經營學碩士 學位論文

해외직접투자가 중국의 경제성장에 미친 영향에 관한 연구

A STUDY ON THE EFFECTS OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH OF CHINA

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2006 年 2 月

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Approval by Committee

This Thesis which is an original work undertaken by Mr. Cuntao Xue in partial fulfillment of the requirements for the degree of Master of International Trade and Economics in accordance with the regulations governing the preparation and presentation of a dissertation at the Graduate School of Korea Maritime University, Republic of Korea, and it is herby approved.

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국문초록

1990 년대 이래 많은 해외직접투자(**FDI**)가 중국에 유입되었으나 이로 인한 문제점도 많았다. 중국의 경제성장에 미친 **FDI** 는 긍정적인 면과 부정적인 면을 공유하고 있으나 점차 증가추세에 있는 것만은 사실이다. 많은 나라의 **FDI** 와 경제성장간의 관계는 학자들간에 의견이 달랐다. **FDI** 가 경제성장에 많은 공헌을 했다고 주장하는 학자가 있는 만면 다른 학자들은 경제성장에 약간 공헌을 했을 뿐이라는 것을 다양한 분석을 통해 증명했다. 이 연구는 중국의 경제성장에 공헌한 점을 계량 경제학의 검증 방법으로 이용하는 경제성장의 신고전주의의 이론을 통해 현재 이용가능한 보고서와 자료들로, 종합적인 근거하에 실증적으로 분석했다. **FDI** 의 결론이 가져오는 것은 중국의 경제성장에 많은 이점을 가져왔다는 것이다. 그 연구는 중국의 경제성장에 가져올 긍정적이고, 부정적인 영향들을 더욱더 심화하고 있다. **FDI** 의 부정적인 측면으로 중국의 **WTO** 의 가입과 외국 기업의 규제가 점차 늦춰진다는 것을 특별하게 언급했다. 새로운 경향은 이익을 최대한으로 활용하기 위해서 중국의 산업에 참여하는 외국 기업이나 시장독점 및 새로운 기술의 봉쇄가 사라진다는 것이다. 따라서, 이 연구는 중국이 외국인 투자를 유발할 때 이런 많은 문제들을 증점적으로 검토해야 한다는 것이다.

Abstract

From 90’ in 20 century, a lot of FDI flowed into China as main form of inducing foreign investment of China, and many problems appeared. The advantages and disadvantages of FDI to economic growth of China then became attention-getting focus certainly.

The opinions of scholars to relationship between FDI and economic growth of host country are different. Some scholars thought that FDI contributed a lot for economic growth; the others proved it contributed little for economic growth by multinational comparing analysis.

This study analyzed empirically contribution of FDI to economic growth of China on the base of summing up now available literature and data, in the neo-classical theory of economic growth, with applying test methods of econometric. With drawing the conclusion of FDI brought advantages to economic growth of China in the mass, the study discussed further on positive and negative influences which FDI will bring to economic growth of China. According to negative influence of FDI, it mentioned specially that with China’s joining WTO and restriction on foreign companies being unloosen step by step, new trends like foreign companies intending to control industry of China, monopolizing market, blanking off new technology in order to get maximization of profit are appearing. So, this study thought that China should think much of these problems when China is inducing foreign investment positively.

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Chapter 1

Introduction

Foreign direct investment (FDI) is probably the single most important factor contributing to the globalisation of the international economy. Flows of FDI are forging increasingly strong economic links between developing and industrialised countries, and also among developing countries. Foreign direct investment flows to China have increased nearly four-fold in the 1990s and now account for almost 42 per cent of global FDI, reaching some $255 billion in 2004. A lot of FDI flowed into China as main form of inducing foreign investment of China, and many problems appeared. The advantages and disadvantages of FDI to economic growth of China then became attention-getting focus certainly. The opinions of scholars to relationship between FDI and economic growth of host country are different. Some scholars thought that FDI contributed a lot for economic growth; the others proved it contributed little for economic growth by multinational comparing analysis.

1.1 The Purpose of Study

China is one of the most attractive locations for FDI in the world. In 2004, for example, China accounted for 24.3 per cent of all FDI flows to developing countries. Net FDI has risen from less than $5 billion in the early 1990s, to $62 billion in 2004. Yet, how affect of FDI to economic growth of China could be? This study discusses the advantages and disadvantages of FDI to economic growth of China with test methods of econometric.

1.2 The Organization

The focus of this study is on the effect of FDI in China to economic growth of China. Briefly, this study is organized as follows: Part I, introduction, including the purpose, scope and methodology of studies. Part II reviews literatures about FDI. Part III introduces theory background of this study. Part IV focuses on FDI in China, starting with a review of recent trends and continuing with a discussion of the sectoral distribution, the regional distribution, and main vehicles and source countries of FDI. Part V analyzes empirically contribution of FDI to economic growth of China on the base of summing up now available literature and recent data, in the neo-classical theory of economic growth, with applying test methods of econometric. Part VI reveals some implications of the empirical results and makes a compare with previous literature and theory. The final part concludes the study.

1.3 The Methodology of Study

Major sources of FDI literature, which includes journal articles, books, conference papers, and dissertations, are derived and expanded in this study. These sources represent dissertation knowledge in the FDI discipline. The principle knowledge of this literature is in the neo-classical theory of economic growth; some methods of econometrics are the main tools in analyzing the case.

Chapter 2

A Literature Review on FDI

2.1 The Theoretical Literature

2.1.1 The Macdougall's Theory

Macdougall (1960)[1] built a general model for international capital movement named international investment benefit distribution model in his thesis: "The Benefits and Costs of Private Investment from Abroad: A Theoretical Approach" to study reason and influence of moving of international capital in theory. Macdougall thought that moving of international capital could lead to identify marginal output ratio of countries, so that could increase total output of the world and improve welfare of counties.

After Macdougall's theory, with scale of foreign direct investment enlarging and more and more is much accounted by international community, the western scholars studied deeply on foreign direct investment with macroscopic structure analysis and microcosmic behavioural analysis formed a lot of foreign direct investment theories.

[1] Macdougall, G.D.A. (1960) "The Benefits and Costs of Private Investment from Abroad: A Theoretical Approach," *Economic Record,* March, pp. 13 —35.

2.1.2 Monopolistic Advantage Theory

Research of foreign direct investment theory began with monopolistic advantage theory of S.Hymer (1960)[2], which was thought as the base of modern foreign direct investment theory. The theory was first presented in his doctor's thesis "The International Operations of National Firms: a research on foreign direct investment". The theory thought that the reason of foreign direct investment was Monopolistic Advantage.

2.1.3 The Theory of Product Life Cycle

American Harvard University professor R.G.Vernon (1966)[3] presented the theory of product life cycle in his thesis: "international investment and international trade in the product life cycle". The theory thought that product had life cycle. The theory of product life cycle explained partly incentive and characteristic of American multinational enterprises after the Second World War and took a great influence to theory of multinational enterprises.

2.1.4 The Theory of Internalization

English scholar P.J.Buckley and M.Casson (1976)[4] presented new theory of foreign direct investment for multinational enterprises in their book "The Future of the Multinational Enterprise" which was named the theory of internalization. The theory thought that the invalidation of market increased

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[2] S.Hymer (1960) "The International Operations of National Firms: A Research on Foreign Direct Investment," *Massachusetts Institute of Technology Press*, June, pp.44-57.
[3] R.G.Vernon (1966) "International Investment and International Ttrade in the Product Llife Cycle," *Quarterly Journal Economics*, 80, pp.196-207.
[4] P.J.Buckley and M.Casson (1976) "The Future of the Multinational Enterprise," *Mamillan, London*.

cost of trade in market and then promoted multinational enterprises to make an inside trade.

2.1.5 The Eclectic Theory of International Production

Multinational enterprises expert-professor J.H.Dunning (1977) [5] presented this theory in his paper “trade, location of economic activity and multinational enterprises: a research for eclectic approach”. The core of the theory was enterprises handling foreign direct investment should hold three kinds of superiority: ownership superiority (O), location superiority (L), internalization superiority (I), which was OLI superiority.

2.1.6 “Two-gap model”

In the theories about influence of foreign direct investment to developing countries, the representative theory was “two-gap model” which was presented in H.Chenery and A.Strout(1966)[6]’s thesis: “foreign assistance and economic development”. They thought that developing course of most of developing country shows economy growth would be bounded by three factors mainly. The first one was limitation of saving deposit. That means domestic demand level was so low that could not support expansion of domestic investment demand. The second was limitation of foreign exchange. Limited foreign exchange was not enough to pay for importing of capital and consumer goods needed by economic growth. The third was limitation of absorption ability. Foreign investment and other resources could not be used efficiently because of scarcity of necessary technology and management. The three factors would

[5] J.H.Dunning (1977) “Trade,Location of Economic Activity and Multinational Enterprises:A Research for an Eclectic Approach,” *International Production and the Multinational Enterprise*, pp.21-45.

[6] H.Chenery and A.Strout(1966) “Foreign Assistance and Economic Development,” *American Economic Review* Nr.4, S. pp.679-733.

block up economic growth. In fact, “two-gap model” was founded in the neo-classical theory of economic growth.

2.1.7 New Growth Theory (Endogenous Growth Theory)

As representative of new growth theory, P.Romer (1986)[7] and R.Lucas (1988)[8] thought that opening to the outside world and participating in international trade could bring a kind of effect named “Spillover”, the effect would accelerate translation of advanced science and technology in world and then improve economic growth of developing countries.

2.2 The Empirical Literature:

In empirical analysis, western scholars adopt two main means: One is studying the relation between influent foreign capital and economic growth by comparing and analyzing the situation in countries. The general way is to make a regression analysis about accumulation of foreign investment and foreign investment level with economic growth rate. The other is to study on contribution of foreign investment to national economic growth by growth equation which is elicited by production function. In all kinds of empirical analysis on influent international capital and domestic economic growth, especially for developing countries, some scholars thought that influent of international investment accelerated economic growth; the others showed a negative attitude according to the acceleration.

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[7] P.Romer (1986) “Increasing Returns and Long-Run Growth,” *Journal of Political Economy,* 94,5, pp.1002-1037.

[8] R.Lucas (1988) “On the Mechanics of Economic Development,” *Journal of Monetary Economics*, 22, pp.3-42.

V.N.Balasubramanyam and M.Salisu (1996)[9] made an inspection based on data of 46 countries in their thesis "foreign direct investment and economic growth in export-promoting countries and import-substituting countries" and that showed foreign direct investment accelerated economic growth of host country in some ways.

As scholar of World Bank, Husian and Jun (1989) made a regression analysis on East Asia countries (China not included) based on data of 1970-1988 and found that foreign direct investment had a significant accelerating effect to economic growth.

Raghuram G.Rajan, Eduardo Borensztein, G.Lee's (1993)[10] empirical research in their thesis "how does foreign direct investment affect economic growth" also got the result that influent international capital could accelerate economic growth of host countries.

Nevertheless, U.S.A economist Gupta and Islam (1983) studied the influence of foreign direct investment to economic growth in developing countries from 1950-1973 by means of time series combine with cross section series and found that foreign direct investment had favourable impact on saving in Asian countries[11].

It is regretful that these scholars didn't study the situation of China. The scholars of China also study influence of introducing foreign capital to

[9] V.N.Balasubramanyam and M.Salisu(1996) "Foreign Direct Investment and Growth in EP and IS Countries," *Economic Journal*,106, pp.92-105.

[10] Raghuram G.Rajan, Eduardo Borensztein, G.Lee's (1998) "How Does Foreign Direct Investment Affect Economic Growth?" *Cambridge: National Bureau of Economic Research.*

[11] Liu zhendong, Cai laixing (2000) "Inflow of International Capital and Domestic Economic Growth", *Foreign Economics and Management*, ,vol. 2, pp. 33-38.

economic growth by empirical analysis based on economic developing in China.

Li chaohui and Qin xianglan (1998)[12] studied the influence of foreign investment to economic growth and exporting and foreign exchange reserve and employment based on the data of 1979-1997 with regression analysis and got the positive result that foreign investment had a positive influence to all aspect as mentioned foregoing.

Song hong and Chai yu (1998)[13] made a empirical analysis on influence of foreigner invested company to industrial benefit showed that foreigner invested company declined the total industrial benefit, enlarged deviation extent of industrial structure of China.

Professor Shen kunrong (1999)[14] had an economic metric inspection on data of 1979-1999 with a model of multiple logging ranges and found that foreign direct investment had significant driving effect including demand effect in short term and supply effect in long term.

Economy in China is typical economy with superfluous labour and a great deal of excess labour is deposited in rural area. It is radical solution to accelerate excess labour transition from agriculture to non-agriculture industry so that problem of excess labour in rural area would be resolved by speeding up development of second industry and third industry, enlarging ability of

[12] Li chaohui and Qin xianglan (1998) "Impact of FDI on Economic Construction of China," *Quantitative Economics Study,* 130 (5), pp.6-9.
[13] Song hong and Chai Yu (1998) "A Study on Impact of Three types of Foreign-funded Enterprises on Industrial Structure of China," *Economics Study*, vol.1, pp.15-21.
[14] Shen kunrong (1999) "Foreign Direct Investment and Economic Growth of China," *Management World*, vol.3, pp.26-31.

employment of excess labour of non-agriculture industry. It is also one of core problems to keep developing steadily in long term and social stability. As soon as FDI flowed in China promoted economic growth, it created a great deal of employment opportunities and promoted excess labour transition from agriculture to non-agriculture industry directly or indirectly. After reform and opening, the number of labour employed by foreign invested enterprises was rising year by year. Wang zhile (1996)[15] made an empirical studied on the relationship between FDI and employment in his thesis and found that FDI had a significant influence on employment. The number increased from 60,000 in 1985 to 8,630,000 in 2004. In view of number of labour employed newly increased in all manner of economic type at deferent stage, the number of labour employed by foreign invested enterprises was considerable. Such as 1991-1999, the number of people employed newly increased in foreign invested enterprises was 5,460,000 while at the same time the number of labour employed in state-owned enterprises and collective enterprises reduced 17,740,000 and 18,370,000 separately.

Neo-classical theory of economic growth explains rest part of output which could not be explained by input of labour and capital with TFP (Total Factor Productivity). TFP contains system, resource structure, and technology. Resource structure has a great effect on initial level of TFP while has a little effect on variety of TFP. At the same time technical progress and system reform have a significant effect on variety of TFP. FDI helps to raise TFP by "Spillover" effect of technology and demonstration effect of system. "Spillover" effect of technology could be accomplished by way of technical progress induced by transferring of technology and way of technical progress

[15] Wang zhile (1996) "Positive and Negative Effect of Multinational Corporations on Economic of China," *Management World*, vol.3, pp.34-43.

induced by direct investment. He jie and Xu luodan(1999)[16] used econometric method of Feder (1982) for reference and got a result by building a regression equation with production function. That is the level of technique coming with FDI increases each 1%, Spillover effect of technology of domestic industrial enterprise (increasing of production) will improve 2.3%. In another study of He jie (2000)[17], he found that after 1990s, FDI flowed in industry of China did not increase essentially in collectively quality. Compared with domestic industrial enterprise, marginal TFP of foreign-invested enterprise in industry did not have decisive advantage. It shows that foreign-invested enterprise could not help to improve utilization efficiency of resources of China. Certainly spillover effect of foreign-invested enterprise to domestic industry was reality and its positive effect is enhancing with enlarging of reform and opening and acceleration of increasing of FDI. Professor Shen kunrong made a correlation analysis of cross section on FDI and TFP in provinces and the result was ratio of FDI to GDP increases 1 unit, TFP increases 0.37 units. In view of quantification of TFP needs professional technique and complicated methods of econometric analysis, this study will not have a analysis on distribution of TFP to China, but rather believe that returns of He jie and Shen kunrong proved that FDI increased TFP of China in the mass if looked at empirical analysis.

[16] He jie and Xu luodan(1999) "An Empirical Study on Effect of Spillover of FDI Flowed in Industrial Sector of China," *World Economics*, vol.2. pp.45-65.

[17] He jie (2000) "More Accurate Quantification on Spillover of Foreign Direct Investment to Industry Department of China," *Economics world*, vol.12, pp.56-65, vol.12.

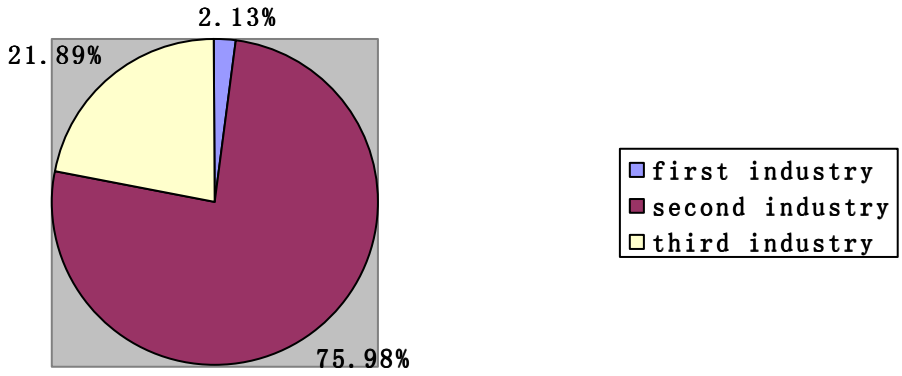
Chapter 3

The Development and Structure of FDI in China

3.1 Sector Distribution of Foreign Direct Investment in China

In view of sector distribution of foreign direct investment in China, we found that most of foreign direct investment flowed in tourist industry and hotels and processing trade manufacturing from late 1970s to early 1980s. And then investment projects in industry increased constantly, and became the main part of foreign direct investment. In early 1990s, the investment flowed in real estate increased fast and in some years it account for 1/3 of utilized investment. In these years, the proportion was declining. In view of accumulation, the investment flowed in industry still accounted for major share, about 60%. In 2004, 72.21% of FDI projects and 75.98% of contracted investment concentrated in second industry. And up to 2004, 72.85% of FDI projects and 63.66% of contracted investment in total concentrated in second industry.

Figure 3.1:FDI flows to China,by industry,2004



Source: http://www.fdi.gov.cn

In view of industrial structure, foreign direct investment flowed in manufacturing mainly. In 2004, 56.35% of FDI projects and 50.31% of contracted investment and 46.39% of utilized investment were thrown in manufacturing. Such as real estate developing and managing (9.81%), leasing and business services (4.66%), transport, storage and post (2.10 %) also had a big proportion in utilized investment. But finance and insurance industry, science research, technology services and education didn't have a big proportion in utilized investment.

Table 3.1: FDI flows to China, by sector, 2004(USD$ million)

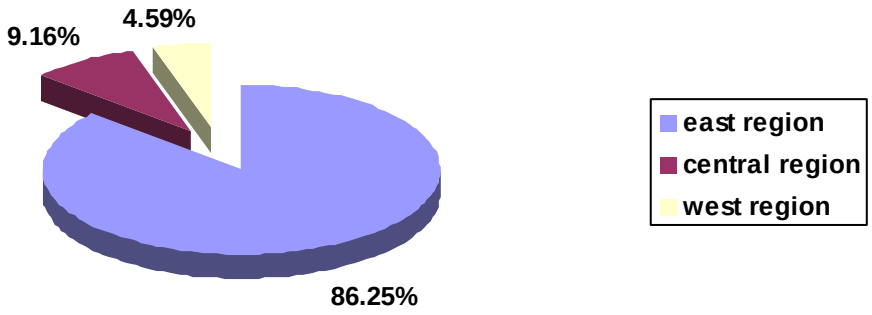
	No of Projects	Value	% Share of Value
Agriculture, forestry, fishery and water conservancy	1,130	111,434	1.83
Manufacturing	30,386	4,301,724	70.95
Extractive industry	279	53800	0.89
Power, gas, water industry	455	113,624	1.87
Construction	411	77,158	1.27
Real estate developing and managing	1,767	595,015	9.81
leasing and business services	2,661	282,423	4.66
transport, storage and post	638	1272,85	2.10
Others	5,937	400,535	6.62
Total	43,664	6,062,998	100.00

Source: China Statistical Yearbook, 18-14, 2004

3.2 Regional Distribution of Foreign Direct Investment in China

Foreign direct investment in China was highly concentrated in several region of eastern seaboard. In 1980s, investment in eastern seaboard accounted for over 90% of total investment. After 1990, the proportion was declined. But the general trend wasn't changed and cumulated investment in eastern seaboard accounted for about 88% of total investment. The statistics of Ministry of Foreign Trade and Economic Cooperation shows that eastern region's share of FDI inflows was 87.77%; central region's share of FDI inflows was 9.92%, while western region's share of FDI was only 2.82% in 2004. Up to 2004, eastern region's share of cumulated FDI inflows was 86.25%; central region's share of FDI inflows was 9.16%, while western region's share of FDI was only 4.59%.

Figure 3.2: FDI inflows,by region,up to 2004



Source: http://www.fdi.gov.cn

3.3The Main Vehicles and Source Countries For FDI in China

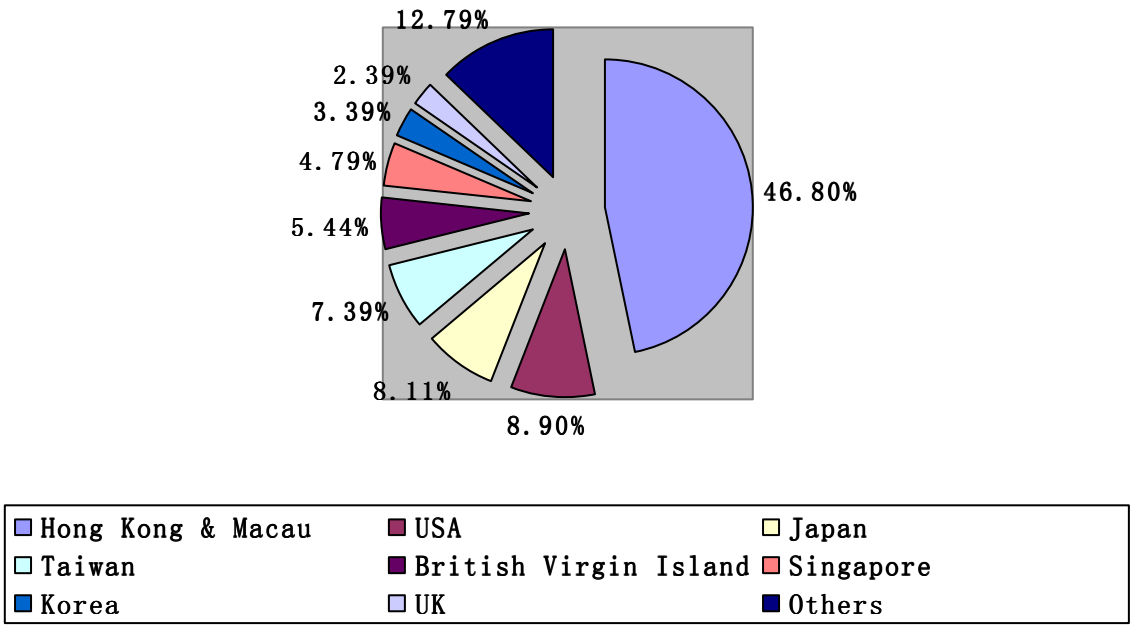
At the beginning of absorbing foreign direct investment, there were two main vehicles for foreign investment: equity joint ventures (EJV) and cooperative joint ventures (CJV). From 1990s, the proportion of wholly foreign-owned ventures (WFO) rose fast and from 1997, number of wholly foreign-owned ventures exceeded the number of equity joint ventures and from 1998, contracted investment of wholly foreign-owned ventures exceeded contracted investment of equity joint ventures. But from cumulative number point of view, as main vehicle with biggest proportion, equity joint ventures account for about half of utilized foreign investment while wholly foreign-owned ventures account for less 1/3 of foreign investment. According to statistics from Ministry of Foreign Trade and Economic Cooperation (table 3), up to 2004, wholly foreign-owned ventures account for 31.58% and equity joint ventures account for 45.99% while cooperative joint ventures account for 20.52% of utilized FDI.

Table 3.2: FDI by type of investment, up to 2004 (USD$ billion)						
type	No of Project	% of total	Contracted investment	% of total	Utilized investment	% of total
total	508,941	100.00%	1096.608	100.00%	562.101	100.00%
EJV	289,027	56.79%	471.212	42.97%	258.51	45.99%
CJV	69,572	13.67%	241.254	22.00%	115.343	20.52%
WFO	150,086	29.49%	376.356	34.32%	177.511	31.58%
Co-exploration ventures	256	0.05%	7.786	0.71%	10.737	1.91%

Source：www.chinafdi.gov.cn

From origin countries point of view, FDI in China has been largely dominated by Hong Kong, Macau and Taiwan region. Before 1990s, the investment originating in the three regions accounted for 80% of accumulated FDI in China. After early 1990s, investment from multinational enterprises in developed countries increased rapidly, the proportion of investment originating in the three regions is declined annually, but still account for 60% of accumulated FDI in China.

Figure 3.3:FDI flows to China, by origin, up to 2004



Source: http://www.fdi.gov.cn

Chapter 4

Empirical Analysis on FDI and Economic Growth in China

4.1 The Data

4.1.1 The Data Sources:

This study used data on record as sample data. FDI and GDP were calculated based on related data. The value of GDP, domestic gross investment came from 《China Statistical Yearbook》1983-2004. The value of FDI came from 《China Foreign Economic and Trade Yearbook》1983-2004. The value of export came from web site of Ministry of Commerce of the people's republic of China. The value of exchange rate came from 《China Financial Yearbook》1983-2004. The inflation rate would be expressed by annual growth rate of CPI (consumer price index) generally and the value of CPI came from 《China Statistical Yearbook》1983-2004.

4.1.2 The Time Span of Data

The time span was determined from 1983 to 2004. The main reason is that after the reform and open policy pursued in 1979, FDI in first several years was so little that it was be listed independently. So it is difficult to gather the data before 1983.

Table 4.1: Macroeconomic data in China, from 1983 to 2004 (USD$ billion)

year	GDP	GDP growth rate %	GDI	GDI growth rate %	FDI	Inflation rate %
1983	**71.7594**	**10.9**	**17.2921**	**11.99**	**0.92**	**1.5**
1984	**86.7110**	**15.2**	**22.1628**	**17.39**	**1.42**	**2.8**
1985	**108.3966**	**13.5**	**30.7520**	**24.54**	**1.96**	**8.8**
1986	**123.3640**	**8.8**	**37.7339**	**8.59**	**2.24**	**6.0**
1987	**144.6493**	**11.6**	**45.8488**	**9.70**	**2.31**	**7.3**
1988	**180.5115**	**11.3**	**57.4825**	**11.72**	**3.19**	**18.5**
1989	**192.3724**	**4.1**	**53.3301**	**0.72**	**3.39**	**17.8**
1990	**224.2793**	**3.8**	**54.6191**	**0.21**	**3.49**	**2.1**
1991	**261.4002**	**9.2**	**67.6481**	**8.19**	**4.37**	**2.9**
1992	**322.1052**	**14.2**	**97.7038**	**12.82**	**11.01**	**5.4**
1993	**418.7956**	**13.4**	**158.0689**	**24.92**	**27.52**	**14.7**
1994	**565.4099**	**11.8**	**206.0713**	**15.61**	**33.77**	**24.1**
1995	**707.1112**	**10.2**	**242.0709**	**15.48**	**37.52**	**17.1**
1996	**820.8537**	**9.7**	**277.0683**	**8.23**	**41.73**	**8.3**
1997	**900.3942**	**8.8**	**301.5854**	**5.64**	**45.26**	**2.8**
1998	**930.6796**	**7.8**	**343.4845**	**13.9**	**45.46**	**-0.8**
1999	**992.3519**	**7.1**	**361.0001**	**5.10**	**40.32**	**-1.4**
2000	**1081.5260**	**8.0**	**398.0378**	**10.30**	**40.72**	**0.4**
2001	**1160.0160**	**7.3**	**449.9817**	**13.70**	**46.88**	**0.7**
2002	**1238.1860**	**8.0**	**522.3894**	**17.40**	**52.74**	**-0.8**
2003	**1411.0520**	**9.1**	**666.4813**	**26.70**	**53.51**	**1.2**
2004	**1650.7280**	**9.5**	**847.3156**	**27.60**	**60.63**	**3.9**

Source: 1) The value of GDP, domestic gross investment came from 《China Statistical Yearbook》1983-2004

2) The value of FDI came from 《China Foreign Economic and Trade Yearbook》1983-2004

3) The inflation rate would be expressed by annual growth rate of CPI (consumer price index) generally and the value of CPI came from 《China Statistical Yearbook》1983-2004.

Table 4.2: Value of imp &export in China, from 1983 to 2004

(USD$ billion)

year	Value of imp & exp	Value of import	Value of export
1983	**43.62**	**21.39**	**22.23**
1984	**53.55**	**27.41**	**26.14**
1985	**69.60**	**42.25**	**27.35**
1986	**73.85**	**42.90**	**30.94**
1987	**82.65**	**43.22**	**39.44**
1988	**102.78**	**55.27**	**47.52**
1989	**111.68**	**59.14**	**52.54**
1990	**115.44**	**53.35**	**62.09**
1991	**135.70**	**63.79**	**71.91**
1992	**165.53**	**80.59**	**84.94**
1993	**195.70**	**103.96**	**91.74**
1994	**236.62**	**115.62**	**121.01**
1995	**280.86**	**132.08**	**148.78**
1996	**289.88**	**138.83**	**151.05**
1997	**325.16**	**142.37**	**182.79**
1998	**323.95**	**140.24**	**183.71**
1999	**360.63**	**165.70**	**194.93**
2000	**474.30**	**225.09**	**249.20**
2001	**509.65**	**243.55**	**266.10**
2002	**620.77**	**295.20**	**325.57**
2003	**851.20**	**412.83**	**438.37**
2004	**1154.74**	**561.38**	**593.36**

Source: http://www.mofcom.gov.cn

Table 4.3: Exchange rate of RMB against USD and loan interest rate for one year in domestic finance market from 1983 to 2004

year	**Exchange rate of RMB against USD**	**Loan interest rate for one year**
1983	**1.7455**	**7.84**
1984	**2.7957**	**7.64**
1985	**3.2015**	**7.99**
1986	**3.7221**	**8.20**
1987	**3.7221**	**8.20**
1988	**3.7221**	**9.00**
1989	**4.7221**	**11.34**
1990	**5.2221**	**9.36**
1991	**5.4342**	**8.64**
1992	**5.7518**	**8.64**
1993	**5.8000**	**9.36**
1994	**8.4462**	**10.98**
1995	**8.3175**	**12.06**
1996	**8.2981**	**10.08**
1997	**8.2798**	**8.64**
1998	**8.2789**	**7.92**
1999	**8.2795**	**6.39**
2000	**8.2774**	**5.85**
2001	**8.2766**	**5.85**
2002	**8.2770**	**5.31**
2003	**8.2800**	**5.31**
2004	**8.2700**	**5.31**

Source:《China Financial Yearbook》1983-2004

4.2 The Empirical Analysis

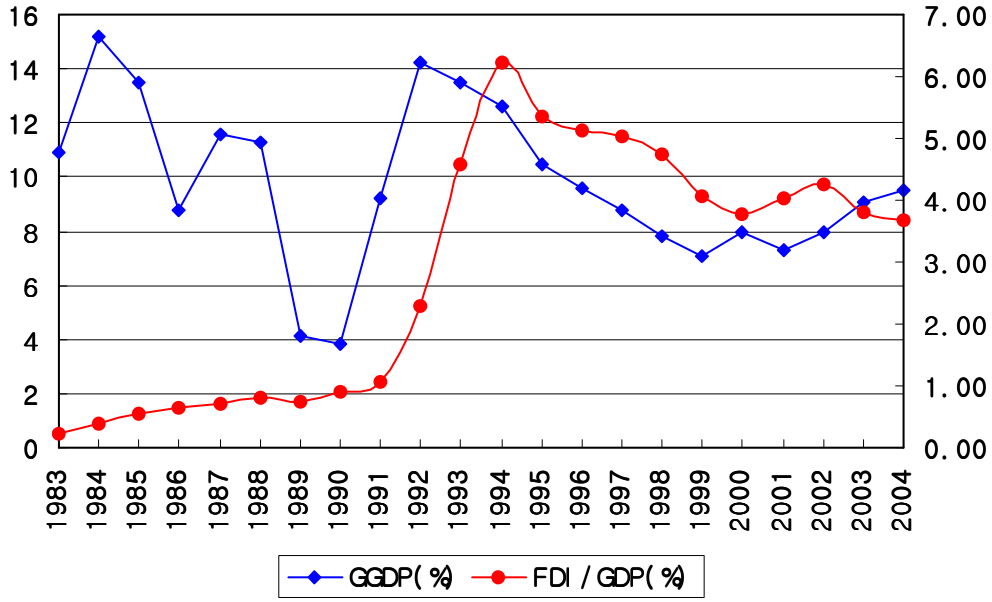
4.2.1 Introduction

Neo-classical theory of economic growth thought that output of one country would be function of capital, labors, and total factor productivity rate. FDI acts on above-mentioned variables to effect economic growth. While there is no adequate model for empirical study on relationship between FDI and employment and it is very difficult to quantify the TFP of china, this article will study on the effect that made by FDI to economic growth of china under the theory of neo-classical theory of economic growth start with relationship between FDI and GDP, domestic investment.

Figure 4 shows changes of real growth rate of gross domestic product (GGDP) and FDI/GDP from 1983-2004. When professor Shen kunrong (1998) analyzed GGDP and FDI/GDP, the used data was actual GDP which was calculated with fixed price in 1990 and then changed to US dollar. This study thought that as investment to host country, FDI should be accounted with the price of the year on buying all kinds of raw material and paying wages to workers. So it would be more scientific to use ratio of FDI and GDP accumulated by prevailing price in that year and exchanged to US dollar as index to measure degree of dependency to FDI. From figure 1 we found that FDI in China accounted for less than 1% in GDP before 1990, so that the relationship between FDI and economic growth was not significant. While after 1990, the usage of FDI in China had a rapid development, especially in 1992 and 1993, FDI/GDP increased as right ascension. In 1994, FDI/GDP reached 6.22%. The effect of FDI to economic growth of China becomes more and more obvious.

In a general way, Domestic Investment of country consists of two parts: National Investment and Foreign Investment. As one part of Domestic Investment, Foreign Investment has different forms which effect aggregate investment in different way. In a general may, FDI worked for incorporation and acquisition would not increase domestic investment but replace domestic enterprise with foreign enterprise or joint ventures and domestic enterprise would be crowded out domestic enterprise from domestic market. Reisen (2000)[18] did a competitive study on Latin America and East South Asia and found that most of foreign investors purchased existing enterprises in Latin America. FDI existed in the form of extending creditor's rights and stock rights and hiving off nationalized industry to private ownership and did not form a new productivity.

Figure 4.1: Growth rate of RGDP and FDI/GDP from 1983 to 2004



Source：《China Statistical Yearbook》1983-2004，

Note: left-coordinate indicates RGDP，right-coordinate indicates FDI/GDP

RGDP indicates real growth rate of GDP

[18] Reisen, H.(2000), "Pensions, Savings and Capital Flows from Ageing to Emerging Markets", *Development Centre Studies*, OECD, Paris

4.2.2 The Models

As above mentioned, there are two ways to measure contribution of FDI to economic growth of host country quantitatively. One is to make economic growth rate as explained variable and make foreign investment level and accumulation of foreign capital as explaining variable and then make a regression analysis. The other is to study contribution of foreign capital to economic growth of host country by growth equation deducted with production function. In view of it is difficult to estimate production function of China, we chose the former way.

The first model:

This study constructed a model based on the analysis carried out by Maxwell j.Fry (1995)[19]. While his study was based on a model that incorporates a cross section of developing countries, our analysis was conducted for the period 1983– 2004 (22 observations) and for one country: the People's Republic of China. The data period is annual and the data are presented as a pure time series.

[19] Maxwell J.Fry (1995), "Foreign Direct Investment in Southeast Asia: Differential Impacts", *SEAN Economic Research Unit, Institute of Southeast Asian Studies.*

$$YG=a+b*YG(-1)+c*IG+d*IY(-1)+e*FDIY+f*FDIY(-1)+g*IF+h*XKG+\varepsilon$$

Where YG=growth rate of actual GDP，

YG (-1) =lagged growth rate of real GDP

IG=growth rate of domestic investment，

IY（-1）=ratio of lagged domestic investment to GDP，

FDIY=ratio of FDI to GDP,

FDIY（-1）=ratio of lagged FDI to GDP，

IF=inflation rate，

XKG=ratio of value of export to GDP，

ε=disturbance

The dependent variable is growth rate of actual GDP. Real GDP refers to the GDP wiping off inflation factors. The independent variables are lagged growth rate of actual GDP, growth rate of domestic investment, ratio of lagged domestic investment to GDP，ratio of lagged domestic investment to GDP，ratio of FDI to GDP, ratio of lagged FDI to GDP, inflation rate，ratio of value of export to GDP.

In theory, growth rate of GDP has a positive correlation relationship with growth rate of domestic investment and growth rate of export, and it also has a positive correlation relationship with lagged growth rate of GDP and has a nondeterministic correlation relationship with inflation rate. FDI and FDI (-1) have a nondeterministic correlation relationship with GDP. It is just the subject investigated in the first model of this study.

The second model:

This study consulted model that built by Professor Shen kunrong (1999)[20] to study affection of FDI to economic growth of countries in Southeast Asia to have an econometric study on relationship between FDI and domestic investment in China.

IY=a+b*YG (-1) +c*IY (-1) +d*FDIY+e*REXL+f*IR+g*IF+ε

Where IY=ratio of domestic investment to GDP,

YG (-1) = lagged growth rate of real GDP,

IY（-1）=ratio of lagged domestic investment to GDP，

FDIY=ratio of FDI to GDP,

REXL=exchange rate of RMB against US dollar,

IR=loan interest rate for one year in domestic finance market,

IF=domestic inflation rate,

ε=disturbance

The dependent variable is ratio of domestic investment to GDP. Real GDP refers to the GDP wiping off inflation factors. The independent variables are lagged growth rate of real GDP, ratio of lagged domestic investment to GDP, exchange rate of RMB against US dollar ratio of FDI to GDP，loan interest rate for one year in domestic finance market，domestic inflation rate.

In theory, domestic investment has a negative correlation relationship with loan interest rate, has an positive correlation relationship with lagged

[20] Shen kunrong (2000), "Foreign Direct Investment and Economic Growth-empirical analysis on Southeast Asia", *Symposium of Excellent Post Doctor in China in 1999,* pp. 3-12.

growth rate of GDP and lagged domestic investment. And it has a nondeterministic correlation relationship with exchange rate, inflation rate and FDI. The relationship between FDI and domestic is just the subject investigated in the second model of this study.

4.2.3 The Estimation Results

Using EVIEWS, estimation output for the first model shows as follows:

Dependent Variable: YG
Method: Least Squares
Date: 12/19/05 Time: 13:22
Sample (adjusted): 1984 2004
Included observations: 21 after adjustments
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	14.81738	0.334595	4.403911*	0.7007
YG(-1)	0.091215	0.243563	0.374501	0.7141
IG	0.277602	0.080398	3.452862*	0.4332
IY(-1)	-32.18448	0.152804	-2.106033***	0.5552
FDIY	24.95095	0.726301	0.344803	0.7358
FDIY(-1)	7.106625	0.714014	2.099477***	0.9223
IF	0.049834	0.062859	0.344793	0.4421
XKG	2.034484	0.122973	2.59821**	0.8755

R-squared	0.936159	Mean dependent var	9.638095
Adjusted R-squared	0.832553	S.D. dependent var	2.997745
S.E. of regression	2.049562	Akaike info criterion	4.555461
Sum squared resid	54.60917	Schwarz criterion	4.953374
Log likelihood	-39.83234	F-statistic	4.255080
Durbin-Watson stat	2.174440	Prob(F-statistic)	0.011840

Estimation equation with substituted coefficients:

YG = 14.817+0.091*YG(-1)+0.278*IG – 32.184*IY (-1)
(4.404) [21] (0.375) (3.453) (-2.106)
+24.951*FDIY+7.107*FDIY(-1)+0.050*IF+2.034*XKG
(0.344) (2.099) (0.345) (2.598)
……..…….. ①

R-squared=0.936159 Adj- R-squared=0.832553

Durbin-Watson stat=2.174440 F-statistic=4.255080

According to model of Maxwell J.Fry, we get equation ①. It includes growth rate of domestic investment, ratio of lagged domestic investment to GDP, inflation rate, ratio of value of export to GDP etc many economic variables. In view of result, economic growth rate has a positive correlation relation with growth rate of domestic investment in the same year, ratio of lagged FDI to GDP, ratio of value of export to GDP. At the same time, correlation coefficient and significant level are higher. There into, whole regression equation is satisfied significantly on 95%[22], growth rate of domestic investment is significant on 1%, ratio of lagged FDI to GDP is significant on 10%, and ratio of value of export to GDP is significant on 5% and ratio of lagged domestic investment to GDP is significant on 10%[23]. Economic growth rate had a negative correlation with ratio of lagged domestic investment to GDP.

[21] The value in bracket is T- statistic value.
[22] The significance level of regression function was estimated according to F-statistic.
[23] In this article, * means being significant on 1%, ** means being significant on 5%, *** means being significant on 10%.

Using EVIEWS, estimated result of second model shows as follows:

Dependent Variable: IY
Method: Least Squares
Date: 12/19/05 Time: 13:29
Sample (adjusted): 1984 2004
Included observations: 20 after adjustments
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.263334	0.084602	3.112614*	0.8221
YG(-1)	-0.001043	0.002187	-0.476919	0.6413
IY(-1)	0.778260	0.248383	3.133308*	0.7901
FDIY	2.258119	0.923201	2.445967**	0.2914
REXL	-0.014944	0.012019	-1.843313***	0.5357
IR	-0.018698	0.005552	-3.367908*	0.5003
IF	0.002386	0.002023	1.779168***	0.7595

R-squared	0.942293	Mean dependent var	0.342602
Adjusted R-squared	0.915659	S.D. dependent var	0.070220
S.E. of regression	0.020393	Akaike info criterion	-4.678032
Sum squared resid	0.005406	Schwarz criterion	-4.329525
Log likelihood	53.78032	F-statistic	35.37929
Durbin-Watson stat	2.189956	Prob(F-statistic)	0.000000

Estimation equation with substituted coefficients:

IY = 0.263-0.001*YG(-1)+0.778*IY(-1)+2.258*FDIY
(3.113) (-0.477) (3.133) (2.446)
-0.0149*REXL-0.018*IR + 0.002*IF ……..……②
(-1.843) (-3.368) (1.779)

R-squared=0.942293 Adj R-squared=0.915659

Durbin-Watson stat=2.189956 F-statistic=35.37929

According to regression model of Professor Shen kunrong, we got regression equation②. From the regression equation, it could be found that goodness of fit was good, each parameter could pass T test except lagged growth rate of real GDP. Thereinto, ratio of lagged domestic investment to GDP is significant on 1%, ratio of FDI to GDP is significant on 5%, exchange rate of RMB against US dollar is significant on 10%, loan interest rate for one year in domestic finance market is significant on 1% and domestic inflation rate is significant on 10%. So this regression equation was infallible.

4.2.4 The Empirical Implications

From above-mentioned result for the first model, economic growth rate has a positive correlation relation with growth rate of domestic investment in the current year, ratio of lagged FDI to GDP, ratio of value of export to GDP. That means domestic investment, FDI in last year and export have positive effect on economic growth of China. FDI promoted economic growth of China at least in the mass from economical standpoint. While acceleration of lagged FDI to economic growth of China was more significant because China kept incorporation and acquisition of multinational enterprises being restricted and FDI appeared in form of newly established enterprise, investment in current year would be launched into production and operation in next year or longer. In company with China joined the WTO and liberalization of incorporation and acquisition, situation will be changed. The phenomenon of FDI will not increase domestic investment but rather crowd out domestic enterprise from domestic market may appear. This kind of incorporation and acquisition can not increase production ability of host country and its negative influence to economic growth of China should not be neglected.

In the result of regression analysis on the second model, domestic investment in China has a negative correlation relation with domestic loan interest rate and a positive correlation relation with lagged domestic investment and FDI in current year, which is consistent with the theory. But in theory, correlation coefficient of domestic investment and actual exchange rate and inflation rate may not be determinate. While in China, domestic investment has a negative correlation relation with actual exchange rate and has a positive correlation relation with inflation rate. So it shows that FDI was good for increasing domestic investment and did not crowd out national investment. It profited from FDI used by China appeared in form of newly established enterprise instead of incorporation and acquisition.

4.2.5The Comparison of the Study with Other Empirical Studies

This study found that on the one side foreign scholars didn’t study the situation of China and on the other side domestic scholars in China studied influence of foreign direct investment to economic growth of China based on the data from 1978- the beginning of reform and opening to outside world to 1999. But this study though that on the one side that before 1983, foreign direct investment used by China was no more than 1% of gross domestic product and the influence of foreign direct investment to economic growth was weak and at the same time on the other side, after foreign direct investment came into capital market of China after 1983, there were great changes in following aspects: first, the main body of investment was middle and small capital before 1990 while after 1990, up to 2004, foreign investment had a well improved in quality and scale, huge multinational enterprises became the main body of investment in China. Second, the purpose of foreign investment had changed from obtaining cheap labor of China at the beginning to extend market of China. Third, the investment form had changed from joint venture to

exclusive investment; the foreign investors are trying to get status of proprietary in China. In addition, market economic system was established generally in earlier of 1990. After the middle of 1990, especially in these years, economic of China broke away from shortage economic and changed from seller's market to buyer's market. So we carried out an econometric analysis on economic data of 1983-2004 emphatically according to character of economical operation in China.

Comparing with the model built by Maxwell, this study found that the growth rate of GDP in previous year, FDI and inflation rate in current year have no significant effect on GDP in China while growth rate of domestic investment in current year, FDI in previous year and export value in current year have significant positive effect on GDP. Domestic investment in previous year has a negative effect on GDP but it is not significant in statistic. The reason of FDI in previous year has positive effect on GDP is because that the government of China keeps incorporation and acquisition of multinational enterprises being restricted and FDI appeared in form of newly established enterprise, investment in current year would be launched into production and operation in next year or longer.

Comparing with the model of Professor Shen kunrong, this study found that growth rate of GDP in previous year has no significant effect on GDP in China while domestic investment in previous year, FDI in current year, inflation rate have significant positive effect on domestic investment in current year, and exchange rate and loan interest rate have significant negative effect on domestic investment in current year. So it shows that FDI in current year was good for increasing domestic investment and did not crowd out national investment. It profited from FDI used by China appeared in form of newly established enterprise instead of incorporation and acquisition.

Chapter 5

Conclusion

The forgoing paragraphs made an empirical analysis on effect of FDI to economic growth of China with econometrics tools and determined that FDI had a great distribution to economic growth of China in the mass. From regression analysis on economic growth rate and FDI we found that growth rate of GDP has a positive correlation relation with growth rate of domestic investment in the current year, lagged FDI, export in current year. That means domestic investment, FDI in last year and export have positive effect on growth rate of GDP of China. While acceleration of lagged FDI to growth rate of GDP of China was more significant because China kept incorporation and acquisition of multinational enterprises being restricted and FDI appeared in form of newly established enterprise, investment in current year would be launched into production and operation in next year or longer. FDI in current year and domestic investment in previous year have a positive correlation relation with domestic investment in China. While in China, domestic investment has a positive correlation relation with inflation rate. With further discussion on positive effect of FDI we found that FDI accelerated economic growth through promoting upgrade of industry structure, enlarging scale of foreign trade, improving foreign trade structure, accelerating development of foreign trade and paying revenue. But as mentioned in forgoing paragraphs, in company with China's participation of WTO and liberalization of incorporation and acquisition, new phenomenon of accomplishing maximization of profit appeared as motive, controlling industry of China calculatedly, holding the market and interdicting advanced techniques. So, this study thought that China should think much of this problem when attracting foreign investment positively.

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