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Foreign Direct Investment and Economic Environment—Based on the Evidence of ASEAN Countries

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Abstract: *Using the data onto foreign direct investment and the index of economic freedom, investment freedom, freedom of trade, monetary freedom and commercial freedom, this paper analyses the foreign direct investment in China and the ASEAN countries and five degrees of freedom. The results show that, after eliminate heteroscedastic, commercial freedom, monetary freedom and economic freedom significantly enhance a country's foreign direct investment, freedom to trade and to invest can inhibit foreign direct investment in a country. The 2009 global financial crisis also played a significant role in the impact on economic freedom of foreign direct investment, in which business freedom had a negative effect of a harsh international environment and a difficult domestic economy, while trade freedom was here It has played a positive role in the normal trade, but also eased the domestic economic environment and promoted the inflow of foreign direct investment.On this basis, the relevant policy suggestions of foreign direct investment and economic liberalization in China and ten ASEAN countries are drawn.*

Keywords: *Foreign direct investment, liberalization, stochastic frontier model*

1. Introduction

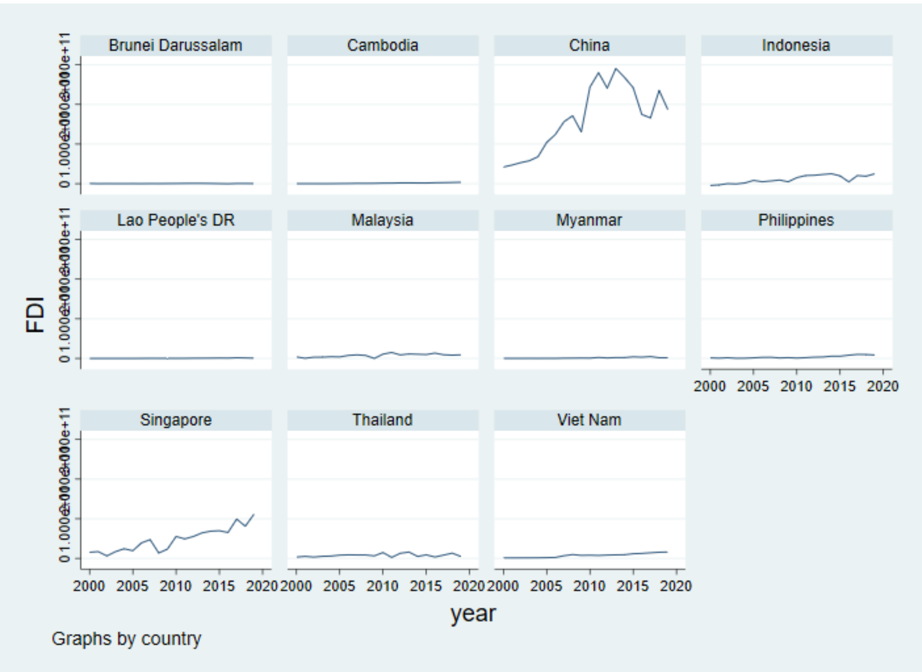

Figure 1: FDI inflow trend chart of China and 10 ASEAN countries from 2000 to 2019

There are ten academic questions about the relationship between foreign direct investment and economic environment of host country. According to the general equilibrium theory of international trade and linking FDI with its determinants, we can find that when the entry barrier of the target market is high, multinational enterprises can avoid trade costs by establishing subsidiary enterprises[1].In this case, the economic freedom, monetary freedom, investment freedom and business freedom of the host

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country will indirectly affect the operating costs of the affiliated enterprises. As far as ASEAN is concerned, Figure 1 shows the change trend of FDI inflow of these 11 countries in the past 20 years. Among them, China, Indonesia and Singapore are three countries with great changes in absolute value. For China, before 2008, China's FDI inflow maintained a relatively steady growth trend, but had a significant decline until 2009. Combined with the international situation, it can be seen that the global financial crisis caused by the US subprime mortgage crisis has a significant impact on China's FDI inflow.

Combined with the economic volume of each country, as shown in Figure 2, the proportion of FDI inflow in GDP of each country had better be kept at a relatively stable level. Excessive fluctuation means that the development of FDI in a country is not coordinated with economic development, and the inflow of FDI cannot be used more efficiently.Among the 11 countries, seven, including China, Indonesia, Malaysia, the Philippines, Thailand, Vietnam and Myanmar, showed a relatively stable trend in the proportion of FDI inflow to GDP, Although Cambodia and Laos have obvious fluctuations in the proportion of FDI inflow to GDP, the overall trend shows an increasing trend. Singapore has a sharp fluctuation in the proportion of FDI inflow of GDP, and the overall proportion is relatively large.

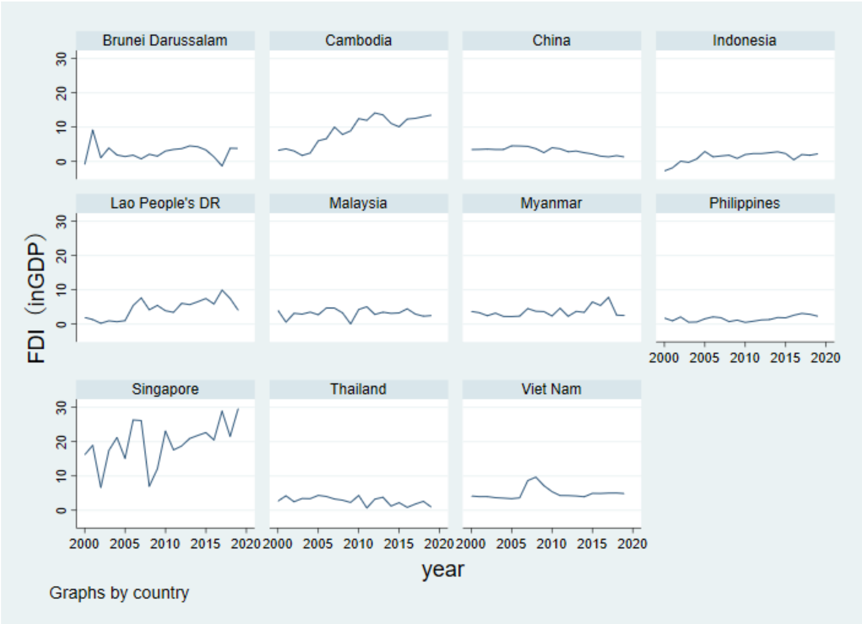

Figure 2: Trend chart of FDI inflow as a share of GDP in China and 10 ASEAN countries from 2000 to 2019

Studies on the degree of freedom related to foreign direct investment and economy mostly focus on institutional factors, trade economic growth, government input and innovation efficiency.To be specific, both traditional economic factors and social system factors (such as economic freedom, political influence, cultural distance and closeness of economic and trade relations) of the host country have an impact on the overseas investment activities of multinational enterprises, social system factors are more important and complex than economic factors in determining the location of OFDI[2].The increase in economic freedom can significantly improve the quality of economic growth, and the effect is more obvious after 2008. However, this effect is heterogeneous between developed countries and developing countries[3].Of countries along the way "to" area as the research Angle of view, which is influenced the trade openness and economic freedom in China and "neighbourhood" all the way along the country's economic growth of the important factors [4], and "neighbourhoods" all the way of the route of the host country economic freedom from China's foreign direct investment has a significant role in promoting[5].On the contrary, the competition for foreign investment in the host country will also significantly improve the economic freedom of the host country[6].At a deeper level, the influence mechanism of FDI and economic freedom is realized through the path of trade inefficiency, which decreases with time[7]. In terms of green technology innovation, economic freedom environment will damage urban green technology innovation, and the degree of damage will gradually increase from time[8].

Based on this, this paper comprehensively considers the relationship between foreign direct investment and economic freedom, trade freedom, monetary freedom, investment freedom and

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commercial freedom in ten ASEAN countries and China. This has important policy implications for grasping the center of gravity of foreign direct investment and economic and social environmental freedom.

2. Theoretical basis

Economic liberalization refers to the removal of government regulations that are not suitable for rapid economic development in exchange for greater participation in individuals or economic groups in social and economic development[9].In the economic activities of individuals or economic groups, it is dominated by its economic environment, so the investment activities of foreign direct investment in the host country will be bound to be restricted by the local economic environment.Specifically, the factors that directly and indirectly affect the economic environment of foreign-invested enterprises included: commercial operation restriction, currency circulation restriction, trade to interflow restriction and investment convenience restriction, which together constitute the economic environment restriction.

The business operation cost of foreign-invested enterprises in the host country is constrained by the business operation environment of the host country. When the business operation unit cost is greater than the unit cost spent to obtain investment benefits of the country, foreign investors will choose not to invest in China.When the business freedom of the host country is improved and the constraints of the business operation are reduced, the cost on the business operation of the host country will be reduced, so as to improve the profit obtained and increase the inflow of foreign direct investment in the host country.

Currency circulation restriction is related to the circulation efficiency of foreign-invested enterprises' capital and international capital. When the currency freedom of the host country is at a high level, the response speed and processing speed of foreign-invested enterprises in the face of risks will also be at a high level, which will greatly improve the survival rate and risk resistance of foreign-invested enterprises.

Trade benefits and investment benefits are the two directions of foreign capital measurement. When trade benefits are too large, it will crowd into the investment power of foreign capital to a certain extent.Therefore, when the trade freedom of the host country increases, it will lead to the reduction of trade barriers and trade costs of the country, so as to obtain more trade benefits, so as to reduce the investment motivation of foreign capital in the host country and reduce the inflow of direct investment in the country.

Convenience of the host country investment constraints will be more reflected on financial financing and disclosure, in the strict investment under the condition of negative list, the greater the degree of freedom of the host country investment more can stimulate people's enthusiasm, thus greatly increased the difficulty of competition in foreign investment and weaken the advantage of foreign identity, thereby reducing the direct investment inflows in the country.

In general, the greater the economic freedom, the more the host country has a more relaxed economic environment. Under the same competition conditions, foreign capital tends to have more technological advantages, so the greater the economic freedom, the lower the cost of survival of foreign-invested enterprises, so as to increase the inflow of foreign direct investment.

3. Design of measurement

3.1. Benchmark panel model

This paper uses a benchmark panel model to analyze the impact on foreign direct investment and five social freedoms in ten ASEAN countries and China. The basic model is as follows:

$$\mathrm{lnFDI_{it}} = \alpha_0 + \alpha_1 \mathrm{Freedom_{it}} + \sum \alpha_j X_{it}^{j} + \mu_{it} \tag{1}$$

Among them, $\mathrm{lnFDI_{it}}$ represents the logarithmic value of foreign direct investment of eleven *countries in year t ;* $Freedom_{it}$ *Represents the five degrees of freedom of eleven countries in year t, They are commercial freedom, monetary freedom, trade freedom, investment freedom and economic* freedom; X_{it}^{j} Represents the control variable, with various price levels in each country as the control variable,That is, the household consumer price level(pl_c), the price level of capital formation(pl_i), the government consumer price level(pl_g), the export price level(pl_x), the import price level(pl_m), and the equity price level(pl_n).

3.2. Data sourcing and processing

In this paper, China and ten ASEAN countries are selected as the research objects. Annual data are used for both dependent and independent variables, and the research time range is from 2000 to 2019,Among them, 2009 is the outbreak year of the global financial crisis caused by the subprime mortgage crisis in the United States, so it is used as the boundary to analyze the years.Six kinds of price level data and foreign direct investment in China and ten ASEAN countries are obtained from the International Bank database. Five kinds of liberalization value, including economic freedom, investment freedom, trade freedom, monetary freedom and commercial freedom, are obtained from the Economic Freedom Index Report.The statistics of each variable are shown in Table 1.

Table 1: Statistical analysis of each variable

Variable	Mean	Variance	Min	Max
lnFDI	21.96207	2.174891	15.30871	26.39634
BusinessFreedom	58.59139	19.294	12.73571	100
MonetaryFreedom	73.91326	11.5328	13.8	93
TradeFreedom	72.26617	10.77464	42.6	94.8
InvestmentFreedom	44.70705	21.55632	10	92.71628
FinancialFreedom	42.54545	17.1449	10	80
pl_c	0.373592	0.1445086	0.1486311	0.7940736
pl_i	0.3745847	0.1209612	0.1109576	0.6903465
pl_g	0.2858354	0.1589006	0.0547331	0.8653749
pl_x	0.5748189	0.0941704	0.3467706	0.7337428
pl_m	0.5739589	0.0779874	0.4089631	0.7392952
pl_n	0.2531256	0.0895631	0.0852606	0.5014355

4. Analysis of measurement results

4.1. Baseline panel regression analysis

Table 2: Benchmark panel regression results of FDI and economic liberalization in China and ten ASEAN countries

Variable	(1) BF	(2) MF	(3) TF	(4) IF	(5) FF	(6) ALL
pl_c	4.091*	2.820	3.638*	4.400**	3.991**	4.595**
	(1.89)	(1.51)	(1.81)	(2.25)	(1.99)	(2.27)
pl_i	8.086***	4.977***	7.673***	6.337***	7.171***	5.650***
	(4.00)	(2.76)	(4.07)	(3.44)	(3.80)	(2.96)
pl_g	-3.296***	-0.992	-3.033***	-3.124***	-3.150***	-2.152*
	(-2.90)	(-0.98)	(-2.91)	(-3.15)	(-3.08)	(-1.93)
pl_x	3.590*	3.751**	3.578*	3.407*	3.412*	3.302*
	(1.92)	(2.16)	(1.88)	(1.88)	(1.83)	(1.89)
pl_m	2.738	3.171	2.781	3.625*	2.701	3.306
	(1.22)	(1.52)	(1.24)	(1.66)	(1.21)	(1.59)
pl_n	-8.936***	-6.819**	-8.290***	-7.361**	-7.545**	-8.067***
	(-2.79)	(-2.45)	(-2.76)	(-2.54)	(-2.51)	(-2.72)
BusinessFreedom	-0.004					-0.010*
	(-0.57)					(-1.67)
MonetaryFreedom		0.035***				0.032***
		(5.69)				(4.78)
TradeFreedom			0.001			0.006
			(0.07)			(0.75)
InvestmentFreedom				0.021***		0.009
				(3.85)		(1.43)
FinancialFreedom					0.011*	
					(1.68)	
Constant	17.169***	14.496***	16.980***	15.703***	16.604***	14.049***
	(28.13)	(21.64)	(24.77)	(25.15)	(28.10)	(16.69)
Observations	216	216	216	216	216	216
R-squared	0.605	0.660	0.604	0.632	0.610	0.672
Number of code	11	11	11	11	11	11

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2 shows the regression results of benchmark panel on FDI and economic liberalization in

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China and ten ASEAN countries.From Model (1) and Model (6), we can see that commercial freedom inhibits the introduction to foreign direct investment in a country, The combination of other degrees of freedom significantly inhibits the introduction to foreign direct investment in a country at the level of 10%, and the degree of inhibition increases.It can be seen from model (2) and model (6) that currency freedom promotes a country's foreign direct investment in 1% level, and the degree of promotion is basically stable.From the model (3) and (6), although the impact on foreign direct investment (fdi) degrees of freedom of trade are positive, but not significantly, on the contrary, can be seen from the model (4), the freedom the influence of foreign direct investment (fdi) has significant at the 1% level positive influence, but model (6) investment coefficient is less than a lot of freedom, and a significant decline. Similarly, it can be seen from model (5) that the impact on economic freedom of foreign direct investment is significant at the 10% level, but in model (6), the year-on-year significance decreases and the coefficient decreases. In terms of control variables, except import price level, the other control variables affected the introduction to foreign direct investment in a country at different levels of significance, Among them, household consumption price level, capital formation price level and export price level all promote a country's foreign direct investment at least 10% level, while equity price level and import price level all inhibit the introduction of foreign direct investment at least 5% level.

4.2. Panel generalized least squares regression

When generalized least square regression is used to eliminate the influence of heteroscedasticity, on the whole, it can be found that the coefficients of the five degrees of freedom are increased to a certain extent and the significance is improved. Specifically, compared with model (1) in Table 2, model (8) shows that the impact of business freedom on a country's foreign direct investment changes from a non-significant inhibiting effect to a significant promotion at the 1% level, and the size of the coefficient obviously increases by nearly 10 times. As can be seen from model (9) compared with model (2), there is no significant change in the significance of the influence of monetary freedom of foreign direct investment, which is significantly promoted at the 1% level, but the coefficient is doubled. From model (10) to model (3), it can be seen that the influence of trade freedom of a country's foreign direct investment has a great change. Firstly, the coefficient changes from positive number and small absolute value to negative number and large absolute value in model (3). Secondly, the significance changes from insignificant to significant influence over 1% level. As can be seen from model (11) compared with model (4), the influence of investment freedom of foreign direct investment in a country also has a great change, the significance is obviously decreased from 1% to 10%, the coefficient is also changed from positive to negative, and the absolute value is also reduced to a certain extent. As can be seen from the comparison between model (12) and model (5), there is no significant change in the significance and coefficient change of the two models, only the coefficient size increases slightly. Finally from the model (7) compared with the model (6) it can be seen that the five degrees of freedom of overall influence on a country's foreign direct investment significantly increased greatly, all above the 5% level of significance, and coefficients have greatly increased, compared with the same coefficient increases minimum twice, of the freedom and the freedom of trade and investment coefficients from positive to negative, Commercial freedom goes from negative to positive.

In a practical sense, the greater the trade freedom, the lower the trade barriers, and the lower the motivation of international enterprises to invest and build factories in the host country. The higher degree of investment liberalization usually means that the country's investment supervision is lower, and correspondingly, it also means that the country's investment potential is lower, so the introduction of foreign direct investment is inhibited. Similarly, the higher the commercial freedom and monetary freedom, the lower the commercial operation cost and currency conversion cost of foreign investment in the country, which has a significant promoting effect on foreign investment operation.Finally, the higher the economic freedom, the higher the degree of economic marketization, the higher the acceptance of foreign investment and the lower the operating cost of foreign investment in the country, so as to promote the introduction to foreign direct investment in the country.

Table 3: Generalized least squares regression of FDI and economic liberalization in China and ten ASEAN countries

Variable	(7) ALL-gls	(8) BF-gls	(9) MF-gls	(10) TF-gls	(11) IF-gls	(12) FF-gls
BusinessFreedom	0.00396	0.047***				
	(0.97)	(6.11)				
MonetaryFreedom	0.0317***		0.078***			
	(4.61)		(8.05)			
TradeFreedom	-0.01548**			-0.039***		
	(-2.08)			(-2.76)		
InvestmentFreedom	-0.01977***				-0.015*	
	(-5.03)				(-1.96)	
FinancialFreedom						0.014*
						(1.84)
pl_c	-0.3154	-12.209***	-6.057***	-2.938	-2.236	-4.540**
	(-0.24)	(-4.83)	(-2.96)	(-1.28)	(-0.91)	(-1.96)
pl_i	-11.035***	-15.881***	-18.587***	-14.503***	-13.304***	-16.311***
	(-7.07)	(-4.99)	(-6.10)	(-4.27)	(-3.75)	(-4.70)
pl_g	5.5329***	9.471***	10.715***	6.485***	5.548***	6.721***
	(6.50)	(5.63)	(6.63)	(3.79)	(3.11)	(3.87)
pl_x	-1.4063	-1.084	0.246	7.276***	6.273**	3.707
	(-1.06)	(-0.39)	(0.10)	(2.58)	(2.24)	(1.27)
pl_m	9.0754***	19.822***	20.056***	10.645***	9.356**	15.728***
	(5.26)	(5.91)	(6.41)	(3.07)	(2.42)	(4.25)
pl_n	12.426***	22.875***	15.463***	20.934***	19.578***	20.025***
	(4.95)	(4.64)	(3.30)	(4.00)	(3.72)	(3.80)
Constant	17.662***	10.423***	6.743***	13.849***	12.897***	10.985***
	(20.2)	(10.14)	(5.94)	(10.34)	(10.24)	(9.63)
Observations	216	216	216	216	216	216
Number of code	11	11	11	11	11	11

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.3. Analysis of the Stages before and after the Financial Crisis

Table 4: Staged generalized least squares regression results

Variable	(13) Before-all	(14) Before-f	(15) After-all	(16) After-f
BusinessFreedom	0.0132		-0.00478	
	[0.0090]		[0.0043]	
MonetaryFreedom	0.0342***		0.0181*	
	[0.0124]		[0.0092]	
TradeFreedom	-0.0244		0.00821	
	[0.0156]		[0.0096]	
InvestmentFreedom	-0.0280***		-0.0228***	
	[0.0082]		[0.0046]	
FinancialFreedom		0.00604		-0.00655*
		[0.0079]		[0.0038]
Control variables	yes	yes	yes	yes
_cons	16.11***	13.88***	16.73***	16.72***
	[1.7432]	[1.3060]	[1.1806]	[0.9512]
AIC	102.2	126.4	215.4	232.1
BIC	124.3	142.5	246.1	254.5

*** p<0.01, ** p<0.05, * p<0.1

Taking the outbreak of the global financial crisis in 2009 as the time point, the analysis time interval was truncated from 2009, and the panel generalized least squares analysis was carried out with the times interval before and after.In terms of commercial freedom, currency freedom, trade freedom, and investment freedom, model (13) is the regression result of the time interval before 2009, and model (15)

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is the regression result of the time interval after 2009.In contrast, except that the impact and significance of investment freedom of FDI inflows has not changed significantly, the impact coefficient of business freedom on FDI inflows has changed from positive to negative, and the impact of trade freedom on FDI inflows has also changed from negative. Turning to positive, although the absolute value of the positive coefficient are relatively small, in addition, the impact on monetary freedom of FDI inflows has not only been significantly reduced, but the impact coefficient has also been reduced by a half. As far as the economic freedom index is concerned, although the absolute value of the coefficient have decreased, after the 2009 global financial crisis, the impact coefficient has turned negative, and it is also significant at the 10% level. In this way, the impact on the global financial crisis in 2009 is also quite significant.

5. Conclusions

5.1. Main Conclusions

This paper uses FDI data and indicators of economic freedom, investment freedom, trade freedom, monetary freedom and business freedom to analyze foreign direct investment and five degrees of freedom in China and ten ASEAN countries. The results show that after eliminating heteroscedasticity, commercial freedom, monetary freedom and economic freedom significantly enhance a country's foreign direct investment, while trade freedom and investment freedom will inhibit a country's foreign direct investment. The 2009 global financial crisis also played a significant role in the impact on economic freedom of foreign direct investment, in which business freedom had a negative effect on a harsh international environment and a difficult domestic economy, while trade freedom was here It has played a positive role in the normal trade, but also eased the domestic economic environment and promoted the inflow of foreign direct investment.

5.2. Policy Suggestions

5.2.1. We will continue to increase economic freedom and strengthen the role of the market in allocating resources

China and ASEAN countries, economic strength and the economic environment is not the same, mostly in developing countries, including Singapore, Vietnam, Cambodia and other countries most of the foreign direct investment to GDP ratio at 10% or 20%, said the ratio of the economic development of these countries have a certain extent, dependent on foreign capital, internal impetus to its economy remains to be strengthened. To this end, China and the ten ASEAN countries will enhance economic freedom, strengthen domestic economic vitality and tap economic potential, focus on implementing reforms in key areas such as finance, foreign investment utilization and government administration, reduce government restrictions on economic activities, and continuously improve the efficiency of finance, foreign investment utilization and government system management. China and the ten ASEAN countries have continuously improved and strengthened the leading role of the market in resource allocation, formulated an economic environment and institutional system conducive to the flow of economic factors in light of their own socio-economic characteristics, and then activated the social and economic vitality, market economic potential and enterprise innovation impetus through effective resource allocation. Therefore, the government allows companies the freedom of a certain field, under the condition of the negative list access management way, in the field of industry within the limits the negative list, and after business, enables the enterprise to limit free access listing outside the industry, to ensure that the market economic activity, at the same time, the government management should fine political and decentralization, Access procedures should be simplified as far as possible in the context of guaranteed procedures. Thirdly, the increasing economic liberalization should be under the unified domestic market controlled by the government, and unified supervision should be carried out on the domestic market environment to create a fair and open domestic competition environment as far as possible.

5.2.2. We will continue to improve the commercial operation system and strengthen the free circulation of money among financial markets

The implementation of commercial liberalization should be carried out in the commercial operation system in accordance with the national conditions, in which the procedures should be simplified as far as possible, and the cost of commercial operation within the system should be reduced as far as possible. China and the 10 ASEAN countries have different national conditions. China is the only

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socialist country among the 11 countries. However, China's business freedom has increased year by year from 2012, from 46.4 in 2012 to 76.8 in 2019.After the global financial crisis in 2009, China's business liberalization road first through the improvement on business operation system, and then to the improvement on business freedom, which has laid a stable foundation for the optimization of domestic investment and business environment. Secondly, the perfection of currency circulation of the financial market strengthens the resource allocation function of the market economy, not only in the free circulation of currency in the domestic market, but also in the exchange of various foreign currencies into local currencies in the international market. The currency of foreign direct investment has various foreign currencies, so the orderly and barrier-free circulation of currency will reduce the operating cost of the implementation of foreign investment.

5.2.3. Balance the relationship between trade freedom, investment freedom and foreign direct investment

The results show that a country's trade freedom and investment freedom will inhibit the development of foreign direct investment. To some extent, China's economic development in the past 20 years has benefited from the driving force input and technology spillover of foreign capital. However, on the basis of ensuring the quality of foreign trade and investment freedom, China has balanced the balance between trade freedom, investment freedom and foreign direct investment on the basis of strictly controlling the negative list of investment. However, in other countries, under different national conditions, the balance between the three is not ideal and does not contribute much to the efficiency of economic development. Therefore, the balance of foreign direct investment, trade freedom and investment freedom is directly related to the internal power of economic development.

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