WORKING PAPERS IN ECONOMICS

Macroeconomic Impact of Direct Foreign Investment in China 1979-93

by
Haishun Sun

No. 232 **June 1996**

DEPARTMENT OF ECONOMICS

The University of Sydney
Australia 2006

Macroeconomic Impact of Direct Foreign Investment in China 1979-93

by
Haishun Sun

No. 232 June 1996

Abstract

Direct foreign investment (DFI) has played an important role in the economic development of China in the past 15 years. It contributed to the Chinese domestic capital formation and industrial growth, and promoted export expansion and employment creation. This paper provides an empirical investigation of the impact of DFI on these macroeconomic variables of China. The regression analysis using pooled time-series and cross-section data shows that DFI positively affected the domestic capital formation and economic growth in the coastal region of China. In addition, DFI added a dynamic force to the industrial growth and exports of China. At the same time it created new employment. The Chinese experience in using DFI would be of valuable implications for other developing countries.

National Library of Australia Card Number and ISBN 1-86451-225-3

CONTENTS

Macroeconomic Impact of Direct Foreign Investment in China 1979-93 *

1. Introduction

The Chinese economy has experienced a rapid growth in the past 15 years, with an annual growth rate of 9.5 percent on the average. One of the major driving forces for this remarkable economic growth has been direct foreign investment (DFI). By the end of 1994, the total realised DFI in China amounted to US$95.5 billion, with 221,777 foreign-invested enterprises (FIEs) approved. As DFI rapidly flows into China, its role in the Chinese economic development become increasingly important.

This paper attempts to assess the macroeconomic impact of DFI on the Chinese economy, analysing its effect on the domestic capital formation, economic growth, industrial production, employment and exports of China. Firstly, it presents a regression analysis of the effects of DFI on China's economic growth and domestic investment, using the pooled cross section and time series data. Secondly, it examines the contributions of FIEs to the Chinese industrial growth. Thirdly, this paper probes the employment creation effect of DFI in China. This is followed by a discussion of the impact of DFI on China's exports and trade balance. The final section of this paper is conclusions and policy implications.

2. Effects of DFI on the Domestic Investment and Economic Growth

Theoretically, DFI can affect the total capital formation of the host country in various ways. As one type of foreign capital inflow, DFI can augment the total financial resources available for investment, thereby promoting capital formation in the host country. At the same time, DFI can dynamically influence domestic investment in following ways. First, DFI may

* The financial support from the World Bank for this research project is gratefully acknowledged. The author would like to thank Dr Joseph C. H. Chai, Dr Paul Ivory and Professor Ben Tipton for their valuable advice and comments on this study.

encourage domestic investment by creating new investment opportunities for local firms in leading industries or by easing economic growth bottlenecks such as the shortage of infrastructure provision and the shortage of investment capital and foreign exchange. Second, DFI can stimulate domestic investment through industrial linkage effects, i.e. buying locally made inputs from and providing intermediate inputs to local firms. Third, DFI increases the host country's exports, which would have a positive effect on domestic savings and investment. Fourth, DFI may take physical form such as equipment, machinery, instruments and technology, which cannot be made locally, and therefore are essential for domestic capital formation in a developing host country. However, DFI may discourage domestic investment if foreign firms compete with local firms both for the use of scarce physical and financial resources and also for product markets. These effects work simultaneously and in different directions, with the net effect depending on their relative strengths.

Empirically, there are quite a few studies on the effect of DFI on domestic investment and economic growth in host countries. In the context of Canada, Lubits (1971) and Noorzoy 1979) found that DFI had a complementary effect on the domestic investment. However, a very strong substitution effect was found for the U.S.A (Noorzoy, 1980). In a study of 23 developing countries, Areskoug (1976) concluded that DFI's effect on the domestic investment in most developing countries was partially substituting. Using a simultaneous-equations model, Lee, Rana, and Iwasaki (1986) studied the effects of foreign capital inflows, including foreign private investment (FPI) and foreign aid, on economic growth and domestic savings in nine Asian developing countries, and found that FPI had a statistically significant favorable effect on the GDP growth and a positive, but not significant effect on the domestic savings.

In a recent case study of Taiwan, Tu (1990), examined the effects of DFI on several macroeconomic variables, including GDP, private fixed investment, private consumption, total exports and imports. He found that DFI stimulated the private fixed investment and increased the exports without significantly affecting the private consumption and imports.

However, all the above mentioned studies omitted China, the largest developing country experiencing economic boom and a surge of DFI during the last 15 years. To date, to

the author's knowledge, no systematic study has been conducted to test empirically the effects of DFI on the domestic investment and economic growth of China. This could be attributed to the lack of time-series data covering a long period of time and also to the difficulty in obtaining the detailed DFI data. This paper attempts to fill the gap and make an analysis of the macroeconomic impact of DFI in China.

2.1 The Model and Data

Due to the short period of time since the opening up of the Chinese economy in 1979, it is difficult to use time-series data to test the effects of DFI on the other macroeconomic variables such as the GDP growth and domestic investment at the national level. As an alternative, pooling time-series and cross-section data at the provincial level makes it possible to measure the effects of DFI. The regression model used in this study is a Kmenta Model (see Kmenta, 1986, section 12.2, pp.616-625), which is a cross-sectionally heteroskedastic and timewise autoregressive model.

In principal, this model applies Generalised Least Square (GLS) method to pooled cross section and time series data, taking cross sectional heteroskedasticity and time-wise autocorrelation into account. Therefore, the estimation using this technique gives more efficient estimates than ordinary least squares (OLS) or indirect least squares (ILS) methods. Using this model and technique, the regression analysis is performed to test the impact of DFI on the economic growth and domestic capital formation in China. The economic growth can normally be expressed as the growth of the gross domestic product (GDP). The GDP and the domestic investment equations are specified respectively as follows:

$$GDP = f(DS, DFI, EX, L)$$
$$DK = f(YPC, DFI, FK, EX)$$

where GDP stands for real GDP; DS for domestic savings; DFI for direct foreign investment (realised); EX for exports; L for labour force; DK for domestically financed fixed capital investment; YPC for national income per capita; and FK for foreign capital other than DFI. All the economic variables including GDP, domestically-financed fixed capital investment

(DK), income per capita (YPC), DFI, other foreign capital inflow (FK), and exports (EX) are in constant prices (1983=100), Therefore, the impact of inflation on the real relationships between these economic variables have been removed.

In the first equation, the GDP is explained by domestic savings (DS) and direct foreign investment (DFI), exports (EX) and labour (L). This equation is a traditional export-augmented neoclassical production function (Rana, 1985). The domestic savings and foreign investment are major determinants of capital formation and economic growth. Labour is an indispensable factor of production. The export variable is included in the GDP equation for the following reasons. First, exports can be used as an indicator of efficiency of resource allocation and factor productivity. This is because exports promote a country to specialise in the production of commodities in which the county has a comparative advantage. Specialisation in turn increases the technical and allocative efficiency. Second, the export growth represents an increase in the aggregate demand for domestic products, hence promoting domestic production. Third, trade creates the so-called dynamic gains, i.e. increasing competition and improving access to new technology. Finally, exports enable a country to import capital goods, which cannot be produced domestically. The positive impact of exports on economic growth has been confirmed by a number of studies (e.g. Hone, 1974; Lee, *et al.*, 1986).

In the second equation, domestically-financed investment is the function of DFI, other foreign capital (FK), income per capita (YPC), and exports (EX). The coefficients of DFI and FK measure the effects of foreign capital on the domestically-financed investment. The inclusion of income per capita (YPC) in the investment equation is justified on the ground of the Keynesian "acceleration principle". Since income per capita is a main measure of the average income level, its change would induce a change in investment at a faster pace. The coefficient reflects the strength of the stimulation effect of income growth on the investment. The inclusion of exports (EX) in the domestic investment equation reflects the "income effect" of exports on domestic savings, thereby on domestic investment. In addition, exports produce foreign exchange earnings, which is essential for many developing countries to import capital goods. Without imported capital goods, domestic capital formation would be

handicapped since some advanced equipment and machinery cannot be produced domestically.

In order to directly measure the impact of explanatory variables on dependent variables (GDP and domestically financed investment) in terms of percentage change, the two equations can be expressed in logarithmic form:

$$\ln GDP = a_0 + a_1 \ln DS + a_2 \ln DFI + a_3 \ln EX + a_4 \ln L + u$$

$$\ln DK = b_0 + b_1 \ln DFI + b_2 \ln FK + b_3 \ln YPC + b_4 \ln EX + v$$

where a_0 and b_0 are the estimated intercepts respectively for the equations. The estimated elasticity coefficients a_1, a_2, a_3 and a_4 in the first equation measure the percentage change in the GDP with regard to a one percent change in the domestic savings (DS), DFI, exports (EX) and labour (L) respectively. Likewise, b_1, b_2, b_3 and b_4 in the second equation measure the percentage change in the domestically-financed investment in response to a one percent change in DFI, other foreign capital inflow (FK), income per capita (YPC) and exports (EX) respectively. u and v are stochastic error terms.

The **hypothesis** to be tested is that DFI positively influenced the GDP growth and domestically-financed investment of China. Therefore, the expected signs of the parameters for DFI in both equations are positive. This hypothesis can be tested by examining t test and the estimated regression coefficients.

The data used in this model are pooled cross-section and time-series data, including ten coastal provinces in China over a ten year period from 1983 to 1992. Thus, each variable has 100 observations. The ten provinces are Fujian, Guangdong, Tianjin, Jiangsu, Zhejiang, Liaoning, Shandong, Beijing, Hebei and Shanghai. Hainan province is excluded in this study because Hainan was a part of Guangdong province before 1987, and its data was included in Guangdong's statistics. In the period under the study, the DFI in these ten provinces accounted for 90 percent of the national total. Therefore, the impact of DFI on the Chinese economy is concentrated in these provinces. Furthermore, the ten coastal provinces have been

the leading force in the Chinese economic growth and export expansion since the early 1980s. In 1992, they accounted for 53.3 percent of the GDP of China (SSB, 1993, p.31, p.37).

Most of the data used in this study are from the provincial statistical yearbooks of the ten provinces covering the period from 1983 to 1992. Some national statistical yearbooks or other materials published by the State Bureau of Statistics (SSB) and Ministry of Foreign Trade and Economic Cooperations (MOFTEC) are also employed.

2.2 Regression Results and Explanation

The regression results for the growth equation and domestic investment equation are presented in Table 1. Since the variables are in logarithmic form, the estimated coefficients shown in Table 1 are the elasticity coefficients of the dependent variables (GDP and DK) in response to a one percent change in the corresponding independent variables. The results for the first equation suggest that domestic savings (DS) and direct foreign investments (DFI), and increase in exports (EX) and labour force (L) significantly contributed to the GDP growth of the coastal region. The coefficients of these variables are positive and are statistically significant.

Among these explanatory variables, the domestic savings is the main determinant of the economic growth. A one percent increase in the domestic savings would give rise to a 0.53 percent increase in GDP. Direct foreign investment is an important contributor to the GDP growth. A one percent increase in DFI would lead to a 0.043 percent increase in the GDP. During the period 1983-92, the average growth rate of DFI in the coastal region was 45.8 percent per year. This would result in a 1.97 percent (45.8 x 0.043) increase in the GDP, which accounted for 20.7 percent of the GDP growth (9.5 percent) for the ten year period. In other words, 20.7 percent of the economic growth of the coastal region from 1983 to 1992 was brought by DFI. This is the direct impact of DFI on the economic growth. If the contributions of DFI to domestic investment and exports are taken into account, the total effect of DFI on the economic growth would be even larger.

Table 1: The Regression Results of DFI Effects

$\ln GDP = a_0 + a_1 \ln DS + a_2 \ln DFI + a_3 \ln EX + a_4 \ln L + u$

Independent Variables	Estimated Coefficients	t-ratio	Standardised Coefficients	Partial Correlation
ln DS	0.5319	17.86**	0.625	0.878
ln DFI	0.0431	8.042**	0.137	0.636
ln EX	0.0658	2.310*	0.063	0.231
ln L	0.2889	11.51**	0.381	0.763
Constant	2.2539	23.97**	0.000	0.926

Buse $R^2 = 0.9317$; d.f.= 95; ** the coefficients are statistically significant at 1% level for a one tailed test; * the coefficient is statistically significant at 5% level for a one tailed test. $F = 341.1 > F_{0.05} = 2.45$ (for a one tailed test).

$\ln DK = b_1 + b_2 \ln DFI + b_3 \ln FK + b_4 \ln YPC + b_5 \ln EX + v$

Independent Variables	Estimated Coefficients	t-ratio	Standardised Coefficients	Partial Correlation
ln DFI	0.1021	5.401**	0.296	0.485
ln FK	0.0190	1.501*	0.060	0.152
ln YPC	0.3233	2.874**	0.309	0.283
ln EX	0.2837	4.628**	0.360	0.429
Constant	0.9392	1.363*	0.000	0.138

Buse $R^2 = 0.6419$; d.f. = 95; ** the coefficients are statistically significant at 1% level for a one tailed test; * the coefficients are statistically significant at 10% level for a one tailed test; $F = 43.75 > F_{0.05} = 2.45$ for a one tailed test.

The increase in exports and labour force are also seen to have positive effects on the GDP growth. A one percent increase in exports would give rise to a 0.066 percent growth in the GDP. During the period from 1983 to 1992, the average growth rate of exports in the coastal region was 13.6 percent per year. This suggests that export expansion would lead to a 0.898 percent (13.6 x 0.066) increase in GDP during this period. This is direct impact of exports on the economic growth. Since export growth positively contributes to domestic investment, as shown in the second equation, its total impact on the economic growth would be more significant. Labour force also shows a positive and statistically significant impact on

the economic growth. A one percent increase in labour force is expected to give rise to a 0.29 percent increase in GDP. From 1983 to 1992 the labour force in the ten coastal provinces increased by 2.31 percent annually. Thus, labour force increase would result in 0.67 percent (0.29 x 2.31) increase in GDP, which accounts for 7.1 percent (=0.67/9.5) of the total economic growth.

Table 1 also shows that the effects of DFI, other foreign capital inflow (FK), GDP per capita (YPC) and exports (EX) on the domestically-financed investment (DK). The results suggest the following: (1) a one percent increase in the income per capita would result in a 0.32 percent increase in the domestic investment. This is the most important contributor to the domestic capital formation. (2) DFI positively contributes to the domestic investment. A one percent increase in DFI would lead to a 0.10 percent increase in the domestic investment. As DFI increased at 45.8 percent on the annual average for the period 1983-92, it would induce a 4.58 percent (=0.1 x 45.8) increase in the domestic investment. This is equal to 31.1 percent of the growth rate of the domestically-financed investment (14.74 percent) over the same period. This indicates that about one third of the increase in the domestically-financed investment is directly associated with or stimulated by DFI. Therefore, the impact of DFI on the domestic investment is positive and significant in the coastal region of China.

The positive impact of DFI on the domestic investment can be accounted for by the complementary relationships between DFI and the domestically financed investment. DFI can complement and stimulate the domestically-financed investment in China in various ways. Firstly, the formation of Sino-foreign joint ventures enables domestic investors to gain financial and physical resources for investment in new projects. Without foreign capital participation many investment projects, particularly those requiring a large amount of capital outlays and advanced technology, would be impossible to carry out. In addition, the joint venture mechanism also offer an important channel for foreign firms to transfer technology, management and marketing skills to local partners, thus creating new investment opportunities in new product fields.

Secondly, DFI, especially those in infrastructure projects such as airports, seaports, power stations, highways and other transportation and telecommunication facilities, improve

the investment environment, thereby enhancing the domestic investment. In recent years, the proportion of DFI in these infrastructure projects has remarkably increased. Consequently the bottlenecks for economic growth has been eased, and the domestically-financed investment has been encouraged. Therefore, DFI not only adds the financial resources to the host country, but also exerts a dynamic and positive effect on the domestically-financed investment. Thus, the total effects of DFI on the domestic investment tend to be stronger than its direct (i.e. first-round) effect.

The impact of exports on the domestic investment is also positive and statistically significant. A one percent increase in exports is expected give rise to a 0.28 percent increase in the domestically-financed investment. During the period under the study, the exports of the 10 coastal provinces grew at 13.6 percent. This would give rise to a 3.8 percent (0.28 x 13.6) increase in the domestically-financed investment, which accounted for 25.8 percent (3.8 / 13.6) of the growth of the domestically-financed investment. It suggests that one quarter of the growth of the domestically-financed investment was in response to the export expansion in the coastal region. Similarly, other foreign capital inflow, which is principally official and private foreign loans, and foreign investment in bonds and shares, is also positively related with the domestic investment. This is mainly due to the fact that in many cases foreign loans, especially project loans, are matched (tied) to domestic funds in investment projects.

2.3 Further Evidence for the Contribution of DFI to the Capital Formation

The contribution of foreign investment to the total capital formation of China can also be demonstrated by examining the changing share of foreign investment in the total fixed capital investment of China. Since the opening up of the Chinese economy, foreign capital (especially DFI) has become an important source of finance for the fixed capital investment. Table 2 shows the share of foreign investment in the total fixed capital investment of China. It increased from 3.8 percent in 1981 to 7.3 percent in 1993. It already overtook the government budget and became the third largest financial source for the total fixed capital investment in China.

The contribution of foreign investment to the total capital formation is more noticeable in the coastal provinces. For example, foreign investment constituted 16.2 percent

Table 2: Source of Finance for Total Fixed Capital Investment in China 1981-93 (100 million yuan)

Year	State Budget		Domestic Loans		Foreign Investment		Self-raised Funds		All Others		Total	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
1981	269.76	28.1	122.00	12.7	36.36	3.8	532.89	55.4			961.01	100
1982	279.26	22.7	176.12	14.3	60.51	4.9	714.51	58.1			1230.40	100
1983	339.71	23.8	175.50	12.3	66.55	4.6	848.30	59.3			1430.06	100
1984	421.00	23.0	258.47	14.1	70.66	3.8	1082.74	59.1			1832.87	100
1985	407.80	16.0	510.27	20.1	91.48	3.6	1533.64	60.3			2543.19	100
1986	440.63	14.6	638.31	21.1	132.16	4.4	1488.51	49.3	320.00	10.6	3019.62	100
1987	475.54	13.1	835.94	23.0	175.37	4.8	1745.18	47.9	408.83	11.2	3640.86	100
1988	410.01	9.1	926.68	20.6	258.99	5.7	2416.94	54.4	457.87	10.3	4496.54	100
1989	341.62	8.3	716.36	17.3	274.15	6.6	2355.50	56.9	450.09	10.9	4137.73	100
1990	387.65	8.7	870.88	19.6	278.26	6.3	2329.49	52.4	583.01	13.1	4449.29	100
1991	372.95	6.8	1292.19	23.5	316.27	5.7	2878.61	52.3	648.79	11.8	5508.80	100
1992	334.20	4.3	2152.02	27.4	457.14	5.8	4024.63	51.2	886.99	11.3	7854.98	100
1993	436.87	3.5	2925.81	23.5	907.29	7.3	6218.75	49.9	1942.14	15.6	12457.88	100
1981-93	4917.00	9.2	11600.55	21.7	3125.19	5.8	28169.69	52.6	5697.72	10.6	53563.23	100

Note: The figures for "other" source are included in "Self-raised funds" for the period of 1981-85.

Source: *Zhongguo Guding Zichan Touzi Tongji Zilao (The Statistical Materials of China's Fixed-Asset Investment) 1950-1985*, published by the State Statistical Bureau (1987), P.8; and *Zhongguo Tongji Nianjian (the Statistical Yearbook of China*, by SSB) 1991, p.143, 1992, p.145, 1993, p.145, and 1994, p.139.

of Guangdong's total fixed capital investment for the period from 1986 to 1992.[1] In Hainan Province, foreign investment accounted for 11.9 of the total fixed capital investment in 1990. It reached 13.3 percent in 1992 (*Hainan Statistical Yearbook* 1993, p.340).

Obviously, the increasing share of foreign capital in the total fixed capital investment indicates that the contribution of DFI to the total capital formation of China has become increasingly important. In addition to the direct contribution to the total capital investment, DFI may induce and stimulate domestically-financed investment. As has been tested in the regression analysis, DFI positively affects the domestically financed investment in China. Therefore, the net contribution of DFI to the total capital formation in China would be more significant than what has been shown by its share in the total fixed capital investment. By promoting the domestic capital formation, DFI has accelerated the economic development of China. This positive impact of DFI has been empirically verified by the regression analysis. These results are consistent with what is expected on the ground of development economics, which argues that capital formation is the most important determinant for economic growth, and DFI may promote the economic growth of the host country through its contribution to the domestic capital formation.

3. DFI and the Industrial Production

The contribution of DFI to the Chinese economic development is evidently verified by its role in the industrial growth in past few years. Since the late 1980s foreign invested enterprises (FIEs) have become important players in industrial activities at both the national and provincial levels. FIEs' share in the total output, value added and other relevant indicators of the industry sector[2] has risen substantially. Table 3 shows the increasing importance of FIEs in the industrial production of China in general, and also highlights the exceptional role of DFI in Guangdong Province in particular.

As shown in Table 3, the Gross Output Value of Industry (GOVI) produced by FIEs increased significantly. In 1988, FIEs produced 15.6 billion yuan of GOVI. By 1993 this

1. Calculated from SSB: *Annual Statistical Report on the Fixed Capital Investment of China* 1987-92.
2. According to the Chinese statistics, the industry sector includes manufacturing, mining and public utilities (electricity, gas, pipe water) production and supply.

figure increased to 346 billion yuan. As a result, the share of FIEs in the national GOVI of China rose from 0.9 percent in 1988 to 10.2 percent in 1993. Furthermore, the share of FIEs in the total net profit of the industry sector rose from 1.1 percent in 1988 to 17.5 percent in 1993 (see Table 3). In terms of growth rate, FIEs' achievement is more impressive. During the period from 1988 to 1993, the GOVI produced by FIES grew at 85.9 percent per annum, which is five times higher than the average growth rate of national GOVI (14.3 percent). This strikingly contrasts to a slow growth of the GOVI produced by state-owned enterprises. Over the same period, the GOVI produced by state-owned enterprises grew only by 6.7 percent per annum, which is less than half of the national average growth rate. As a result, the share of state-owned enterprises in the national GOVI declined remarkably from 56.8 percent in 1988 to 43.1 percent in 1993 (SSB: SYOC, 1994, p.375). This clearly indicates that FIEs have become a dynamic leading force accelerating the industrial growth of China.

In the coastal region, FIEs' contribution to the industrial production is more noticeable than that for the national average. In 1993, FIEs in the 12 coastal provinces produced 333.4 billion yuan of GOVI, accounting for 12.9 percent of their total industrial output value (SSB: SYOC, 1994, pp.382-385). In Guangdong Province, FIEs has become the second largest contributor, next only to the state-owned enterprises, to the industrial production. In 1992, FIEs produced one-third of Guangdong's GOVI (see Table 3). During the period 1987 to 1992 there was a remarkable increase in FIEs' output, fixed capital investment, revenue of sales and profits. Therefore, it can be argued that DFI has become the most important driving force for the Guangdong's economic boom. Without DFI, it would be impossible for this province to achieve an exceptional economic growth of 13.5 percent over the past ten years (GSB: Statistical Yearbook of Guangdong, 1993, p.77).

Fujian is another example which started opening up to foreign investment in the early 1980s. DFI also played an increasing role in the provincial economy. In 1985, FIEs produced 4.7 percent of the total provincial industrial output. By 1993, this share rose to33.5 percent. In Shanghai and Beijing FIEs produced 15.6 percent and 14.8 percent of the total industrial output respectively in 1993 (SSB: SYOC, 1994, pp.382-385).

Table 3: FIE's Contributions to the Industrial Production of China and Guangdong Province (Unit: 100 million yuan)

Industries	China										Guangdong									
	1988			1991			1993				1988			1991			1992			
	Total	FIE	%	Total	FIE	%	Total	FIE	%		Total	FIE	%	Total	FIE	%	Total	FIE	%	
Gross Output value	17458	156	0.9	22382	1176	5.4	34048	3460	10.2		1065	49	4.6	1964	536	27.3	2607	841	32.3	
Net Output Value	4301	36	0.8	5915	268	4.5	12843	1081	8.4		276	10	3.5	522	108	20.6	696	174	24.9	
Revenue of Sales	14001	135	1.0	20597	1079	5.2	35535	3240	9.1		953	35	3.6	1875	494	26.3	2538	778	30.6	
Original Value of Fixed Capital	10641	63	0.6	17156	751	4.4	25818	1686	6.5		701	56	7.9	1339	428	32.0	1485	383	25.4	
Net Value of Fixed Capital	7420	56	0.8	12020	473	3.9	18428	1363	7.4		376	19	4.9	879	206	23.4	1115	302	27.1	
Total Capital	11149	82	0,7	18804	723	3.8	37981	3013	7.9		842	42	5.0	1868	454	24.3	2417	660	27.3	
Sum of Profit and Tax	2289	19	0.8	2233	97	4.4	3924	327	8.3		134	5	3.3	188	32	16.9	249	57	23.0	
Net Profit	1190	13	1.1	643	61	9.4	964	169	17.5		69	2.4	3.5	72	19	25.9	115	39	33.7	
Tax paid	489	2	0.4	678	29	4.3	2321	158	6.8		21	0.3	1.5	52	3.4	6.5	38	4.5	11.9	
Enterprises (hundred)	4209	11	0.3	4189	67	1.6	4492	201	0.5		232	4	1.7	255	29	11.4	255	37	14.5	

Note: The figures for 1988 refer to all enterprises with independent accounting system, *the figures for all other years refer to the enterprises with independent accounting* system at town level and above. The gross output value in this table is at 1990 constant price. Values for other indicators are in current prices.

Source: *Zhongguo Gongye Tongji Nianbao (The Annual Statistical Report of China's Industry) 1988-1993*, prepared by the State Statistical Bureau; and *Guangdong Sheng Gongye Tongji Nianbao (The Annual Statistical Report of Guangdong' Industry)* 1988-92, prepared by the Statistical Bureau of Guangdong Province.

Table 4: FIE's Role in the Manufacturing Industries of China in 1993

(100 million yuan)

Industries	Gross Output Value			Net Output Value			Sum of Profit & Tax		
	Total	FIEs	%	Total	FIEs	%	Total	FIEs	%
Total	31352.5	3423.2	10.9	10862.7	1040.4	9.6	3466.5	314.2	9.1
Food,Beverage	2767.4	291.3	10.5	960.7	99.4	10.3	227.3	30.8	13.6
Textile	3699.8	349.6	9.5	950.9	107.2	11.3	110.0	15.7	14.3
Clothing and footwear	1564.3	488.0	31.2	477.0	144.4	30.3	78.6	28.4	36.1
Paper, printing	1139.7	139.0	12.2	340.2	34.3	10.1	86.4	12.3	14.2
Chemicals	4069.9	340.7	8.4	1183.7	110.5	9.3	379.9	34.7	9.1
Plastic products	754.7	151.6	20.1	208.6	42.4	20.3	37.4	7.1	19.0
Metal processing	4007.2	192.8	4.8	1944.3	62.3	3.2	794.6	22.0	2.8
Machinery	3071.5	166.3	5.4	1048.8	58.0	5.5	285.5	28.6	10.0
Transport vehicle	2191.0	289.7	13.2	2191.0	79.0	3.6	221.4	34.0	15.4
Electrical	1809.6	177.2	9.8	530.6	48.6	9.2	162.3	17.9	11.0
Electronics	1540.9	523.0	33.9	355.1	123.0	34.6	102.9	44.3	43.1
Instruments & office equipment	367.7	91.7	24.9	122.3	29.3	24.0	29.6	10.8	36.5

Note: The gross output value are in 1990 constant price and the value added and sum of profit and tax are in current price.

Source: *Zhongguo Gongye Tongji Nianbao (The Annual Statistical Report of China's Industry)* 1993, prepared by the State Statistical Bureau of China

The role DFI played in the Chinese industrial development can also be demonstrated by examining the share of FIEs in the total output value of various manufacturing industries. In 1993, 33.9 percent of the total output value of the electronic industry was produced by FIEs. In the industry of clothing, footwear and other fabric products, FIEs produced 31.2 percent of the total output. This is followed by precise instruments and office equipment (24.9 percent), plastic products (20.1 percent) and transportation vehicle (13.2 percent).

As shown in Table 4, in 1993 FIEs provided 43.1 percent of the total profits and tax of the electronics industry. In the industry of precise instrument and office equipment, 36.5 percent of the total profits and tax were provided by FIEs. Similarly, FIEs accounted for 36.1 percent of the total profits and tax yielded in the industry of clothing, footwear and fabric products. In other manufacturing industries, FIEs also provided a sizable share of the total output. On the average, FIEs produced 11 percent of total output value of the manufacturing

sector. These facts clearly suggest that FIEs have become an important pillar of China's manufacturing sector and played as a propeller to the industrial development of China.

4. DFI and Employment Creation

Employment creation is an important positive impact of DFI on the host country economy. For many developing countries, especially for those countries with a large unemployed labour force or in a severe state of underemployment, the creation of employment is one of top priorities of economic policies. China is a typical developing country with the largest population (1.2 billion) in the world. Employment creation has been an primary policy goal of the Chinese government. It is also one of the principal motivations of the government to attract direct foreign investment. In the past few years, the employment creation by FIEs became increasingly significant. It is estimated that nearly 10 million of people were directly employed by all types of FIEs in China in 1994 (*Economic Daily*, May 13, 1995, p.3).

In the context of the sectoral composition of the newly created employment, the industry sector (mainly manufacturing) is the largest employer of new employees. In 1993, there were 3.26 million of people working for FIEs, accounting for 4 percent of the total employees in the industry sector. Within the industry sector, new employments created by FIEs were centred in a few labour-intensive industries such as clothing, footwear and other fabric products, textile, electronic & electrical products, food and beverage. Of these industries, the industry of clothing, footwear and fabric products provides the single largest share of new employment. As shown in Table 5, 809 thousand of people were employed by FIEs in this industry in 1993, accounting for 21 percent of the national total employees in the industry. This is followed by the textile and electronic industries in which FIEs employed 397 thousand and 267 thousand Chinese workers respectively.

In terms of regional distribution, the newly created employment by FIEs are concentrated in the coastal region, especially Guangdong, Fujian, Jiangsu, Shanghai, Beijing, Shandong, Tianjin and Zhejiang. There were 841 thousand people employed in 30 thousand FIEs in Guangdong Province in 1993, which accounted for 10 percent of the total provincial

employment. FIEs also contributed significantly to Fujian's employment creation. As shown in Table 5, 392 thousand people worked in FIEs in Fujian province in 1993, accounting for 10.1 percent of the total employment in this province. In other coastal provinces, the employment created by FIEs also reached to a considerable size.

Table 5: The Employment Impact of FIEs by Industry and Region 1993 (1000 persons)

Industries[1]	FIE's Employee	Total Employee	FIEs' Share	Provinces[2]	FIE's Employee	Total Employee	FIE's Share
All industries	3264	82998	3.9	Total	2880	15964	1.8
Food & beverage	202	3846	5.3	Beijing	174	483.2	3.6
Textile	397	9036	4.4	Tianjin	87	303.2	2.9
Clothing,footwearr	809	3855	21.0	Hebei	82	728.8	1.1
Printing & paper	194	3376	5.7	Liaoning	112	1098.3	1.0
Chemicals	249	7252	3.4	Shandong	119	903.5	1.3
Plastic products	139	1515	9.2	Jiangsu	204	954.0	2.1
Metal products	96	2928	3.3	Zhejiang	168	553.8	3.0
Machinery	147	8795	1.7	Shanghai	204	505.3	4.0
Transport vehicle	94	4008	2.3	Guangdong	841	1022.2	8.3
Electrical product	136	3118	4.4	Fujian	392	389.4	10.1
Electronics	267	1809	14.8	Guangxi	46	385.4	1.1
Office machinery	70	1067	6.6	Hainan	21	121.6	1.7
Other	464	32393	1.4	Shaanxi	22	421.9	0.5

Note: 1.The employment figures for the industries refer to the number of employees in all industrial enterprises with independent accounting system. 2. The regional employment figures refer to the number of employees urban areas, does not include employment in rural areas.

Source: The employment data by industry are from *Annual Statistical Report of China's Industry 1993*, pp.298-301. The employment data by region are from *Statistical Yearbook of China 1994*, pp.84-85.

Employment creation is a very important contribution made by direct foreign investment to the Chinese economy. Since China has a large size of unemployed population, and in many cases the underemployment rate is as high as 30 percent. It is estimated that over the period 1995 to 2000 the unemployed population in China will reach 22.3 million people, with annual increase of 3.5 million unemployed people (*Australian Chinese Daily*, April 4, 1995, p.5). The high unemployment pressure is particularly conspicuous in the countryside where a large number of rural workers are in the state of chronic underemployment or hidden unemployment. In addition, economic reforms, especially industrial transformation, cause an increasing number of urban workers to quit from their previous positions. This is especially

the case for workers in state-owned enterprises. Under these circumstances, therefore, employment creation by FIEs become critically important for China both economically and socially.

The positive impacts of the employment creation by DFI on the economy are far beyond the direct employment growth. First, through input-output linkage effects, especially backward linkage effects, FIEs create new demand for domestically made products, and therefore spark and deliver a strong stimulus to local Chinese firms. Consequently, the output and employment of the domestic sectors will increase by a multiplier.

Second, the creation of new employment by FIEs has a considerable *income effect*. In general, the nominal salaries or wages paid by FIEs to Chinese employees are higher than that in the domestic sector. The increased income is expected to augment the domestic consumption and savings. It is generally agreed by economists that young people have a higher propensity to save than aged people especially retired people. Since most of the workers in FIEs are young (at age between 20 to 45), they tend to save a relatively large proportion of their disposable income. This would contribute to the domestic savings.

Third, the creation of new employment by DFI facilitates labour flow from traditional sectors (e.g. agriculture) or state-owned enterprises to foreign-invested sectors or enterprises. It is well known that the traditional sectors and state-owned enterprises are characterised by a high rate of underemployment, thereby a low labour productivity. In terms of economic efficiency, labour flow from these sectors to FIEs would result in an increase in the overall labour productivity of the economy. Therefore, the efficiency of resources allocation can be improved.

Finally, along with the inter-industrial and inter-firm flow of labour, the inter-regional flow of labour from rural areas to urban areas and from the inland regions to the coastal regions are also stimulated by DFI. This tends to increase the average productivity of labour in the rural areas or inland regions. At the same time, the labour flow contributes to production growth in the urban areas or coastal regions. Therefore, it can be argued that the newly created employment and the inter-regional or inter-industrial flow of labour tend to

improve the overall efficiency of allocation of resources, thereby creating a net gain to the Chinese economy.

5. DFI, Export Expansion and Foreign Trade Balance

Promoting exports is an important contribution of DFI to the host country. As foreign investors (MNCs) have advantages in international trading channels and expertise, they can improve the host country's access to overseas markets. In particular, export-oriented DFI can significantly increase the exports from the host country. This has been verified both theoretically and empirically in many studies (e.g. Hone, 1974; Helleiner, 1973; Rana, 1985). Export expansion has been found to lead the economic growth of many developing countries in recent decades.

In the case of China, exports have grown rapidly since 1979. During the period from 1980 to 1993, the Chinese exports increased by 13.3 percent on the annual average. As a result, the openness of the Chinese economy [(X+M)/GDP] rose from 15.4 percent in 1981 to 35.9 percent in 1993 (SSB: SYOC 1994, p.506 and pp.4-5). Among the factors promoting the export growth, DFI has played an important role. By the end of 1993, there were about 80 thousand FIEs in China, covering almost all sectors of the economy. FIEs have been the most active players in the export expansion drive. During the period from 1981 to 1993, the exports by FIEs grew at an annual rate of 85.4 percent, with the value increasing from US$32 million to US$25,240 million. Consequently, the share of FIEs in the total exports of China increased sharply from 0.1 percent in 1981 to 27.5 percent in 1993 (see Table 6). The rapid expansion of FIEs' exports led to a phenomenal growth of China's exports.

The contribution of FIEs to the export expansion in the coastal region is even more significant. As shown in Table 6, FIEs provided nearly half of the total exports of Guangdong Province. In 1992, the share of FIEs in the total provincial exports reached 44.3 percent. For the period from 1986 to 1992, the exports of FIEs increased by US$7,770 million, accounting for 54.8 percent of the increase in the total provincial exports. This indicates that FIEs have played a leading role in promoting Guangdong's exports. With FIEs' driving force, Guangdong's exports experienced an exceptional boom in the past few years.

During the period from 1986 to 1992 Guangdong's exports grew at an annual rate of 29.9 percent. This is significantly higher than the national average growth rate (17.6 percent).

Similarly, in other coastal provinces FIEs also contributed considerably to the exports. For instance, in Fujian and Jiangsu provinces, FIEs provided 44 percent and 20 percent of their total exports respectively in 1992.[3] Therefore, the contribution of FIEs to the exports of China (especially in the coastal region) has become critically important.

Furthermore, the role of FIEs in promoting the exports of China can also be demonstrated by examining their shares in the total exports of major commodities. As Table 7 presents, FIEs have become the dominant exporter for a number of major commodities exported from China. Among the major export commodities are garments, footwear and other fabric products, textiles, household electrical products, T.V. and sound equipment, office supplies, handicraft articles, machinery and equipment, plastic goods, toys, clock and watches, foodstuffs and beverage, and plastic goods. More impressively, in 1993 FIEs provided over half of the national total exports in some major exports such as T.V. and sound equipment (53.5 percent), clocks and watches (53.6 percent), plastic products (56.9 percent), office supplies (55.1 percent), sports goods (60.8 percent) and industrial tools and instruments (53.0 percent).

In addition, FIEs have gained an enlarging share in the exports of some capital/technology intensive products like machinery and equipment, transport equipment, and chemical products. In 1993, FIEs accounted for 25.0 percent, 30.0 percent and 15.0 percent respectively of these three categories of exports. From these facts it can be definitely maintained that DFI have significantly promoted the export growth of China. By promoting the exports of China, DFI can positively stimulate the Chinese economic development.

---

3. Calculated from Statistical Yearbook of China's Customs 1992, P.4-5.

Table 6: FIE's Effect on the Foreign Trade of China and Guangdong Province *(100 million US$)*

	China								Guangdong							
	Exports			Imports			Trade Balance		Exports			Imports			Trade Balance	
	Total	FIEs	%	Total	FIEs	%	Total	FIEs	Total	FIEs	%	Total	FIEs	%	Total	FIEs
1980	181.2	0.1		200.2	0.3	0.2	-19.0	-0.3	22.1			3.6			18.5	
1981	220.1	0.3	0.1	220.2	1.1	0.5	-0.1	-0.8	24.2			6.7			17.5	
1982	223.2	0.5	0.2	192.9	2.8	1.4	30.3	-2.3	22.7			8.0			14.7	
1983	222.3	3.3	1.5	213.9	2.9	1.3	8.4	0.4	24.0			9.4			14.6	
1984	261.4	0.7	0.3	274.1	4.0	1.5	-12.7	-3.3	25.2	0.7	2.9	12.1			13.1	
1985	273.5	3.0	1.1	422.5	20.6	4.9	-149.0	-17.6	29.5	2.2	7.3	24.3	3.4	11.9	5.2	-1.2
1986	309.4	5.8	1.9	429.0	24.3	5.7	-119.6	-18.5	42.5	3.9	9.2	25.6	8.5	32.3	16.9	-4.6
1987	394.4	12.1	3.1	432.2	31.2	7.2	-37.8	-19.1	54.4	6.2	11.4	36.2	8.0	22.0	18.2	-1.8
1988	475.2	24.6	5.2	522.8	57.5	11.0	-47.6	-32.9	74.8	12.0	16.1	51.1	11.3	22.1	23.7	0.7
1989	525.4	49.1	9.4	591.4	88.0	14.9	-66.0	-38.9	81.7	22.8	30.2	48.3	19.5	40.4	33.4	3.3
1990	620.9	78.1	12.6	533.5	123.1	23.1	87.4	-45.0	105.6	37.2	37.6	57.5	33.0	57.4	48.1	4.2
1991	719.1	120.5	16.8	637.9	169.1	26.5	81.2	-48.6	136.9	53.3	41.6	85.1	45.1	53.0	51.8	8.2
1992	850.0	173.6	20.4	806.1	263.9	32.8	43.9	-90.3	184.4	81.6	44.3	111.8	60.2	53.8	72.6	21.4
1993	917.6	252.4	27.5	1039.5	418.3	40.2	-121.9	-165.9								

Note: The figures in this table are based on the China's Customs Statistics.

Source: The national figures for period of 1980-91 are calculated from *China's Foreign Economic Statistics 1979-1991* published by the State Statistical Bureau (SSB) of China, and the figures for 1992 and 1993 are cited from *Wenhui Bao* (Hong Kong), March 22 1994. The figures for Guangdong province are based on *Guangdong Sheng Duiwai Jingji Guanxi Tongji Ziliao (Statistical Materials of Foreign Economic Relations of Guangdong Province), 1987-1992.*

Table 7: FIE's Contribution to The Exports of China by Commodity (Unit: million US$)

	1988			1990			1992			1993		
Commodities	FIEs	Total	%	FIEs	Total	%	FIEs	Total	%	FIEs	Total	%
Total	1746	40640	4.3	6021	62091	9.7	15591	84940	18.4	23390	91763	25.5
Food,beverage & wine	151	3602	4.2	304	4327	7.0	780	5654	13.8	1344	6152	21.9
Textile fibres & fabric	350	7431	4.7	825	6235	13.2	2031	10465	19.4	2979	12242	24.0
Garments, shoes & other fabric	240	4270	5.6	1359	6498	20.9	3583	12385	28.9	5696	17656	32.0
Household electrical appliances	57	509	11.1	247	873	28.2	563	1728	32.6	803	3179	25.3
TV receivers & sound equipment	270	744	36.3	712	1550	45.9	1018	1887	53.9	982	1836	53.5
Machinery and equipment	23	997	2.3	134	1877	7.1	349	2592	13.5	702	2839	25.0
Bicycles and spare parts	4	148	2.4	116	308	37.6	184	554	33.3	229	537	42.7
Plastic articles	59	280	20.9	213	447	47.6	526	823	63.9	847	1490	56.9
Handicraft article	69	736	9.3	224	899	24.9	708	1689	41.9	1021	2084	49.1
Toys	55	268	20.7	134	314	42.8	351	660	53.1	535	1512	35.4
Chemicals	55	1795	3.1	138	2627	5.3	351	3746	9.4	590	3854	15.0
Transport equipment	4	475	0.8	50	857	5.9	349	1545	22.6	551	1843	30.0
Clocks and watches	37	131	28.3	122	299	40.9	162	295	55.0	226	421	53.6
Metallic products	62	2201	2.8	172	2421	7.1	395	3685	10.7	639	3998	16.0
Tools and Instruments	81	553	14.7	383	1422	26.9	1394	2603	53.5	1818	3440	53.0
Sports goods	2	171	1.2	124	345	36.1	464	838	55.3	750	1234	60.8
Office supplies	16	38	43.3	35	67	52.2	57	103	55.1	74	135	55.1
General metalware	12	161	7.2	45	245	18.3	141	553	25.4	239	742	32.2
Other	200	16130	1.24	684	30481	2.3	2187	33134	6.6	3359	26570	13.0

Note: The figures of FIE's exports and China's total exports in this table are based on the MOFTEC's statistics, which are some times not identical to the statistics published by the Customs.

Source: The FIE's exports data is from *Zhongguo Duiwai Maoyi Tongji Nianbao (the Annual Statistical Report of China's Foreign Trade) 1988, 1990, 1992 and 1993*; The data on the national total exports are from *Almanac of China's Foreign Economic Relations and Trade, 1990, 1992, 1994* (by MOFTEC).

Nevertheless, this is only one aspect of the overall trade impacts of DFI on the host economy, although it is one of the most important effects. To investigate the overall impact of DFI on the economic growth, it is necessary to investigate the effect of DFI on the net exports (i.e. trade balance) of the host country. As displayed in Table 7, over the period from 1981 to 1993, the foreign trade of FIEs was not balanced. During these 13 years, the imports of FIEs exceeded their exports, only once (in 1983), were FIEs' exports larger than their imports. As a result, the trade deficit of FIEs has experienced a chronic growth, from US$26 million in 1980 to US$16,590 million in 1993. As shown in Table 7, prior to 1989 FIEs' trade deficit exacerbated the existing trade deficit of China. It was an important factor resulting in a large trade deficits of China. In the recent four years (1990-93), the increased trade deficits of FIEs largely offset the trade surplus created by the Chinese domestic sector, hence resulting in either a smaller trade surplus or a larger trade deficit in the trade account of China. Therefore, the direct impact of FIEs on the balance of foreign trade of China as a whole has been negative.

A proper assessment of the net impact of FIEs' trade deficit on the Chinese economy requires an analysis of the reasons for the trade deficits and the composition of FIEs' imports. It is quite clear that FIEs' trade deficits are attributed to a larger imports in relative to their exports. There are three factors contributing to FIEs' trade deficits. First, FIEs import machinery and equipment as investment goods. When FIEs are established, foreign investors normally provide some (or all) machinery and equipment as an important proportion of their investment equity. The importation of these capital goods accounted for a sizable proportion of FIEs' total imports in past few years. For instance, in 1993, 39.5 percent of FIEs' imports were machinery and equipment as investment goods in FIEs (*Economic Daily*, July 15, 1995, p.2). If this proportion of imports are excluded from FIEs' total imports, FIEs' foreign trade has been balanced or has had a slight surplus since 1990. Therefore, trade deficit is no longer a major problem with FIEs in real sense. In addition, the importation of investment goods, especially advanced machinery and equipment, assist the fixed capital investment of China, hence promoting the economic growth.

Second, FIEs import productive inputs including raw materials, spare parts and other intermediate products. In general, FIEs have a relatively higher propensity to use imported

inputs than local firms. In many cases, they rely heavily on imported raw materials and intermediate inputs. For those FIEs whose products are oriented to the domestic markets, this is the major reason for their trade deficits. The trade deficits of this sort could affect the host economy in two ways. On the one hand, according to the Keynesian income determination theory, trade deficits represent a net leakage of aggregate demand from the importing country, thereby negatively affects the economic growth of the country. Therefore, it can be argued that FIEs' trade deficits may have a negative impact on the economic growth of China. On the other hand, if FIEs' products especially capital goods can be used as the substitutes for imported products, China would benefit from the saving of foreign exchange.

Third, transfer pricing manipulated by foreign investors (MNCs) for FIEs' exports and imports is a major reason for the persistent and increasing trade deficits of FIEs. For many FIEs, their foreign trade is largely controlled by MNCs. A large proportion of the trade is intra-firm trade within the MNC's system, and is therefore subject to transfer pricing. By using transfer prices foreign investors undervalue FIEs' exports and overvalue the imports, thereby enlarging the trade deficits for FIEs. To what extent the transfer prices affect the trade balance of FIEs depends on the difference between the transfer prices and the open market prices for their exports and imports. This issue needs a separate investigation.

The three factors discussed above simultaneously contribute to the trade deficits of FIEs. The trade deficit associated with the importation of investment goods is expected to positively affect the Chinese capital formation and economic growth. However, the trade deficit caused by transfer pricing and disproportionate input imports relative to product exports, would negatively influence the Chinese economy. Therefore, the net impact of FIEs' trade deficits on the economy depends on the shares of these factors in the total trade deficit.

From a developmental point of view, the impact of DFI on the host country' net exports can be divided into two stages. In the first stage (e.g. the first 10 to 15 years) it would be negative, but in the second stage it would turn positive. This is because in the initial stage, FIEs use a high percentage of imported inputs including equipment, intermediate products and raw materials. The low quality and unstable supply of these inputs by local firms or the lack of the knowledge about the local supply are the major reasons for a lower local content

in the total inputs used in FIEs. However, as the quality and supply system of these inputs produced by local firms improve, the local content ratio of FIEs' production inputs will inevitably rise. As a result, the imported input ratio will decline. The input localisation policy pursued by the Chinese government also promote this trend. Therefore, the effect of DFI on the net exports of China is expected to become positive in the near future.

This has been verified by the Guangdong's experience. Since 1988, the exports by FIEs in Guangdong has exceeded their imports, and hence creating a net trade surplus. In 1992, FIEs' trade surplus reached US$2,140 million, which is equal to 29.5 percent of the total provincial trade surplus (GSB, 1992). Besides, by examining the relative growth rates, we can see an encouraging trend that the growth rate of FIEs' exports is higher than that of their imports. For instance, the exports of FIEs in Guangdong grew by 67.4 percent per year while the imports grew by 49.7 percent for the period from 1987 to 1992. For the whole country, during the period from 1987 to 1993, FIEs' exports grew by 65.9 percent per year on average, compared to 54.1 percent of the average growth rate of their imports. This implies that the FIEs' exports will exceed their imports within a few years, and therefore produce a net trade surplus, as Guangdong Province has experienced.

6. Conclusions

This paper has investigated the macroeconomic impacts of DFI in China in the context of economic development. It provides a theoretical analysis and empirical examination of the effects of DFI on the GDP growth, capital formation, industrial production, employment, and exports and trade balance of China. Based upon the above analyses and findings, it can be surely argued that direct foreign investment significantly contributed to the economic development of China in the past 15 years. The positive impacts of DFI on the Chinese economy have primarily been realised through its contribution to the domestic capital formation, its promotion of the industrial production and exports, and creation of new employment.

The regression analysis using pooled times-series and cross-section data suggests that DFI promoted the domestically-financed investment and economic growth of China. By

adding financial and physical capital and encouraging local investment, DFI positively contributed to the capital formation of China. The positive impact of DFI on the total capital formation of China is more significant than what is suggested by its share in the total fixed capital investment. In addition, DFI has promoted the industrial production and is becoming an important propeller for the Chinese industrial development.

At the same time, DFI has played an important role in creating new employment in China especially in the coastal region. Furthermore, DFI substantially advanced the exports from China, hence facilitating the export-led economic growth. As revealed by the analysis presented in Section 5, foreign-invested enterprises have become the most vigorous players in expanding the exports from China. Although the trade deficits of FIEs negatively influence the trade balance of China, it is expected to be a short-term effect of DFI on the host country economy.

The Chinese experience with use of DFI in economic development is of valuable policy implications for other developing countries. First, as DFI can effectively influence the major determinants of economic development such as domestic savings and capital formation, technology and productivity, employment and exports, DFI can significantly affect the economic growth and development of a host developing country. Therefore, DFI should be treated as an indispensable component for economic development by the government of a developing country. Second, creation of a suitable legal, political and business environment in which DFI is operated is the pre-condition for DFI to positively affect the host economy. Third, DFI policy should conform to the economic development goals and policy orientation of the host country and serves the strategic goals of development.

Reference

Areskoug, Kaj (1976): Private foreign investment and capital formation in developing countries. *Economic Development and Cultural Change*, Vol.24, No.3, April, pp. 539-547.

Atri, Said and Jhun, U Jin (1990): Foreign capital inflows and domestic savings: a model with a Latent variable. *Journal of Economic Development*. Vol. 15, No.2, pp. 25-38.

Beijing Statistical Bureau: *Beijing Statistical Yearbook* 1988-94, *Fourty Years of Beijing*, Beijing: China Statistical Publishing House.

Fujian Statistical Bureau: *Fujian Statistical yearbook* 1986-93, Beijing: China Statistical Publishing House.

GSB (Guangdong Statistical Bureau): *Guangdong Tongji Nianjian (Statistical Yearbook of Guangdong) 1983-92;* Beijing: China Statistical Publishing House.
——— *Guangdong Sheng Duiwai Jingji Tongji Zilao (Statistical Material on the Foreign Economic Relations of Guangdong Province) 1987-92* (unpublished official statistics).

Hainan Statistical Bureau: *Hainan Statistical yearbook* 1993, Beijing: China Statistical Publishing House.

Hebei Statistical Bureau: *Hebei Statistical Yearbook* 1989-93, and *The Fourty Years of Hebei,* Beijing: China Statistical Publishing House.

Helleiner, G.K. (1973): Manufactured exports from less developed countries and multinational firms, *Economic Journal*, No.3, pp.21-47.

Hone, A. (1974): Multinational corporations and multinational buying groups: their impact on the growth of Asia's exports of manufactures: myths and realities, *World Development*, No.2, pp.145-149.

Jiangsu Statistical Bureau: *Jiangsu Statistical Yearbook* 1986-93, Beijing: China Statistical Publishing House.

Kmenta, Jan (1986): *Elements of Econometrics*, New York: Macmillan.

Kueh, Y.Y. (1992): Foreign investment and economic change in China, *China Quarterly*, pp-637-690-

Lee, Jungsoo, Rana, Pradumna B. and Iwasaki, Yoshihiro (1986): Effects of foreign capital inflows on developing countries of Asia. *Asian Development Bank Economic Staff Paper*, No.30.

Liaoning Statistical Bureau: *Liaoning Statistical Yearbook* 1987-93, Beijing: China Statistical Publishing House.

Lubits, R. (1971): Direct investment and capital formation, in Caves, R.E. and G.L. Reuber, *Capital Transfer and Economic Policy: Canada 1951-62*, chapter 4, Cambridge, MA: Harward University Press.

Michaely, M. (1977): Exports and economic growth: an empirical investigation, Journal of Development Economics, No.1. March, pp. 49-53.

Ministry of Foreign Trade and Economic Corporations (MOFTEC): Almanac of China's Foreign Economic Relations and Trade, 1984-1994.

Noorzoy, M.S. (1979): Flow of direct investment and their effects on investment in Canada, *Economic Letter*, (2), P.257-261.
——— (1980): Flow of direct investment and their effects on U.S. domestic investment, Economic Letter (5), pp.311-317.

Rana, P. B. (1985): Exports and economic growth in the Asian region. *Asian Development Bank, Economic Staff Paper*, No.75.

Ruffin, Roy J. (1993): The role of foreign investment in the economic growth of the Asian and Pacific Region. *Asian Development Review*, Vol.11, No.1, pp.1-23.

Schive, Chi (1990): *The foreign factor: The multinational corporation's contribution to the economic modernisation of the Republic of China.* Hoover Institute Press, Stanford University, California.

Shandong Statistical Bureau: *Shandong Statistical Yearbook* 1987-93, Beijing: China Statistical Publishing House.

Shanghai *Shanhai Statistical Yearbook*: *Shanhai Statistical Yearbook* 1987-93, and *Shanhai economic Statistical Yearbook* 1990-93, Beijing: China Statistical Publishing House.

SSB (State Statistical Bureau of China): *Statistical Yearbook of China* (SYOC), all issues for 1982-1994. Beijing: China Statistical Publishing House.

——— *Zhonggou Gongyi Tongji NianBao (Annual Statistical Report on China's Industry) 1987-92* (unpublished official statistics).
——— *Zhonggou Shangye Waijing Tongji Zilao 1952-1988 (Statistical Material on the Commerce and Foreign Economic Relations of China)*, Beijing: China Statistical Publishing House.
——— *China Foreign Economic Statistics 1979-1992*, Beijing: China Statistical Publishing House.
——— *Guding Zichan Touzi Tongji Zilao (Statistical Material on Fixed-capital Investment) 1952-1985*, Beijing: China Statistical Publishing House.

Stoneman, Colin (1975): Foreign capital and economic growth. *World Development*, Vol.3, No.1, pp. 11-22.

Tianjin Statistical Bureau: *Tianjin Statistical Yearbook* 1987-93, Beijing: China Statistical Publishing House.

Tu, Jenn-Hwa (1990): *Direct foreign Investment and economic growth: a case study of Taiwan.* The Institute of Economics, Academia Sinica, Taibei, Taiwan.

Tyler, W. (1981): Growth and export expansion in developing countries: some empirical evidence, *Journal of Development Economics*, Vol.9, No.2 August, pp.121-130.

Warwick, Kenneth S. (1991): Savings and investment in developing countries: sources and uses of funds, 1975-96. *Finance & Development,* June, pp.36-37.

Weisskopf, T.E. (1972): The impact of foreign capital inflow on domestic savings in underdeveloped countries, *Journal of International Economics*, No.2, February, pp.25-38.

Zhejiang Statistical Bureau: *Zhejiang Statistical Yearbook* 1986-93, Beijing: China Statistical Publishing House.

Appendix 1: FIE's Contribution to China's Industry Growth *(100 million yuan)*

	1988			1989			1990			1991			1992			1993		
Indicateors	Total	FIE	%	Total	FIE	%	Total	FIE	%	Total	FIE	%	Total	FIE	%	Total	FIE	%
Gross Output Value	17458	156	0.9	18118	252	1.4	19637	378	2.0	22382	1176	5.4	27132	1974	7.4	34048	3460	10.2
Net Output value	4301	36	0.8	4901	60	1.2	5093	97	1.9	5915	268	4.5	7447	461	6.2	12843	1081	8.4
Total Value of Sales	14001	135	1.0	15447	218	1.4	16793	338	2.0	20597	1079	5.2	26525	1952	7.4	35535	3240	9.1
Original Value of Fixed Capital	10641	63	0.6	12474	120	1.0	14390	221	1.5	17156	751	4.4	19963	912	4.6	25818	1686	6.5
Net Value of Fixed Capital	7420	56	0.8	8752	104	1.2	10139	187	1.8	12020	473	3.9	14118	724	5.1	18428	1363	
Total Capital	11149	82	0.7	13553	158	1.2	15953	266	1.7	18804	723	3.8	28320	1671	5.9	37981	3013	7.9
Sum of Profit and Tax	2289	19	0.8	2275	26	1.1	2235	36	1.6	2233	97	4.4	2801	183	6.5	3924	327	8.3
Net Profit	1190	13	1.1	1000	16	1.6	560	22	3.9	643	61	9.4	972	125	12.8	964	169	17.5
Tax paid	489	2	0.4	445	7	1.5	414	5.8	1.4	678	29	4.3	850	40.5	4.8	2321	158	6.8
Enterprises (hundred)	4209	11	0.3	4200	20	0.5	4171	25	0.6	4189	67	1.6	4080	93.4	2.3	4492	201	0.5
Employees (thousand)	75180	239	0.3	75460	373	0.5	7481	51	0.7	7798	137	1.8	7902	201	2.5	8299	326	0.9

Note: The figures for 1988-1990 refer to all enterprises with independent accounting system, the figures for all other years refer to the enterprises with independent accounting system at town level and above. The gross output value in this table is at 1990 constant price. Value for other indicators are in current prices.

Source: *Zhongguo Gongye Tongji Nianbiao (The Annual Statistical Report of China's Industry) 1988-1993*, prepared by the State Statistical Bureau.

Appendix 2: FIE's Contribution to the Industrial Development of Guangdong Province 1987-1992 (100 million yuan)

Indicator	1987			1988			1989			1990			1991			1992		
	Total	*FIEs*	%	Total	*FIEs*	%	Total	*FIEs*	%	Total	FIEs	%	Total	FIEs	%	Total	FIEs	%
Output value	627	33	5.3	792	45	5.7	965	100	9.7	1119	124	11.0	1964	535	27.2	2607	841	32.3
Value of exports				162	18	11	272	65	24.0	364	67	18.1	625	325	52.0	691	396	57.3
Net output value	205	8	3.9	276	10	3.5	343	24	7.1	391	29	7.3	522	108	20.6	696	174	24.9
Original value of fixed capital	434	21	4.7	509	21	4.2	701	56	7.9	884	63	7.1	1339	428	32.0	1485	383	25.8
Net value of fixed *capital*	318	18	5.6	376	19	4.9	527	49	9.2	668	51	7.6	879	206	23.4	1115	302	27.1
Total capital	658	32	4.9	842	42	5.0	1179	79	6.7	1456	108	7.4	1868	454	24.3	2417	660	27.3
Revenue of sales	693	31	4.5	953	34.6	3.6	1222	104	8.5	1409	117	8.3	1875	494	26.3	2538	778	30.6
Net profit	51.4	2.3	4.5	69	2.4	3.5	60	4.1	6.8	37	4.5	12.0	72	19	25.9	115	39	33.7
Sum of profit and tax				134	4.5	3.3	140	6.3	4.5	131	7.2	5.5	188	32	16.9	249	573	23.0
Tax paid				20.6	0.3	1.5	21.1	0.9	4.3	23.2	1.6	6.9	52.2	3.4	6.5	38	5	11.9
Enterprises (hundred)	222	3.2	1.4	232	3.9	1.7	246	5.9	2.4	247	6.4	2.6	255	29	11.4	255	37	14.5
Employees (thousand)	3706	55	1.5	3765	66	1.8	3879	105	2.7	4032	126	3.1	4461	616	13.8	4599	799	17.4

Note: The gross output value and the value of exports are expressed in 1980 constant price for 1987-1990, and at 1990 constant price for 1991 and 1992. The other values in this table are in current prices.

Source: *Guangdong Sheng Gongye Tongji Nianbao (The Annual Statistical Report of Guangdong's Industry)* 1987, 1988, 1989, 1990, 1991 and 1992, prepared by Guangdong Province's Statistical Bureau.

Appendix 3: Statistical Data for Regression Analysis

Pooled cross-section and time-series data (10 coastal provinces for period 1983-92).

GDP = Gross domestic product,

DK = Fixed capital investment financed by domestic savings (= total fixed capital investment - fixed capital investment financed by foreign capital),

DFI = Direct foreign investment,

FK = foreign capital other than DFI,

EX = exports, and M = imports,

Y = national income,

DS = domestic savings (= national income - consumption),

YPC = national income per capita = national income / population,

L = number of labour force.

The 10 coastal provinces in order are: Fujian, Guangdong, Tianjin, Jiangsu, Liaoning, Shandong, Zhejiang, Beijing, Hebei and Shanghai.

Sample size = 100

Year	GDP	DK	DFI	FK	EX	M	L	Y	DS	YPC
1983	123.1	25.1	14.4	33.5	3.9	2.0	10.5	109.3	27.6	414
1984	143.5	31.3	48.3	13.4	4.2	2.7	11.0	123.1	27.6	463
1985	166.8	42.9	117.8	59.3	4.9	6.3	11.5	144.1	35.0	531
1986	176.1	38.0	61.5	135.1	5.8	3.2	11.9	153.5	36.3	558
1987	197.4	45.8	51.4	95.8	8.5	4.9	12.4	172.5	48.2	616
1988	224.3	51.6	130.2	158.8	14.1	7.9	12.8	196.3	59.5	695
1989	238.9	54.9	328.8	62.3	16.6	7.4	13.0	207.9	58.7	725
1990	253.9	54.1	290.0	89.7	22.4	9.3	13.5	217.2	59.7	724
1991	291.3	68.7	644.5	168.9	29.3	14.1	14.5	244.7	72.7	806
1992	351.8	91.1	1416.3	49.3	42.8	23.0	14.9	298.7	98.8	974
1983	380.0	77.9	247.9	161.8	24.0	9.4	25.7	342.8	106.2	564
1984	433.2	100.9	547.8	105.9	25.2	12.1	26.4	362.3	112.5	588
1985	514.2	128.3	534.3	406.6	30.3	28.1	27.3	467.5	154.0	748
1986	586.2	135.4	643.9	784.4	42.9	26.2	28.1	561.3	230.0	884
1987	680.6	157.9	594.0	622.8	55.6	36.2	29.1	593.3	223.9	1027
1988	786.7	184.9	919.1	1520.6	74.8	51.1	30.0	640.8	229.7	1081
1989	841.6	177.6	1156.4	1242.7	81.7	48.3	30.4	663.8	244.8	1102
1990	938.2	201.7	1459.8	563.6	105.6	57.5	31.2	721.5	282.8	1155
1991	1100.3	251.9	1822.9	759.6	136.9	85.1	32.6	853.1	351.9	1344
1992	1342.3	345.0	3551.5	1310.0	184.4	111.8	33.7	1049.5	424.9	1624
1983	123.4	29.4	4.5	7.5	14.3	1.5	4.4	108.4	52.8	1380
1984	147.2	35.8	10.2	12.7	12.3	2.3	4.5	121.5	62.7	1527
1985	162.9	40.2	32.5	28.1	11.5	3.3	4.6	139.9	75.3	1738
1986	172.4	43.6	42.9	114.8	12.6	4.1	4.7	147.0	76.6	1804
1987	185.5	48.0	54.9	191.2	15.2	5.0	4.6	156.6	78.5	1890
1988	196.3	47.1	24.0	459.6	16.8	5.9	4.7	167.2	79.8	2992
1989	199.4	47.9	81.3	355.7	16.9	5.3	4.7	165.0	72.1	1936
1990	210.2	51.9	83.2	251.5	17.9	4.2	4.7	173.2	73.8	1999
1991	222.8	56.4	93.9	387.6	16.1	4.1	4.8	188.4	78.1	2159
1992	248.9	67.7	231.4	599.8	17.5	6.2	4.8	208.4	89.2	2371
1983	437.7	101.5	5.2	5.2	13.7	0.8	30.6	377.0	152.4	615
1984	506.4	134.2	15.7	15.7	14.9	1.4	31.6	450.1	190.4	732

1985	594.0	164.5	11.9	81.4	15.6	3.0	32.6	528.0	242.0	853
1986	655.8	182.3	18.1	164.4	17.2	3.6	33.5	575.4	260.8	922
1987	733.2	228.8	49.7	164.6	21.2	5.8	34.3	644.6	307.1	1021
1988	829.2	261.2	103.0	161.7	23.5	8.2	35.0	713.2	326.9	1116
1989	847.2	206.7	94.6	288.1	24.4	11.6	35.2	726.5	325.2	1120
1990	887.8	228.2	141.1	297.5	29.5	9.5	35.7	768.1	346.1	1141
1991	945.5	269.5	233.2	241.7	34.6	12.7	36.0	814.8	364.8	1187
1992	1193.3	405.7	1402.9	319.3	46.7	18.0	36.1	1027.2	528.9	1482
1983	359.2	71.0	2.8	5.3	39.2	0.8	16.4	298.0	145.9	829
1984	411.8	96.8	3.9	11.3	49.9	1.2	16.8	339.6	169.2	932
1985	465.7	129.5	15.7	26.2	50.4	3.5	17.7	392.0	195.6	1068
1986	506.7	141.4	33.0	57.1	30.8	3.5	18.0	421.5	207.6	1137
1987	561.9	157.9	64.4	489.0	37.9	4.3	18.4	463.1	232.3	1233
1988	625.5	182.6	90.5	459.7	38.7	5.8	18.6	517.1	247.1	1341
1989	640.0	153.6	108.9	480.1	44.5	8.9	18.8	535.0	256.8	1372
1990	641.8	152.1	248.3	538.9	56.0	7.0	19.0	521.1	239.9	1323
1991	677.1	181.5	313.6	658.0	57.7	9.6	19.4	548.8	250.6	1392
1992	756.3	223.9	439.2	420.2	61.7	14.7	19.6	618.1	292.3	1550
1983	423.3	89.7	2.8	1.2	18.1	1.2	35.0	364.6	120.7	482
1984	497.4	114.4	4.4	15.8	22.9	1.4	35.6	429.2	180.2	562
1985	554.1	154.6	5.6	56.7	26.7	4.7	35.6	476.2	204.5	618
1986	588.4	165.3	19.4	97.4	21.4	5.3	36.5	496.8	196.3	635
1987	669.4	206.2	23.8	78.4	29.7	6.4	38.7	586.4	250.8	737
1988	755.1	237.9	39.1	103.2	29.8	8.9	38.9	655.5	273.8	813
1989	785.5	196.4	131.3	183.7	30.6	9.7	39.4	688.3	296.8	844
1990	827.8	199.5	150.8	160.4	35.0	6.9	40.4	712.3	305.0	839
1991	943.1	236.7	179.5	288.4	38.3	8.1	42.2	812.9	359.5	949
1992	1126.9	312.2	973.4	403.5	47.3	11.5	43.0	958.3	460.3	1113
1983	251.3	42.7	1.2	1.3	6.5	0.3	21.4	220.2	85.0	556
1984	306.0	62.4	7.9	3.7	7.4	0.6	22.5	269.4	109.6	676
1985	372.6	87.6	16.3	45.7	9.4	1.9	23.2	329.3	146.6	819
1986	417.5	100.2	18.5	30.9	11.6	1.3	23.9	367.4	155.6	905
1987	466.9	118.1	23.4	90.7	13.7	2.1	24.5	412.3	182.4	1004
1988	519.6	129.9	29.6	158.4	16.2	4.0	25.0	458.5	191.6	1103
1989	516.7	114.2	52.4	216.8	18.8	4.5	25.2	455.3	189.6	1084
1990	537.1	117.6	48.4	113.9	22.6	2.9	25.5	466.4	180.1	1102
1991	619.8	143.8	91.6	80.2	29.1	5.4	25.8	539.4	228.2	1267
1992	737.0	199.7	294.0	115.7	37.0	9.5	26.0	657.5	301.4	1535
1983	183.1	37.4	32.0	69.0	5.9	3.0	5.5	135.3	60.0	1461
1984	212.8	45.3	35.5	8.2	6.3	5.0	5.6	154.5	66.8	1647
1985	244.7	64.1	88.8	27.5	6.2	8.0	5.6	185.0	86.3	1945
1986	248.6	67.4	140.0	22.8	7.2	10.2	5.7	179.8	79.6	1865
1987	269.0	73.7	95.3	66.4	7.8	7.6	5.8	194.5	83.3	1987
1988	298.9	83.4	502.8	81.1	10.0	10.0	6.0	219.9	101.1	2212
1989	312.0	72.7	100.4	218.0	11.3	10.3	5.9	230.5	107.9	2273
1990	328.8	79.6	276.9	133.1	11.2	10.3	6.3	240.9	98.9	2341
1991	353.5	81.0	245.0	54.7	12.4	13.5	6.3	240.0	118.1	2317
1992	394.4	96.6	349.9	180.1	15.3	16.8	6.5	282.1	151.7	2699
1983	281.2	70.3	1.1	0.3	8.2	5.2	24.9	238.3	88.5	440
1984	321.6	80.7	1.6	3.4	7.6	7.7	25.3	272.5	104.1	498
1985	361.8	96.6	3.9	4.3	13.0	11.8	25.6	310.7	115.0	560
1986	380.1	109.1	6.9	4.4	10.5	7.8	26.3	327.0	113.8	581
1987	424.2	117.1	7.4	2.9	14.5	11.1	27.3	364.3	122.7	638
1988	476.1	131.9	16.7	2.4	15.5	23.2	28.1	409.1	143.6	706
1989	553.3	153.3	26.5	16.9	16.4	23.0	28.6	468.4	178.8	796

1990	597.0	139.1	39.4	5.1	17.4	21.5	29.6	501.4	188.4	814
1991	653.1	154.1	44.4	123.5	17.4	27.2	30.4	538.8	210.9	866
1992	743.9	197.9	179.5	107.3	17.8	33.4	31.1	611.6	238.2	975
1983	351.8	75.5	10.7	1.1	36.5	4.9	7.6	303.5	213.4	2542
1984	392.6	87.9	41.4	1.0	35.9	8.1	7.6	338.7	236.4	2825
1985	445.2	105.1	107.5	1.8	33.6	18.1	7.6	384.0	257.4	3225
1986	464.8	119.5	147.6	163.8	35.8	16.2	7.7	402.5	246.9	3283
1987	500.0	131.5	212.0	488.4	41.6	18.4	7.7	433.5	264.8	3493
1988	550.5	159.6	364.2	957.6	46.1	26.4	7.7	480.5	278.5	3826
1989	567.0	131.5	422.1	767.4	50.3	28.2	7.6	477.2	261.1	3760
1990	586.8	153.2	177.2	602.5	53.2	21.1	7.7	486.4	266.3	3800
1991	628.5	159.0	175.3	690.7	57.4	23.0	7.7	510.5	263.7	3973
1992	722.2	198.6	790.0	979.0	65.6	32.0	7.8	596.9	327.6	4634

Notes: GDP, Y, TK, DK, C, DS are in constant price (1983=100). DFI, FK, EX and M are in constant US dollar (1983=100). The unit for GDP, DK, DS and Y is 100 million yuan; the unit YPC is yuan; the unit for DFI and FK is million US dollars; the unit for EX and M is 100 million US dollar; and the unit for L is million person.

Working Papers in Economics

189	C. Karfakis & S-J Kim	Exchange Rates, Interest Rates and Current Account News: Some Evidence from Australia; September 1993
190	A.J. Phipps & J.R. Sheen	Unionisation, Industrial Relations and Labour Productivity Growth in Australia: A Pooled Time-Series/Cross-Section Analysis of TFP Growth; September 1993
191	W.P. Hogan	Market Value Accounting in the Financial Sector; November 1993
192	Y. Varoufakis & W. Kafouros	The Transferability of Property Rights and the Scope of Industrial Relations' Legislation: Some Lessons from the NSW Road Transport Industry; November 1993
193	P.D. Groenewegen	Jacob Viner and the History of Economic Thought; January 1994
194	D. Dutta & A. Hussain	A Model of Share-Cropping with Interlinked Markets in a Dual Agrarian Economy; March 1994
195	P.E. Korsvold	Hedging Efficiency of Froward and Option Currency Contracts; March 1994
196	J. Yates	Housing and Taxation: An Overview; March 1994
197	P.D. Groenewegen	Keynes and Marshall: Methodology, Society and Politics; March 1994
198	D.J. Wright	Strategic Trade Policy and Signalling with Unobservable Costs; April 1994
199	J. Yates	Private Finance for Social Housing in Australia; April 1994
200	L. Haddad	The Disjunction Between Decision-Making and Information Flows: The Case of the Former Planned Economies; April 1994
201	P.D. Groenewegen & S. King	Women as Producers of Economic Articles: A Statistical Assessment of the Nature and the Extent of Female Participation in Five British and North American Journals 1900-39; June 1994
202	P.D. Groenewegen	The French Connection: Some Case Studies of French Influences on British Economics in the Eighteenth Century; June 1994
203	F. Gill	Inequality and the Wheel of Fortune: Systemic Causes of Economic Deprivation; July 1994
204	M. Smith	The Monetary Thought of Thomas Tooke; July 1994
205	A. Aspromourgos	Keynes on the Australian Wages System; July 1994
206	W. Kafouros & Y. Varoufakis	Bargaining and Strikes: From an Equilibrium to an Evolutionary Framework; July 1994
207	A. Oswald & I. Walker	Rethinking Labor Supply: Contract Theory and Unions; July 1994
208	J.B. Towe & D.J. Wright	The Research Output of Australian Econometrics and Economics Department: 1988-93; July 1994
209	*F. Gill & C. Rose*	*Discontinuous Payoff Functions under Incomplete* Information; August 1994
210	S-J Kim	Inflation News in Australia: Its Effects on Exchange Rates and Interest Rates; October 1994
211	Y. Varoufakis	Moral Rhetoric in the Face of Strategic Weakness: Modern Clues for an Ancient Puzzle; November 1994
212	E. Jones	Bureaucratic Politics and Economic Policy: The Evolution of Trade Policy in the 1970s and 1980s; December 1994

213	R. Hataiseree & A.J. Phipps	The Relationship Between Money and Income in Thailand: Some Evidence for the 1980s Using a Cointegration Approach; January 1995
214	G. White	Classical Competition, Keynesian Adjustment and Composite Dynamics: A Critical Perspective; February 1995
215	C. Karfakis & A.J. Phipps	Treasury Note and Bank Bill Rates, the Risk Premium and Australian Monetary Policy; February 1995
216	P.D. Groenewegen	The Post 1945 Internationalization of Economics The Australian Experience; April 1995
217	S-J Kim	Modeling Changes in Daily $A Exchange Rates: An Application of GARCH; June 1995
218	R. Hataiseree & A. Phipps	The Degree of Capital Mobility in Thailand: Some Estimates Using a Cointegration Approach; June 1995
219	I.J. Irvine & W.A. Sims	Measuring Consumer Surplus with Unknown Hicksian Demands; June 1995
220	I.J. Irvine & S. Wang	Saving Behavior in a Pure Life-Cycle Model with Income Uncertainty; June 1995
221	J. Logan	The Self-Destruction of Private Health Insurance; October 1995
222	A. Aspromourgos	Cantillon on Real Wages and Employment: a rational reconstruction of the significance of land utilization; November 1995
223	M. Smith	A Monetary Explanation of Distribution in a Gold Money Economy; December 1995
224	J.B. Towe	The Ranking of University Accounting and Finance Departments in Australia, 1990-94; January 1996
225	W.P. Hogan	Foreign Debt: Perceptions, Experiences and Issues; January 1996
226	N. Barkatullah	OLS and Instrumental Variable Price Elasticity Estimates for Water in Mixed-Effects Model Under Multipart Tariff Structure; January 1996
227	C. Simkin	Three Essays on Problems of Market Economies; January 1996
228	L. Haddad	On the Transition from a Supply to a Demand-Constrained Economic System: The East European Experience; February 1996
229	F. Gill	The Road to Full Employment: Co-ordination in a World of Interdependent Decisions; February 1996
230	S-J Kim	Testing the Rationality of Exchange Rate and Interest Rate Expectations: An Empirical Study of Australian Survey Based Expectations; March 1996
231	R. Bryan & M. Rafferty	Still Calling Australia Home? Conceptions of International Capital in Recent Official Reports; May 1996
232	H. Sun	Macroeconomic Impact of Direct Foreign Investment in China 1979-93; June 1996

Copies are available upon request from:

Department of Economics
The University of Sydney
N.S.W. 2006, Australia

Working Papers in Economics Published Elsewhere

2	I.G. Sharpe & R.G. Walker	*Journal of Accounting Research*, *13*(2), Autumn 1975
3	N.V. Lam	*Journal of the Developing Economies*, *17*(1), March 1979
4	V.B. Hall & M.L. King	*New Zealand Economic Papers*, *10*, 1976
5	A.J. Phipps	*Economic Record*, *53*(143), September 1977
6	N.V. Lam	*Journal of Development Studies*, *14*(1), October 1977
7	I.G. Sharpe	*Australian Journal of Management*, April 1976
9	W.P. Hogan	*Economic Papers*, 55, The Economic Society of Australia and New Zealand, October 1977
12	I.G. Sharpe & P.A. Volker	*Economics Letters*, 2, 1979
13	I.G. Sharpe & P.A. Volker	*Kredit and Kapital*, *12*(1), 1979
14	W.P. Hogan	*Some Calculations in Stability and Inflation*, A.R. Bergström et al (eds.), J. Wiley & Sons, 1978
15	F. Gill	*Australian Economic Papers*, *19*(35), December 1980
18	I.G. Sharpe	*Journal of Banking and Finance*, *3*(1), April 1978
21	R.L. Brown	*Australian Journal of Management*, *3*(1), April 1978
23	I.G. Sharpe & P.A. Volker	*The Australian Monetary System in the 1970s*, M. Porter (ed.), Supplement to Economic Board 1978
24	V.B. Hall	*Economic Record*, *56*(152), March 1980
25	I.G. Sharpe & P.A. Volker	*Australian Journal of Management*, October 1979
27	W.P. Hogan	*Malayan Economic Review*, *24*(1), April 1979
28	P. Saunders	*Australian Economic Papers*, *19*(34), June 1980
29	W.P. Hogan I.G. Sharpe & P.A. Volker	*Economics Letters*, 6 (1980), 7 (1981)
30	W.P. Hogan	*Australian Economic Papers*, 18(33), December 1979
32	R.W. Bailey, V.B. Hall & P.C.B. Phillips	*Keynesian Theory, Planning Models, and Quantitative Economics*, G. Gandolfo and F. Marzano (eds.), 1987
38	U.R. Kohli	*Australian Economic Papers*, *21*(39), December 1982
39	G. Mills	*Journal of the Operational Research Society* (33) 1982
41	U.R. Kohli	*Canadian Journal of Economics*, *15*(2), May 1982
42	W.J. Merrilees	*Applied Economics*, 15, February 1983
43	P. Saunders	*Australian Economic Papers*, *20*(37), December 1981
45	W.J.Merrilees	*Canadian Journal of Economics*, *15*(3), August 1982
46	W.J. Merrilees	*Journal of Industrial Economics*, *31*, March 1983
49	U.R. Kohli	*Review of Economic Studies*, *50*(160), January 1983
50	P. Saunders	*Economic Record*, 57(159), December 1981
53	J. Yates	AFSI, *Commissioned Studies and Selected Papers*, AGPS, IV 1982
54	J. Yates	*Economic Record*, *58*(161), June 1982
55	G. Mills	*Seventh Australian Transport Research Forum-Papers*, Hobart 1982

56	V.B. Hall & P. Saunders	*Economic Record*, *60*(168), March 1984
57	P. Saunders	*Economic Record*, *59*(166), September 1983
58	F. Gill	*Économie Appliquée*, *37*(3-4), 1984
59	G. Mills & W. Coleman	*Journal of Transport Economics and Policy*, 16(3), September 1982
60	J. Yates	*Economic Papers*, Special Edition, April 1983
61	S.S. Joson	*Australian Economic Papers*, *24*(44), June 1985
62	R.T. Ross	*Australian Quarterly*, *56*(3), Spring 1984
63	W.J. Merrilees	*Economic Record*, *59*(166), September 1983
65	A.J. Phipps	*Australian Economic Papers*, *22*(41), December 1983
67	V.B. Hall	*Economics Letters*, 12, 1983
69	V.B. Hall	*Energy Economics*, *8*(2), April 1986
70	F. Gill	*Australian Quarterly*, *59*(2), Winter 1987
71	W.J. Merrilees	*Australian Economic Papers*, *23*(43), December 1984
73	C.G.F. Simkin	*Singapore Economic Review*, *29*(1), April 1984
74	J. Yates	*Australian Quarterly*, *56*(2), Winter 1984
77	V.B. Hall	*Economics Letters*, 20, 1986
78	S.S. Joson	*Journal of Policy Modeling*, *8*(2), Summer 1986
79	R.T. Ross	*Economic Record*, *62*(178), September 1986
81	R.T. Ross	*Australian Bulletin of Labour*, *11*(4), September 1985
82	P.D. Groenewegen	*History of Political Economy*, *20*(4), Winter 1988 and *Scottish Journal of Political Economy*, *37*(1) 1990
84	E.M.A. Gross, W.P. Hogan & I.G. Sharpe	*Australian Economic Papers*, *27*(50), June 1988
85	F. Gill	*Australian Bulletin of Labour*, *16*(4), December 1990
94	W.P. Hogan	*Company and Securities Law Journal*, *6*(1), February 1988
95	J. Yates	*Urban Studies*, *26*, 1989
96	B.W. Ross	*The Economic and Social Review*, *20*(3), April 1989
97	F. Gill	*Australia's Greatest Asset: Human Resources in the Nineteenth and Twentieth Centuries*, D. Pope (ed.), Federation Press, 1988
98	A.J. Phipps	*Australian Economic Papers*, *31*(58), June 1992
99	R.T. Ross	*Australian Bulletin of Labour*, *15*(1), December 1988
100	L. Haddad	*Hetsa Bulletin*, (11), Winter 1989
101	J. Piggott	*Public Sector Economics - A Reader*, P. Hare (ed.), Basil Blackwell, 1988
102	J. Carlson & D. Findlay	*Journal of Macroeconomics*, *13*(1), Winter 1991
102	J. Carlson & D. Findlay	*Journal of Economics and Business*, *44*(1), February 1992
104	P.D. Groenewegen	*Decentralization, Local Government and Markets: Towards a Post-Welfare Agenda*, R.J. Bennet (ed.) Oxford University Press, 1990
107	B.W. Ross	*Prometheus*, *6*(2), December 1988
108	S.S. Joson	*Rivista di diritto valutario e di economia internazionale*, *35*(2), June 1988
112	P. Groenewegen	*NeoClassical Economic Theory 1870 to 1930*, K. Hennings and W. Samuels (eds.), Boston Kluwer-Nighoff, 1990

113	V.B. Hall T.P. Truong V.A. Nguyen	*Energy Economics, 12*(4) October 1990
114	V.B. Hall T.P. Truong & V.A. Nguyen	*Australian Economic Review*, (87) 1989(3)
115	F. Gill	*Australian Journal of Social Issues, 25*(2), May 1990
116	G. Kingston	*Economics Letters*, 15 (1989)
117	V.B. Hall & D.R. Mills	*Pacific and Asian Journal of Energy, 2*(2), December *1988*
118	W.P. Hogan	*Abacus, 25*(2), September 1989
120	P. Groenewegen	*Flattening the Tax Rate Scale: Alternative Scenarios & Methodologies*, (eds.) J.G. Head and R. Krever, 1990
122	W.P. Hogan & I.G. Sharpe	*Economic Analysis and Policy, 19*(1), March 1989
123	G. Mills	*Journal of Transport Economics and Policy, 23*, May 1989
126	F. Gill	*The Australian Quarterly, 61*(4), 1989
128	S. Lahiri & J. Sheen	*The Economic Journal, 100*(400), 1990
130	J. Sheen	*Journal of Economic Dynamics and Control*, 16, 1992
135	Y. Varoufakis	*Économie Appliquée, 45*(1), 1992
136	L. Ermini	*The Economic Record, 69*(204), March 1993
138	D. Wright	*Journal of International Economics, 35*, (1/2) 1993
139	D. Wright	*Australian Economic Papers, 32*, 1993
141	P. Groenewegen	*Australian Economic Papers, 31*, 1992
143	C. Karfakis	*Applied Economics, 23*, 1991
144	C. Karfakis & D. Moschos	*Journal of Money, Credit and Banking, 22*,(3), 1990
147	J. Yates	*Housing Studies*, 7, (2), April 1992
149	B. Rao	*The Economic Journal, 102*(414), Sept. 1992
150	D. Wright	*Bulletin of Economic Research*, 47(1), Jan. 1995
157	B. Rao	*Applied Economics, 24*(6), June 1992
158	W.P. Hogan	*Economic Papers, 10*(1), March 1991
159	P.Groenewegen	*Local Government and Market Decentralisation: Experiences in Industialised, Developing and Former Eastern Block Countries*, R. J. Bennett (ed.) UN University Press, 1994
160	C. Karfakis	*Applied Financial Economics, 1*(3), September 1991
161	B. Rao	*Southern Economic Journal, 61*(2),Oct. 1994
162	Y. Varoufakis	*Erkenntnis, 38*, 1993
163	Y. Varoufakis	*Science and Society, 56*(4), 1993
164	D. Wright	*The ManchesterSchool of Economics and Social Studies*, 63(4), December 1995
173	C. Rose	*The Rand Journal of Economics, 24*(4), Winter 1993
174	D. Wright	*Canadian Journal of Economics*, 28(4), November 1995
177	P. Groenewegen	*European Journal of the History of Economic Thought, 1*(2) Spring 1994
178	D. J. Wright	*Economic Record, 70*(211), December *1994*
187	C. Karfakis & A. J. Phipps	*Australian Economic Papers*, 33(62), June 1994
189	C. Karfakis & S-J Kim	*Jounal of International Money and Finance, 14*(4) August *1995*

190	A.J. Phipps & J.R. Sheen	*Labour Economics and Productivity*, 6(1), March 1994
193	P. Groenewegen	*Contributions to Political Economy, 13*, 1994
194	D.Dutta & A. Hussain	*Journal of Contemporary Asia, 25*(4), 1995
197	P. Groenewegen	*New Perspectives on Keynes*, Supplementary History of Political Economy, *27*, 1995, A.F. Cottrell & M.S. Lawlor Duke University Press, Durham
199	J. Yates	*Housing Policy Debate*, 5(2), 1994
202	P. Groenewegen	*Dix-Huitieme Siecle* (26), 1994
203	F. Gill	*Australian Economic Papers, 33*(62), June 1994
208	J.B. Towe & D.J. Wright	*Economic Record, 71*(212), March 1995
210	S-J Kim	*Applied Financial Economics*, 6(2), 1996
218	R. Hataiseree & A. J. Phipps	*Applied Economics Letters, 3*, 1996
225	W.P. Hogan	*Economic Analysis and Policy, 25*(2), September 1995