Frontiers in Economics and Management Volume 5 Issue 2, 2024
ISSN: 2692-7608 DOI: 10.6981/FEM.202402_5(2).0017

How Does Anti-corruption Affect Foreign Direct Investment: An Empirical Study based on Panel Data of Prefecture-level Cities

Zixuan Zhou[1], Xinyi Liu[2], Ying Zheng[3], and Mengqin Liu[1]

[1] School of International Economics and Trade, Anhui University of Finance and Economics, Bengbu 233030, China

[2] School of Business Administration, Anhui University of Finance and Economics, Bengbu 233030, China

[3] School of Finance, Anhui University of Finance and Economics, Bengbu 233030, China

Abstract

China has entered a period of high-quality development, and the field of foreign direct investment has also changed from the pursuit of scale effect to the pursuit of high-quality development. The impact of anti-corruption on foreign direct investment has also received more and more attention. This paper analyzes the status of anti-corruption and foreign direct investment in China's prefecture-level cities through field research and literature review, and briefly analyzes the relationship between the two with theory. Then, the panel data of anti-corruption and FDI in China's prefecture-level cities from 2003 to 2021 is adopted. Among them, the anti-corruption degree is measured based on the big data of 148,008 judgments of duty crime cases (as of December 31, 2021) collected on the Internet of China's judgment Documents and the multi-period large sample (total sample size 502,689) national corruption survey data. Using natural language processing, dynamic and static panels, system GMM, instrumental variables, differential analysis and other measurement methods to establish an econometric model, empirically analyze the mechanism of the influence of anti-corruption on foreign direct investment, draw conclusions and put forward policy recommendations for China's foreign direct investment, which has theoretical and practical significance for the high-quality development of China's foreign direct investment.

Keywords

Foreign Direct Investment; Anti-corruption; Impact; Panel Data.

1. Introduction

Since the 18th National Congress of the CPC, China's fight against corruption has won an overwhelming victory and been comprehensively consolidated. It has made important contributions to promoting a more transparent business environment and helping to shape a more law-based market economy, and its continued spillover effect has greatly boosted the confidence of foreign investors in China. China's experience shows that, to a certain extent, anti-corruption promotes the development of FDI. The research of this subject is of great practical significance based on how to further maintain the market order and provide a more fair and honest investment environment for foreign investment. Only by clarifying the mechanism of the influence of anti-corruption on foreign direct investment, can we formulate more effective macro policies for China, take correct measures against corruption, and promote the steady growth of foreign direct investment.

First, from the perspective of anti-corruption, to provide different perspectives for the debate on whether corruption is a "sand'' or a "lubricant". Corruption is a "sand" because it destroys a fair market environment, leads to resource misallocation and limits foreign direct investment.

ISSN: 2692-7608 DOI: 10.6981/FEM.202402_5(2).0017

And corruption is the "lubricant", because anti-corruption and the subsequent publication of anti-corruption cases may deter investors, because it reflects the complexity of the investment environment. Secondly, with the frequent exposure of transnational corporations involved in corruption cases in recent years, some scholars believe that corruption has gradually become an unspoken rule for the survival of foreign companies, and anti-corruption measures are not conducive to the development of some transnational corporations that have adapted to the corruption rules of the host country. Therefore, these scholars believe that corruption is the "lubricant" of foreign direct investment, and anti-corruption will restrict the development of foreign direct investment. The debate about corruption and how anti-corruption affects FDI has gradually attracted wide attention and become an important topic for scholars to study. Thestudy of this topic will also enrich the academic discussion on the factors affecting FDI.

Secondly, based on the big data of 148,008 judgments of duty crimes cases collected on China's Judgment Documents Website (as of December 31, 2021) and multi-period large sample (total sample size 502,689) national corruption survey data, natural language processing is used to quantify anti-corruption indicators, and static panel and dynamic panel measurement equations are established. Using system GMM, instrumental variables, differential and other methods to empirically analyze how anti-corruption affects foreign direct investment, and provide policy suggestions for the sustainable and healthy development of foreign direct investment in China.

2. Research on the Impact of Anti-corruption on Foreign Direct Investment

Compared with the impact of corruption on foreign direct investment, the literature on the relationship between anti-corruption and foreign direct investment is relatively small. At present, research on anti-corruption is mainly focused on economic growth, productivity and income distribution. Gao Yuan (2010) used provincial panel data from 1988-2004 to measure anti-corruption efforts by the number of cases of graft and malfeasance. The empirical results show that the more anti-corruption efforts, the greater the inflow of foreign direct investment in China, that is, corruption is not the lubricant of FDI inflow, in order to attract multinational enterprises to invest in China, we must unswervingly implement the anti-corruption policy. Huang Siyu and Hu Wenqiong (2016) quantitatively analyzed the relationship between anti-corruption and FDI using the panel data of 31 provinces in China from 2002 to 2013, and found that there is a relatively obvious positive correlation between anti-corruption and FDI, and FDI is more sensitive to the intensity of anti-corruption in a country. At the same time, by adding the square term of anti-corruption to the regression equation, it is verified that there is no "U-shaped" relationship between anti-corruption and FDI. Wang Feng et al. (2018) used China's provincial panel data from 2000 to 2014 to study how anti-corruption affects economic growth. They believe that the direct introduction of corruption as an explanatory variable in previous economic growth models may be endogenous, and in order to solve the endogenous problem of models, a dynamic panel difference model should be built. The results show that the degree of corruption affects the relationship between anti-corruption and economic growth. When the level of corruption is low, the government's aggressive anti-corruption actions will promote economic growth. When the corruption problem is very serious, the anti-corruption action can not have a significant inhibiting effect on the corruption phenomenon, and in this case, the anti-corruption will inhibit economic growth. However, a sustained and vigorous anti-corruption campaign over a long period of time can reduce corruption and prevent corruption from growing at its source, gradually turning the market into a state of free competition and promoting long-term and stable economic growth.

ISSN: 2692-7608 DOI: 10.6981/FEM.202402_5(2).0017

3. Econometric Model Construction and Data Explanation

3.1. Model Setting

The anti-corruption data and FDI panel data of China's prefecture-level cities from 2003 to 2021 were used to measure the level of foreign direct investment (FDI) with the annual FDI actual utilization amount of prefecture-level cities, and the number of judgments of duty crimes cases (cases) of prefecture-level cities were taken as the core variable to measure the degree of anti-corruption. Select the infrastructure construction level (road), education expenditure (edu), per capita GDP(pgdp), labor cost (lab), gross industrial output value (ind) and other variables of each prefecture-level city as other variables X of FDI influencing factors, and establish the static panel and system GMM dynamic panel measurement equations:

$$\ln\left(FDI_{i,t}\right)=\beta_0+\beta_1\ln\ \left(cases_{i,t}\right)+\boldsymbol{\beta}_2^{'}\boldsymbol{X}_{i,t}+\delta_i+\tau_t+\varepsilon_{i,t} \tag{1}$$

$$\ln\left(FDI_{i,t}\right)=\beta_0+\beta_1\ln\left(FDI_{i,t-1}\right)+\beta_2\ln\ \left(cases_{i,t}\right)+\boldsymbol{\beta}_3^{'}\boldsymbol{X}_{i,t}+\delta_i+\tau_t+\varepsilon_{i,t} \tag{2}$$

In the formula, i and t represent sample individuals and periods respectively; FDli,t is the actual utilization amount of FDI in each prefecture-level city each year to measure the level of foreign direct investment; cases are the number of verdicts of duty crimes in prefecture-level cities; X is other control variables affecting FDI; δ_i And τ_t represent fixed effects of region and time respectively; $\varepsilon_{i,t}$ is a random disturbance term.

The explained variable. We use the FDI data of 31 provinces in the range from 2002 to 2021 and convert them into RMB, in one billion yuan

Core explanatory variable. In this paper's econometric model, the quantification of anti-corruption policies is a key one. There are different ways to measure this variable in various literatures on corruption. After comprehensively considering the availability and quantification of data, the anti-corruption intensity in this paper is finally determined to be measured by the number of corruption cases in each province.

Control variables. First, the degree of infrastructure construction (road). Good infrastructure construction can reduce the cost of foreign investment and strongly attract FDI inflows. Different literatures use different instrumental variables. Generally, there are quantitative methods such as the proportion of electricity, communication, energy and transportation in GDP. In the actual data search process, it is difficult to collect indicators such as power and communication. Finally, we can find the expressway mileage of each province in the corresponding year from the China Expressway Network to quantify infrastructure. The unit is one hundred kilometers.

Second, education expenditure (edu). Education expenditure reflects the quality of labor force by reflecting the degree of emphasis on education in a region. With the upgrading of industry, foreign-funded enterprises have higher requirements for the quality of labor force. Generally speaking, the higher the quality of the labor force in a region, the stronger the ability to attract FDI. The unit is one billion yuan.

Third, per capita GDP(pgdp). GDP is a comprehensive reflection of regional economic environment, and its development determines the average income level of the market. The more developed places should attract more investment by virtue of their own economic strength, and the unit is 10,000 yuan.

Fourth, labor cost (lab). Labor cost measures the intensity of attracting FDI in a region, and the relationship between the two should be inversely proportional. The higher the labor cost, the

ISSN: 2692-7608 DOI: 10.6981/FEM.202402_5(2).0017

lower the profits of enterprises, and the corresponding foreign direct investment will also decrease. We use labor compensation/number of employees to measure the labor cost of a region in 10,000 yuan.

Fifth, the gross industrial output (ind). A large proportion of foreign direct investment is in the industrial sector. Theoretically, the development of regional industry can attract more FDI. Due to the lack of data on the gross industrial output value in the Statistical Yearbook and the National Research network and other databases, we found the gross industrial output value of 31 provinces from the corresponding year's China Industrial Economic Statistical Yearbook. The unit is 10 billion yuan.

3.2. Sample Selection and Data Source.

The sample selected panel data of 31 provinces in China from 2003 to 2021 as the research object, and some data were missing, thus forming an unbalanced panel data. The data of relevant variables came from China Statistical Yearbook and databases such as China Research Network and China Economic Network.

4. Analysis of Regression Results

4.1. Full Sample Regression.

For the sample containing 31 provinces, stata12.0 was used to calculate the processing of the point fixed mold when the software was running. Table 1 is the result of the mold regression:

Table 1. Model regression results

Variables	Full sample regression	Eastern Region	Midwest Region
lnamount	0.533 ***	0.622 * * *	0.501 * * *
	(0.118)	(0.122)	(0.137)
road	0.015 *	0.005	0.008
	(0.006)	(0.005)	(0.007)
edu	0.054 * * *	0.004	0.048 * * *
	(0.006)	(0.006)	(0.009)
pgdp	0.512 * * *	0.322 * * *	0.977 * *
	(0.156)	(0.088)	(0.376)
lab	0.003	0.005	0.217
	(0.086)	(0.035)	(0.201)
ind	0.005 * * *	0.001	0.005 * * *
	(0.001)	(0.001)	(0.001)
cons	1.766 *	0.921 *	0.921 * *
	(0.776)	(0.432)	(0.432)
R^2	0.785	0.814	0.798
obs	262	101	205

Note: Below the coefficient are standard errors, *** means significant at 1% level, ** means significant at 5% level, and * means significant at 10% level.

From the regression results of the model, the coefficient before the variable of filing number is positive and high, and always remains significant at 1% level, indicating that the net effect of anti-corruption work on foreign investment is positive. Anti-corruption can reduce the occurrence of internal transactions and improve investment efficiency. At the same time, it can

ISSN: 2692-7608 DOI: 10.6981/FEM.202402_5(2).0017

reduce unnecessary entry costs for foreign investors and create a fair and transparent market environment, which is more conducive to fair competition for foreign investors. Among other factors, infrastructure, education spending, per capita GDP and FDI are also positively correlated, which is in line with theoretical assumptions. The P-value of labor cost is large in the four regressions and the direction of the coefficient is uncertain, so it is determined that there is no obvious correlation between labor cost and FDI in this model, that is, the influence of regional labor price level on FDI is not obvious. The coefficient of gross industrial output value is negative. One explanation is that with the upgrading of regional industries, the focus of investment of transnational corporations has gradually shifted to the tertiary industry, and the attraction of industry to FDI has decreased. In addition, environmental problems brought by industry may also be unfavorable to attracting foreign investment. Because the coefficient of gross industrial output value is too small, the negative impact on FDI can be ignored, so it is not considered for the time being.

4.2. Sub-sample Regression.

Considering the differences in development levels among regions, the whole sample was divided into eastern and central and western regions for regression analysis, as shown in Table 1. Since there is no unified way to divide east, central and western regions, the data processing in this paper is mainly divided into regions from the perspective of economic development level. The eastern region consists of 10 provinces: Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan, while the remaining provinces are classified as the central and western regions. From the regression point of view of the model, the correlation between anti-corruption and FDI in the eastern region is slightly higher than that in the central and western regions, while the attraction effect of other conditions on FDI is less obvious than that in the central and western regions. Due to the developed economy, factors such as infrastructure and labor quality have been maintained at a high level in the eastern region, so that the further improvement of other conditions has no obvious effect on the attraction of FDI. On the other hand, the intensification of anti-corruption efforts has improved the market investment environment, reduced the hidden costs of transnational corporations, and is conducive to FDI entry. The investment environment in the central and western regions is relatively poor, and the improvement of education level and other conditions can significantly improve the regional economic environment, thus attracting FDI more obviously.

5. Policy Suggestions

5.1. Intensify Anti-corruption Efforts and Improve Power Supervision.

Corruption is still serious in China today. Even though the Party and the government have long raised the banner of anti-corruption, administrative corruption cases are still common. Administrative corruption is a malignant tumor that permeates the political and economic aspects of our country. In order to attract the investment of foreign investors, it is necessary to strengthen the attack and punishment on corruption, restrain the bad influence of administrative corruption on politics and economy, create a fair and just investment environment for foreign investment, and reduce its hidden costs.

5.2. Improve Infrastructure and Reduce Transportation Costs

Infrastructure is the basic condition for a region to develop and attract foreign direct investment. If the infrastructure condition of a region is very imperfect, there is inevitably no investment value. Therefore, in order to attract more foreign investors, it is necessary to improve the construction of local infrastructure and reduce the transportation and operation costs of foreign enterprises. In today's era of rapid economic development, the more the economy develops, the higher the requirements for infrastructure. However, the construction

ISSN: 2692-7608 DOI: 10.6981/FEM.202402_5(2).0017

of infrastructure usually takes a long time, so all regions should improve their infrastructure as soon as possible, lay a solid foundation for economic development, in order to avoid missing the opportunity of foreign investment and development. Of course, infrastructure does not just refer to transportation facilities. Communication facilities, water supply and power supply are also important for attracting foreign direct investment. All regions should make comprehensive and focused improvements based on their actual conditions.

5.3. Raise the Level of Human Capital and Improve the Quality of Workers

Labor is an essential basic element in all production processes, and the improvement of human capital level mentioned here is not only the improvement of education level, but also the improvement of the physical quality of workers. The better education of the workers can improve the dynamic productivity and reduce the production cost. If workers are in better physical condition, they can create more value for the enterprise. Therefore, to attract the interest of foreign investors, it is also important to mention the level of human capital.

Acknowledgments

Fund Projects: 2023 Innovation and Entrepreneurship Training Program for College Students in Anhui Province (S202310378017).

References

[1] Gao Yuan. Anti-corruption and foreign direct investment: China's experience [J]. Southern Economy, 2010,(02):15-27.

[2] Zhou Lingling. Corruption, anti-corruption and Foreign Direct Investment [D]. Central University of Finance and Economics, 2015.

[3] Wang Feng, Yao Shujie, Qu Guangjun. Theoretical mechanism of anti-corruption promoting sustainable and stable economic growth. Economic Research Journal, 2018, 53 (01): 65-80.

[4] Wang Peiwen. The impact of administrative corruption and anti-corruption on Foreign Direct investment [D]. Southwest University of Finance and Economics,2019.

[5] Habib,M and Zurawicki,L. Corruption and Foreign Direct Investment [J]. Journal of International Business Studies, 2002(2): 291-307.

[6] Woo,J.Y and Heo,U. Corruption and Foreign Direct Investment Attractiveness in Asia [J]. Asian Politics and Policy Journal of Economics,2009(2): 223-238.

[7] Ryan,B.Brazilian Judge:Corruption Reform to Increase FDI[J].International Financial Law Review, 2012 (01):30.