the later period, so the OFDI behavior of enterprises tends to be long-term. However, the regression results also show that the inclusion of $OFDI_{t-1}$ does not change the relationship between other variables. The coefficients of CEPU and FEPU are still significant when $OFDI_{t-1}$ is included as an explanatory variable. The coefficients of the variables are very similar to those of the benchmark model, which indicates that there is no significant endogeneity problem in the benchmark model.

4.4.3 Economic policy uncertainty indicator replacement

The CEPU index based on the mainland Chinese newspapers People’s Daily and Guangming Daily is used in the previous paper. To test the robustness of the index, the index constructed based on the South China Morning Post in Hong Kong, China and the index built by the Hong Kong Baptist University are used below instead of the original index, respectively, and the regression results are shown in columns (3) and (4) of Table 5. From the regression results, it can be seen that no matter which indicator is used to measure China’s policy environment, the core explanatory variables CEPU and FEPU are still significant. The coefficients of the variables are closer to the empirical results of the benchmark model, indicating that the CEPU index chosen in the previous section is more appropriate and can well reflect the policy changes and fluctuations of China’s economic environment.

Table 5 Robustness tests

	Clog-log	Endogenous problems	EPU remeasurement	
	(1)	(2)	(3)	(4)
OFDI _{t-1}		0.0262*** (35.41)		
CEPU	0.052*** (25.62)	0.0085*** (26.81)	0.0092*** (27.81)	0.0072*** (6.15)
FEPU	-0.0051*** (-15.71)	-0.0065*** (-16.57)	-0.0085*** (-17.85)	- (-11.41)
In- dustry dummy	Yes	Yes	Yes	Yes
Year dummy	Yes	Yes	Yes	Yes

Note: *, ** and *** indicate significant at the 10%, 5% and 1% levels, respectively, with t-statistics in parentheses

Table 6 Quasi-natural experiment

Variable	TFP (1)
TEST	0.018 (0.760)
Industry dummy	YES
Year dummy	YES
N	302,682
F-value	825.45
R ²	0.438

4.4.4 The quasi-natural experiment of “OFDI policy”

China’s foreign direct investment policy may also directly affect the foreign direct investment activities of Chinese enterprises. To test whether this variable affects the foreign investment activities of Chinese enterprises, we designed a quasi-natural experiment. Since the Chinese government’s foreign direct investment policy has frequently undergone policy changes in the follow-up, this paper sets up a multi-period DID (Difference-In-Difference) model as shown in the following formula to explore the impact of foreign direct investment policy on Chinese enterprises’ foreign investment activities.

$$OFDI_{ijt} = \alpha_0 + \alpha_1 TEST_t + \alpha_2 \sum \text{Control} + \alpha_3 \sum \text{Year}_t + \alpha_4 \sum \text{Industry}_i + \varepsilon_{ijt}$$

Among them, $TEST_t$ is a policy dummy variable. If the Chinese government promulgated or changed the foreign direct investment policy in the first year, the variable is 1, otherwise it is 0. For many control variables affecting the foreign investment activities of enterprises, the settings are the same as those in the empirical analysis above; the meanings of other symbols are also consistent with the above model. The estimated results of the quasi-natural experiment of “outward direct investment policy” are shown in Table 6 below. The results show that the “outward direct investment policy” has a positive but insignificant coefficient on Chinese companies’ outward investment activities, reflecting that there is no evidence that the Chinese

government's outward foreign investment policies can directly affect Chinese companies' outward investment activities. This also confirms that the model constructed above is robust and reliable.

5 Conclusions and recommendations

This paper investigates whether Chinese multinational enterprises will change their OFDI decisions when the economic policy environments of China and trade-related countries are unstable and conducts enterprise heterogeneity analysis and period-by-period discussions. The findings are as follows.

First, China's economic policy uncertainty will promote Chinese enterprises' OFDI, while the host country's economic policy uncertainty will inhibit China's foreign direct investment, and the effect is lagging.

This means that when China's policy changes and the economic environment is unstable, firms have difficulty predicting future development prospects and perceive more significant investment risks, thus reducing their investments in China and investing their capital in countries with a more stable policy environment. And when the host country's policy fluctuation is unstable, the host country's policy fluctuation is high, and the global enterprise review system is strict, the enterprises tend to reduce their direct investment in that country to maintain a stable cash flow, thus reducing the risk of investment.

Second, policy fluctuations arising from major international economic and financial events such as the financial crisis and the U.S.-China trade friction can have different effects on Chinese OFDI. For example, it was difficult to drive outward FDI by multinational firms during the financial crisis even with increased uncertainty about China's economic policies. This is because firms were more inclined to trust the robustness of the Chinese government and thus reduced their overseas investments. In contrast, during the U.S.-China trade frictions, when Chinese economic policies were volatile, or the host country policy environment was stable, firms were more inclined to invest outward FDI than in previous years.

The above-mentioned results prompt the following considerations and recommendations.

First of all, the OFDI decisions of enterprises are influenced by the national macro economy and their characteristics, so it is necessary to effectively solve the problems enterprises face in the development and investment processes. Many SMEs and private enterprises lack government support and guidance and have relative difficulties in external financing, limiting their OFDI activities. Therefore, the Chinese government should take the lead in establishing a multi-level capital market, building a new platform for open cooperation, building and broadening corporate financing channels, encouraging diversified financing methods, and appropriately relaxing restrictions on capital borrowing by SMEs. In addition to solving the problem of "difficult financing" from the institutional system, it should also reform the ideology, focus on the fairness of the financing market, and eliminate the discrimination of financial institutions against private enterprises and SMEs in financing. In addition to funding, the government should also provide policy support and protection throughout the

development process of private enterprises and cultivate more enterprises with the ability and conditions to make overseas investments. In addition, local governments and enterprises should respond positively to the 14th Five-Year Plan, improve the legal, policy, and service systems for promoting and safeguarding overseas investment, firmly defend the legitimate rights and interests of Chinese enterprises overseas, promote trade and investment liberalization and facilitation, and build a new system for a higher level of an open economy.

Secondly, a new round of technological revolution has begun. In addition to unilaterally upgrading China's science and technology, multinational enterprises' flexible use of investment activities can also better promote the integration of industry, academia, and research and accelerate China's industrial revolution. Companies can thoroughly learn and utilize foreign high technology in overseas investment and improve the technology according to China's national conditions and consumer demand so that it can be applied to Chinese companies' production on a large scale. This will improve the productivity and profitability of the enterprises themselves and promote the industrial progress of the whole country. Therefore, the Chinese government should encourage and advocate overseas investment by technology-seeking enterprises. Still, compared to labor-intensive and capital-intensive enterprises, the OFDI behavior of technology-seeking enterprises is vulnerable to economic policy fluctuations. accordingly, to advocate technology-seeking enterprises to carry out OFDI activities, the government should establish a sound policy protection system by granting certain tax concessions. In addition, the government should establish a sound technology guidance system to encourage enterprises to absorb foreign advanced technologies in overseas investment and localize high and new technologies in line with China's national conditions and consumer market characteristics to help China's technological revolution and industrial development.

Data Availability All data included in this study are available upon request by contacting the corresponding author.

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