

Exchange Rate Risk, Political Environment and Chinese Outward FDI in Emerging Economies: A Panel Data Analysis*

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This study attempts to investigate the effect of financial and political risk on Chinese outward FDI activities in 56 emerging economies for a period from 2003 to 2013. Exchange rate is taken as a main indicator of financial risks and political risks are evaluated using ICRG (International Country Risk Guide) index. Generalized method of moments with panel data of Chinese outward FDI (foreign direct investment) in new emerging economies is used to find how Chinese firms intend to invest abroad with respect to exchange rate level, volatility, and expectation. The major findings show that RMB appreciation proved to have a positive effect on Chinese outward FDI in emerging economies. But Chinese OFDI (outward foreign direct investment) seems not to respond to exchange rate volatility. The expectation of RMB's appreciation has positive effect on Chinese OFDI in emerging economies. Results also show that more political risk leads to more Chinese OFDI in emerging economies.

Keywords: FDI (foreign direct investment), exchange rate, political risk, emerging economies

Introduction

After the opening-up reform in 1979, China has kept a rapid economic growth rate for 30 years. GNP (gross national product) has been more than two trillion US dollars and the foreign-exchange reserve has been near 1.5 trillion. Research found that when the per capita GNP of a country runs up to 2,500 US dollars, the country's OFDI (outward foreign direct investment) will enter a stage of rapid development and China is just at this stage (Xiang, 2011). In 2013, China's FDI (foreign direct investment) flow is 107.84 billion US dollars. Among them, the proportion of non-financial investment is 86.0%, while financial investment is 14% (China's Ministry of Commerce, 2013). China accounted for 7.6% of world total in 2013, ranking the third largest FDI investor in the world (United Nations Conference on Trade and Development, 2014).

The main industries of China's OFDI are the leasing and business services industry, the mining industry, the financial industry, and the wholesale and retail industry. The amount of these four main industries is 81.62 billion dollars, accounting for 75.7% of the total. Figure 1 shows the industry distribution of China's OFDI flow in 2013.

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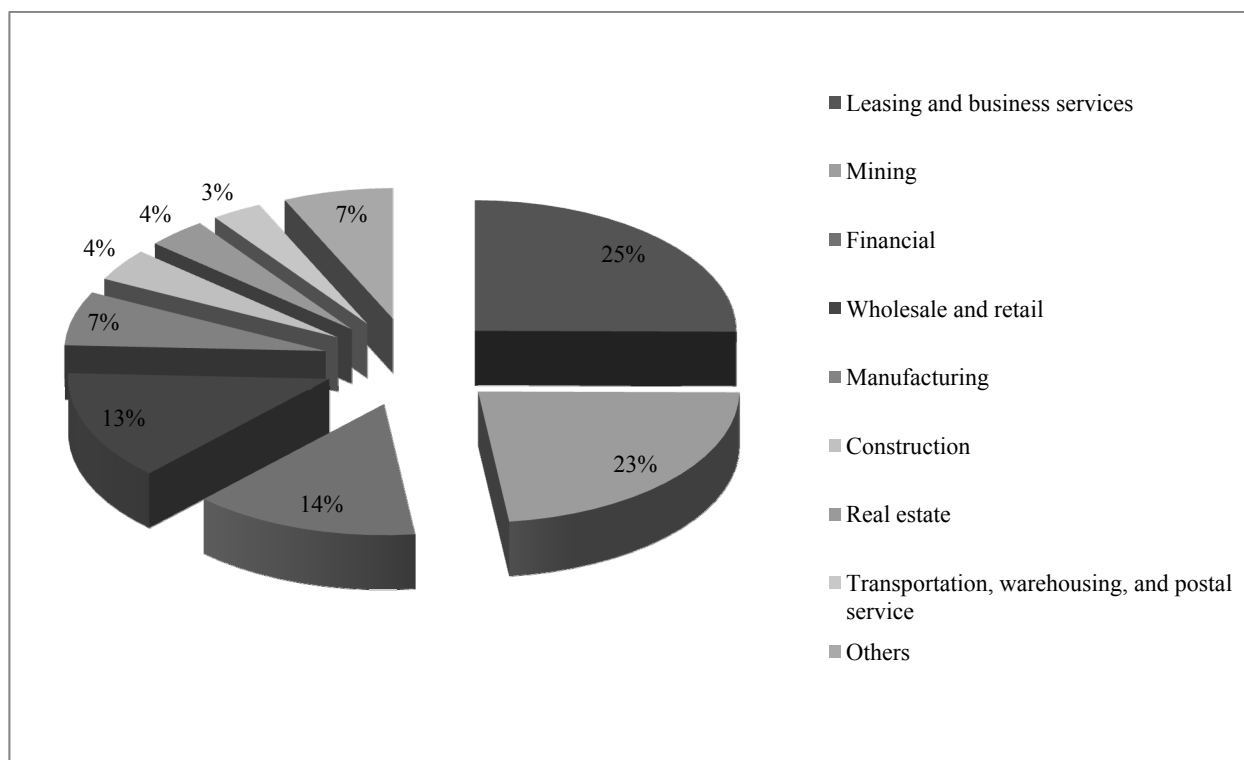


Figure 1. The industry distribution of China's OFDI flow in 2013 (\$ billion). Source: China's Ministry of Commerce (2013).

China's OFDI towards developing economies increases rapidly, while it towards transition economies falls sharply. The OFDI flow towards developing economies in 2013 is 91.73 billion dollars, accounting for 85.1% with an increase of 31%. While it towards transition economies is 2.28 billion dollars, accounting for 2.1% with a decrease of 46.8%. Also the stock towards developing economies is accounting for nearly 80%. Figure 2 shows the OFDI flow of the major countries in the world in 2013.

The focus of the world economics is shifting from the developed countries to the emerging economies and the emerging economies will play a more and more important role in the global economy. Since the beginning of 21st century, the economy of many emerging countries has experienced 10-year strong and sustainable development, some emerging economies are constantly shrinking the income gap with the developed countries. Strong growth leads to a huge improvement in the citizens' living conditions and the growth of the household consumption in these countries is far ahead of other countries in the world. At the same time, international investment to these economies keeps growing and it will promote an effective economic integration of the emerging economies and the global economy.

China and emerging economies have important connections. On one hand, the dependence of China's economic development on the emerging economies is further improved. E23¹ has become China's important export market. In 2011, the 18% of the export of goods in China are flowing to E23, while 19% to the EU, 17% to the United States, and 8% to Japan. Compared with 2001, the proportion of E23 in 2011 increased by nine

¹ E23 is the emerging countries list according to IMF. Except for China, it contains 23 countries (Argentina, Brazil, Bulgaria, Chile, Colombia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Romania, Russia, South Africa, Thailand, Turkey, Ukraine, and Venezuela).

percentage points, while the United States and Japan decreased by three and nine percentage points respectively. On the other hand, the dependence of the emerging economies' economic development on China will be also improved. China has become an important buyer of the emerging economies' resource products. During the same period, China's proportion of Indian and Russian primary products export market also increased more than doubled. The most significant connection is that the infrastructure of the emerging economies implies a huge investment opportunity. In order to solve the problem of poor infrastructure, many emerging economies have developed large-scale investment plans. The government of India is planning to invest about 1.2 trillion dollars to build infrastructure from 2012 to 2017 and South Africa plans to invest 0.465 trillion dollars in infrastructure from 2012 to 2027. Due to the large financing gap, the emerging economies are active in foreign investment. China's FDI in the emerging economies is increasing rapidly. The establishment of Asian Infrastructure Investment Bank means that China will further strengthen the infrastructure investment in the emerging economies, especially the emerging economies in Asia. Table 1 shows the top 20 countries and areas to which China's OFDI flows.

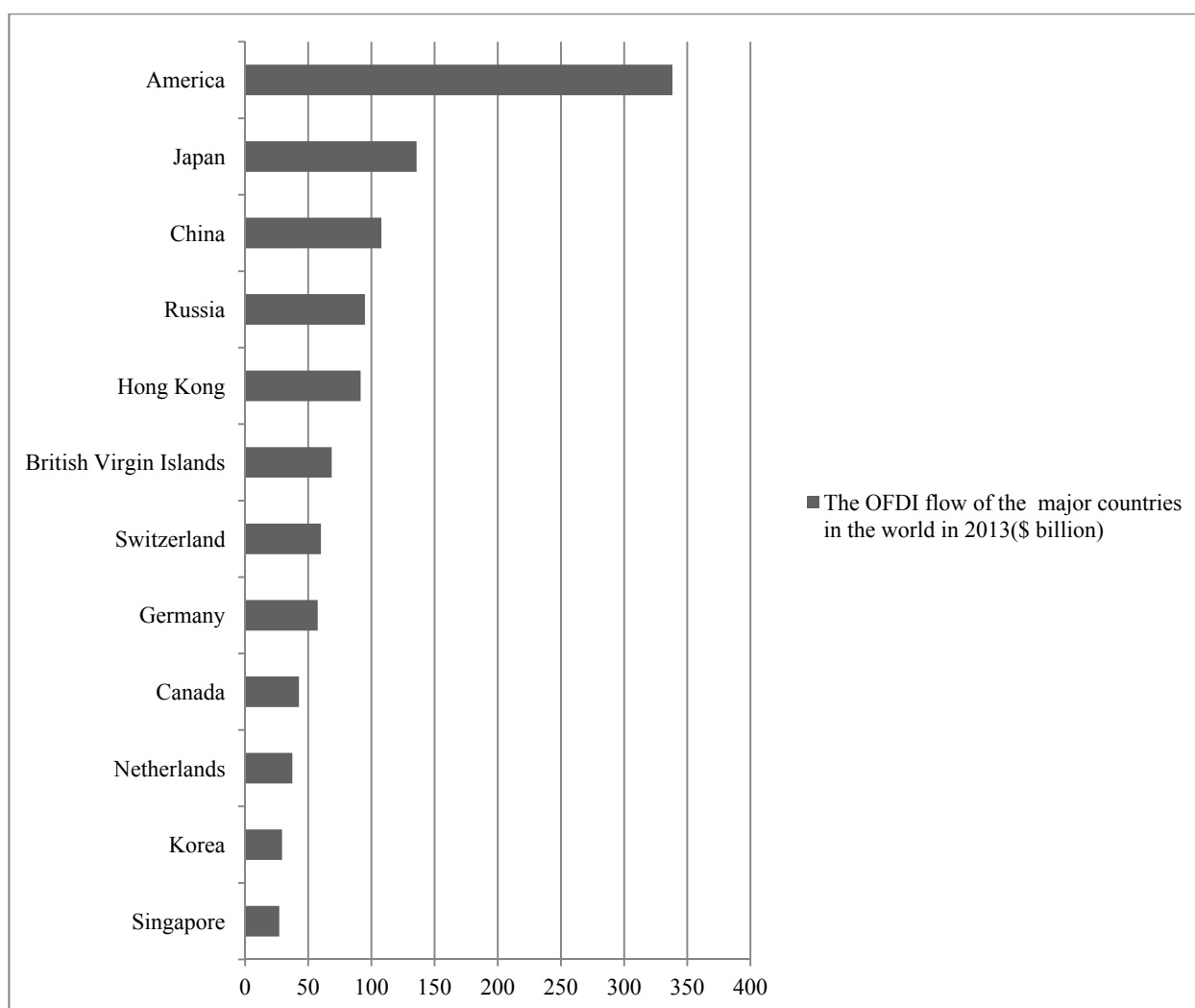


Figure 2. The OFDI flow of the major countries in the world in 2013 (\$ billion). Source: China's Ministry of Commerce (2013).

Table 1

The Top 20 Countries and Areas to Which China's OFDI Flows

Serial number	Countries and areas	Flow (billion dollars)	Proportion (%)
1	Hong Kong	62.824	58.3
2	The Cayman Islands	9.253	8.6
3	The United States	3.873	3.6
4	Australia	3.458	3.2
5	The British Virgin Islands	3.222	3.0
6	Singapore	2.033	1.9
7	Indonesia	1.563	1.5
8	The United Kingdom	1.42	1.3
9	Luxembourg	1.275	1.2
10	Russia	1.022	0.9
11	Canada	1.009	0.9
12	Germany	0.911	0.8
13	Kazakhstan	0.811	0.8
14	Laos	0.781	0.7
15	Thailand	0.755	0.7
16	Iran	0.745	0.7
17	Malaysia	0.616	0.6
18	Zimbabwe	0.518	0.5
19	Kampuchea	0.499	0.4
20	Vietnam	0.481	0.4
Total		97.069	90.0

Source: China's Ministry of Commerce (2013).

In terms of risk, on one hand, exchange rate risk affects China's OFDI. Exchange rate risk refers to the possibility of economic losses to the foreign investors caused by the uncertainty of exchange rate fluctuations. With the expansion of the scale of China's OFDI, the exchange rate risk has a great effect on China's firms' strategic choice. Especially after the exchange rate system reform on July 21st, 2005, China began to carry out the floating exchange rate system and this has enhanced the exchange rate volatility of RMB. So exchange rate risk will become an important factor in Chinese firms' foreign investment strategy. On the other hand, as a non-market uncertainty, political risk has a significant effect on China's OFDI. Political risk refers to the possibility of economic losses to the foreign investors caused by the political events of the host country or the changing of political relationship between the host country and the investor. As the political risk in the international investment has the characteristics of wide coverage, strong influence, complexity, and changeability, it tends to cause huge losses to the foreign investors. In general, the study of exchange rate risk and political risk will be of great significance to China's OFDI strategy.

In this paper, authors adopt the "generalized method of moments" model to investigate the effect of the exchange rate on China's OFDI into the emerging economics. They would like to explore two main issues. First, how does exchange rate (including level, volatility, and expectation) affect China's OFDI in the emerging economics? Second, how does emerging economics' political environment affect China's OFDI?

This paper is organized as follows: Section 1 patterns the features of China's OFDI; section 2 reviews the relevant theoretical and empirical literature; section 3 describes data and variables; section 4 presents the

empirical model; section 5 presents empirical results and discussions; section 6 presents robustness checks; and section 7 concludes.

Literature Review

There is a vast amount of literature about exchange rate and political risk effects on OFDI.

In terms of exchange rate level, most theoretical prediction is that home country's currency appreciation will have a positive effect on OFDI due to capital market imperfection (Blonigen, 1997) and relative wealth effect (Froot & Stein, 1991). In spite of this, Wan (2010) found that the real exchange rate of RMB appreciation has a certain degree of negative influence on FDI. Udomkerdmongkol, Morrissey, and Görg (2009) investigated the effect of exchange rates on US FDI flows to 16 emerging market countries and found that a cheaper currency attracts FDI. Schmidt and Broll (2009) empirically analyzed the impact of exchange rate on US FDI and found that a real appreciation of host country currency (that is a real depreciation of investment country currency) was associated with higher FDI flows. Lee (2015) examined the short- and long-run dynamic relationships between exchange rate level and FDI in Korea and found that a change in exchange rates negatively affects FDI flows in the long run, while in the short run, there is reciprocal feedback between the two variables.

There are different views of exchange rate volatility's effect on OFDI in both theoretical and empirical literature. There are three main theoretical arguments about the exchange rate volatility. First, according to the analysis on the optional theory, Darby model (Dixit & Pindyck, 1994) shows that the volatility's effect is uncertain. Second, the theory of flexible production by Goldberg and Crockett (1998) shows that MNCs (Multinational Corporations) adjust production to reply exchange rate volatility. Third, the theory of risk aversion indicates that only when the MNCs' prospective earnings can make up the cost and the risk caused by exchange rate volatility, they could carry out FDI. About this, there are two views: On one hand, foreign investors tend to postpone the investment due to the effect of risk aversion (Campa, 1993; Dixit, 1989); on the other hand, if uncertainty is correlated with export demand shock in the market that MNCs intend to serve, then risk-averse firms would tend to increase FDI (Goldberg & Kolstad, 1994). From the empirical, Bénassy-Quéré, Fontagné, and Lahrière-Révil (2001) found that exchange rate volatility of the developing countries goes against FDI of OECD (Organisation for Economic Co-operation and Development) countries to the developing countries. Udomkerdmongkol et al. (2009) found that exchange rate volatility discourages FDI of US in emerging countries. However, Takagi and Shi (2011) found that exchange rate volatility has a positive impact on Japanese FDI to nine Asian countries. While Görg and Wakelin (2002) found that the relationship between USA's FDI and exchange rate volatility is not significant.

The exchange rate expectation is believed to be another indicator to affect OFDI. Studies about this are identical in most instances. Takagi and Shi (2011) suggested that expectation of yen appreciation should discourage Japanese FDI. Chakrabarti and Scholnick's findings (2002) of US FDI flows to OECD countries for a period from 1982 to 1995 also show that expectation of US dollar appreciation discourages FDI. Deseatnicov and Akiba (2011) showed that Japanese MNCs positively respond to an increase of Yen depreciation's expectation, due to a possible higher value of future repatriated profits. Udomkerdmongkol et al. (2009) found that expected devaluation implies that FDI of US is postponed in emerging countries. Schmidt and Broll (2009) empirically analyzed the impact of exchange rate on US FDI and found that expectations about an appreciation show a negative result.

In addition, political environment, including government stability, internal and external conflict, corruption and ethnic tensions, law and order, democratic accountability of government, and quality of bureaucracy, is highly significant determinant of foreign investment inflows (Busse & Hefeker, 2007). Most studies indicate that political stability may have a positive effect on the incoming FDI (Busse & Hefeker, 2007; Hayakawa, Kimura, & Lee, 2011; Wei, 2000). Also, the high sunk cost of FDI is associated with uncertainties, including the political uncertainty, and makes investors highly sensitive in their investment decisions (Walsh & Yu, 2010). Although it has been argued that political instability in the host country could discourage the inflow of FDI and most of the empirical studies support this argument, some empirical evidence suggest that political factors play an insignificant role in firms' decision to invest abroad (Wang & Swain, 1997; Andresosso-O'Callaghan & Wei, 2003).

Data and Definitions of Variables

This paper mainly investigates the effect of the exchange rate level, volatility, expectation, and the political environment on China's OFDI in the emerging economies from 2003 to 2013, utilizing panel data extracted from the World Bank, the International Monetary Fund, the World Integrated Trade Solution, ICRG (International Country Risk Guide), China's Ministry of Commerce, China's National Development and Reform Commission, and other databases. Pooled across the 11 years, there are 228 observations from 56 host countries.

After analyzing the characteristics of China's OFDI and reviewing the theoretical and empirical literature, authors finally select nine variables, including real FDI (divided by CPI—consumer price index), real GDP (gross domestic product) (divided by CPI), political environment², openness, real wage (divided by CPI), real interest rate, the mean of real exchange rate, the var of real exchange rate, and the skewness of real exchange rate. Table 2 summarizes the definitions of all the variables.

Table 2

The Description of the Variables and Sources

Name	Description	Unit	Source (2003-2013)
Real FDI	China's outward foreign direct investment to the emerging economies	Current price (US\$ millions)	Department of commerce of China
CPI	Consumer price index	Index, 2010 = 100	IMF IFS statistics
Real GDP	Real gross domestic product	constant 2005 US\$	World Bank
PE	The political environment	International country risks index	International Country Risk Guide
Openness	Openness in constant prices	Constant prices, ratio of the sum of imports and exports to GDP	Penn World Tables
Real wage	National income per capita	US\$/capita	IMF WEO statistics
Real interest rate	Real interest rate in the host country	%	World Bank
Mean of real exchange rate	Yearly REER divided by CPI average	First moment of *year $t - 1$ and t	IMF IFS statistics
Var of real exchange rate	Yearly REER divided by CPI standard deviation	Second moment of * year $t - 1$ and t	IMF IFS statistics
Skewness of real exchange rate	Yearly REER divided by CPI skewness	Third moment of *year $t - 1$ and t	IMF IFS statistics

Note. * The formula is (host country currency/host country CPI)/(RMB/China CPI); IMF is International Monetary Fund; IFS is International Financial Statistics; and WEO is World Economic Outlook.

² Political environment is a composite index of government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religion in politics, law and order, ethnic tensions, democratic accountability, and bureaucracy quality.

Empirical Model

“Generalized method of moments” analysis is used to find out the effect of exchange rate and political risk on China’s OFDI in the emerging economies. Authors took logarithm for real FDI (divided by CPI), real GDP (divided by CPI), and the mean of real exchange rate. The basic model for “generalized method of moments” is in a reduced form as:

$$Y_{it} = \delta Y_{it-1} + \beta X'_{it} + \varepsilon_{it} \quad (1)$$

where Y_{it} is the logarithm of OFDI from China to an emerging “economy i ” at time t ; Y_{it-1} is a lagged dependent variable, which is the logarithm of OFDI from China to an emerging “economy i ” at time $t - 1$; δ is a scalar; X'_{it} means an $(1 \times k)$ vector of exogenous variables which vary in the cross-section and in the time dimension; and ε_{it} is a stochastic error term, which is assumed to be uncorrelated over all i and t .

Authors estimate the following model for the samples of all 56 countries:

$$\begin{aligned} (\text{LOG_REAL_FDI_CPI})_{it} = & \delta(\text{LOG_REAL_FDI_CPI})_{it-1} + \beta_1 \text{LOG_GDP_CPI}_{it} + \\ & \beta_2 \text{PE}_{it} + \beta_3 \text{OPENNESS}_{it} + \beta_4 \text{REAL_WAGE_CPI}_{it} + \beta_5 \text{RIR}_{it} + \beta_6 \text{LOG_MEANR}_{it} + \\ & \beta_7 \text{VARR}_{it} + \beta_8 \text{SKEWR}_{it} + \varepsilon_{it} \end{aligned} \quad (2)$$

Authors perform a panel data analysis to examine possible heteroscedasticity, autocorrelation, and endogeneity. The panel data set consists of a cross-section dimension (56 economies: $i = 1, \dots, N$), and a time dimension (11 periods: 2003-2013: $t = 1, \dots, T$). The total number of observations in this context is 228 for all economies and this vast data set is enough to produce robust estimations for the scope of the analysis.

According to the paper written by Desatnicov and Akiba (2011), authors selected the empirical approach. They used the “generalized method of moments” estimator proposed by Arellano and Bond (1991) to avoid the problems caused by heteroscedasticity, autocorrelation, and endogeneity. As their estimator is set up, authors use first differences to eliminate the fixed effects. Then, “generalized method of moments” style instruments are used as proposed by Holtz-Eakin, Newey, and Rosen (1988) to account for possible endogeneity of the explanatory variables. Under this criterion, all the regressions are robust.

Empirical Results and Discussions

Table 3 shows the result of “generalized method of moments” model of the equation (2).

According to these empirical results, some interesting features can be found. Then some explanations and discussions about the results will be given.

The Effects of Political Environment on Chinese OFDI in Emerging Economies

The coefficient β_2 is negative and statistically significant. It means that China’s firms are political risk lovers. It can be inferred that the good political environment of the emerging economies discourages China’s OFDI. Since the composite index political environment is constructed with 12 different qualitative components (there are government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religion in politics, law and order, ethnic tensions, democratic accountability, and bureaucracy quality), they may have different effects on China’s OFDI. The total effect can be explained as follows: First, the country or the area whose political environment index is high has good government stability, so that it will protect its native firms and resist foreign investment. This will decrease China’s OFDI in emerging economies. Second, political environment index is high, which may mean that the country’s or the area’s socioeconomic is advanced, so that it does not need other countries’ investment. Third,

the country or the area whose political environment index is low may mean that its legal system is not perfect, especially the law of tax, and it can attract many foreign firms to evade tax, such as Virgin Islands, the Cayman Islands, and Panama.

Table 3

Political Environment and Financial Risk Effects on Chinese OFDI in Emerging Economies, 56 Countries

Variable	Coefficient	Std. error	t-statistic	Prob.
LREAL_FDI_CPI (-1)	0.019960	0.074219	0.268936	0.7882
LGDP_CPI	-1.356428	0.917146	-1.478966	0.1406
PE	-0.096928	0.043641	-2.221048	0.0274
OPENNESS 1	0.897078	0.202912	4.421019	0.0000
REAL_WAGE_CPI	0.021525	0.011371	1.892959	0.0597
RIR	-0.024638	0.016746	-1.471323	0.1426
LMEANR	-9.217513	2.144174	-4.298865	0.0000
VARR	-0.027990	0.006788	-4.123289	0.0001
SKEWR	-0.068150	0.125116	-0.544696	0.5865
Effects specification				
Cross-section fixed (first differences)				
Mean dependent var	0.427972	S.D. dependent var		1.319669
S.E. of regression	1.798303	Sum squared resid		708.2230
J-statistic	29.20761	Instrument rank		36

The Effects of Exchange Rate Level and Expectation on Chinese OFDI in Emerging Economies

The coefficient β_6 and β_8 are negative and statistically significant. It means that RMB depreciation and the expectation of RMB depreciation will increase China's OFDI. This result is same with Campa's findings (1993). Some explanations on this result can be given. First, China's OFDI in emerging economies is the long-term investment and it is market oriented. Second, the overseas investment strategy of the MNCs depends on the expectation of the future profit. If a host country's currency appreciates, the expectation of the future profit of this country is high and the host country will attract more inward FDI. The depreciation of the host country will have the opposite effect. It can be seen that the appreciation of the host country's currency means the depreciation of the investment country, so the depreciation of RMB may encourage China's OFDI in the emerging economies. Another explanation of this result is that some of China's firms FDI strategy is to get the repatriate profit. They get the profit measured by the host country's currency and will exchange it into RMB. If RMB depreciates, they will get more profit, so the depreciation of RMB may encourage China's OFDI in the emerging economies.

The Effects of Exchange Rate Volatility on Chinese OFDI in Emerging Economies

The coefficient β_7 is negative and statistically significant. The exchange rate volatility discourages China's OFDI. It means that China's firms are financial risk averters. They do not like to invest in emerging economies at the risk of exchange rate. There are some explanations about this. First, the uncertainty investment theory created by Dixit and Pindyck (1994) shows that the high exchange rate volatility increases the cost of collecting information, the firms have to spend more on collecting global information to control the risk caused by the exchange rate volatility, so the firms will decrease the FDI. Second, according to Bénassy-Quere et al. (2001), the high exchange rate volatility may offset the profit to some degree, so the firms will decrease the FDI.

Robustness Check

As a robustness check, the least squares analysis is used to find out the effect of exchange rate and political risk on China's OFDI in 56 emerging economies from 2003 to 2013. Table 4 presents the results. The stationary test using Augmented Dickey-Fuller Test has already been done and Tables 5-7 show the results that the variables are stationary at level, so the least squares estimation can be run.

The coefficient for the exchange rate expectation is positive but not statistically significant.

Table 4

Political Environment and Financial Risk Effects on Chinese OFDI in Emerging Economies, 56 Countries (Robustness Check)

Variable	Coefficient	Std. error	t-statistic	Prob.
C	-52.08487	9.815013	-5.306654	0.0000
LGDP_CPI	4.257503	0.603671	7.052690	0.0000
POLITICAL ENVIRONMENT	-0.097281	0.037169	-2.617272	0.0093
OPENNESS1	0.430880	0.091298	4.719503	0.0000
REAL_WAGE_CPI	-0.017302	0.004031	-4.291773	0.0000
RIR	0.005026	0.028862	0.174151	0.8619
LMEANR	-1.789105	0.905289	-1.976282	0.0491
VARR	-0.016633	0.005784	-2.875831	0.0043
SKEWR	0.002244	0.081901	0.027393	0.9782

Table 5

The List of Countries and Areas Used in the Paper

The emerging economies (56 countries and areas)
United Arab Emirates (ARE), Argentina (ARG), Bangladesh (BGD), Bulgaria (BGR), Bahamas (BHS), Belarus (BLR), Brazil (BRA), Brunei Darussalam (BRN), Botswana (BWA), Chile (CHL), Colombia (COL), Cuba (CUB), Cayman Islands (CYM), Czech Republic (CZE), Algeria (DZA), Egypt (EGY), Fiji (FJI), Gabon (GAB), Equatorial Guinea (GNQ), Hong Kong SAR (HKG), Hungary (HUN), Indonesia (IDN), India (IND), Iran (IRN), Jamaica (JAM), Kazakhstan (KAZ), Korea Rep. (KOR), Libya (LBY), Macao SAR (MAC), Mexico (MEX), Mauritius (MUS), Malaysia (MYS), Namibia (NAM), Nigeria (NGA), Oman (OMN), Pakistan (PAK), Panama (PAN), Peru (PER), Philippines (PHL), Poland (POL), Qatar (QAT), Romania (ROU), Russian Federation (RUS), Saudi Arabia (SAU), Singapore (SGP), Suriname (SUR), Turkey (TUR), Uruguay (URY), St. Vincent and the Grenadines (VCT), Venezuela RB (VEN), Virgin Islands (US) (VIR), Vietnam (VNM), Samoa (WSM), South Africa (ZAF), Zambia (ZMB)

Table 6

Summary Statistics

	Mean	Median	Maximum	Minimum	Std.Dev.	Observations
LREAL_FDI_CPI	7.4313	7.528355	12.75542	0.750654	2.332251	327
LGDP_CPI	16.41858	16.66944	19.26335	12.314	1.504191	327
POLITICAL ENVIRONMENT	66.92877	67.54167	85.125	41.54167	10.00921	327
OPENNESS1	0.516458	0.059034	12.99777	0.029708	1.329452	327
REAL_WAGE_CPI	98.67464	71.34172	997.9465	0	118.3398	327
RIR	1.06853	-0.15554	5.952353	-2.27698	2.517385	327
LMEANR	1.276827	0.342823	8.213234	-2.84353	2.62204	327
VARR	6.727998	0.117878	161.7758	0.000683	24.00342	327
SKEWR	0.24028	0.246263	2.115173	-2.29696	0.707463	327

Table 7

The Result of Group Augmented Dickey-Fuller Test

Method	Statistic	Prob.
ADF-Choi Z-stat	-16.8715	0.0000

So it does not make any effect on the result before that the expectation of RMB depreciation encourages China's OFDI. So from the robustness check, it can be seen that the imperfect political environment, RMB's depreciation, low exchange rate volatility, and the expectation of depreciation may encourage China's OFDI in emerging economies. So it can be confirmed that the results of Generalized method of moments estimation are consistent.

Conclusions

This paper empirically analyzed China's firms OFDI with a panel data of 56 emerging economies for the period from 2003 to 2013. According to the empirical model, many indicators are selected to find the effect of the political risk and financial risk, namely political environment index, exchange rate level, exchange rate volatility, and exchange rate expectation.

First, political environment has a negative effect on China's OFDI. It means that high political environment index discourages China's firms OFDI in emerging economies. The high government stability, the high socioeconomic conditions, and the perfect legal system may decrease China's OFDI in emerging economies.

Second, the depreciation of RMB may encourage China's OFDI in emerging economies.

Third, because in terms of exchange rate risk, China's firms are mainly risk averters, high exchange rate volatility will decrease China's OFDI.

Finally, skewness as the indicator of the exchange rate expectation suggests that the expectation of RMB depreciation encourages China's OFDI.

The robustness check further confirmed the "generalized method of moments" estimation, so this paper concluded that China's FDI can be explained by the independent variables. It is found that political risk and financial risk are really associated with China's OFDI in emerging economies. These findings may be useful for Chinese government's decision making in the "going-out strategy".

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