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What are the impacts of inward foreign direct investment on China?

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By

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Abstract

Under the trend of economic globalization, labor, capital and other resources flow in and out of countries continually due to fewer and fewer barriers. In this way, multinational enterprises have become one of the most influential part of economies. Inevitably, multinational enterprises' global activities result in a more intense foreign direct investment (FDI). China has been a major receiver of FDI for a long time, and the trend of IFDI to China is still on the rise in the mass. Therefore, the number of researches on FDI to China increases considerably year by year. Focusing on economic, environmental and regulatory aspects, this paper aims to explore IFDI's impacts on China. The results indicated that IFDI indeed brings numerous benefits to China while it aggravates imbalanced developments in China and causes some environmental problems. On the whole, the advantages brought by IFDI outweigh its disadvantages as long as the Chinese government keeps IFDI's environment pollution under control. Consequently, how to attract high-quality foreign direct investment and improve foreign investment efficiency become urgent problems for the Chinese government. This paper also suggests that the Chinese government can't take in IFDI passively, it should call for actions to minimize IFDI's negative impacts, too.

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Introduction

With the trend of global integration and economic integration, international trades,

investments and transnational cooperation have been developing rapidly. The whole world is

increasingly becoming a unified entirety while multinational enterprises have become the most

active and influential part of economies. Foreign direct investment is one popular way to reflect

activities of multinational enterprises.

Since the Chinese government has been carrying out reform and opening policies, China's

economy is gradually in line with the world's economy. Inward foreign direct investment (IFDI),

which is a phenomenon that foreign firms or individuals make investments to firms in host

countries, accepted by China is increasing. According to the *China Statistical Yearbook* (National

Bureau of Statistics, 2018), actual utilization of foreign capital rises from $19.56 billion in 1985

to $1310.35 billion in 2017. Actual utilization of foreign capital is an indicator that refers to

amounts of foreign capital actually received after signing contracts, which can truly reflect the

level of China's foreign capital utilization. In the past thirty years, China's GDP also has been

growing by leaps and bounds. National Bureau of Statistics (2018) points out that China's GDP

grows from ￥9098.9 billion in 1985 to ￥827121.7 billion in 2017. Does IFDI play a critical role

in the growth of China's economy? That's one of the questions answered by this paper.

Inward foreign direct investment usually comes with a feature called "imbalance".

Imbalance is mainly presented from two aspects, regional and industrial. This feature is related

to factors that influence FDI. Factors that influence FDI are complex, including institution

indicators like FDI incentives related policies, human capital, economic indicators like economic growth rate and sector indicators like scale industrial sectors. Different regions and sectors in one country are under different contexts, leading to imbalanced inflows of foreign direct investment. In this way, the impacts of IFDI in different regions and sectors are also different. This paper examines whether IFDI brings this feature in China and if yes, what impacts does it cause.

There are three major forms that IFDI takes when it inflows to host countries.

◆ Sino-foreign Equity Joint Ventures

The enterprises are jointly invested and operated by domestic investors and foreign investors; the two parties bear risks, losses and profits in equal proportion to their investments in the enterprises' registered capital. Its main legal feature is that the proportion of foreign investors in the registered capital of the enterprises has statutory requirements.

◆ Sino-foreign Cooperative Joint Ventures

Domestic and foreign investors cooperate in the form of contract; the rights and obligations of each party are stipulated in the contractual files. There is no mandatory requirement for foreign investors of share in the registered capital. Chinese investors usually supply labor, land use rights while foreign investors bring technology and equipment in, as well as capital.

◆ Wholly Foreign-owned Enterprises.

The enterprises take the form of limited liability companies. All capital of the enterprises is invested and owned by foreign investors. Therefore, the foreign investors have full control over the enterprises.

Information above is provided in order to make readers have a better understanding of IFDI to China.

International scholars have conducted many researches on IFDI, and even some of them researched the impacts of IFDI on China. The already-known impacts of IFDI, pointed out by those scholars, are relevant to the aspects like technology improvement and transition, GDP's growth, increase in employment rate, environment. However, IFDI's influences in China are still somewhat ambiguous and there are still controversial opinions.

This study is conducted to explain IFDI's impacts by a mathematical model and theoretical analysis of examples. The thesis statement, as a hypothesis, was that the impacts of IFDI on China are economic growth, environment development and regulation improvement, while it also causes the imbalanced development in regions and industries.

This paper uses data and one simple model to show a clear influence degree of IFDI on GDP; then some living examples and theoretical analysis were also given to support or refute some controversial arguments. In general, this paper can enhance people's understanding of IFDI so that the Chinese can better utilize IFDI to develop the whole society.

Literature Review

Different people hold different attitudes towards the topic that whether China benefits

from inward foreign direct investment (IFDI). On one side, some people think IFDI promotes

China's economic and social developments; on the other side, others think IFDI negatively

impacts China's economy and environment.

People in favor of the view that China benefits from IFDI focus more on higher levels of

technology, management, economic growth and so on. Two evident spillovers that brought to

China are technology spillover and knowledge spillover. Advanced technologies and new

technology ideas are taken to China with IFDI, which increase output and accelerate

technological transition. Chen once conducted a research and found "the growing FDI presence

in China can increase domestic firm's productivity" (2011, p.246). what's more, although the

main source of China's comparative advantage is still low-tech production, the portion of high-

tech production increases recently (Yang & Chang, 2016). The exposure to new technologies and

technological transition opens the door of technological innovation in China. Wang, Ning, Li and

Prevezer (2016) stated the positive relationship between IFDI and innovation. Li, Sutherland and

Ning supported this statement in 2017. Another impact of IFDI is inflow of advanced

management. IFDI, especially foreign investment enterprises (FIEs) "have had an enormous

influence on management training and development in China" (Enright, 2017, p.73). IFDI brings

not only employees' and employers' training, but also management policies and administrative

talents. The Chinese are unconsciously influenced in this kind of environment; their thoughts

and behaviors become more and more advanced. In this way, the management level is improving.

IFDI also provides a channel to solve local enterprises' financial difficulties and increases the ease of finding jobs. In Enright's (2017) book, IFDI improves the financial system in China; and it makes more liquid capital available to enterprises in financial trouble, what is called "capital formation" (Jiang, 2014). IFDI creates thousands of jobs for the Chinese in China, too. Karlsson, Lundin, Sjöholm and He (2007) found that IFDI increases the employment rate in China. This finding coincided with He's statement proposed in 2018.

Scholars put effort to explore the relationship between IFDI and China's economic growth. He (2018), claimed the positive impact of IFDI on China's economic growth in his research. Lew and Liu (2016) admitted IFDI's positive influence in China's economic growth which was agreed by Ma and Hung in 2018. They even thought the benefits of IFDI to China's economic growth is larger than to most other developing countries. Economic growth increases taxes of the Chinese government. In turn, taxes are used to strengthen cities' infrastructure and stimulate economic growth.

One surprising impact of IFDI on China is the improvement of legal and regulatory environment (Enright, 2017). In order to adapt to the international environment and attract more foreign direct investment to develop China's economy, the Chinese government revises its foreign policy actively. In the meantime, the Chinese government amends its laws to control IFDI and create a fair competition environment. IFDI also plays an important role in the evolution of

China's institutional regimes. Foreign investors use their economic clout to put pressure on

Chinese politicians for a more favorable environment to run businesses. Therefore, China's

jurisprudence and foreign policies are improved all the time.

Environmental quality in China is improved significantly in some people's opinion. Zhang

and Zhou (2016) found that IFDI reduces CO2 emission and supported the pollution halo

hypothesis, which argues that IFDI improves environmental quality by transferring greener

technology to China. Enright (2017) also insisted that no matter green products and

technologies from abroad, or the concept and construction of sustainable development from

abroad, have exerted a positive impact on China's environment.

Some people query if China benefits from IFDI. These people pay more attention to IFDI's

negative impacts on China.

These people argue that one characteristic of IFDI is few core technologies. Most foreign

direct investment flows into China's labor-intensive and low-tech industries (Huang, Ma, Yang &

Zhang, 2016). Why? The owners of foreign direct investment try to avoid competing with the

Chinese using their own core technology. They have to guarantee their interests. What's worse,

some scholars think IFDI inhibits local enterprises' innovation. "The presence of IFDI per se

exercises a 'crowding-out' effect on local firms' innovation" (Lew & Liu, 2016, p.284). This was

proved by Zhang in 2017. Inward FDI exerts a negative influence on local firms' innovation by

supplying new technology and competing for R&D resources. IFDI weakens the innovation

motivation of local firms, shakes the innovation support system and deteriorates the innovation

environment. Absence of foreign core technology and the decline of China's innovation ability

result in the lack of core technology in China.

Even whether IFDI stimulates China's economic growth is controversial. Gunby, Jin and

Reed (2017) conducted a research on the relationship between IFDI and China's economic

growth. In their opinion, IFDI's positive impact on China's economic growth is tiny. They

suggested there are else reasons for the Chinese economic miracle. On the micro-level, Hong,

Sun and Huang's research (2016) proved that IFDI tends to hinder the development of local

enterprises. IFDI negatively affects the productivity of domestic enterprises through competing

resources and preferential policies of the Chinese government.

IFDI also aggravates the imbalance of regional development and the contradiction of

industrial structure. Most FDI flows into eastern coastal areas of China instead of the inner areas

of China. Huang and Wei (2016) proposed the spatial inequality of FDI intensifies unbalanced

economic development. Besides, Lew and Liu mentioned, "with their possession of educated

and skilled labor forces and qualified R & D staff and a pool of knowledge stock and R & D

investments, coastal regions in China have enjoyed more asset-seeking FDI knowledge

spillovers. In contrast, inland regions are less prepared to utilize external knowledge sources and

have not experienced any considerable regional innovation owing to IFDI" (2016, p. 306). In

Zhang's study (2017), he also found the spillover effect of FDI is significant and positive in the

east region, but that's not very significant in the central and west regions. The gap in economic

development level and per capita income in China's inner and coastal areas are gradually

widening. The contradict of China's three industrial structures is worsened, too. According to Liu

and Daly (2011), most FDI inflows to the secondary industry, resulting in its faster development

than the other two industries. Zhao and Niu (2013) agreed that the secondary industry absorbs

the largest portion of IFDI and suggested China should attract more FDI flows to the tertiary

industry.

Many people insist that the pollution haven hypothesis exists in China. Research conducted

by Zheng and Sheng (2017) pointed out explicitly that IFDI promotes China's CO_2 emissions. In

the same year, Sun, Zhang and Xu came up with the view that IFDI damages China's

environment. The negative relationship between China's environment quality and IFDI was also

confirmed by Liao and Shi in 2018.

Research Design

This paper adopts a mix of quantitative and qualitative approaches.

Firstly, the relationship between GDP and FDI was tested by the model given by Panagiotis

Pegkas (2015),

Log(GDP)=c+βLog(IFDI)+ ε

Here c is a constant; and β is the coefficient of this regression, measuring the elasticity of

GDP. β means a 1% increase in IFDI can result in a β% increase in GDP. ε is the error term,

describing the 'noise'.

The data used here is quarter data of GDP and IFDI in China from 2000 to 2018, which

comes from Bloomberg and National Bureau of Statistics. The observations of this study are

limited because of a lack of data. Then the data was analyzed by Eviews to show the correlation

between GDP (dependent variable) and IFDI (independent variable). The results that came out

also indicated IFDI's imbalanced impacts on regions' and industries' development.

As for the development of technology and management in China, the study uses labor

productivity to measure it. Some relevant data of previous years is lack, so the whole sample is

too small to use a model for testing. Finally, this study adopts a correlation analysis to show the

relationship between technology, management and FDI in China. According to Zamborsky (2006)

and Ismail, Rosa and Sulaiman (2011), R & D investment, fixed asset, FDI and GDP are several

factors that affect labor productivity. This study takes the logarithm form of these factors to

observe if there exists corresponding trends.

The following are the indicators used in the economic aspect.

- **Inward Foreign Direct Investment**: This paper uses actual utilization of foreign direct investment as the indicator to measure IFDI because it shows the actual amounts that China receives from foreign investors.

- **Output & Economic Growth**: The indicator used to measure output and economic growth is gross domestic product, which is also called GDP for short. It's the total monetary value of all finished goods and services made within a country during a certain period.

- **Regional Development & Industrial Structure**: This paper also uses GDP to measure economic development of different regions of China. In addition, the respective added values of three industries are represented by GDP.

- **Technology & Management & Innovation**: Technology and management development are two major factors that influence labor productivity; innovation accelerates technology improvement. Therefore, labor productivity, which calculated as dividing GDP in year t by the total number of people employed in the country in year t, is used to measure changes in technology and management level.

- **Employment**: This paper searches and recorded urban employment in foreign investment enterprises and its proportion of urban employment from 2000 to 2017 (data of urban employment in foreign investment enterprises is not available until 2000). These two indicators present the contribution that IFDI made to labor force participation in China.

In terms of environment and legislation, these two impacts were represented by theoretical

analysis and typical examples due to their immeasurable nature.

Findings

This paper tests the impacts of IFDI on China from three aspects, which are economy,

environment and legal mechanism. The results and analysis are displayed as follows.

Firstly, IFDI has become an important force in China's economic development.

Before using the model given to test the relationships between GDP and FDI, this study

checks the stationarity of the variables by using unit root test.

Table 1: Augmented Dickey-Fuller Unit Root Test

Variables	ADF at level	ADF at first difference	ADF at second difference
LogGDP	-0.401418	-3.409688	-4.710091
LogFDI	-9.804749	-4.871682	-8.976816

Table 2: Test Critical Values (at 5% level)

Variables	Critical value at level	Critical value at first difference	Critical value at second difference
LogGDP	-3.475305	-3.475305	-3.475305
LogFDI	-3.470851	-3.479396	-3.478305

Tables 1 and 2 show the results of ADF test. FDI (independent variable) is stationary at level

while GDP (dependent variable) becomes stationary at second difference. After proving both the

variables are stationary, ordinary least square method is used.

These are two preliminarily hypotheses.

H$_0$: There is no relationship between FDI and GDP.

H1: There is a relationship between FDI and GDP.

According to the quarter data of GDP and FDI, the results are discussed as follows.

Table 3: Result of the Regression

| Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGFDI	1.913222	0.135606	14.10870	0.0000
C	-0.258640	0.296027	-0.873707	0.3851
R-squared	0.728993	Mean dependent var		3.909348
Adjusted R-squared	0.725330	S.D. dependent var		0.315125
S.E. of regression	0.165154	Akaike info criterion		-0.737916
Sum squared resid	2.018407	Schwarz criterion		-0.676581
Log likelihood	30.04082	Hannan-Quinn criter.		-0.713404
F-statistic	199.0554	Durbin-Watson stat		1.497976
Prob(F-statistic)	0.000000			

We can notice that the F-statistic is 199.0554 and the p-value (F-statistic) is 0, proving the significance of this model and the fitness are good. The r-squared is 0.728993, so about 73% variation in GDP can be explained by FDI. The p-value of LogFDI is 0, so we can reject H$_0$. The coefficient β is 1.9132, showing the positive relationship between FDI and GDP. It means a 1% increase in FDI can cause a 1.91% increase in GDP.

Further study to test the positive relationship between IFDI and GDP is listed in the appendix.

To make the whole paper more logical, we now analyze the imbalanced impacts of IFDI on regions and industries.

We know the relationship between IFDI and GDP from the model above. So here we only need to realize the unequal spatial distribution and industrial distribution of IFDI in China. Then we can infer that IFDI causes imbalanced development in regions and industries.

Chart 1: Percent of IFDI in Three Regions – China
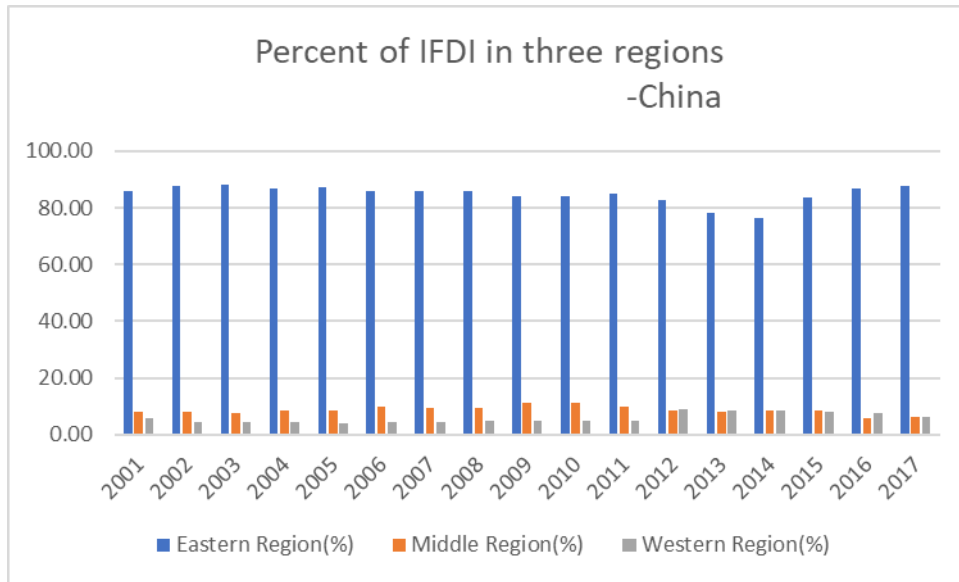
The chart above shows the spatial distribution of IFDI into China. No matter when the time is, the eastern region is always the major receiver of FDI. The middle and western regions together only take up a small proportion of FDI. The factors that result in such a disparity are differences in economic level, quality of employees and market size. The eastern region of China has a relatively high level of economic development, resulting from convenient transport and earlier opening to the world. It is its high level of economic development that attracts high-quality talents and large customer base. Compared to the eastern region, the middle and western regions lack these conditions, so their attractiveness to IFDI is weaker than that of the eastern region.

Chart 2: Percent of IFDI in Three Industries - China
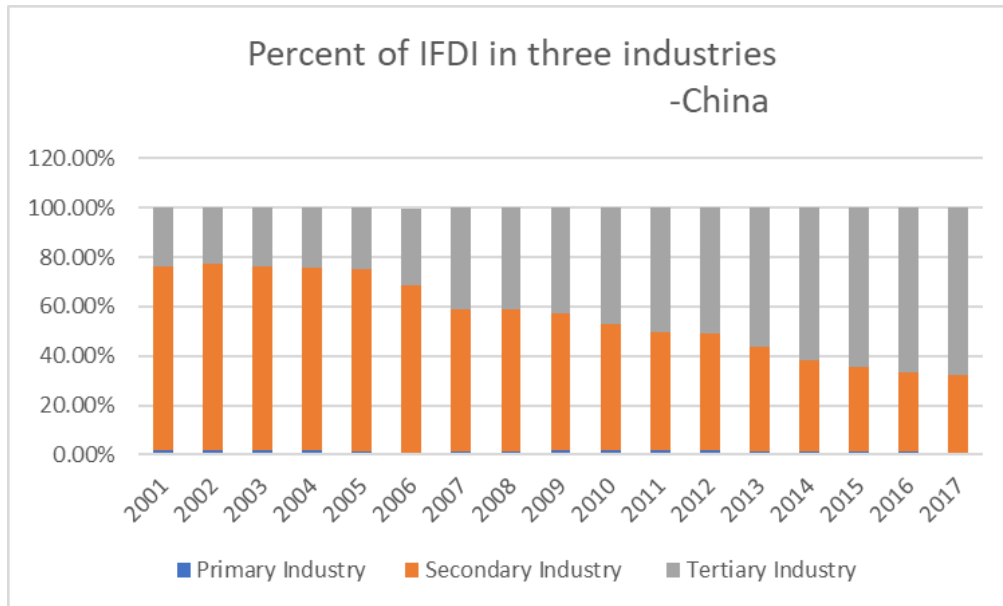
This another chart shows the inequal industrial distribution in China. There is a trend that

the secondary industry gradually loses its weight of FDI while the tertiary industry takes up more

and more proportion in recent years. The primary industry is always the smallest receiver of FDI.

From the data and information above, we can conclude that the imbalanced development

in regions and industries can be partly blamed on FDI.

Then, this paper tests IFDI's impacts on China's technology and management by using labor

productivity as an index. As mentioned above, the data needed is limited so that this study only

uses a correlation analysis.
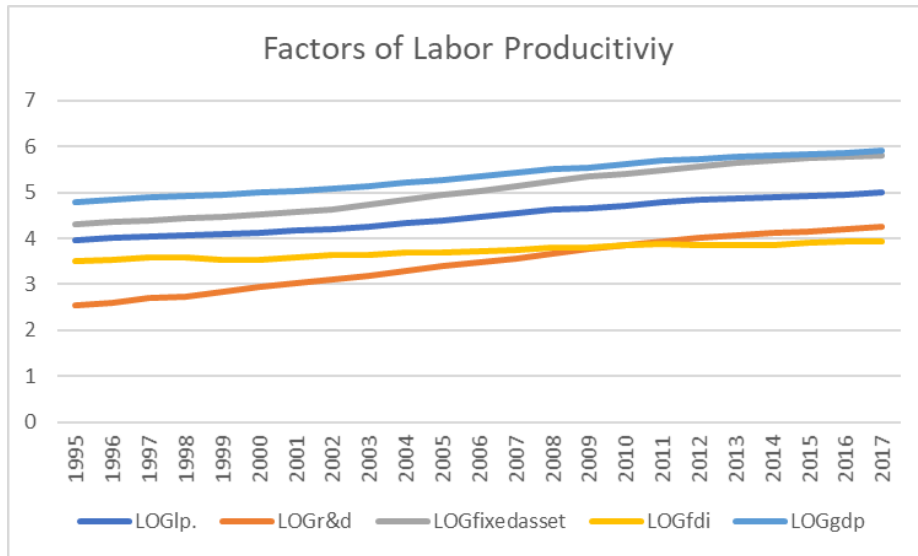
Chart 3: Factors of Labor Productivity

Table 4: Result of the Covariance Analysis

Correlation Probability	LOGFDI	LOGFIXASS...	LOGGDP	LOGLP	LOGRD
LOGFDI	1.000000				

LOGFIXASSET	0.984506	1.000000			
	0.0000	-----			
LOGGDP	0.986028	0.998964	1.000000		
	0.0000	0.0000	-----		
LOGLP	0.986217	0.999157	0.999898	1.000000	
	0.0000	0.0000	0.0000	-----	
LOGRD	0.982547	0.994999	0.996672	0.995613	1.000000
	0.0000	0.0000	0.0000	0.0000	-----

From the chart named "Factors of Labor Productivity", we can clearly see the similar trends

of this factors and labor productivity. More specifically, a covariance analysis is given to show

quantitative correlation between these variables. All the probabilities of these factors are zero,

indicating the correlation coefficients are meaningful. What's more, all the correlation

coefficients are larger than 0.8, so we can say these factors are highly correlated with labor

productivity.

As for employment, the following chart only shows data from 2000 to 2017 because there

is no earlier data of urban employment in foreign investment enterprises recorded. From the

chart, we notice that from 2013, urban employment in foreign investment enterprises began to

decrease. This may because of several reasons. The first reason is related to China's economic

transformation and increasing labor cost. The second reason is increasing geopolitical risks due

to the rise of China. The third reason is decreasing profits because of changes in tax policies and

local enterprises' development. Another reason may because employees tend to be more and

more self-centered and safeguard their own rights, increasing operating risks. Therefore, foreign

investment enterprises have accelerated their departure from China since 2013. However,

urban employment in foreign investment enterprises is increasing on the whole; they still

provide thousands of positions for the Chinese.

Chart 4: Urban Employment in Foreign-Invested Enterprises
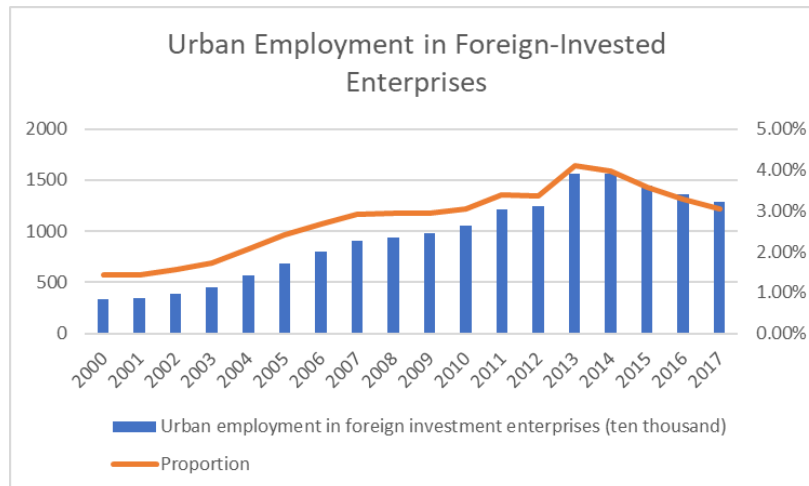
Secondly, IFDI plays a two-side role in the quality of China's environment. This paper analyzes IFDI's environmental impacts from three effects.

The first effect is scale effect. Host countries welcome IFDI, resulting in the expansion of production scale and economic growth. With the increase of output, pollution emissions will increase, too. It causes environmental deterioration. On the meanwhile, with the continuous development of host countries' economies and the improvement of people's living standard, social awareness of environmental protection is enhanced. This may lead to the increasing investment in environmental governance and the formulation of environmental-protection-related policies. Also, the residents' willingness to participate in environmental protection activities may increase due to the increase of environmental awareness. In this way, the environmental quality of host countries is improved.

The scale effect of IFDI on China's environment is presented by following charts.

Table 5: Environmental Indexes of China from 2007 to 2017

Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
GDP (hundred million)	270092.3	319244.6	348517.7	412119.3	487940.2	538580.0	592963.2	641280.6	685992.9	740060.8	820754.3
Total Wastewater Discharge (ten thousand tons)	5568494.16	5716801.00	5890877.25	6172562.00	6591922.44	6847612.14	6954432.70	7161750.53	7353226.83	7110953.88	6996609.97
General Industrial Solid Waste (ten thousand tons)	175632	190127	203943.4	240944	322772.34	329044.26	327701.94	325620.02	327079	309210	331592
Major Exhaust Pollutants (ten thousand tons) — Sulfur Dioxide (SO2)	2468	2321	2214	2185	2217.9	2118	2043.9	1974.4	1859.1	1102.9	875.4
Oxynitride (NOx)	/	/	/	/	2404.3	2337.8	2227.4	2078	1851	1394.3	1258.8
Dust	/	/	/	/	1278.8	1235.8	1278.1	1740.8	1538	1010.7	796.3
Investment in Environmental Pollution Control (hundred million)	3387.30	4937.03	5258.39	7612.19	7114.03	8253.46	9037.20	9575.50	8806.30	9219.80	9538.95

Chart 5: GDP & Wastewater Discharge

GDP & Wastewater Discharge

Chart 6: GDP & Solid Waste
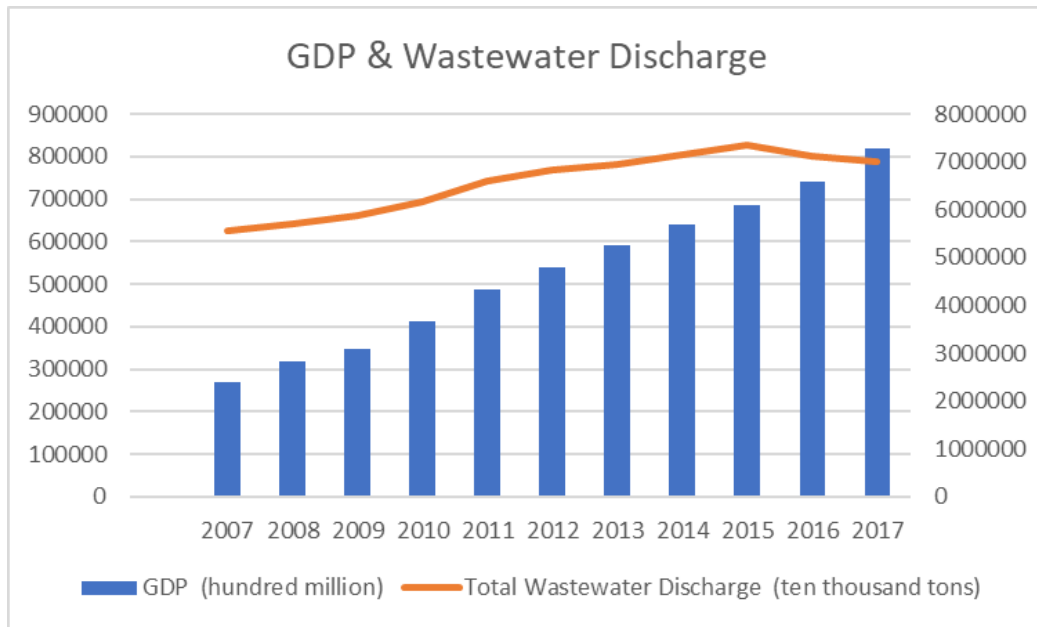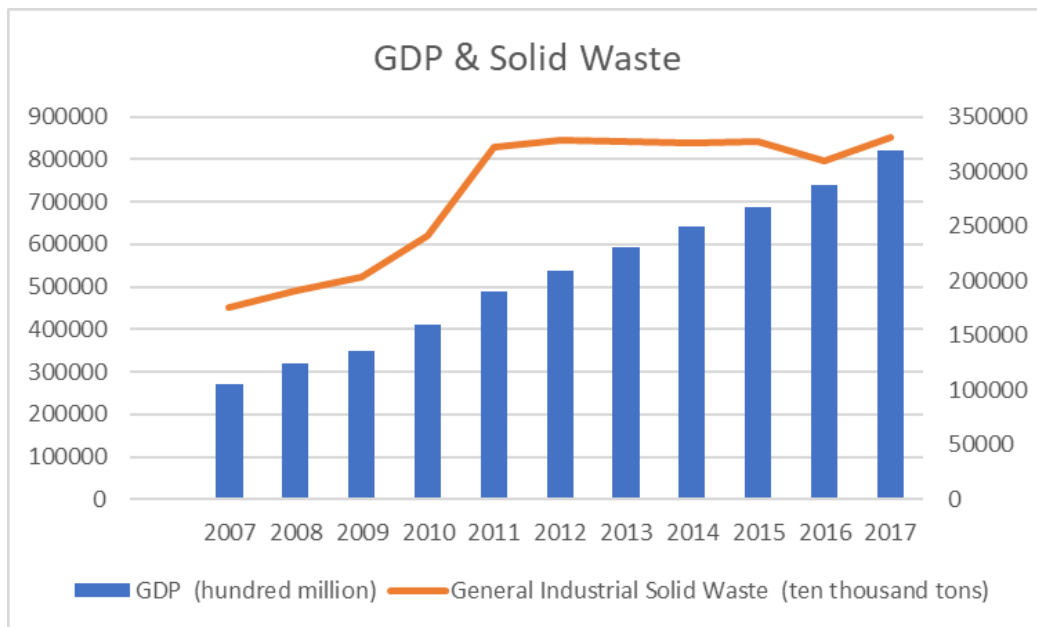

GDP & Solid Waste

These two charts show the relationship between GDP, total wastewater discharge and

general industrial solid waste. Changes in major exhaust pollutants are not showed in the charts

because of missing data. From these two charts, we can notice the increasing trends of total

wastewater discharge and general industrial solid waste are generally consistent with the

increasing trend of GDP.

Chart 7: GDP & Investment in Environmental Pollution Control
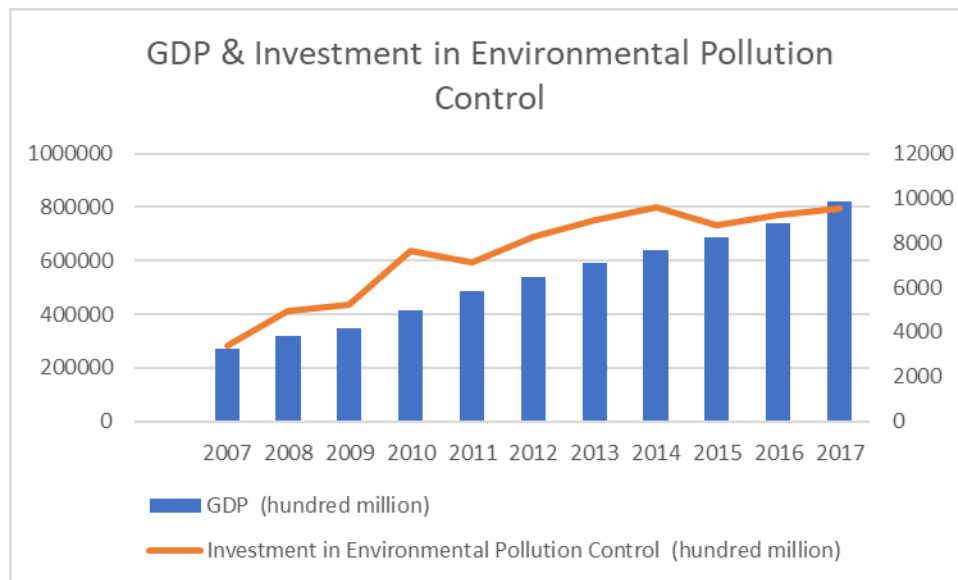
This another chart shows the relationship between GDP and investment in environment

pollution control. Although investment in environment pollution control has some fluctuations,

it presents an overall upward trend. GDP rises steadily in recent years, too. In addition, no

matter the introduction and implementation of environmental protection regulations like the

Law of the People's Republic of China on Prevention and Control of Water Pollution 2008, or the

garbage sorting activities recently, both show the improvement of environmental awareness.

These evidences support the scale effect of IFDI in China's environment.

The second effect is technical effect. IFDI usually accompanies with technological

diffusion. Such a kind of diffusion often leads to the improvement of production efficiency, the

increase of the utilization rate of natural resources and the reduction of environmental

pollution, which also improves the environmental quality of host countries. More important,

foreign investment enterprises often bring capital, advanced technology, cleaner production

methods and equipment compared with host countries' enterprises. In this regard, IFDI usually

has a positive impact on host countries' environment.

For example, Hongda group co., Ltd. is a cross-industry economic entity which integrates

scientific research, production, processing and trade in China. Once it co-invested with Novo

Nordisk, a pharmaceuticals company, which is one of the largest multinational enterprises in

Denmark. In the process of cooperation, they produced an enzyme that needed for the wine

industry, reducing the organic content of wastewater by 90%. Organic content in water needs

oxygen for biological oxidation and decomposition, and it will also ferment to make bacteria

grow, which will cause serious damage to water source. Therefore, reducing the organic content

of wastewater decreases pollution in water to some extent.

The third effect is structural effect. The structural effect refers to the impact on host

countries' environment caused by IFDI in different industries. If FDI funds are too concentrated

on pollution-intensive industries, it will enlarge the scale of pollution-intensive industries and

make the environment of host countries worse; but if FDI funds more in environmentally-

friendly industries, environmental quality of host countries will increase.

Chart 2: Percent of IFDI in Three Industries - China
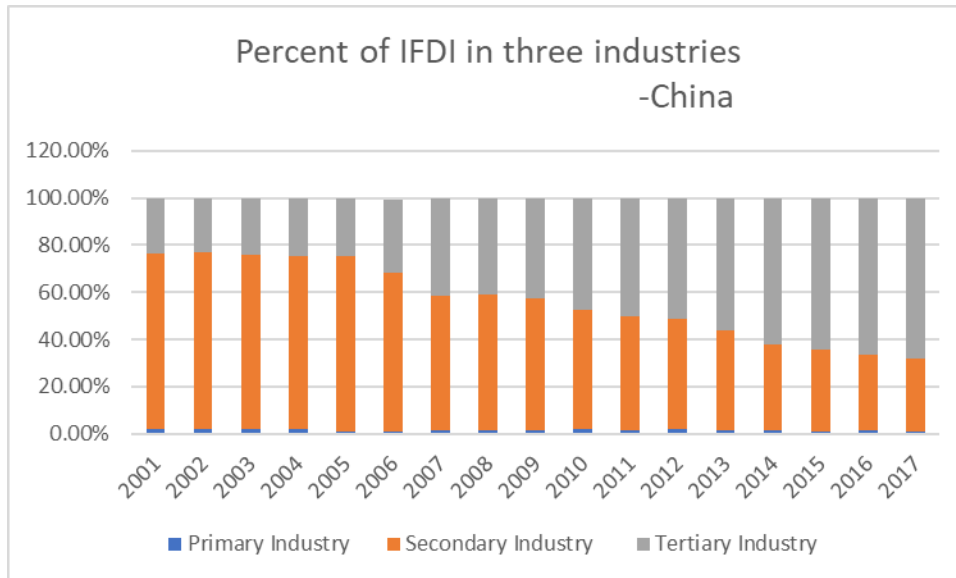
Here we need to review chart 2, which shows percent of IFDI in three industries. We can find the primary industry only takes up a small fraction of IFDI in China. The secondary and tertiary industries occupy the residual fraction of IFDI. There is a trend showing the proportion of IFDI in the secondary industry is decreasing while that of the tertiary industry is increasing from 2001 to 2017. This trend accelerates the transformation of China's industrial structure from the primary and secondary industries, which have serious pollution to the tertiary industry, which has less pollution.

This paper uses added values to measure respective proportions of three industries in GDP because it is impossible to calculate the gross product of each industry. The calculation of the gross product includes the values of raw materials, fuel, power consumption and labor consumption, which have not given specific values. The next chart shows the percent of each

industry's added value of GDP in 2017, indicating that China's development focus is gradually

shifting to the tertiary industry.

Chart 8: Percent of Each Industry's Added Value of GDP
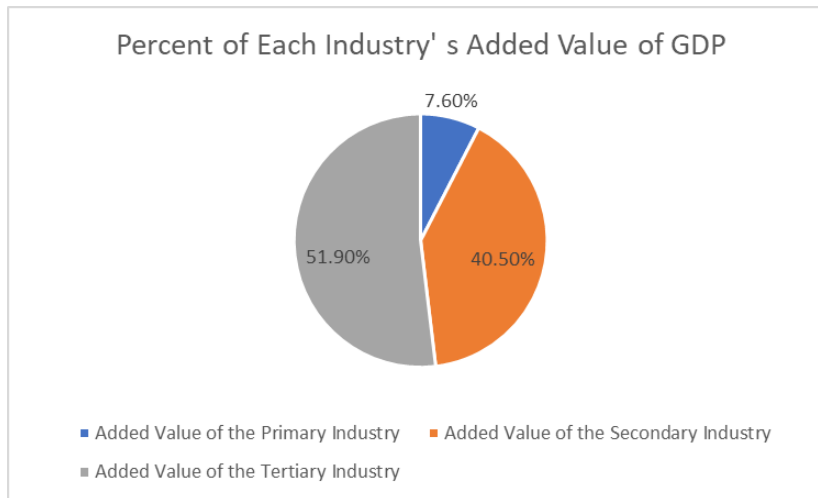
All in all, IFDI causes damage to China's environment but it also brings greener technology

to improve China's environment in theory.

Thirdly, IFDI indeed makes China's regulations more perfect. Due to the difficulty to present

this impact by indicators and data, this paper uses some typical examples to theoretically show

the positive relationship between IFDI and China's legal mechanism.

On one side, foreign investors exert impacts on Chinese laws by providing advanced

concepts and useful examples of international practices. Their purpose is to provide the Chinese

government with adequate governance powers so that foreign investment enterprises can be

run under a relatively stable environment. It can be exaggeratedly said that as long as IFDI exists

in China, foreign investors will influence China's laws because a good legal environment and

social stability are in their interests.

Firstly, views of the Chinese on employment have changed a lot because of foreign

investment enterprises. Before carrying out reform and opening-up policy, domestic enterprises

followed the "iron rice bowl" policy of permanent employment. "Unified package and unified

distribution" was a key feature during that period. Jobs of the Chinese were assigned by the

government and one should be responsible for the job until retirement. Distribution of income is

equal, no matter how much work you do. It was a waste of resources and limited efficiency.

Fortunately, China's rulers realized this problem and gradually learned from foreign investment

enterprises after FDI flowed into China. Nowadays, the Chinese are more inclined to choose

their own career among more diversified choices. Also, China's rulers pay more attention to pay-

for-performance policies. It means that the distribution of income depends on how much work

you do. Give more pay for more work, less pay for less work and no pay for those doing nothing.

Secondly, China's laws and regulations are revised with the suggestions of foreign investors.

Take the US-China Business Council (USCBC)as an example. It composes of several powerful

foreign investors and has been giving suggestions on China's draft laws to the rulers for a long

time. Once USCBS was invited to give suggestions on the current negative list of China in 2014.

Their opinion was that the negative list (2014) "retains nearly all of the investment restriction

included in the 2011 Catalogue Guiding Foreign Investment in Industry and other investment-

related regulations. These restrictions make it difficult for foreign companies to contribute fully

to China's economic modernization plans and discourage foreign investment into China" (the

US-China Business Council, 2014). To make their suggestions more specific, they prepared a

summary of US "negative list" as an example. As they hoped, China's rulers revised the negative

list, taking the summary of US negative list and China's actual situation into consideration. For

instance, foreign investment to the processing of traditional green tea and special tea (black tea,

etc.) in China was prohibited before revision. However, foreign investment to the production

and processing of green tea has changed from a prohibited project to the project requiring to be

controlled by the Chinese side after the revision.

On the other side, China's rulers proactively revise Chinese laws to make them be in line

with international laws. The objectives are to attract more IFDI of high quality into China and

coordinate existing foreign investment enterprises with domestic enterprises, finally to promote

Chinese society. As the Chinese realized, the legal system concerning foreign investors should be

improved because whether or not the legal system is sound is usually one important parameter

that is used internationally to measure the degree of investment risk in a country. An

environment of sound legal system concerning foreign investors is a key to ensure that foreign

investment enterprises can 'come in, stay, and stand steadily'. Therefore, China's rulers have

been putting effort into improving Chinese laws in order to create a favorable environment for

IFDI.

One very typical example is TRIMs agreement. TRIMs agreement, which is signed in the

Uruguay round of negotiations, describes several rules that apply to foreign investors in host

countries. The agreement requires that contracting states shall not adopt any trade-related

investment measure which is inconsistent with the provisions of national treatment and

transparency. This requirement is designed to limit the distorting and restrictive effects on trade

due to host countries' protective measures, so that a favorable context can be created to attract

more high-quality foreign direct investment. Whether before or after WTO accession, China is

committed to making China's foreign investment legislation be drawing closer to TRIMs

agreement.

Before entering WTO, China's original foreign investment legislation had a certain deviation

from the TRIMs agreement. In order to join WTO and attract more IFDI, China's rulers revised

investment-related laws several times. Just to name a little, from the perspective of national

treatment principle, China's original policies indicated differential treatments for foreign

investment enterprises to some extent. Like Catalogue for Guidance of Foreign Investment of

1995 mentioned, foreign investment in telecommunications, finance, insurance, retail…was

prohibited. However, foreign investment in finance, insurance…was allowed then; and

restrictions of area, number, equity…were gradually relaxed. In terms of transparency principle,

China depended on private documents, administrative instructions and internal notifications to

determine important matters concerning foreign investment in the past because of long-term

planned management of the economy. It resulted in a situation that a large number of internal

documents related to foreign investment were not available for the public. Recently, China's

rulers are gradually addressing this problem. According to *Opinions on Further Utilizing Foreign

Capital* (The State Council, 2019), China is going to continually deepen reform to facilitate

foreign investment and improve the procedures of approving lands for foreign-invested

projects. Also, China will fully implement the foreign investment related laws, establish and

improve the institutions of accepting complaints, strengthen the standardization of

implementation of regulatory policies and make the formulation of regulatory documents more

transparent.

In conclusion, as the hypothesis said, IFDI exerts great fluences on China. Economically, IFDI

promotes China's GDP and develops China's technology and management level. It also increases

employment in China. However, IFDI causes imbalanced development in regions and industries,

too. Environmentally, IFDI improves China's environment quality by providing greener

equipment, raising the Chinese's environmental awareness and investing in environmentally-

friendly industries. Meanwhile, IFDI may damage China's environment when foreign investors

transfer and invest in pollution-intensive industries. Legally, IFDI makes China's laws more

advanced and perfect.

Conclusions

In recent years, the scale of foreign direct investment in China is increasing. IFDI plays a significant role in China's development and it helps all parties to achieved mutual benefits.

Under this background, the study tests IFDI's impacts on China's economy, environment and legislation. The original hypothesis is that IFDI results in China's economic growth, environment development and regulation improvement, while it also causes the imbalanced development in regions and industries. This study tests the relationships between GDP, FDI and labor productivity by using a simple model and covariance analysis; the relationships between FDI, environment and legislation are analyzed by theories and examples. The results indicate there are significantly positive relationships between GDP, labor productivity and FDI; FDI contributes to China's environment and legislation development, although it damages China's environment from the perspective of scale effect.

In order to maximize IFDI's positive impacts and minimize its negative impacts, the Chinese government is supposed to take actions. Here are some suggestions.

- Optimize regional and industrial structure, promote China's all-round development.

- Improve investment environment.

- Adhere to the policy of independence, coordinate local enterprises with foreign enterprises to achieve common development.

This paper has several limitations, as well as some creative contributions to the topic.

Limitations

First of all, some data is not available. For example, major exhaust pollutant has some

lacking data in past years and it makes IFDI's impact on China's air quality hard to measure.

Another example, the index for measuring the improvement of technology and management

should have been TFP, but finally this paper adopts labor productivity because most data of TFP

is estimated and not authoritative. Authoritative data of China's TFP is not published by the

Conference Board. Lacking data causes some difficulties to deepen this study.

Second, the data may have some little deviations. Since the national statistical system and

statistical methods are different from year to year, the data used in this paper are not from the

same statistical caliber, which will inevitably lead to deviations in the analysis results.

Third, no matter the data for regressions, or the data for charts, is too little to make up a

sizeable sample. Too small sample size makes the results not representative and convincing.

Also, the fitness of regressions is not so good, which may be caused by ignoring too many

factors. Further study can be developed by exploring the effects of other variables on China.

Forth, time is constrained by the due date of the course's assignment. Inadequate time to

be dedicated to doing the research limits the scope of the paper's results and analysis. For

instance, this paper only expounds IFDI's impact on China's environment in theory. However,

the quantitative relationship between IFDI and China's environmental quality can be

represented by the relationship between IFDI, air quality index (AQI), water quality index (WQI)

and environmental comprehensive index (ECI), making IFDI's impact on China's environment

clearer.

Contributions

This paper helps readers get more familiar with the impacts of IFDI to China. Before this

project, people may only have a basic understanding that IFDI benefits China in economy, but

now they clearly know IFDI benefits China from what economic aspects and what extent. While

the majority of scholars use TFP to measure FDI's impact on technology and management, this

paper uses labor productivity creatively.

Also, the impact of IFDI on China's environment has been controversial for a long time.

Although this paper does not use a model to demonstrate the environmental impact of IFDI, it

used data and examples to theoretically analyze the impact from three perspectives.

In addition, most people only lay emphasis on IFDI's economic and environmental impacts,

ignoring other impacts that brought by IFDI. This paper comes up with another impact, which is

on China's legal mechanism. Only a few scholars explored the relationship between IFDI and

host countries' legal mechanism, let IFD's impact on China's legal mechanism alone. This paper

tests a linkage between IFDI and China's laws by examples from two sides. On one side, foreign

investors actively exert impacts on promoting China's legal mechanism; on the other side,

China's rulers put effort into developing a favor and fair legal environment to attract more IFDI

of high quality into China.

Only when the Chinese have a better awareness of the impacts of IFDI can they fully utilize

IFDI. This paper concludes that IFDI indeed contributes greatly to China's development, although

it has some negative impacts on China's economy and environment. This cognition may change

the way to attract IFDI and the type of IFDI while holding a more welcoming attitude towards it.

By better utilization of IFDI, which means to magnify its advantages and minimize its

disadvantages, the Chinese can promote the overall welfare of the society and improve their

living standard.

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Appendix

ARDL Approach

ARDL approach has several advantages compared to the standard cointegration test. First, it can be applied to variables integrated into order zero, order one or fractionally integrated. Second, it is more efficient if the sample size is small, which accords with the sample of this test. Considering these advantages, ARDL model is applied to identify the long-run relationship of FDI and GDP in China.

```
Dependent Variable: LOGGDP
Method: ARDL
Date: 11/25/19   Time: 14:28
Sample (adjusted): 2001Q1 2018Q4
Included observations: 72 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): LOGFDI
Fixed regressors: C
Number of models evaluated: 20
Selected Model: ARDL(4, 2)
```

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LOGGDP(-1)	0.113695	0.050259	2.262178	0.0271
LOGGDP(-2)	-0.031803	0.057224	-0.555761	0.5803
LOGGDP(-3)	-0.028127	0.057991	-0.485030	0.6293
LOGGDP(-4)	0.864826	0.055684	15.53094	0.0000
LOGFDI	0.060987	0.031492	1.936581	0.0572
LOGFDI(-1)	0.045565	0.031561	1.443725	0.1537
LOGFDI(-2)	0.065735	0.030705	2.140841	0.0361
C	-0.011049	0.053113	-0.208019	0.8359

R-squared	0.997373	Mean dependent var		3.937847
Adjusted R-squared	0.997086	S.D. dependent var		0.298517
S.E. of regression	0.016115	Akaike info criterion		-5.313701
Sum squared resid	0.016620	Schwarz criterion		-5.060738
Log likelihood	199.2932	Hannan-Quinn criter.		-5.212996
F-statistic	3471.343	Durbin-Watson stat		0.432570
Prob(F-statistic)	0.000000			

Just as analyzed above, the high value of the F-statistic and "0" of the p-value (F-statistic) show the good fitness of this model. The R-squared shows the large part of changes in the dependent variable that can be explained by the independent variable.

Stability Test

This study also uses CUSUMSQ test to test the stability of this model. CUSUMSQ test generates figure plots by using the sum of squared recursive residuals. The line of CUSUMSQ should be laid between critical lines.
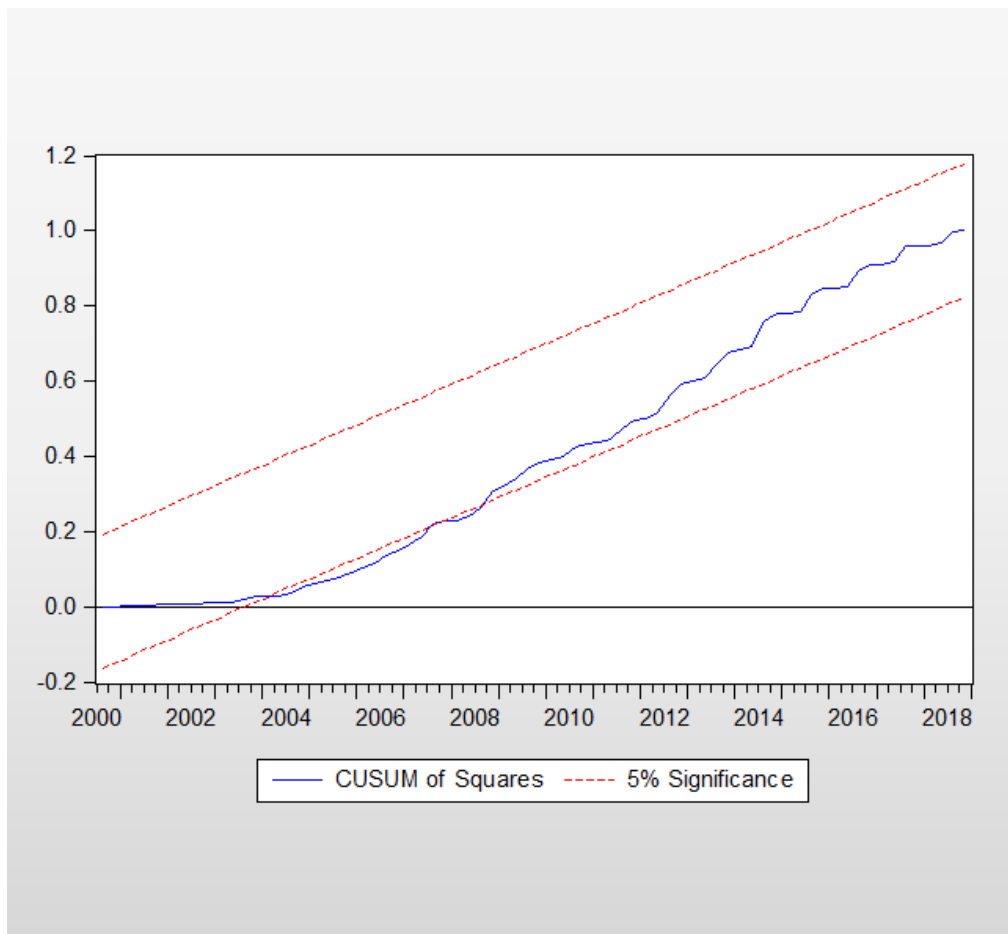
On the whole, the line of CUSUMSQ test is placed between the critical bounds, proving the model used is relatively stable.