

**JAPANESE DIRECT FOREIGN INVESTMENT:
SOURCES AND SUSTAINABILITY**

by

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ABSTRACT

In 1984, Japan became the world's leading creditor nation. Although most of this capital has been in the form of foreign portfolio investment (FPI), foreign direct investment (FDI) has contributed significantly to the total. The rapid acceleration of Japanese FDI is evidenced by the fact that the nation's accumulated foreign direct assets in 1988 exceeded \$96 billion (in 1980 U.S. dollars) roughly 3 times the 1984 total and 6 times the 1980 total.

This startling change in Japan's role in global FDI raises two important questions. Firstly, why has Japan been able to substantially accelerate its foreign direct investments in the 1980s? This study suggests that the country's rapid expansion in FDI is the result of macro-economic developments which have taken place in Japan since 1973. These developments include the transition of the country from a high-growth to slow-growth economy after the first oil crisis; the resultant decline in capital formation requirements and sustained savings surpluses in the private sector; and the commitment of the Liberal Democratic Party (LDP) to fiscal austerity after 1978.

The second question concerns the future sustainability of Japanese FDI. As described in this study, the answer to the second

question depends largely on the answer to the first; namely, that the future rate of Japanese FDI will be determined by the extent to which the macro-economic developments noted above prevail.

In format, this study first provides a historical perspective of Japanese offshore direct investment, concentrating on the changing level, nature and motivation of Japanese FDI in the post World War II period. The study then provides a brief analysis of modern FDI theory and its inadequacy for explaining past Japanese FDI or for predicting its future sustainability. After introducing the theoretical rationale behind the study's two main contentions, the analysis then turns to an identification of the forces which are generating the huge amounts of capital currently available for offshore investment. In particular, the study suggests that the dramatic appreciation of Japanese land prices has been a primary cause of excess savings in the private sector. It is these excess savings, coupled with the LDP's commitment to balanced budgets after 1978, that have sponsored Japan's remarkable increase in FDI in the 1980s.

The study also examines the results of a regression model developed to test the above macro-economic contentions. The model provides some evidence to support the macro-economic rationale used in the study but is limited by statistical problems with the data. Finally, the study examines the issue of sustainability and concludes that, based on likely macro-economic developments in the medium term, Japanese FDI will be sustained at its present high level.

TABLE of CONTENTS

1.0.	<u>INTRODUCTION</u>	1
1.1.	THESIS STATEMENT AND FORMAT	1
1.2.	THE CURRENT STATUS	3
2.0	<u>DEFINITIONS AND DATA SOURCES</u>	5
2.1.	DEFINITIONS OF FOREIGN INVESTMENT	5
2.2.	SOURCES OF STATISTICAL DATA	8
3.0.	<u>HISTORICAL REVIEW OF JAPANESE FOREIGN DIRECT INVESTMENT</u>	11
3.1.	JAPANESE FDI PRIOR TO WORLD WAR II (1870 to 1940)	11
3.2.	JAPANESE FDI; 1951 to 1965	14
3.3.	JAPANESE FDI; 1966 to 1973	17
3.4.	JAPANESE FDI; 1974 to 1980	24
3.5.	JAPANESE FDI; 1981 to 1984	33
3.6.	JAPANESE FDI; 1985 TO THE PRESENT	38
4.0.	<u>TOWARDS A THEORY OF JAPANESE FOREIGN DIRECT INVESTMENT</u>	52
4.1.	CONVENTIONAL FDI THEORY	53
4.2.	CLASSICAL THEORY	54
4.3.	OFFENSIVE FDI THEORY - THE INDUSTRIAL ORGANIZATION APPROACH	56
4.3.1.	<u>Economies of Scale</u>	57
4.3.2.	<u>The possession of unique skills or special expertise</u>	57
4.3.3.	<u>Differentiated Products</u>	58
4.3.4.	<u>Internalization</u>	58
4.3.5.	<u>Applicability of Offensive FDI theory in the Japanese FDI Context</u>	50
4.4.	DEFENSIVE FDI THEORY	61
4.4.1.	<u>Market Imperfections Created by Governments</u>	61
4.4.2.	<u>New Markets</u>	62
4.4.3.	<u>Access to New Technologies</u>	62
4.4.4.	<u>Risk Diversification</u>	62
4.4.5.	<u>Product Cycle Theory</u>	63
4.4.6.	<u>Follow the Leader</u>	64
4.4.7.	<u>Applicability of Defensive FDI models in the Japanese Context</u>	64
4.5.	A MODEL OF JAPANESE FDI	65

5.0.	<u>MACROECONOMIC BALANCES OF THE JAPANESE ECONOMY</u>	67
6.0.	<u>INTERNAL MACROECONOMIC COMPONENTS OF THE JAPANESE</u>	75
6.1.	THE PRIVATE SECTOR BALANCE	85
6.1.1.	<u>Private Sector Savings</u>	78
6.1.1.1.	The Need to Provide for Retirement	80
6.1.1.2.	The High Cost of Housing	83
6.1.2.	<u>Private Sector Investment</u>	87
6.1.2.1.	Rising Industrial and Commercial Land Prices	88
6.1.2.2.	Rising Real Wages	89
6.1.2.3.	Reduced Productivity Growth	90
6.1.2.4.	Environmental Constraints	90
6.1.2.5.	The Impact of the Oil Crisis	91
6.1.2.6.	The Investment Climate since 1973	93
6.1.3.	<u>The Private Sector Surplus since 1986</u>	96
6.1.4.	<u>Implications of Private Sector Savings Surpluses</u>	99
6.2.	THE PUBLIC SECTOR BALANCE	100
6.2.1.	<u>Government Expenditures after 1973</u>	101
6.2.2.	<u>Government Revenues after 1973</u>	103
6.2.3.	<u>The Pressure for Fiscal Austerity</u>	105
6.2.4.	<u>The Government Balance since 1984</u>	107
6.4.	THE DOMESTIC SECTOR - SUMMARY	109
7.0.	<u>EXTERNAL MACROECONOMIC COMPONENTS OF THE JAPANESE ECONOMY</u>	111
7.1.	NET FOREIGN DIRECT INVESTMENT	111
7.2.	NET FOREIGN PORTFOLIO INVESTMENT	113
7.3.	NET SHORT TERM CAPITAL INVESTMENT	118
7.4.	NET MONETARY MOVEMENTS	119
7.5.	SUMMARY OF THE CAPITAL ACCOUNT BALANCE	119
8.0.	<u>A STATISTICAL MODEL OF JAPANESE DIRECT FOREIGN INVESTMENT</u>	121
8.1.	RATIONALE AND METHODOLOGY OF STATISTICAL APPROACH	123

8.2.	NET FOREIGN DIRECT INVESTMENT	125
8.2.1.	<u>The NFDI Model: Hypotheses and Rationale</u>	126
8.2.2.	<u>The NFDI Model: Data Sources</u>	129
8.2.4	<u>Results of the NFDI Model</u>	130
8.3.	THE PRIVATE SECTOR BALANCE	131
8.3.1.	<u>(S-I) Model: Hypotheses and Rationale</u>	132
8.3.2.	<u>(S-I) Model: Data Sources</u>	135
8.3.3.	<u>(S-I) Model: Results</u>	135
8.4.	NET FOREIGN PORTFOLIO INVESTMENT	138
8.4.1.	<u>NFPI Model: Hypotheses and Rationale</u>	139
8.4.2.	<u>NFPI Model: Data Sources</u>	141
8.4.3.	<u>NFPI Model: Results</u>	142
8.5.	LIMITATIONS OF THE NFDI RESULTS	143
8.5.1.	<u>Multicollinearity among the Explanatory Variables</u>	143
8.5.2.	<u>Auto-Correlation of the Residuals</u>	144
8.5.3.	<u>The Problem of Endogeneity</u>	144
8.5.4.	<u>Structural Change</u>	144
8.5.5.	<u>Problems in the Data</u>	146
8.6.	SUMMARY	147
9.0.	<u>JAPANESE FDI: THE FUTURE</u>	148
9.1.	AVAILABILITY OF FUNDS	148
9.1.1.	<u>Private Sector Balance</u>	149
9.1.1.1.	Household Savings	149
9.1.1.2.	Private Residential Investment.	152
9.1.1.3.	Corporate Savings	153
9.1.1.4.	Corporate Investment	154
9.1.1.5.	Summary of Private Sector Balance	155
9.1.2.	<u>Government Sector</u>	156
9.1.2.1.	Expenditures	156
9.1.2.2.	Income	156
9.1.2.3.	Summary of Government Sector Balance	158
9.1.3.	<u>Summary of Macroeconomic Balance</u>	158

9.1.4.	<u>Other Factors</u>	159
9.1.4.1.	Real Estate Market	159
9.1.4.2.	Stock Market Earnings	160
9.1.4.3.	Off-Shore Earnings	160
9.2.	THE REQUIREMENTS OF THE CURRENT ACCOUNT BALANCE	161
9.3.	THE ALLOCATION PRIORITIES OF FOREIGN INVESTMENT FUNDS	162
9.3.1.	<u>The Allocation of Funds to Direct Foreign Investment</u>	163
9.3.1.1.	Comparative Returns	164
9.3.1.2.	Comparative Production Costs	165
9.3.1.3.	Trade Frictions and Barriers to Market entry	166
9.3.1.4.	Procurement of Resources	167
9.3.1.5.	Longterm Strategic Plans	168
9.3.2.	<u>Allocation of Funds to Foreign Portfolio Investment</u>	170
9.3.3.	<u>Allocations in a Competing Environment</u>	171
9.4.	ACCEPTABILITY	172
10.0.	<u>CONCLUSIONS</u>	177
	<u>BIBLIOGRAPHY</u>	179
	<u>APPENDICES</u>	
Appendix 1	Data Used in Regression Models	188
Appendix 2	Results of Regression Models	189

LIST OF TABLES

Following
Page

SECTION 1:

- | | | |
|-----|--|---|
| 1.1 | Japanese Net Foreign Investment, F.Y.
1960-1988 | 3 |
|-----|--|---|

SECTION 3:

- | | | |
|------|---|----|
| 3.1 | Number of Overseas Offices of Selected
Sogo Shosha Prior to WWII | 13 |
| 3.2 | Approval of Investment Projects in East
Asia, 1960-1974 | 19 |
| 3.3 | Supply Sources of Selected Resources, 1969 | 21 |
| 3.4 | Japanese FDI Classified by Industry,
F.Y. 1965-F.Y. 1972 | 21 |
| 3.5 | Japanese FDI by Region, F.Y. 1965-F.Y.
1973 | 22 |
| 3.6 | Japanese FDI by Region, F.Y. 1974-F.Y.
1980 | 25 |
| 3.7 | Japanese FDI Classified by Industry,
F.Y. 1972-F.Y. 1980 | 25 |
| 3.8 | Japanese FDI by Region, F.Y. 1981-F.Y. 1984 | 31 |
| 3.9 | Japanese FDI Classified by Industry,
F.Y. 1984-F.Y. 1987 | 34 |
| 3.10 | Japanese FDI by Region, F.Y. 1984-F.Y. 1987 | 35 |

SECTION 6:

- | | | |
|-----|--|----|
| 6.1 | Japanese Private Sector Savings-Investment
Balance, F.Y. 1960-F.Y. 1987 | 67 |
|-----|--|----|

SECTION 6 CONT'DFollowing
Page

6.2	Inflation Results and Time Deposit Rates by Type of Institution, 1969 to 1981	70
6.3	Life Expectancy and Labour Participation Ratios of Selected Countries	72
6.4	Residential Land Price Indices, Japan, F.Y. 1960-F.Y. 1987	74
6.5	Average Prices of Residential Land of Six Largest Cities	74
6.6	Commercial Land Price Indices, Japan, F.Y. 1960-F.Y. 1987	77
6.7	Industrial Land Price Indices, Japan, F.Y. 1960-F.Y. 1987	78
6.8	Real Wage Indices and Compound Annual Growth Rates, Japan, F.Y. 1960-F.Y. 1987	79
6.9	Average Prices of Commercial Land of Six Largest Cities	83
6.10	Average Prices of Industrial Land of Six Largest Cities	83
6.11	The Private and Public Sector Balance, F.Y. 1960-F.Y. 1987	87
6.12	Budgeted Government Spending by Category, Real Percentage Change over Previous Fiscal Year, F.Y. 1971-F.Y. 1986	89
6.13	Budgeted Government Spending as a Percentage of GNP, F.Y. 1970-F.Y. 1986	90
6.14	Growth of Budgeted Government Spending, by Category, F.Y. 1970-F.Y. 1986	90
6.15	Percentage Real Increase in Tax Burden, F.Y. 1961-F.Y. 1987	94
6.16	The Domestic Sector and Current Account Balance, F.Y. 1960-F.Y. 1987	94

SECTION 7:

Following Page

7.1	Japanese Net Portfolio Investment, F.Y. F.Y. 1987	100
7.2	Investment in Foreign Securities by Japanese, F.Y. 1981-F.Y. 1988	100
7.3	Real Discount Rates, U.S. and Bank of Japan, Averages, F.Y. 1961-F.Y. 1988	102
7.4	Investment in Japanese Securites by Non- Japanese, F.Y. 1981-F.Y. 1988	103
7.5	Japan's Balance of Payments, F.Y. 1961- F.Y.1987	104

SECTION 8:

8.1	Results of Net Foreign Direct Investment Model (1)	114
8.2	Results of Net Foreign Direct Investment Model (2)	114
8.3	Correlation Matrix for the Private Balance Regression	119
8.4	Results of Private Balance Regression (1)	119
8.5	Results of Regressions of Individual Explanatory Variables on Private Balance	119
8.6	Results of Private Balance Regression (1) Corrected for First Order Auto-Correlation	120
8.7	Results of Regressions of Individual Explanatory Variables on Private Balance, Corrected for First Order Auto-Correlation	120
8.8	Results of Net Foreign Portfolio Investment Model	124
8.9	Results of Net Foreign Portfolio Investment Model, Corrected for First Order Auto-Correlation	124
8.10	Testing for Structural Change, 1960 to 1971 and 1972 to 1987	127

LIST OF FIGURES

<u>Section 5:</u>	Following Page
Figure 5.1. Balance of Payments Schematic	62
 <u>Section 8:</u>	
Figure 8.1. Macro-Economic Rationale Behind Statistical Approach	109

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1.0. INTRODUCTION

1.1. THESIS STATEMENT AND FORMAT

In each of the past 4 years, Japan has been the world's largest exporter of capital. Although most of this capital has been in the form of foreign portfolio investment (FPI), foreign direct investment (FDI) has contributed significantly to the total. The startling change in Japan's role in world FDI can be gauged by the fact that the country's accumulated direct foreign assets amounted to over \$96 billion U.S. (in 1980 dollars ¹) by the end of fiscal 1988; which was almost 3 times the 1984 figure of \$33 billion U.S. and over 6 times the accumulated direct investment assets held in 1980.

Both the size and the changed focus of Japan's FDI are likely to be of pivotal importance in shaping the world economic order of the 1990s. Any assessment of this impact must address two key questions:

- (1) What factors are producing the current excess of capital in the Japanese economy which is available for offshore investment?
- (2) Given (1), is the current rate of Japanese foreign direct investment sustainable?

The answers to these questions need to be extracted from a complex

¹ Unless otherwise stated, all figures referring to the level of cumulative and annual Japanese FDI flows will be in constant 1980 dollars.

matrix of economic parameters, disparate corporate cultures and overlying political considerations. Nevertheless, the general shape of the answers seem clear. The Japanese economy will be able to sustain high rates of foreign investment and a growing proportion of this investment will be directed towards asset acquisition. As a consequence of this increased involvement in off-shore ownership and operations, the major Japanese companies will develop a far greater degree of internationalism than has been the case hitherto. This later trend, with its concomitant strains on the traditional Japanese management system, will be a major test of the resilience and adaptability of the Japanese industrial society.

This study seeks to explain the rapid increase in Japanese FDI in the context of macro-economic developments which have taken place in Japan since 1973. In format, this paper will first provide a historical perspective of Japanese offshore direct investment, concentrating on the changing levels, nature and motivation of Japanese FDI, particularly since 1973. In section 4, the study will provide a brief analysis of current FDI theories and their inadequacy for explaining past Japanese FDI or for predicting its future continuation. Section 5 will introduce the macro-economic basis for the study's contention that structural changes in the domestic economy are driving Japan's current FDI initiatives. The study will then identify the forces which are generating the huge amounts of capital currently available for

offshore investment and will seek to establish the contribution of each of these forces. In section 8.0, the results and limitations of a regression model developed to support the foregoing macro-economic discussion will be examined. Finally, section 9.0 will evaluate the long-term sustainability of the capital generating factors described in the macro-economic and statistical sections of this study. As will be discussed in section 9.0, the future levels of Japanese FDI will depend not only on the extent to which current macro-economic conditions prevail, but also on the desirability of continued Japanese offshore investment and its future acceptability in terms of the recipient countries.

Before the supporting discussion of this thesis, it may be of value to provide a background brief of the current circumstances of Japanese foreign investment.

1.2. THE CURRENT STATUS

As noted above, Japan became the world's leading creditor nation in 1984 and, spurred by aggressive portfolio, direct and, increasingly, foreign real estate investments, has maintained this position since. Although this study is focussed on Japan's FDI, it is of interest to take a brief look at the country's overall foreign investment practice. In fiscal year (F.Y.) 1988 (ending March 31, 1989), Japan's net overseas assets exceeded \$260 billion

US having risen by a record \$46 billion over F.Y. 1987 ⁽²⁾. Total assets overseas increased by 37.1% to \$1,321 billion US while total debts rose 41.4% to \$1,059 billion US. Japan's total foreign investment in 1988 was about \$109 billion U.S., of which \$78.7 billion was in the portfolio classification, which resulted in an accumulated net FPI of over \$293 billion U.S.⁽³⁾. Between 1984 and 1988, the sum of the annual net portfolio investments amounted to \$313 billion U.S.; the corresponding figure for the preceding 24 years was minus \$20.2 billion U.S. Table 1.1 shows the pattern of Japan's foreign investment from 1960 to 1988 and clearly indicates the rapid expansion of both FPI and FDI since 1983. Although currency appreciation has over-stated this growth, it can also be seen that total foreign investment has increased from 0.5 percent of GNP in F.Y. 1983 to 4.2 percent of GNP in F.Y. 1988.

² "Japan World's Leading Creditor," The Province, May 28, 1989.

³ Both foreign portfolio and foreign direct investment will be defined in Section 2.1.

TABLE 1.1: JAPANESE NET TOTAL OVERSEAS INVESTMENT AS A % OF GNP,
FISCAL YEAR 1960 TO 1987, BILLIONS OF U.S. \$ *1

BILLIONS OF U.S. \$							
YEAR	GNP	TOTAL NET OVERSEAS INVESTMENT	% OF GNP	NET FOREIGN DIRECT INVESTMENT	% OF GNP	NET FOREIGN PORTFOLIO INVESTMENT	% OF GNP
1960	45.02	0.09	0.2	0.07	0.2	0.02	0.0
1961	55.15	0.02	0.0	0.03	0.1	-0.01	0.0
1962	60.17	-0.06	-0.1	0.01	0.0	-0.07	-0.1
1963	71.09	-0.13	-0.2	0.02	0.0	-0.15	-0.2
1964	82.39	-0.10	-0.1	0.05	0.1	-0.15	-0.2
1965	91.15	-0.05	-0.1	0.03	0.0	-0.08	-0.1
1966	106.81	0.10	0.1	0.08	0.1	0.02	0.0
1967	125.89	0.09	0.1	0.08	0.1	0.01	0.0
1968	148.24	-0.21	-0.1	0.14	0.1	-0.35	-0.2
1969	172.94	-0.79	-0.5	0.14	0.1	-0.93	-0.5
1970	202.92	0.00	0.0	0.25	0.1	-0.25	-0.1
1971	233.52	-0.66	-0.3	0.14	0.1	-0.80	-0.3
1972	312.26	0.46	0.1	0.54	0.2	-0.08	0.0
1973	396.55	3.66	0.9	1.94	0.5	1.72	0.4
1974	467.07	2.56	0.5	1.69	0.4	0.87	0.2
1975	377.11	-1.06	-0.3	1.53	0.4	-2.59	-0.7
1976	574.24	-0.87	-0.2	1.90	0.3	-2.77	-0.5
1977	703.15	0.99	0.1	1.63	0.2	-0.64	-0.1
1978	982.53	5.17	0.5	2.36	0.2	2.81	0.3
1979	1013.25	3.89	0.4	2.66	0.3	1.23	0.1
1980	1081.25	-7.32	-0.7	2.11	0.2	-9.43	-0.9
1981	1177.42	-2.96	-0.3	4.71	0.4	-7.67	-0.7
1982	1093.56	3.26	0.3	4.10	0.4	-0.84	-0.1
1983	1196.25	6.10	0.5	3.20	0.3	2.90	0.2
1984	1276.34	29.93	2.3	5.97	0.5	23.96	1.9
1985	1344.74	46.83	3.5	5.08	0.4	41.75	3.1
1986	1985.34	116.29	5.9	14.25	0.7	102.04	5.1
1987	2428.01	109.41	4.5	18.61	0.8	90.80	3.7
1988	2889.06	121.30	4.2	33.76	1.2	87.54	3.0

Footnote:

*1 + signs refer to net outflows and - signs refer to net inflows

2.0 DEFINITIONS AND DATA SOURCES

The study makes extensive use of statistical data in describing and analyzing the subject of Japanese foreign investment. Before entering the main body of the discussion, it will be helpful to define the principal terms used with reference to foreign investment and to comment on the sources of the data used.

2.1. DEFINITIONS OF FOREIGN INVESTMENT

From the balance of payments perspective, international capital movements which involve transactions with credit maturities of less than one year are referred to as short term movements, while transactions which have infinite maturities, or maturities exceeding one year (such as stocks and physical assets) are deemed as long term movements. Generally, short term capital movements serve to smooth out short term fluctuations in the balance of payments by responding swiftly (overnight) to changes in relative interest rates and exchange rates. Although important in the overall monetary sense, short term movements are, necessarily, of a transient nature and do not confer a lasting impact on either the recipient or donor economies. They have no part in the discussion at hand.

On the other hand, long term capital movements, represent an extended transfer of capital to the recipient countries and are, therefore, more important in the context of long term economic

development. These long term capital movements can be further subdivided into indirect and direct assets. The former, also referred to as foreign portfolio investment (FPI), includes purchases of foreign equities, bonds and other similar instruments. In general, foreign portfolio investment does not confer any direct management rights on the foreign investor. Such investment is made purely on the basis of expected returns.

Conversely, foreign direct investment (FDI) does assign management rights to the investor and allows the investor to influence, in part or in total, the conduct of the recipient organization's business. The line of demarcation between portfolio and direct investment is obviously an arbitrary judgement which is established more for the purposes of foreign investment accounting than as a true attempt to separate passive and active investment. For Japan, the demarcation point is 10 percent; i.e. the acquisition of 10 percent, or more, of a foreign company's equity is considered to be direct foreign investment. Below that level, the transaction is generally recorded as foreign portfolio investment. Japan's Ministry of Finance (MOF) uses a somewhat broader net to encompass FDI. In addition to the 10 percent rule, the MOF also includes investments in foreign corporations with which the donor has established a permanent, economic working relationship. Further, it classifies loans as FDI when such loans are made to companies in which the lender has 10 percent or more equity interest.

Obviously, if "direct" is intended to convey an ability to influence, the use of an arbitrary level of investment is not technically sound. Kojima's (4) description of direct foreign investment provides a more comprehensive definition:

"...direct foreign investment should be understood as the transmission of management resources in a package of capital, management ability, and technical expertise to a host country. The management resources are organizations that exhibit various capabilities in the process of corporate management, consisting outwardly of the nucleus of managers but encompassing in a wider sense, managerial knowledge including patents, technical know-how and marketing techniques, market positions in regards to sales, materials procurement, and capital raising, trademarks and goodwill and organizations for information gathering and research and development."

Notwithstanding its arbitrary nature, the use of statistics based on the MOF's definition of FDI is probably a reasonable basis for measuring Japanese overseas investment which has influence on the conduct of the recipient companies. In many cases, the Japanese participation is clearly dominant or exclusive; e.g. recent investments in North America and Europe by the automobile industry. Where small equity investments are concerned, influence (if not control) is often exercised through technical assistance, marketing or licensing agreements or, as provided for under the MOF interpretations, loans.

⁴ Kiyoshi Kojima, "Japanese-Style Direct Foreign Investment," Japanese Economic Studies, New York: ME Sharpe Inc., Spring 1986, p. 58.

2.2. SOURCES OF STATISTICAL DATA

Two sources of Japanese DFI statistics are available; one is based on notifications (and licenses before December 1, 1980) and the other is based on implementation. The former refers to applications for FDI which are approved by the Ministry of Finance in accordance with the Foreign Exchange and Trade Control Law (1949 and 1980). The second source is the Balance of Payments Statistics compiled by the Bank of Japan. As the former tends to include all reported or licensed investments including, those which are not eventually executed and investments which are divested in the future, the MOF data are an over-estimation. Conversely, the Bank of Japan statistics tend to under-state Japanese FDI, covering only those transfers of monies (in the form of investments in, or loans to, branch offices or subsidiaries) where the Japanese investor holds 10% or more (25% before 1980) of the common stock. According to Hamada (⁵), the resulting difference between the MOF and Bank of Japan statistics suggests that "there exists a substantial lag in the actual transfer of funds behind authorization." Ozawa (⁶) notes that between 1951 and 1965, the ratio of actual FDI to the amount approved by the MOF was 44.4%; and in the periods 1965 to

⁵ Koichi Hamada, "Japanese Investment Abroad" in P. Drysdale, ed., Direct Foreign Investment in Asia and the Pacific, Toronto: University of Toronto Press, 1972. Taken from Terutomo Ozawa, Multinationalism, Japanese Style, Princeton: Princeton University Press, 1979 p. 237.

⁶ Terutomo Ozawa, Multinationalism, Japanese-Style, Princeton: Princeton University Press, 1979, p. 237.

1970 and 1971 to 1979, the ratios were 38.5% and 34.9, respectively. Ozawa attributes the decline in the execution ratio to the increase in the average size of Japanese overseas investments which has prompted longer periods of preparatory activities. ⁽⁷⁾

On balance, and despite the propensity to over-estimate, it appears that the MOF statistics are the best available estimates of Japanese FDI. The MOF statistics make a number of exclusions which are important in the context of overall Japanese FDI. These exclusions include:

- (1) Direct investments financed through local borrowing;
- (2) Technology transfers; and,
- (3) Reinvestment of retained earnings by Japanese subsidiaries abroad. ⁽⁸⁾

(1) and (3) are particularly relevant since the size of many Japanese foreign subsidiaries enables them to raise capital overseas on the basis of their own assets. According to Ozawa ⁽⁹⁾, therefore, "the amount of direct foreign investment approved by the Japanese government serves as a good proxy for the actual amount invested because the amount of capital raised and reinvested overseas, so far, roughly matches the amount of delayed or

⁷ Ibid., p. 238.

⁸ OECD Economic Surveys, Japan, 1987/1988, Paris, 1988, p. 65.

⁹ Ozawa, Multinationalism, Japanese-Style, p. 238.

cancelled capital outflows from Japan." In addition to the above exclusions, since 1980, the MOF have dropped foreign real estate acquisitions from the FDI statistics. Under the new Foreign Exchange and Trade Control Law of 1980, notifications of foreign real estate purchases were declared non-mandatory. Given the phenomenal increase in foreign real estate holdings by Japanese firms and individuals, especially since 1984, this exclusion probably represents a serious understatement of the volumes of investment between 1980 and 1987. Further, as the inventory of revenue earning investments has increased, the amount of money available for reinvestment by the overseas subsidiaries is likely to have experienced corresponding growth.

Given the above, and because their better availability, this study has generally relied on MOF data.

3.0. HISTORICAL REVIEW OF JAPANESE FOREIGN DIRECT INVESTMENT

Direct foreign investment is not a new phenomenon among Japanese strategies. Such investment has been practiced since the early days of the Meiji period and has formed a vital part of Japan's past policies of industrial and political expansion. To establish a proper historical perspective, within which the current FDI status can be evaluated, this section will provide an outline of FDI in each of six periods; ranging from 1870 to the present. For each period, the discussion will present a brief description, not only of the investments made, but also the causal factors behind such investment. From the sequence of period snapshots a picture emerges of an eminently practical approach to using FDI as a tactical device towards furtherance of the strategic objectives of the day.

3.1. JAPANESE FDI PRIOR TO WORLD WAR II (1870 TO 1940)

Japan had accumulated approximately Yen 219 billion, in nominal terms, in overseas assets by 1945; which was roughly 3 times the value of GNP in 1944 (¹⁰). Geographically, this was distributed between Manchuria (61.1%) and China (30.1%) with the remaining 8.8% concentrated in other, mainly Southeast Asian, nations (¹¹). Although the large majority of these investments

¹⁰ K. Yasumuro, "The Contribution of Sogo Shosha to Multinationalization", in A. Okochi and T. Inoue, edit., Overseas Business Activities, Tokyo: University of Tokyo Press, 1984, p.77.

¹¹ Ibid., p.77.

were of a military nature, a number of important trends were established in the pre-war period which later re-emerged after 1951 when FDI was once again permitted.

At the forefront of much of the non-military investments made in Asia prior to World War II were those undertaken by the Japanese textile industry. The textile industry had developed major export markets in Asia after World War I when the British textile producers largely dis-invested in this region. The primary market was China and, by 1915, 80% of Japanese textile exports were earmarked for Chinese markets ⁽¹²⁾.

Subsequently, however, these export markets were threatened by the rapid expansion of Chinese cotton spinning production capacity, which rose from 650 thousand spindles in 1915 to 2.1 million spindles in 1921. This expansion was supported by protective measures, introduced by the Chinese government after 1919, which included the revision of custom rates on imported yarn and textile products. (By 1930, these rates were as high as 40 to 70 percent ¹³). In response to these combined threats, Japanese cotton spinners established local mills in Shanghai and Tsingtao between 1917 and 1922. By 1926, Japanese cotton spinners accounted for 36% of the total production capacity in China, controlling

¹² T. Inoue, "A Comparison of the Emergence of MNC manufacturing," in Overseas Business Activities, p. 13.

¹³ Yasumuro, "The Contribution of Sogo Shosha to Multinationalization," p. 71.

approximately 1.3 million spindles (¹⁴). Thus, these early investments by the Japanese textile industry represented the first example of FDI undertaken for the purpose of protecting important Japanese export markets.

A second important characteristic of the pre-World War II period was the FDI undertaken by the large Japanese general trading companies (sogo shosha). The sogo shosha were the trading arms of the powerful Japanese financial and industrial conglomerates known as zaibatsu which have contributed extensively to both the pre- and post-World War II economic development of Japan. As global traders, the sogo shosha were instrumental in sourcing the raw materials necessary for Japan's industrialization and in establishing overseas export markets for Japanese products. To support their trading business, the sogo shosha established a network of overseas offices. Mitsui Bussan, the largest trader in the pre-WW II period, established 46 branches in Asia (primarily China); 5 in Europe, 2 in the United States and 1 in Australia between 1877 and 1914 to facilitate its trade in textile raw materials and end products (¹⁵). By 1919, 37% of Mitsui Bussan's employees served in overseas branch offices (¹⁶) and by 1939, the

¹⁴ Inoue, p. 13.

¹⁵ Yasumuro, "The Contribution of the Sogo Shosha to Multinationalization," p. 67.

¹⁶ Ibid., p. 67.

company had established 91 branch offices worldwide (¹⁷). The early "internationalization" of Mitsui Bussan was matched by other large trading companies, notably Mitsubishi Shoji (active in the mineral trade); C. Itoh and Marubeni (textiles), Iwai (chemicals and heavy industrial products); Nissho (foodstuffs) and Kanematsu (wool). Table 3.1 indicates the number of overseas offices established by the leading trading companies prior to World War II.

In addition to establishing overseas branch offices to support their trading business, the sogo shosha also participated in overseas joint ventures with Japanese industrial enterprises and local partners. The majority of these joint ventures were in manufacturing or extractive industries with the sogo shosha accepting a minority interest in order to secure the trading business generated from the investment. While small in number (at the end of 1942, Mitsui Bussan had 8 joint ventures with Japanese partners and 3 with Japanese and local partners ¹⁸), these investments represented a precedent for what would become an important characteristic of Japanese FDI in the 1960s and 1970s.

3.2. JAPANESE FDI; 1951 to 1965

At the end of 1945, Japan was stripped of its entire stock of overseas investments and FDI was forbidden until 1951. After 1951

¹⁷ Yoshihara Kunio, The Sogo Shosha, Oxford: Oxford University Press, 1982, p. 17.

¹⁸ Yasumoro, "The Contribution of the Sogo Shosha to Multinationalization," p. 76.

TABLE 3.1: NUMBER OF OVERSEAS OFFICES OF SELECTED SOGO SHOSHA PRIOR TO W.W. II

NAME	TOTAL	AS OF
MITSUI BUSSAN	91	1939
MITSUBISHI SHOJI	46	1941
C. ITOH	31	1941
IWAI	24	1941
NISSHO	23 *	1941

*Footnote: includes 4 manufacturing subsidiaries in China.

Source: Yoshihara Kunio, Sogo Shosha, Oxford:
Oxford University Press, 1982, pages 17, 42, 53, 59 and 69.

modest amounts of Japanese FDI occurred but the average between 1951 and 1965 was less than US \$70 million, in nominal terms, per year. There were a number of reasons behind this. First, FDI was strictly regulated to prevent the outflow of scarce foreign reserves. At the end of 1945, the yen had been pegged at 360 to the dollar. During the early part of this period the rate represented an over-valuation of the yen, making it difficult for Japan to sell enough products overseas to pay for its much-needed imports of basic foodstuffs and raw materials. Under the Bretton Woods system, the onus of adjustment was largely on the deficit countries through either reductions in the current account deficit or devaluation. For the Japanese, struggling for re-acceptance in the international community, a devaluation of the yen would have represented a major national humiliation. Furthermore, the Japanese need to import capital goods to develop their heavy industrial capacity was also a strong argument against devaluation. To protect the yen, the Foreign Exchange and Trade Control Act of 1949 made all international transactions subject to licensing approval by the Ministry of Finance.

As noted by Uno (¹⁹), a second factor behind the lack of Japanese FDI between 1951 and 1965 was that investment opportunities in Japan abounded. Much of the early part of this period was spent re-building war-torn factories and basic social

¹⁹ Kimio Uno, Japanese Industrial Performance, Amsterdam: Elsevier Science Publishers B.V., 1987, p. 402.

infrastructure. Later, supported by a variety of government industrial policy measures, Japanese manufacturers of low technology, consumer goods expanded plant capacities for the purpose of export. In the second half of the period, government industrial policy encouraged investment in domestic heavy industries such as iron and steel and petrochemicals. Supported by protective tariffs and preferential and low interest financing, these investments tended to be highly profitable. When coupled with the general lack of financial resources available, the abundance of domestic investment opportunities tended to preclude the demand for FDI.

Another compelling reason for Japan's limited FDI during this period was the lack of financial, managerial and technological sophistication in Japanese industries. (One notable exception, however, was the textile sector). Isolation imposed by war had left many Japanese industries technologically backward; as a result, the period between 1951 and 1965 was characterized by massive efforts to import and adapt Western technologies to Japanese manufacturing processes.

Despite the relatively small scale of Japanese FDI between 1951 and 1963, the period is important because of the resumption of several pre-war FDI practices noted in section 3.1. First, the trading companies re-grouped after 1951 and once again established overseas branch offices in principal export and import markets. Second, the Japanese textile industry, the most mature and

competitive of Japan's industries in the immediate post-war period, faced rising tariff barriers in Southeast Asia where host governments were implementing import substitution policies. The tariff barriers, when combined with lower costs of production in these countries, threatened the international competitiveness of Japan's textile industry. As a result, textile producers such as Toyobo, Kanebo, and Kurabo invested offshore in Latin America (primarily Brazil) and Southeast Asia. Finally, the period also witnessed the resumption of investments in overseas resource developments for the purpose of export to Japan. These included four large, government-supported projects: Alaska Pulp (1953); the Nippon Usiminas (Brazil) steel project (1957); Arabian Oil (1958); and the North Sumatra Oil development (1960) ⁽²⁰⁾.

3.3. JAPANESE FDI; 1966 to 1973

Total cumulative Japanese FDI increased rapidly during this period, rising from US \$2833 million in 1966 to US \$10,030 million in 1973; that is, at a compounded annual growth rate of 43.4%. The average annual flow jumped to greater than US \$750 million between 1966 and 1973. This rapid increase can be attributed to several factors. First, after 1965, the balance of payments turned to surplus reducing the pressure on the central authorities to restrict capital outflows. As a result, the period witnessed a gradual liberalization of foreign direct investment, beginning in October 1969 when case by case screening by the Ministry of Finance

²⁰ Uno, Japanese Industrial Performance, p. 401.

was replaced by automatic approval from the Bank of Japan for investments under US \$200,000. In September 1970, the limit for automatic approval was raised to US \$1 million and it was completely eliminated in July 1971 (²¹). According to Yoshihara (²²), this gradual approach reflected both the government's concern that the BOP surplus would be sustained and that FDI not be injurious to domestic industries. By 1972, the effects of liberalization were clearly felt; FDI increased by \$3.9 billion in F.Y. 1972 and by \$4.3 billion in F.Y. 1973 with the combined total for these two years exceeding the total for the entire 1951 to 1971 period (²³).

In addition to liberalizing capital outflows, the Japanese government implemented several measures to encourage FDI. Included among these were the provision of foreign currency loans to residents after August 1972 (designed to eliminate foreign exchange risks); the lowering of interest rates on monies borrowed for FDI through the Export-Import Bank of Japan by 1% in November, 1972; the provision of bank loans through the Export-Import Bank for operating funds as well as machinery and equipment procurement after November 1972; tax incentives allowing for deductions from profits to be used as reserves against FDI losses and credits on

²¹ Ozawa, Multinationalism Japanese-Style, p. 16.

²² Kunio Yoshihara, Japanese Investment in Southeast Asia, Honolulu: University Press of Hawaii, 1978, p. 3.

²³ Uno, Japanese Industrial Performance, p. 403.

taxes paid abroad; and, finally, improved insurance schemes for overseas investments. In addition, in the early 1970s, the government established the Institute of Developing Economies; expanded the Japan External Trade Organization's (JETRO) information service; subsidized overseas missions of the Japan Chamber of Commerce and other private organizations and concluded commercial treaties with foreign countries to expedite the granting of business visas to Japanese managers ⁽²⁴⁾.

The pro-FDI stance of the Japanese government reflected their desire to hold down the appreciation of the yen and to relieve perceived domestic pressures which threatened Japan's export competitiveness. In 1971, the world moved to floating exchange rates and the yen appreciated by 20% between 1971 and 1973. Domestic pressures included rising labour shortages and associated wage hikes; accelerating land costs; pollution problems; and shortages of new sites for industrial production. Wage and land price increases had been particularly severe. In terms of the former, manufacturing wages rose at an average rate of 10% between 1960 and 1965. In the second half of the 1960s, rapidly escalating wage increases exceeded productivity gains and, in 1972, wages increased by 20% ⁽²⁵⁾. Industrial land prices rose 66% between 1966 and 1973. Finally, pollution problems such as the Minimata mercury poisoning incident in the late 1960s galvanized public support for

²⁴ Yoshihara, Japanese Investment in Southeast Asia, p. 12.

²⁵ Ibid., p. 4.

increased investments in pollution control and for full consultation between industry and the communities which could be affected by potential developments.

These "push" factors driving Japanese manufacturers offshore were reinforced by several "pull" factors. Japan's export success in the late 1960s and early 1970s had met with rising criticism and the introduction of trade restrictions in several of her principal export markets in Southeast Asia. At the same time, many Southeast Asian countries were pursuing export promotion strategies designed to encourage foreign capital and technology investments. These policies included the establishment of export processing zones allowing for the duty-free import of inputs, unrestricted repatriation of foreign earnings and the provision of tax incentives to foreign investors. After 1970, for example, the government of Korea allowed for 100% ownership of companies by foreign investors, exempted new companies from taxation for the first 5 years of operation and gave a 50% tax reduction on corporate profits for the succeeding 3 years (²⁶). Although formal diplomatic relations were not established between Japan and Korea until 1965, by 1974 the number of Japanese investment projects in Korea far exceeded those in Taiwan, Singapore and Hong Kong (see Table 3.2).

A second influence which encouraged offshore Japanese manufacturing investment in Southeast Asia was the dismantling of

²⁶ Yoshihara, Japanese Investment in Southeast Asia, p. 18.

TABLE 3.2: APPROVAL OF INVESTMENT PROJECTS IN EAST ASIA, 1960-1974

	YEAR	TAIWAN	KOREA	HONG KONG	SINGAPORE
Before	1960	3	-	1	1
	1960	4	-	1	-
	1961	2	-	4	1
	1962	9	-	1	-
	1963	8	-	7	8
	1964	-	-	4	-
	1965	9	-	3	3
	1966	24	-	10	4
	1967	46	3	2	4
	1968	80	8	1	3
	1969	73	15	6	10
	1970	50	58	5	7
	1971	16	51	10	14
	1972	13	113	16	26
	1973	68	290	19	38
	1974 (1-3)	21	43	7	2
TOTAL		426	581	97	121
MEDIAN (YEAR)		1969	1973	1971	1972

- indicates no investments

SOURCE: Kunio Yoshihara, Japanese Investment in Southeast Asia,
Honolulu: The University of Honolulu, 1978. p.18

trade barriers against imports from developing countries after 1970. Japanese tariffs, notoriously high in the 1950s and 1960s were gradually relaxed after 1967 with the signing of the Kennedy Round of GATT. Between 1968 and 1971, tariffs on over 2000 commodities were lowered by 50% and an additional 20% reduction was made on 1900 goods after 1972 ⁽²⁷⁾ More importantly, after August 1971, Japan allowed the duty-free import of manufactured goods from less developed countries, up to certain prescribed limits. According to Yoshihara ⁽²⁸⁾, imports under this scheme amounted to \$760 million in 1972 and \$806 million in 1973. These tariff reductions provided an incentive for Japanese firms to locate production offshore in nearby Southeast Asia and export to Japan as well as third countries.

Finally, Japan's rapid industrial restructuring during the 1960s towards chemical and heavy industries, produced an insatiable demand for raw materials at stable prices. For example, between 1964 and 1968 Japan's demand for petroleum grew at an average annual rate of almost 18% ⁽²⁹⁾. The demand for copper, aluminum, nickel and crude steel grew at 11.7, 21.0, 25.2, and 20.0 percent, respectively over the same period. By 1969, Japan's share of the

²⁷ Ibid., p. 5.

²⁸ Yoshihara, Japanese Investment in Southeast Asia, p. 6.

²⁹ Ozawa, Multinationalism, Japanese-Style, p. 159.

OECD coking coal trade exceeded 41%, up from 15.8% in 1965 (³⁰) and the country was also a major importer of iron ore. In addition, Japan had developed a pronounced dependency on imported foodstuffs. By 1974, Japan imported 95% of the wheat consumed, 96% of the soybean and 82% of the barley (³¹).

This strong dependence on overseas resource supplies, coupled with Japan's high economic growth rates during the 1960s (averaging in excess of 10% per annum between 1964 and 1968), provided a significant incentive for extractive investment offshore. Table 3.3 indicates the percentage of Japanese resource consumption in 1969 provided by Develop & Import (D&I) arrangements. The D&I projects were generally undertaken by consortiums of Japanese buyers which provided financial backing (principally through long-term loans and purchase agreements, but also through equity participation) to develop overseas resources. Often, the consortiums would consist of several buyers from the same keiretsu or, large oligopolistic industrial group, originating from the former zaibatsu conglomerates. However, in the case of resource developments such as coal or iron ore, inter-keiretsu consortiums were also active; joint purchasing by the Japanese steel industry was one such example of this type of activity. The projects were

³⁰ Japan's share of OECD trade in other raw materials showed similar increases with iron ore rising from 23.7 to 39.3%; timber from 15.4 to 29.9%; copper from 9.5 to 19.1%; and in crude oil from 12.6 to 15.6%. Ozawa, Multinationalism, Japanese-Style, p. 160.

³¹ Ibid., 160.

TABLE 3.3: SUPPLY SOURCES OF SELECTED RESOURCES, 1969

RESOURCE	DOMESTIC	DEVELOP-AND-IMPORT	REGULAR
	SUPPLY	(D & I)	IMPORT PURCHASE
	%	INVESTMENT ABROAD	%
COPPER	28.3	16.1 (11.6)*	55.6
LEAD	44.7	6.3	49.0
ZINC	51.1	2.5	46.4
ALUMINUM (BAUXITE)	-	9.6	90.4
NICKEL	-	6.4	93.6
IRON ORE	14.0	82.5 (75.2)*	3.5
COAL	22.4	68.6 (61.5)*	9.0
CRUDE OIL	0.5	10.5	89.1
NATURAL GAS	95.6	4.4	-
URANIUM	-	0.0	100.0

*Footnote: Percentages in parentheses show those imports developed under longterm loans instead of direct investment.

Source: Terutomo Ozawa, Multinationalism, Japanese Style, Princeton: Princeton University Press, 1979, p. 176.

usually organized by the keiretsu major trading company and financed by the group's bank (for example, the Mitsubishi Group would be led by Mitsubishi Trading Company and financed by Mitsubishi Bank.) These consortium-backed investments reduced the financial risk of overseas developments. As noted by Ozawa (³²),

"Group investment...plays an important risk-sharing function, because large-scale investments, particularly in resource development, call for huge sums of capital outlay involving extremely high risks...the linkage-sharing function played by group investment appears to be a positive and unique characteristic of Japan's system-focused strategy for overseas extractive ventures."

The importance of overseas extractive investments is corroborated by statistics about the type of FDI undertaken during this period. As indicated in Table 3.4, mining investments increased at an average annual rate of 26% between F.Y. 1965 and F.Y. 1972, representing the single largest proportion of Japanese FDI (34%) in F.Y. 1972.

However, some of the strongest rates of growth during the period F.Y. 1965 to F.Y. 1972 were witnessed outside the primary sector investments. This was most notable in overseas investments in chemical manufacturing, electrical machinery (including consumer electronics) production, and in the finance-insurance and commerce sectors with compounded annual rates of growth of 42, 37, 27 and 26% respectively. FDI by the textile sector also realized an annual rate of growth in excess of 20%. The rapid growth in manufacturing investments was led by labour intensive industries

³² Ozawa, Multinationalism, Japanese-Style, p. 187.

TABLE 3.4: JAPANESE FDI CLASSIFIED BY INDUSTRY, ON A REPORTED BASIS,
F.Y. 1965 TO F.Y. 1972, CUMULATIVE TOTALS FOR SPECIFIED
FISCAL YEAR, MILLIONS OF 1980 U.S. \$

INDUSTRY	YEAR	1965	% OF TOTAL	1972	% OF TOTAL	ANNUAL RATE OF GROWTH
Manufacturing:						
Food Stuffs		74	2.8	185	1.5	13.9
Textile		173	6.5	776	6.1	23.9
Pulp & Lumber Products		205	7.7	552	4.4	15.2
Chemicals		22	0.8	263	2.1	42.2
Iron & Ferrous Metals		168	6.4	448	3.5	15.0
General Machinery		75	2.8	239	1.9	18.0
Electrical Machinery		35	1.3	321	2.5	37.1
Transport Machinery		160	6.0	265	2.1	7.5
Others		59	2.2	218	1.7	20.6
Sub-Total		972	36.7	3267	25.9	18.9
Primary Industries:						
Agriculture-Forestry		41	1.6	155	1.2	20.7
Fisheries		24	0.9	91	0.7	20.9
Mining		848	32.0	4241	33.6	25.9
Sub-Total		914	34.5	4487	35.5	25.5
Tertiary Industries:						
Construction		48	1.8	88	0.7	8.9
Commerce		296	11.2	1410	11.2	25.0
Finance-Insurance		191	7.2	1009	8.0	26.8
Others		231	8.7	2375	18.8	39.5
Sub-Total		766	28.9	4882	38.6	30.3
Total		2652	100.0	12636	100.0	25.0

(in the case of consumer electronics and textiles) and resource-intensive industries (in the case of chemicals). Investments in the commerce and finance-insurance sectors were undertaken largely to support export offensives and, in the case of the latter, to provide financial services to the growing number of Japanese companies moving abroad.

Regionally, as indicated in Table 3.5, Japanese FDI was concentrated in North America (24%) and Asia (23%) with Europe and Latin America accounting for 19 and 18%, respectively. While all regions experienced phenomenal rates of growth in Japanese FDI, Oceania and Europe, with virtually no Japanese investment in 1965, saw cumulative totals grow at annual rates in excess of 60%. Oceania realized a significant proportion of Japanese mining investments while Japanese commercial and financial investments rapidly increased in Europe during this period.

3.4. JAPANESE FDI; 1974 to 1980

The rapid expansion of Japanese FDI witnessed between 1965 and 1973 was interrupted by the oil crisis of 1973 and the ensuing global recession. Although net FDI averaged about \$2 billion per annum between 1974 and 1980, net FDI did not recover their 1973 levels until after 1981 (see Table 1.1).

The decline in Japanese FDI was largely induced by the world recession which followed the 1973 oil shock. This reduced the profitability of Japanese businesses both at home and abroad and

TABLE 3.5: JAPANESE FDI BY REGION ON A CUMULATIVE BASIS,
F.Y. 1965 TO F.Y. 1973, MILLIONS OF 1980 U.S. \$

REGION	YEAR	1965	% OF TOTAL	1973	% OF TOTAL	ANNUAL RATE OF GROWTH
N. AMERICA		666	25.4	4069	24.0	25.4
LATIN AMERICA		776	29.6	2993	17.6	18.4
ASIA		519	19.8	3947	23.3	28.9
EUROPE		69	2.6	3299	19.4	62.1
OCEANIA		19	0.7	1058	6.2	64.9
AFRICA		30	1.2	418	2.5	38.8
MIDDLE EAST		541	20.7	1183	7.0	10.3
TOTAL		2622	100.0	16969	100.0	26.3

provided an uncertain environment for foreign investment. However, other factors contributed to the decline of Japanese FDI. For example, in Southeast Asia rising nationalism resulted in anti-Japanese demonstrations in Bangkok and Jakarta during the visit of Prime Minister Kakuei Tanaka in 1974. The anti-Japanese sentiment was largely spawned by the visible concentration of Japanese investment in this region. As indicated in Table 3.6, American investment was comparable to Japanese FDI in Southeast Asia at the end of 1974, (\$3,533 million in total US FDI vs \$3,764 million in total Japanese FDI, nominal terms). However, the number of projects undertaken by Japanese companies in countries for which information is available ⁽³³⁾, exceeded the corresponding number of American projects by 2.7 times. This profusion of projects tended to make the Japanese economic presence more conspicuous than that suggested by its total value of investment. The concentration of Japanese firms in Southeast Asia resulted from the "bandwagon effect of investment,"⁽³⁴⁾ where the relocation of one Japanese firm was usually followed by several in the same industry. According to Murakami this "follow the leader" investment pattern resulted in the transplanting of excessive competition by the same firms in Japan to ASEAN and NIC nations. Because Japanese

³³ Indonesia, Taiwan, Hong Kong and South Korea.

³⁴ Hikoji Katano, Atsushi Murakami, Kiyoshi Ikemoto, edit, Japan's Direct Investment to Asean Countries, Kobe: Research Institute for Economics and Business Administration, Kobe University, 1978, p. 8.

TABLE 3.6: JAPANESE FDI BY REGION ON A CUMULATIVE BASIS,
F.Y. 1974 TO F.Y. 1980, MILLIONS OF 1980 U.S. \$

REGION	YEAR	1974	% OF TOTAL	1980	% OF TOTAL	ANNUAL RATE OF GROWTH
N. AMERICA		4120	23.8	9798	26.8	15.5
LATIN AMERICA		3434	19.8	6168	16.9	10.3
ASIA		4267	24.6	9830	26.9	14.9
EUROPE		2989	17.3	4471	12.3	6.9
OCEANIA		1023	5.9	2525	6.9	16.2
AFRICA		421	2.4	1445	4.0	22.8
MIDDLE EAST		1067	6.2	2259	6.2	13.3
TOTAL		17321	100.0	36496	100.0	13.2

investments were generally undertaken in labour intensive industries, domestic firms were often unable to develop competitively. This problem of over-concentration was not limited to Southeast Asia. After 1974, there was increasing criticism of Japanese acquisitions in Hawaii following a surge of investment in hotels, golf courses, condominiums and other real estate between 1970 and 1973 (³⁵).

Despite the problems resulting from global recession and rising nationalism among host countries, Japanese FDI recovered in the latter half of the 1970s, jumping from \$20,257 million, on a notifications basis, in 1975 to \$36,496 million in 1980. The increase in FDI was attributable to the recovery of the Japanese economy after 1975; the sustained appreciation of the yen throughout the decade (with the exception of 1975); and continually accelerating domestic costs for land, labour and energy. In addition, Japan became the subject of greater import restraints by the industrialized nations. The most notable of these were the import restraints introduced on colour television imports by the United States between July 1977 and June 1980 (³⁶). Local production of colour televisions, initiated in the United States in the first half of the 1970s, was rapidly accelerated. Sony was the first electronics firm to undertake FDI in the US in 1972 with

³⁵ James C. Abegglen & George Stalk Jr., Kaisha: The Japanese Corporation, Tokyo: Charles E. Tuttle Company, 1985, p. 257.

³⁶ Uno, Japanese Industrial Performance, p. 405.

construction of a plant in San Diego, but Matsushita soon followed, acquiring Motorola's TV division in 1974. A final stimulant to renewed FDI in this period was provided by the greatly increased degree of international sophistication of Japanese companies, in terms of the managerial, technological and the financial resources available for overseas investment.

Regionally, the increase in Japanese FDI was most notable in North America (from \$4977 million in 1975 to \$9798 million in 1980); Asia (from \$5361 million in 1975 to \$9830 million in 1980); Oceania (from \$1182 million in 1975 to \$2525 million in 1980) and in the Middle East (from \$1240 million in 1975 to \$2259 million in 1980). By 1980, Japanese cumulative investment was evenly divided between North America and Asia (27%). (See Table 3.6). In terms of sectoral developments, between 1974 and 1980, tertiary sector investments became more significant while investments in the overseas resource developments, as a percentage of overall investment, declined. In 1972, tertiary investments accounted for 39% of total investments, followed closely by primary investments (36%) and manufacturing investments (26%). By 1980, tertiary investments had expanded to 44% of total investments with manufacturing and primary investments accounting for 34% and 22%, respectively. Industries realizing the largest gains during the period were chemicals (up 898%); iron and ferrous materials (up 485%); electrical machinery (up 392%); construction (up 350%); commerce (up 284%); transport machinery (up 268%); and textiles (up

111%). Although mining investments still represented the largest proportion of total cumulative investment in 1980, its share of total investment had fallen to 19% in FY 1980, from 34% in FY 1972. (See Table 3.7).

The relative decline of mining investments and of the primary sector overall, was due to the slower growth of the Japanese economy after 1975 and the declining importance of heavy industry. Although Japanese real GNP continued to grow at around 5% after 1977, this represented a halving of the growth rates experienced during the 1960s and early 1970s. Concentration in heavy industry and raw materials processing industries had been sustainable while Japan was able to access the necessary resource inputs under stable price conditions. However, these conditions changed after the late 1960s. According to Abegglen ⁽³⁷⁾,

"It was clear by the late 1960s that raw materials processing industries would come under pressure to reduce production in Japan. The choice was either to source semi-finished or finished product from off-shore, or move off-shore to control the sourcing by investing in facilities in foreign countries. This shift in structure away from on-shore processing was likely for a variety of reasons; pressures from material-supplying countries to add value to the materials in the source country before their export; costs in Japan from very stringent pollution control requirements; and energy and land cost disadvantages in Japan. The probability of this industrial structure change became an inevitability as energy prices exploded in the 1970s."

The rising factor input costs and structural changes in the economy had a profound effect on Japan's petrochemical industry. After 1974, foreign chemical manufacturing investments increased

³⁷ Abegglen & Stalk, Kaisha: The Japanese Corporation, p. 244.

TABLE 3.7: JAPANESE FDI CLASSIFIED BY INDUSTRY, ON A REPORTED BASIS,
F.Y. 1972 TO F.Y. 1980, CUMULATIVE TOTALS FOR SPECIFIED
FISCAL YEAR, CONSTANT 1980 DOLLARS, MILLIONS OF U.S.\$

INDUSTRY	YEAR	1972	% OF TOTAL	1980	% OF TOTAL	ANNUAL RATE OF GROWTH
Manufacturing:						
Food Stuffs		185	1.5	587	1.6	15.6
Textile		776	6.1	1637	4.5	9.8
Pulp & Lumber Products		552	4.4	758	2.1	4.0
Chemicals		263	2.1	2626	7.2	33.3
Iron & Ferrous Metals		448	3.5	2619	7.2	24.7
General Machinery		239	1.9	894	2.4	17.9
Electrical Machinery		321	2.5	1579	4.3	22.0
Transport Machinery		265	2.1	979	2.7	17.7
Others		218	1.7	894	2.4	19.3
Sub-Total		3267	25.9	12573	34.4	18.3
Primary Industries:						
Agriculture-Forestry		155	1.2	609	1.7	18.7
Fisheries		91	0.7	301	0.8	16.1
Mining		4241	33.6	7071	19.4	6.6
Sub-Total		4487	35.5	7981	21.9	7.5
Tertiary Industries:						
Construction		88	0.7	396	1.1	20.7
Commerce		1410	11.2	5409	14.8	18.3
Finance-Insurance		1009	8.0	2426	6.6	11.6
Others		2375	18.8	7712	21.1	15.9
Sub-Total		4882	38.6	15943	43.7	15.9
Total		12636	100.0	36497	100.0	14.2

substantially, as Japanese petrochemical manufacturers responded to increased demands by the oil-producing nations for greater value-added production at home. Rising costs of production domestically and increased uncertainty about the reliability of supply sources further reinforced the need to relocate production offshore. The expansion in petrochemical investments in the Middle East, especially, was accompanied by large increases in government aid and loans to these regions. This assistance was intended to ensure an uninterrupted flow of oil supplies since Japan, even by 1978, was still dependent on the Middle East for over 85% of its oil supplies. Loans extended by the Japanese government to the Middle East increased to \$3 billion (nominal dollars) in 1973, up 5 times from the corresponding amount extended in 1972 ⁽³⁸⁾. The increase in government aid and promises for corporate investment was openly welcomed by the Middle East host countries and after January 1974, Japan was placed on OPEC's list of "friendly nations." After reaching an economic and technological agreement with the Japanese government in February 1974, the Saudi Arabian Oil Minister, Sheik Ahmed Zaki Yamani is reported to have stated that "Japan in the No. 1 position both to help us and to be the recipient of Saudi Arabian oil on a long term basis."⁽³⁹⁾

As usual, the *soga shosha* were at the forefront of this surge in investment in the Middle East. The trading companies either

³⁸ Ozawa, Multinationalism, Japanese-Style, p.144.

³⁹ Ibid., p. 145.

participated in, or acted as intermediaries for practically all the Japanese industrial projects in the region (⁴⁰). Included among these projects was the turnkey contract signed by SONATRAC, Algeria's state-owned oil-gas corporation, with C.Itoh and Toyo Engineering to build a huge maintenance and repair complex for Algeria's pipeline, oil refining, petro-chemical, LNG and mining industries (⁴¹). Other large projects organized by the trading companies included the \$200 million direct-reduced iron plant established, in 1974, at Alexandria as a joint venture between the Egyptian government (50% ownership) and C.Itoh, Korf-Stahl of West Germany, and Compahia Vale do Rio Doce of Brazil (⁴²).

The Middle Eastern projects were not without their difficulties; in the early 1970s, Mitsui Bussan agreed to organize the construction of the world's largest petrochemical project in Iran in exchange for an oil concession right in the Lorestan area southwest of Teheran (⁴³). The project, in which Mitsui Bussan invested in excess of \$500 million (the largest single foreign investment of the Mitsui group), faced construction delays and finally, an indefinite postponement of completion after the fall of the Shah in 1979.

Other large-scale investments undertaken by Japanese companies

⁴⁰ Ibid., p. 145.

⁴¹ Ibid., p. 146.

⁴² Ozawa, Multinationalism, Japanese Style, p. 147.

⁴³ Yoshihara, The Sogo Shosha, p. 119.

during this period, included major projects in Brazil and Indonesia. Brazil has long been a popular host to Japanese FDI, initially in the textile and other light manufacturing sectors during the 1950s and 1960s, but later in shipbuilding and iron & steel. However, after 1974, further large investments were undertaken in the resource processing industries including a large electric power and aluminum project in the Amazon basin. The Japanese consortium, originally consisting of 5 major smelters but later expanding to include participation by the governmental agency OECF (the Overseas Economic Cooperation Fund) and 32 private corporations, has a 49% ownership in the project. The remaining 51% is controlled by the state mining company Companhia Vale do Rio Doce (⁴⁴). In addition, other large investments have been made in steel making (Kawasaki Steel's 24.5% participation in the Tubarao steel-making project in Espirito Santo State); pulp and paper (Oji Paper's investment in the Cinebra pulp project in the state of Minas Gerais); and fertilizers (Sumitomo Chemicals and Ataka of Japan's investment with a local partner to build a million ton capacity plant in Recife). In Indonesia, also a popular host country to Japanese investment, the \$800 million Asahan electric power and aluminum project is another example of resource-based investment undertaken after 1974. The refinery is 90% owned by Japanese interests, however, initial plans were to transfer 25% of the shares of the project to the Indonesian government 10 years

⁴⁴ Ibid., p. 135.

after its completion. In addition, control of the 430,000 kilowatt hydro-electric power plant is to revert to the Indonesian government after 30 years.

A final characteristic of Japanese FDI undertaken between 1974 and 1980 is the large number of overseas investments made by small to medium sized firms. At the end of the 1970s, small to medium scale enterprises accounted for 41.8% of the total number of outstanding Japanese manufacturing projects overseas ⁽⁴⁵⁾. However, when examined on a country by country basis, the ratio of participation by these firms was higher than that of large companies in some countries. In Taiwan, they represented 58.6% of the total investment projects and in South Korea, they represented 70% ⁽⁴⁶⁾. In 1979, 82.3% of the total value of manufacturing investments made by small to medium size firms were located in Asia. According to Ozawa, this predominance of small and medium sized firms in Asia reflected not only the traditional domination of such enterprises in Japan's industrial structure but also the "unique process by which the labour-intensive, low-productivity end of the dual industrial structure (was) being gradually pushed out of Japan and sent to more labour-abundant neighboring countries through direct foreign investment" ⁽⁴⁷⁾. These

⁴⁵ Yoshihara, The Sogo Shosha, p. 26. Small to medium size firms refer to those companies having employees of 300 or fewer or paid in capital of Y100 million or less.

⁴⁶ Ibid., p. 28.

⁴⁷ Yoshihara, The Sogo Shosha, p. 28.

projects were concentrated in the textiles, sundries, metal products and relatively unsophisticated light manufacturing industries, accounting for 65.5% of the Japanese FDI in textiles, 50.2% of her investments in electrical appliances and 60.7% of her investments in sundries being located in Asia, during 1978. This large overseas investment presence by small and medium scale companies was in direct contrast to typical US multinational investments. The latter was generally undertaken by large, technically and financially, sophisticated firms which demonstrated strong competitive advantages in (primarily) growth industries. On the other hand, a large proportion of Japanese investment prior to the 1970s was undertaken by firms which were relatively unsophisticated in terms of financial and managerial resources and was directed towards industries which were declining in Japan.

3.5. JAPANESE FDI; 1981 to 1984

A number of important trends occurred during this period, including the rapid escalation of annual FDI flows. In 1981, Japanese cumulative net FDI reached \$27 billion with net annual investment flows exceeding \$4 billion for the first time (see Table 1.1). On a notifications basis, cumulative FDI increased from \$44 billion in F.Y. 1981 to \$66.6 billion in F.Y. 1984. By the end of F.Y. 1984, annual FDI flows had increased to slightly over \$10 billion. The increase in the volume of FDI can be largely attributed to the continuing appreciation of the yen against the

US dollar; decreasing factor cost differentials and rising trade frictions between Japan and her industrialized trading partners; and increased incentives for FDI in many developed countries. Japanese FDI, however, did not grow as fast as in previous periods, averaging around 18% per year. This was due, in large part, to the world recession following the second oil shock in 1979.

One of the most significant aspects of this period was the increased concentration of Japanese FDI in North America. At the end of 1980, as noted previously, Japanese FDI was evenly divided between North America and Asia with each accounting for 27% of the total investment and Latin America and Europe accounting for 17 and 12%, respectively. By F.Y. 1984, 30% of total Japanese FDI was held by North America; the corresponding Asian share had fallen to 25%. Latin America and Europe had increased their shares marginally to 18% and 13%, respectively (See Table 3.8). A large proportion of the incremental investment earmarked for North America was in the commercial and financial sectors, however, manufacturing investments also increased sharply. By F.Y. 1984, North America accounted for 29.4% of total Japanese manufacturing investment compared to 19.3% in F.Y. 1980. (Japanese manufacturing investment in Asia accounted for 36.4 and 32% of total manufacturing investment in F.Y. 1980 and F.Y. 1984, respectively⁴⁸). At the end of F.Y. 1984, Japanese manufacturing investments

⁴⁸ Jetro, White Paper on World and Japanese Direct Foreign Investment, Tokyo, 1986, p. 8.

TABLE 3.8.: JAPANESE FDI BY REGION ON A CUMULATIVE BASIS,
F.Y. 1981 TO F.Y. 1984, MILLIONS OF 1980 U.S. \$

REGION	YEAR	1980	% OF TOTAL	1984	% OF TOTAL	ANNUAL RATE OF GROWTH
N. AMERICA		9798	26.8	20028	30.1	19.6
LATIN AMERICA		6168	16.9	12146	18.2	18.5
ASIA		9830	26.9	16816	25.2	14.4
EUROPE		4471	12.3	8463	12.7	17.3
OCEANIA		2525	6.9	3468	5.2	8.3
AFRICA		1445	4.0	2982	4.5	19.9
MIDDLE EAST		2259	6.2	2730	4.1	4.9
TOTAL		36496	100.0	66633	100.0	16.2

in the United States numbered 440, were located across 40 states and involved firms which employed approximately 80,000 people.

The manufacturing investments in North America were characterized by investments in joint-venture, technology-intensive fields. Between 1984 and 1985, the number of cases of US-Japan industrial cooperation increased to 652, with manufacturing related joint ventures accounting for 79%, or 505 cases. Of these, the greatest number of cases were in high-technology related fields with 59 cases in computer-related industries; 51 in semi-conductors and ICs; and 25 in new materials (⁴⁹).

During the early 1980s the Japanese auto industry became increasingly active in United States investments, as a means of circumventing tighter restrictions on Japanese auto imports into North America. Honda was the first auto manufacturer to begin production with the 1982 opening of its Marysville plant in Ohio. In the early 1980s, investments by consumer electronics and automotive manufacturers, coupled with the demands by recipient countries for greater local procurement, also led to related investments by components-manufacturing industries (e.g., auto parts, and electronics components).

The early 1980s also witnessed an increase in the number of acquisitions in the North American financial industry by the large Japanese banks. By 1984, almost one quarter of the world's largest

⁴⁹ Jetro, White Paper on World and Japanese Direct Foreign Investment, p. 12.

banks were Japanese with the largest, Dai-Ichi Kangyo (assets in excess of \$108 billion), being ranked seventh in the world. The high-profile takeovers of several American banks were an indication of the growing power and international confidence of Japanese financial institutions. Included among these acquisitions were Fuji Bank's \$450 million acquisition of the financially troubled Heller Financial Services Group; the \$282 million takeover of the Bank of California by Mitsubishi Bank; and Sumitomo Bank's takeover of Union Bank of California in 1984. Japanese investments in Europe also increased significantly during this period, rising at an average annual rate of 19%. Previously, Japanese FDI in Europe had been primarily in the tertiary sector (commerce, finance, insurance and branch offices). Early manufacturing investments were mainly in sales companies and were designed to promote exports and serve as a foothold to develop distribution and marketing channels, if and when local production was undertaken. However, in the early 1980s, several European nations implemented incentive schemes to attract foreign direct investment in the hopes of reducing chronic unemployment problems. In addition, by the end of the period, further steps were being studied towards removing non-tariff barriers and unifying the EEC into a single market. These movements encouraged increased Japanese manufacturing investment and, by F.Y. 1984, Japanese manufacturing ventures in

Europe totalled 188 (⁵⁰). The principal recipients of this investment were the United Kingdom, France and West Germany. In the U.K. the ventures included investments made by Brother and Sharp Industries (electronic typewriters), Tabuchi Electric (small transformers for Video Tape Recorders (VTRs) and Nihon Radiator/TI Silencer (mufflers). The French investments included those by Honda Motor (power mowers), Canon (electronic typewriters) and Sony (compact disc players). In West Germany, the Sanyo Group (tuners for VTRs), Matsushita Electric (electronic components), Hitachi (VTRs), Matsushita Group (car radios and stereos) and Hitachi Koki (electric tools) were among the principal investors (⁵¹).

The average annual growth of Japanese FDI in Asia declined marginally to 14% during the period 1981 to 1984 from 15% over the previous period. However, in absolute terms, total cumulative investment increased 83% from \$9,830 million in F.Y. 1980 to \$16,816 million by F.Y. 1984. The stagnant growth rate may be attributed to the fact that the majority of labour-intensive, low technology industries had already relocated from Japan during the 1970s. However, increased investments were undertaken in response to meet the demands of burgeoning consumer markets due to rapid economic growth. In addition, increasing costs in the NICs were also resulting in the shift of investment towards lower cost

⁵⁰ Jetro, White Paper on World and Japanese Direct Foreign Investment, p. 14.

⁵¹ Jetro, White Paper on World and Japanese Direct Foreign Investment, p. 15.

producers such as Thailand, Malaysia and China. By the end of 1984, China was receiving vigorous attention, with 741 additional cases of Japanese investment in F.Y. 1984 (⁵²).

3.6. JAPANESE FDI; 1985 TO THE PRESENT

The most recent period of Japanese FDI has been characterized by a continuation of trends started in the early 1980s, but on a much larger scale. The cumulative total of Japanese FDI grew by almost 71% from \$66.6 billion in F.Y. 1984 to \$130 billion in F.Y. 1987. This increase represented a compounded annual growth rate in excess of 22%. (See Table 3.9). The indicated net FDI for F.Y. 1988 showed a further quantum jump from \$18.6 billion U.S. in 1987 to over \$33 billion U.S. in 1988.

The increase in the volume of Japanese FDI, especially since 1984, has been due to a number of factors. First, between 1984 and 1987, the yen appreciated against the dollar by over 80%. This appreciation has both increased the relative costs of producing in Japan (thus reducing the international competitiveness of Japanese exports and increasing the appeal of imports) and has made overseas investment, especially in North America, very attractive. In addition, the precipitous rise in the yen has been accompanied by mounting trade actions by developed countries against Japanese local procurement practices and the emergence of potentially protectionist trading blocks in Japan's major regional export

⁵² Ibid., p. 13.

TABLE 3.9: JAPANESE FDI CLASSIFIED BY INDUSTRY, ON A REPORTED BASIS,
F.Y. 1984 TO F.Y. 1987, CUMULATIVE TOTALS FOR SPECIFIED
FISCAL YEAR, MILLIONS OF 1980 U.S. \$

INDUSTRY	YEAR 1984	% OF TOTAL	1987	% OF TOTAL	ANNUAL RATE OF GROWTH 1984-87
Manufacturing:					
Food Stuffs	961	1.3	1398	1.1	13.3
Textile	1974	2.7	2127	1.7	2.5
Pulp & Lumber Products	993	1.4	1384	1.1	11.7
Chemicals	3714	5.1	4744	3.8	8.5
Iron & Ferrous Metals	4419	6.1	5700	4.5	8.9
General Machinery	1765	2.4	2969	2.4	18.9
Electrical Machinery	3298	4.5	6469	5.1	25.2
Transport Machinery	2901	4.0	5131	4.1	20.9
Others					
Sub-Total	21633	29.8	35278	28.0	17.7
Primary Industries:					
Agriculture-Forestry	745	1.0			
Fisheries	413	0.6			
Mining	11138	15.3	11696	9.3	1.6
Sub-Total	12296	16.9	11696		
Tertiary Industries:					
Construction	678	0.9	1025	0.8	14.8
Commerce	11062	15.2	15196	12.1	11.2
Finance-Insurance	8670	11.9	26014	20.6	44.2
Services	3958	5.4	8161	6.5	27.3
Transportation	4199	5.8	9014	7.2	29.0
Real Estate	2078	2.9	10812	8.6	73.3
Others	8047	11.1	8782	7.0	3.0
Sub-total	38692	53.3	79005	62.7	26.9
Total	72622	100.0	125980	100.0	20.2

destinations. These combined forces have pushed Japanese FDI to record levels, drastically increasing the profile of Japanese overseas investment practices both at home and abroad.

The role of North America as the primary destination of Japanese FDI was further emphasized after 1984. By F.Y. 1987, this market accounted for 36.1% of the value of Japan's total cumulative investment and approximately 36.2% of the total number of cases of FDI (see Table 3.10). According to the U.S. Commerce Department, in 1987, Japan passed Great Britain as the largest foreign direct investor in the United States (⁵³). The onslaught of Japanese FDI has largely resulted from the rapid appreciation of the yen against the dollar, the dominant position of the United States among Japan's export markets and the strong performance of the American economy. In addition, investment in the United States has been encouraged by the development of state-based incentive programs for FDI such as government subsidies to foreign firms locating in depressed regions. Further, the unitary tax systems (⁵⁴) were repealed in several states, including California; thus removing a contentious obstacle to foreign investment. Canada has also experienced an increase in Japanese FDI because of an improved

⁵³ "Japanese are Biggest Foreign U.S. Investors," The Financial Post, June 28, 1989.

⁵⁴ The unitary tax system, adopted in several states, sums the total earnings of the firm uses the ratio of assets, wages and turnover of the parent to calculate the corporation tax levied on the subsidiary operating within that state. Foreign investors charge that the system results in double taxation and cumbersome administrative and clerical effort to collect the required data.

TABLE 3.10: JAPANESE FDI BY REGION ON A CUMULATIVE BASIS,
F.Y. 1984 TO F.Y. 1987, MILLIONS OF 1980 U.S. \$

REGION	YEAR	1984	% OF TOTAL	1986	% OF TOTAL	ANNUAL RATE OF GROWTH 1984-86
N. AMERICA		20028	30.1	33729	35.3	29.8
LATIN AMERICA		12146	18.2	18371	19.2	23.0
ASIA		16816	25.2	19647	20.6	8.1
EUROPE		8463	12.7	13049	13.7	24.2
OCEANIA		3468	5.2	4720	4.9	16.7
AFRICA		2982	4.5	3317	3.5	5.5
MIDDLE EAST		2730	4.1	2720	2.8	-0.2
TOTAL		66633	100.0	95553	100.0	19.8

foreign investment climate and its potential as a stepping stone to the larger US market. The recent Free Trade Agreement concluded between Canada and the United States, in particular, has been cited as an important future stimulant to Japanese investment in Canada (⁵⁵).

Europe has also been an increasing recipient of Japanese FDI, accounting for 13.5% of the value of cumulative investment in F.Y. 1987 and 10.8% of the total cases. Although these proportions increased only marginally over F.Y. 1984 (in F.Y. 1984, Europe accounted for approximately 13% of total Japanese cumulative investment), the rate of growth of Japanese FDI in Europe has averaged 31% annually since 1984 (versus 24% for North America).

The rapid rate of growth in Japanese FDI in Europe has been fuelled by two important factors. Firstly, the number of trade actions against Japanese imports and perceived "screwdriver" assembly plants has increased dramatically. In terms of the former, in 1987, a 20% dumping tariff was applied to all Japanese copiers, thus forcing local production by Canon Inc., Konica Inc., Ricoh Co., Minolta Camera Co., Toshiba, Matsushita Electric Industrial Co. and Sharp Corp (⁵⁶) In addition, in November of 1988, a 47% anti-dumping tax was placed on Fujitsu computer

⁵⁵ Report prepared by the Gleneagles Group, Japanese Direct Foreign Investment in North America - A Canadian Perspective, Vancouver, January 1988, p. iv.

⁵⁶ "Challenge and Dilemma for Corporate Japan, the EC Gears up for 1992," TOKYO Business Today, Tokyo, April 1989, p. 26.

printers and a 20 to 34% duty on all other Japanese printers (⁵⁷). Severe penalties have also been levied against Japanese manufacturers in Europe which do not meet mandatory local procurement requirements. Under EC local content rules, at least 40% of the value of the product must be generated from local production; the percentage is even higher for certain products (e.g., automobiles, 60%) and certain countries (e.g., France, automobiles, 80%). Japanese subsidiaries producing electronic typewriters, photocopiers and electronic scales have been particularly affected since 1987 (⁵⁸).

Secondly, the commitment by the 12 member EC trading block to complete unification of the European Community market by 1992 has also prompted investment by Japanese firms seeking to establish a foothold before "Fortress Europe" emerges. Although down-played by the European Parliament, 1992 has sparked strong anti-protectionist fears among Europe's major trading partners. The broadly-defined reciprocity concept introduced in 1988, (whereby trading partners would be allowed equal access to European markets, if and only if, European companies have the same degree of access to foreign markets) has led to concern that certain European markets previously open to foreign exporters will be closed after 1992. Despite reassurances to the contrary, the ill-defined nature

⁵⁷ Ibid., p. 26.

⁵⁸ "Japan Copiers Made in U.S. May Be Hit With EC Duties," The Asian Wall Street Journal, February 8, 1989, p. 4.

of 1992's impact on the international community and the threat of exclusion from the world's largest common market, has been a strong impetus to Japanese FDI in Europe since 1985.

With the rise in relative importance of industrialized nations as hosts to Japanese FDI has been a concomitant decline in the proportion of Japanese investment in the developing countries. The decline has been most notable in Asia. The region in F.Y. 1987 accounted for only 20.6% of total Japanese investment, down from 25% in 1984 (see Table 3.10). Nevertheless, investment in Asia has been increasing in absolute terms since 1984, albeit at a slower rate than was previously the case, (8%/annum versus 14%/annum between 1980 and 1984). As a result, total cumulative investment increased from \$16.8 billion in F.Y. 1984 to \$20.6 billion in F.Y. 1987. An interesting feature of the investment patterns in Asia since 1984 has been the increasing shift of investment from the NICs to relatively lower cost producers such as Thailand, Malaysia, the Philippines and China. Yamaha's investment sequence provides an example of this shifting focus. In 1979, Yamaha went to Singapore to produce tennis rackets; in 1982, to Taiwan to produce golf clubs; in 1987, to Thailand to produce skis; and in 1988, to Indonesia to produce electronic organs (⁵⁹). Manufacturing production in some instances has also been scaled down, or shut completely, in the NICs. Uniden, a manufacturer of telecommunications equipment, is closing factories in Taiwan and

⁵⁹ "On the Move Again," The Economist, November 5, 1988, p. 83.

Hongkong and moving to the Philippines and China; Asahi Optical has reduced the number of employees at its Pentax Camera plant in Hongkong to 150 from 350 (⁶⁰).

Africa and the Middle East have experienced declines in both the proportion of total and rate of growth of Japanese FDI in their regions. Latin America, on the other hand, has increased both its growth rates and overall proportion of Japanese FDI since 1984. This, however, is attributed to the rise in Japanese banking and insurance investments in such "tax havens" as the Bahamas, Cayman and Panama rather than increases in manufacturing investment.

The decreasing importance of the developing regions is due to several reasons. First, political and economic instability in the developing countries, primarily the Middle East, Africa and Latin America, greatly increased the risks associated with foreign investment. Second, stricter government controls on FDI, particularly with regard to resource investments, also deterred foreign investment by the Japanese. Third, structural changes in Japan leading to lower requirements for offshore resources further inhibited Japanese FDI in the resource sectors of developing nations. Fourthly, as previously mentioned, most of the offshore labour-intensive manufacturing investment by Japan had been completed by the late 1970s. Finally, there is an emerging trend of Japanese FDI in ventures which are primarily targeted towards profit maximization. In the case of manufacturing companies this

⁶⁰ "On the Move Again," The Economist, p. 83.

means adopting the multinational companies' approach of making maximum permitted use of comparative advantage to increase returns, rather than being influenced primarily (as they were in the past) by domestic (Japanese) market considerations. The situation is even more clear-cut in the real estate and financial areas. In the former case, investments are being made because real estate, especially in North America, is considered to be under-valued, with good appreciation potential. Shuwa Corporation (Shigeru Kobayashi) which, by 1987 had purchased about \$1.5 billion U.S. of American real estate, now earns more rental income from its U.S. assets than it does from its Japanese holdings. This shift has resulted from the massive increases in Japanese real estate prices (which have provided huge amounts of collateral), the relatively low cost of borrowing in Japan and the increased purchasing power of the yen in North America (⁶¹). The investments in the financial sector reflect the enormous financial power of the Japanese banks, insurance companies and security firms and the natural progression towards translating this power to an international market scale.

The FDI of the 1970s was characterized by the transfer of labour- and resource-intensive manufacturing production offshore. However, during the 1980s, and particularly since 1984, the trend has been towards technology-intensive manufacturing industries. Examples of this trend is provided by the automobile, electronics

⁶¹ "The Shuwa Shogun", Tokyo Business Today, Tokyo, March 1987, p.28-32.

and office and automation industries. Until recently, the technology-intensive industries have tended to remain in Japan because they have been able to absorb the increasing costs of local factors of production through rapid productivity improvements. In fact, many of these industries would prefer not to invest offshore. As noted by President Jun Kobayashi of Tokyo Electric, "To be quite honest, it would be so simple to just produce everything in Japan, and then sell it around the world. The fact that we cannot forces us to adopt new strategies "⁽⁶²⁾. However, during the 1980s, many of these industries have been forced to move offshore because of rising trade restrictions in important export markets. The FDI of the Japanese automobile industry in North America and Europe is a clear example of this. Startling productivity gains in this industry at home (around 45% since 1985) have meant that exports are still more profitable than overseas production despite the 80% appreciation of the yen over the past 4 years. According to an article by Kevin Done of the Financial Times (⁶³), the exchange rate break-even point for cars is now Y105 to the dollar whereas five years ago it was Y160-170 to the dollar. (By 1991, this break-even point could be as low as Y95 to the dollar.) However, as a result of the voluntary export restraints (VERs) introduced in the early 1980s, local production in the United States by Japanese auto-

⁶² "Challenge and Dilemma for Corporate Japan," TOKYO Business Today, April 1989, p. 28.

⁶³ Kevin Done, "Car Wars After the Yen Shock," The Financial Times, London, May 12, 1989.

manufacturers could reach between 1.8 to 2.2 million units per year by 1992. Honda, the largest Japanese manufacturer operating in the U.S., currently produces over 500,000 cars per year.

As noted above, another important trend in Japanese FDI since 1984, has been the emergence of the financial-insurance industry as the dominant overseas investor. By 1987, finance-insurance investments accounted for the largest single proportion of total Japanese FDI (17.1%). Again, these investments have been concentrated in the United States and Europe. Japanese banks now own 5 of the largest 11 banks in California, controlling \$363 billion in banking assets (⁶⁴).

Accompanying the investment surge in the finance-insurance industries has been a boom in real estate acquisitions. Foreign real estate holdings by Japanese increased at a phenomenal pace between 1985 and 1987, rising from \$2.9 billion in F.Y. 1984 to almost \$11 billion by F.Y. 1987. These acquisitions have often involved high-profile purchases such as the \$610 million acquisition by Mitsui Real Estate Development Co. Ltd of the Exxon Building in New York and the \$620 million purchase of the Arco Plaza in Los Angeles by Shuwa Corporation (⁶⁵). According to James D. Noteware, the national director of real estate services for Laventhol & Horwath, the future Japanese activity in US real estate

⁶⁴ John Woodruff, "Banking on the Golden State," The Japan Times, May 22, 1989, p. 6.

⁶⁵ "Overseas Investment", Japan Economic Almanac, 1987, Tokyo, 1988, p. 32.

will be diversified away from "high-profile trophy office buildings" to suburban office buildings, industrial/business parks, resorts and special facilities such as nursing homes and casinos as smaller, more flexible Japanese investors become active in the market (⁶⁶). The Japanese have also been active in real estate investment in Europe and Australia. In Australia, the boom has been concentrated in the Gold Coast tourist region, where the Japanese spent over Australian \$1.2 billion acquiring hotels, resorts, and future tourism-related development sites in F.Y. 1988. Japanese investors now control 57% of the value and 64% of the number of rooms of the seven largest international hotels in the Gold Coast area (⁶⁷).

Three other important characteristics of Japanese FDI since 1984 are important signals of the future pattern of investment towards the internationalization of Japanese company profit strategies. First, mergers and acquisitions are becoming an increasingly popular method of entering foreign markets, reflecting the increasing aggressiveness and international confidence of Japanese companies. Between 1984 and 1987, the number of annual M&As undertaken by Japanese firms increased from 44 to 228. M&As in the U.S. increased from 33 in 1984 to 120 in 1987; in Europe, from 12 in 1985 to 36 in 1987; and in Australia from 1 in 1984 to

⁶⁶ "Japanese Likely to Diversify US Investment Portfolio," World Property, London: RICS Journals Ltd., April 1989, p. 21

⁶⁷ "The Overwhelming Japanese," World Property, London: RICS Journals Ltd., May 1989, p. 32.

16 in 1987 (⁶⁸). Most of the M&As occur with businesses similar to those conducted by the Japanese buyer; examples of which include Sony's \$2 billion takeover of CBS Records, Bridgestone's \$2.6 billion acquisition of Firestone Corp and Dainippon Ink's \$500 million purchase of Reichold Chemicals. Other M&As involve the diversification of the Japanese companies main line of business, such as the \$2.15 billion purchase of Intercontinental Hotels from Grand Metropolitan PLC of Britain by Seibu Saison Group, a major private retailer in Japan. Both types of M&As are undertaken to further the globalization of the Japanese buyer; either by providing overseas production bases, securing strong local markets or providing access to important new technology. A second important trend is the rising movement of R & D functions offshore. Many Japanese companies believe this is the key to becoming truly global corporations. Sony, for example, currently has laboratories in West Germany, New Jersey and Britain and is planning to double its scientific staff overseas during the next two to three years (⁶⁹).

The final important trend is "re-importing" and third country exporting from the industrialized countries. "Re-importing" or "Reverse Exporting" refers to the importing of production from Japanese subsidiaries abroad back to Japan. In the past, most

⁶⁸ "Rapid Increase in Japanese Overseas M&A," TOKYO Business Today, Tokyo, January, 1989, p. 21.

⁶⁹ "...As big Japanese firms attempt to really go global," The Globe and Mail, July 3, 1989, p. B4.

foreign production was earmarked for local or third country markets and if re-importing was practiced, it was generally between Japan and Southeast Asia. However, in 1985, the U.S. Department noted that Japanese companies operating in the U.S. exported products worth \$22.75 billion, of which \$15.85 billion was destined for parent companies in Japan (⁷⁰). Honda Motor Inc. currently exports U.S.-made cars to Japan and is considering third country exports to Europe. Ricoh Co., exports copiers from its California plant to Europe and other electronics and machinery manufacturers are considering similar plans (⁷¹).

The trends in Japanese FDI since 1984 are important harbingers of the future strategy of Japanese investment. According to Hollerman (⁷²), current Japanese FDI is part of a general plan to shift from an economy based on manufacturing exports to a "headquarters" economy fuelled by service account surpluses. This strategy is designed to lessen direct trade frictions between Japan and her major trading partners; as noted by Hollerman, "Japan's trade balance will turn to deficit; its service account ...to surplus. Japan's strategy will have contrived to smother its bilateral trade friction with the U.S. while promoting multilateral

⁷⁰ "Overseas Investment," Japan Economic Almanac, 1988, Tokyo, p. 42.

⁷¹ "Japan Copiers Made in U.S. May Be Hit with EC Duties," The Asian Wall Street Journal, Tokyo, February 9, 1989, p. 4.

⁷² Leon Hollerman, Japan's Economic Strategy in Brazil: Challenge for the United States, Lexington, Ma: Lexington Books, 1988.

friction between the U.S. and the new Japans."

While perhaps not, as some suggest, part of a Machiavellian conspiracy, Japanese overseas investment is an important component of the nation's economic strategy. The de-industrialization of Japan, despite longterm employment fears at home, has been promoted by the government through aid packages to declining industries and worker re-training schemes. As in the 1960s and 1970s, Japan refuses to be fettered by declining industries at home, preferring to move them offshore with surprising ease and panache. This globalization process is aided by Japan's capital surplus position, which places it in an enviable position. As in the 1960s, when Japan could shop the world for the cheapest resource inputs, in the 1980s they can shop the world for the least cost production sites; the highest yielding assets; and the most auspicious markets. In addition, Japanese firms have reached a level of sophistication such that they can undertake international ventures and investments with increasing confidence.

Only two forces are likely to impede this foreign "buying binge". They are: the lack of a truly international mindset and the potential for host country protectionism against Japanese FDI. The former refers to Japan's relative difficulty in dealing with non-homogeneous workforces; promoting foreign nationals to executive positions; and adapting to local cultures etc. With regard to the latter, the concentration and tide of Japanese investment has already raised demands for protectionist action in

the United States, Europe and Australia. In addition, there is a dawning realization that the former protectionist actions taken to limit imports from Japanese may have had the even more adverse consequence of introducing the Japanese "Trojan horse" into the indigenous economies. As noted in one Asian Wall Street Journal article, "...European industrialists must confront their worst nightmare; because of their own policies, they will soon have to compete in their own back yards with the very Japanese industrial giants they were trying to keep out"⁷³). In Europe, there is growing support for the elimination of host country subsidies for foreign investment.

⁷³ "Competition from Japan Begins in the Back Yard," Asian Wall Street Journal, March 4, 1989, p. 13.

4.0. TOWARDS A THEORY OF JAPANESE FOREIGN DIRECT INVESTMENT

The foregoing sections have provided a historical perspective of the developments in Japanese direct foreign investment particularly since World War II. In less than 40 years, Japan has become one of the world's most important sources of offshore direct investment, with the largest increase in FDI taking place in the last 8 years. As will be discussed in subsequent sections of this study, the rise in Japanese direct foreign investment can be attributed largely to macro-economic developments which have taken place in Japan since 1973.

However, while Japan's rapid increase in offshore investment is of interest, from a global perspective the more pertinent issue may be the likely sustainability of Japanese FDI flows. The latter depends greatly on the continuation of the macro-trends alluded to above, a subject which will be addressed in section 9.0. The emphasis on macro-economic developments in this study stems largely from the inability of modern FDI theory to adequately explain either the past patterns of Japanese offshore investment or to predict its likely continuation. Thus, before addressing the study's macro-economic rationale for Japanese foreign direct investment, a brief analysis of modern FDI theories and their shortcomings in the Japanese context is provided below.

4.1. CONVENTIONAL FDI THEORY

During the past 30 years, there has been a substantial increase in the literature dealing with the subject of FDI. Modern theories have tended to concentrate on firm-specific motivations for undertaking foreign investment abroad as opposed to exporting or licensing. These theories have two drawbacks in terms of their applicability to Japanese FDI. First, existing theories have been developed primarily on the basis of Western multinationals; in this context, Japanese multinationals have been regarded as either special cases or newcomers which will eventually emulate their Western counterparts. However, as noted by Ozawa, the industrial pattern of Japanese multinationals may warrant a different theoretical approach ⁽⁷⁴⁾. In addition, current theories focus on micro-economic explanations for FDI, attributing FDI to the particular circumstances of firms or industries. On the other hand, Japanese multinationals have historically been strongly influenced by prevailing macro-economic factors in both their own economy and in the host country. On this basis, micro-economic theories of FDI may not be the most useful for explaining Japanese offshore investment. In the following section, current theories relating to FDI and their applicability to the Japanese context are examined. In general, these theories classify FDI as either offensive or defensive strategies undertaken to support the firm's goal of profit maximization. In the past, Japanese

⁷⁴ Ozawa, Multinationalism, Japanese Style, p. 41.

multinationals have tended to undertake FDI for defensive reasons; to ensure continued access to raw material supplies; to circumvent foreign government-imposed trade barriers; and to protect the comparative advantages of firms operating in international markets. Increasingly, however, offensive strategies have become more and more important in explaining Japanese foreign direct investment. An examination of these FDI theories provides a useful background to the likely evolution of Japanese FDI in the future. A brief explanation of the classical model is provided as a theoretical background for modern FDI theory.

4.2. CLASSICAL THEORY

The classical theory of international capital flows is derived from the Hechsher-Ohlin-Samuelson (H-O-S) factor-proportions model of international trade, modified to allow for international capital mobility. The modified version of the H-O-S model assumes perfect competition in capital markets. Under this assumption, capital flows to where it earns the highest rate of return. The differences in national rates of returns on capital occur because of differing factor proportions and prices across countries. Under the additional assumption that the marginal productivity of capital in each country is equal to the interest rate on bonds, countries with a relative abundance of capital (and therefore, a relatively lower domestic marginal productivity of capital) will buy bonds from capital-scarce countries leading to a transfer of real

capital. Barring market imperfections, these capital flows will tend to equalize capital endowments over time and remove a basis for trade.

Although useful as a possible explanation for foreign portfolio investment, classical theory fails to explain the economic rationale behind foreign direct investment. For example, if capital markets are perfectly competitive, entrepreneurs in capital scarce countries could sell bonds to investors in capital rich countries and use the proceeds to establish operating facilities at home where the rates of return are higher. Presumably, these local entrepreneurs could earn a higher rate of return than foreigners investing in their country because of their superior knowledge of the local market. This would tend to preclude direct investment in productive facilities by foreigners. However, in the 20th century, foreign direct investment has been substantial and, in the case of the United States, the world's largest cumulative foreign direct investor, has accounted for a larger proportion of international capital flows than portfolio related investments. In addition, the theory does not address why capital flows occur in both directions. If the productivity of capital is higher in the capital-scarce country then there should be no flow of capital from the capital-scarce country to the capital-rich country.

The problems associated with the classical theory of international capital flows have prompted modern economists to

develop theories of FDI which are based on global oligopolistic competition in imperfect markets. These theories explain FDI as offensive and defensive strategies used by multinational corporations to maximize global profit positions.

4.3. OFFENSIVE FDI THEORY - THE INDUSTRIAL ORGANIZATION APPROACH

Theories explaining offensive FDI emphasize industrial organization as a basis for offshore investment. This framework has been developed by Hymer, Kindleberger and Caves and postulates that FDI occurs in industries which are characterized by oligopolistic markets in both the domestic and foreign economy. FDI, on this basis, is undertaken by a few relatively large firms and yields products which are highly differentiated in terms of market acceptability or technical superiority. The theory assumes that the investing firms are able to exploit some firm-specific, competitive advantage in global markets. These competitive advantages compensate the MNC for the additional costs associated with operating in foreign markets such as lack of knowledge regarding local customs, markets, and legal matters and greater communication and control costs. Further, these advantages allow the firm to earn a higher rate of return than it would undertaking projects of similar size and risk in the home market. Because these competitive advantages generate monopoly profits, the investing firm will be more inclined to set up wholly-owned subsidiaries rather than license or export so as not to share the

rents with local interests. Some of these competitive advantages are discussed briefly below.

4.3.1. Economies of Scale

The existence of economies of scale in production, marketing, research and development, transportation and purchasing is regarded as a possible rationale for FDI. Firms undertake FDI to expand markets and therefore, spread their fixed costs over a larger volume of production. Empirical studies tend to support the need for multinationals to be large to succeed. In a comparison of US multinational and domestic manufacturing concerns, Horst found that the firm size was the only statistically significant variable. However, these studies do not determine causality, i.e., is an MNC larger and more profitable than domestic firms because it is a multinational or is it a multinational because it is large and more profitable.

4.3.2. The possession of unique skills or special expertise

Other theories postulate that MNCs undertake FDI because they possess special skills which can be transferred internationally. These special skills include managerial and marketing expertise, technological know-how and financial strengths which allow MNCs to overcome the superior knowledge of competing host country firms. Empirical studies regarding the significance of

managerial/marketing expertise in the foreign investment decision are limited; however, there have been numerous studies which underline the importance of R & D as a characteristic of multinational firms. These include Raymond Vernon's product cycle theory, in which MNCs are the originators of new technologies because of emphasis on R&D functions.

4.3.3. Differentiated Products

According to Richard Caves, multinational firms tend to operate in marketing or research intensive industries. Because of this, multinationals are able to develop firm-specific advantages by producing or marketing differentiated products. To maximize the return on the large fixed costs associated with R&D and marketing, the multinational may want to market these differentiated products globally. Caves notes that direct foreign investment will not be used in every case to penetrate foreign markets. However, if the firm's main competitive strength lies in research, marketing, and managerial expertise rather than in any specific differentiated product, then direct foreign investment may be used to expand overall production.

4.3.4. Internalization

According to Buckley, Casson and Dunning, the existence of imperfect markets and competitive advantages is not sufficient to induce foreign direct investment. Rather, the competitive

advantages must be firm-specific. Financial strength and economies of scale are not unique to any one firm. Some technology can be licensed, bought or copied and differentiated products can lose advantage to modified alternatives with appropriate marketing. Buckley et al. postulate that only possession of proprietary knowledge and control of human capital can generate sufficient competitive advantages to warrant FDI. In this sense, production by overseas subsidiaries is preferable to licensing or joint ventures because the latter would jeopardize the information monopoly of the MNC and its ability to gain monopoly profits.

4.3.5 Applicability of Offensive FDI theory in Japanese FDI Context

The industrial organization approach postulated by Hymer, Kindleberger and Caves is not sufficient to explain the large majority of Japanese overseas direct investment undertaken in the past. As outlined in Section 3.0, a vast proportion of Japanese manufacturing FDI has been undertaken by small and medium scale operations in Southeast Asia and Latin America. These firms produce primarily standardized, low-technology products in which there is little opportunity for economies of scale or product differentiation. In addition, as noted by Ozawa (⁷⁵), the market imperfections which give Japanese firms advantages in these countries originates from the underdeveloped nature of the host

⁷⁵ Ozawa, Multinationalism, Japanese Style, p. 44.

economies rather than oligopolistic characteristics of the investing Japanese companies. This is in direct contrast to the industrial organization approach which stipulates that FDI only occurs when oligopolistic market structures for a particular industry exist in both the investing and host country. The fact that Japanese firms derive their quasi-advantages from the backwardness of the host country illuminates an important concern for many Japanese firms operating abroad. If such is the case, then the advantage of the investing Japanese concern must inevitably be transient, especially if one impact of FDI is to further the economic development of the host country.

However, Ozawa notes that there is one "lasting advantage" of Japanese firms. This is the world-wide marketing networks developed by many Japanese companies. These networks can also be accessed by small/medium concerns through partnerships with the large sogo shosha. This represents a strong advantage of Japanese firms operating in underdeveloped countries where the global marketing skills of local firms is often weak.

Although industrial organization theories are not applicable to a significant proportion of past Japanese overseas investment, recently, there has been an increase in Japanese investment which does fit the theoretical framework. Such firms as Sony, Toyota, Mitsubishi Heavy Industries, Nippon Steel, Matsushita and Honda operate in global oligopolistic markets and are using FDI as an offensive strategy to foster global profit maximization and the

evolution towards true multinational status.

4.4. DEFENSIVE FDI THEORY

Some FDI theories postulate that foreign investment occurs because MNCs must protect their global profit positions from external threats. Principal motivations behind defensive FDI include:

4.4.1. Market Imperfections Created by Governments

Market imperfections resulting from tariff or non-tariff barriers, preferential purchasing policies, tax incentives, capital market and exchange market controls, can lead to defensive foreign direct investment. In addition, the formation of protectionist, multi-nation trading blocs, such as the the European Economic Community, can also induce FDI by non-member countries. Nevertheless, government policies leading to the creation of protected markets will only lead to FDI if the markets are sufficiently large or protected to compensate the MNC for the additional costs of operating abroad.

4.4.2. New Markets

MNCs may reach a stage where opportunities at home are limited. Home markets may be characterized by product saturation, intensive competition, or changing consumer tastes. The firm is faced with the alternative of expanding into new products at home

or seeking new foreign markets for the existing product. Penetrating foreign markets may be preferable because of the firm's built-up experience in producing and marketing the product. If transportation costs for the product are high then FDI may be the most appropriate method of accessing local markets. Other incentives for off-shore investment in search of new markets include following domestic clients abroad. This is particularly relevant to the service industries such as banking, insurance, and finance which have undertaken FDI to counter efforts by foreign service firms to attract the business of domestic clients.

4.4.3. Access to New Technologies

An increasingly important motivation for FDI is to access technology in foreign countries, especially for foreign MNCs undertaking FDI in the United States. Defensive FDI of this type usually takes the form of joint-ventures with local companies. Technology acquired from these joint venture investments can then be used to improve production processes in all global subsidiaries.

4.4.4. Risk Diversification

Risk diversification theory explains FDI by MNCs as a means of reducing systematic risk. This occurs because project returns in one country will not be perfectly correlated with returns from projects in other countries due to differing economic environments.

By diversifying internationally, therefore, a firm can reduce the volatility of its cash flows. Stable cash flows reduce the need to set aside funds in liquid, lower-yielding bank accounts to cover unexpected shortages; allow for uninterrupted dividend payments; and enable the firm to enjoy a lower cost of funds from shareholders or banks.

4.4.5. Product Cycle Theory

Raymond Vernon's product cycle theory is perhaps one of the most recognized theories describing defensive FDI. According to Vernon, FDI is a natural stage in the life cycle of a product. Vernon postulates that oligopolistic competition, economies of scale and other imperfections in product and factor markets lead firms in advanced countries to undertake extensive R&D, leading to the creation of new, technologically-advanced goods. These goods are first introduced into the home market because close coordination of the production and marketing divisions of the firm is required. After a short time lag, the product is then exported. As it reaches maturity, competition from near similar products will reduce the profit margin of the product both in home and export markets. In order to maintain its profit margins, the firm will undertake FDI to establish manufacturing facilities in areas which provide the lowest unit cost of production. Thus, defensive FDI occurs because of the need to protect profit margins.

4.4.6. Follow the Leader

A final theory describing defensive FDI is Frederick Knickerbocker's follow the leader model of foreign investment. Knickerbocker contends that when one firm in an oligopolistic industry undertakes a FDI, other firms in the same industry make defensive FDIs in the same market. These investments are undertaken to prevent competing firms from enjoying competitive advantages such as economies of scale through FDI.

4.4.7. Applicability of Defensive FDI models in the Japanese Context

Defensive FDI models can be used to explain particular cases of past Japanese foreign investment. Japanese firms have undertaken FDI in the past to circumvent government imposed trade barriers; to develop new markets; and to access foreign technologies and strategic resources. In addition, Japanese manufacturing investment by small/medium scale firms in Southeast Asia and Latin America has also exhibited a follow the leader pattern of investment. However, unlike Knickerbocker's theory, these firms have tended to produce low-technology, standardized products and operate in industries which are not oligopolistic.

A modified version of the product cycle theory may be more appropriate for explaining Japanese manufacturing FDI. The product cycle theory is based on the investing firm developing new technologies which are successfully introduced at home and transplanted abroad. In contrast, Japanese industry "has not

introduced any significant innovations that would invite massive imitations overseas as envisaged by the model."⁷⁶) As importers of technologies, Japanese firms were concerned about reducing production costs, not spreading the overhead of large R&D expenditures. In the 1950s and 1960s, Japanese firms accumulated valuable experience in importing technologies and adapting them to a relatively labour intensive environment. When Japanese production costs became too high this experience was then used to transplant production to lower cost countries. In recent years, many of these technological importers have graduated from interceptors of Western technologies to innovators; in particular, Japanese firms have developed efficient, highly productive manufacturing processes which can be transplanted to relatively capital intensive regions like North America and Europe. Others are now overcoming technology trade barriers by investing in joint ventures in the United States to gain access to new technologies. Thus, in the future, the product cycle theory may be more relevant to Japanese firms as innovators rather than importer-modifiers of old technologies.

4.5. A MODEL OF JAPANESE FDI

Both offensive and defensive based models of FDI fail to explain adequately the rise in Japanese FDI since the 1970s and, in particular, the dramatic growth since 1984. This failure occurs

⁷⁶ Ozawa, Multinationalism, Japanese Style, p. 52.

because of the concentration on firm-specific motivations for undertaking FDI. Conversely, Japanese economists, such as Kojima and Ozawa, have tended to attribute past Japanese FDI to macro-economic developments at home and abroad. These developments include the dependency of Japan on foreign markets both as outlets for her exports and as important sources of vital productive inputs; the rising costs of industrialization at home including massive factor price increases and environmental pollution; increasing protectionism in foreign markets; and the desires of developing nations to attract foreign capital to further economic development. Macro-economic factors are suggested as the reason for offshore investment by Japanese firms which exhibit few of the characteristics of true multinationals. Yet, as noted by Ozawa (⁷⁷), "...ironically, from a macroeconomic viewpoint, they are judged both appropriate and ready to be transplanted overseas."

Thus, in order to explain the change in the level and direction of Japanese FDI flows since the 1970s, an understanding of the macro-economic factors stimulating offshore investment is required. An examination of macro-economic developments in Japan indicates that the increase in FDI on a national basis can be largely attributed to the economic slowdown after 1973 and the inability of the domestic economy to absorb the surplus of savings in the private sector during the 1980s. These issues will be discussed fully in Section 5.0.

⁷⁷ Ozawa, Multinationalism, Japanese Style, p. 40.

5.0. MACROECONOMIC BALANCES OF THE JAPANESE ECONOMY

Japanese net longterm capital investment [net foreign direct investment (NFDI) plus net foreign portfolio investment (NFPI)] has experienced dramatic growth during the past few years, rising from U.S.\$17.7 billion in 1983 to U.S.\$121.3 billion in 1988, with a peak of U.S. \$144.7 billion in 1986. To understand the sourcing of these funds, and to judge the ongoing sustainability of this magnitude of investment, it is necessary to examine the underlying macroeconomic features of the Japanese economy. This examination will also provide a perspective from which to view the statistical analysis contained in section 8.0. of this report.

The macro-economic features of a national economy can be summarized by an accounting identity which defines the nation's fundamental domestic and external balances. The identity also provides a useful perspective from which Japanese FDI in the post 1973 era can be examined. This perspective is clouded by two characteristics of identities; namely, they do not provide quantitative precision, and they do not explain causality. The first difficulty is not important within the context of this paper, since our approach will, in any event, involve certain simplifying assumptions. On the other hand, causality is important to the conclusions being sought. However, as long as the discussion occurs within the context of what actually happened in the Japanese economy after 1973, reasonable inferences can be made about inter-factor dependencies with respect to the direction of causality.

The macro-economic accounting identity can be derived as follows. Gross national product which is the sum of all goods and services produced in an economy is made up of private-sector consumption (C) and investment (I); government spending (G); and the difference between the exports of goods and services produced in an economy (X) and the imports of goods and services produced in other countries (M). This can be stated as:

$$\text{GNP} = C + I + G + (X - M) \quad (1)$$

GNP can also be defined in terms of how the total income produced in an economy is spent, or:

$$\text{GNP} = C + S + T \quad (2)$$

where: C = total income consumed

S = total income saved, and

T = total income paid to the government in

taxes.

Equating (1) and (2):

$$C + I + G + (X - M) = C + S + T$$

Which may be reduced to:

$$(S-I) = (G-T) + (X-M)$$

(3)

According to (3), surpluses or deficits between private sector savings and investment ($S-I$) must be offset by surpluses or deficits in the government sector ($G-T$), or in the current account balance ($X-M$). Any excess of investment over savings (i.e. $S-I < 0$), must be offset by either a government sector surplus (i.e. $G-T < 0$), or a current account deficit (i.e. $X-M < 0$), or a combination of both. Similarly, a private sector saving surplus (i.e. $S-I > 0$) must be balanced by either a government sector deficit (i.e. $G-T > 0$), or a current account surplus (i.e. $X-M > 0$), or both.

A second macro-economic concept of importance in the following discussion is the Balance of Payments (BOP). The latter must always sum to zero; what exits the country must equal what enters. As such, although subsets of the BOP accounts can be in surplus or deficit, the BOP must balance. Under the Japanese accounting framework, the Balance of Payments is determined by the sequence outlined in Figure 1.

For the BOP to balance, the current account balance must, necessarily, be offset by the capital account balance which equals net long term and short term capital, errors and omissions, and official and private monetary movements. This can be illustrated by an example. If Japan has a current account surplus it means that Japan is paying out less foreign exchange for its imports than

it was receiving for its exports. This excess of foreign currency can be used in either of two ways:

- (1) Japanese corporations, individuals or public interests could purchase interest bearing foreign debt instruments such as foreign equities or bonds;

or

- (2) they could hold the excess foreign currency which is a non-interest bearing debt instrument of foreign governments.

	Exports (f.o.b.)
Less	Imports (f.o.b.)

FIGURE 1
BOP Schematic

Equals

Merchandise Trade Balance

Plus	Service Exports
Plus	Service Imports
Plus	Unilateral Transfers

Equals

Current Account Balance

Plus	Longterm Capital Balance
------	--------------------------

Equals

Basic Balance

Plus	Short Term Capital Balance
Plus	Errors & Omissions

Equals

Overall Balance

Minus	Official Monetary Movements
Minus	Private Monetary Movements

Equals

ZERO

In both cases, the transactions would equal a capital outflow; the first on either the long term or short term capital balance, depending on the duration of the debt instrument; and the second on the private monetary movements. The argument works in reverse for current account deficits; the shortage of foreign currency can be made up either by selling domestic equities, bonds etc. to foreigners (representing a capital inflow on the long or short term balance) or by foreigners holding the debtor nation's currency.

From the above, it is clear that the capital account is merely the flipside of the current account balance. This can be expressed as:

$$(X-M) = Lc + Sc + E + F \quad (4)$$

where:	Lc	=	Net Long term capital
	Sc	=	Net Short term capital
	E	=	Errors & Omissions
	F	=	Official and Private Monetary Movements

Errors and omissions (E) represent a balancing item which brings the BOP to zero after the effects of current account balance, the long term and short term capital balances, and the official and private monetary movements are considered. Because E is a random quantity, used only to balance (X-M) and (Lc+Sc+F), it cannot be considered a causal factor determining the level of

NFDI and has, therefore, been omitted from our discussion.
Therefore:

$$(X-M) = Lc + Sc + F$$

and since, based on the discussion in section 2.0, Lc is equal to Net Foreign Portfolio Investment (NFPI) and Net Foreign Direct Investment (NFDI), then:

$$(X-M) = NFPI + NFDI + Sc + F \quad (5)$$

Substituting (5) into equation (3), gives the expression:

$$\underline{NFDI + NFPI + Sc + F} = \underline{(S-I) - (G-T)} \quad (6)$$

According to this equation, total net external investments are equal to the private sector savings balance minus the government sector balance. The excess monies available in the internal sector (either because of a private sector surplus or government surplus or both) are available for net direct, net portfolio and net short term capital investments plus official and private monetary movements. Presumably, if we can identify the factors which generate excess capital in the domestic economy and the factors which determine the distribution of this excess capital among the various external investment options, we can develop some

understanding of the forces determining the level of **NFDI**.

Using identity (6) as a base, the next two sections will examine the internal [(S-I) and (G-T)] and external [NFDI, NFPI, S_c and F] macroeconomic components of the Japanese economy.

6.0. INTERNAL MACROECONOMIC COMPONENTS OF THE JAPANESE ECONOMY

Since 1973, Japan has been generating large surplus savings in the private sector which, until the late 1970s, were more or less absorbed by government deficits. With the implementation of fiscal austerity programs after 1978, government deficits no longer fully absorbed the excess savings in the private sector and the surplus was increasingly channelled offshore in long and short term capital investments. In order to determine whether or not this situation can continue to persist, it is important to examine the factors which have been causing the private sector surpluses and the evolution of Japanese fiscal policy since 1973. The sustainability of the post 1973 trends will determine the excess capital available for future offshore investment.

6.1. THE PRIVATE SECTOR BALANCE

The 1973 oil crisis was a watershed not only for the Japanese economy as a whole but as a force for generating large amounts of surplus capital in the private sector. Japan's high growth rates had begun to decline from 1970 onwards but it was the 1973 crisis which finally terminated the long cycle of economic growth. In 1974, the economy declined 0.4% in real terms, thus registering its first real negative growth since the end of the war. After 1974, economic growth reflected the maturity of the economy, with an average real growth rate of 3.8% per year between 1974 and 1985.

This economic slowdown had significant impact on the private sector savings and investment patterns and was the single most important factor contributing to the rapid increase in Japanese foreign investment after 1980. Table 6-1 shows the breakdown of total private savings and investment as a percentage of GNP between 1960 and 1987 for both the household and corporate sectors. The pattern of savings/investment balances can be conveniently separated into three time periods: that is, from 1960 to 1964; from 1965 to 1974; and from 1975 onwards.

During the first period, private sector investment tended to exceed savings, sometimes by large margins. In 1961 the net deficit peaked at the equivalent of 7.4% of GNP. Between 1960 and 1964, this average deficit was equal to about 3.2% of GNP. The deficit was financed from two sources; an excess of government savings over investment, which averaged about 1.6% of GNP; and small current account deficits. The private sector deficits reflected large increases in capital formation during the 1960s with annual corporate investments between 1960 and 1964 averaging about 24.4% of GNP.

During the second period, between 1965 and 1974, private sector savings and investment remained more or less in balance; the former averaged about 31.23% of GNP and the latter about 31.27% of GNP. In relative terms both the average annual corporate investment and savings declined marginally during this period (investment dropped to 23.8% of GNP from 24.4% in 1960-1964 and

TABLE 6.1: THE JAPANESE PRIVATE SECTOR SAVINGS-INVESTMENT BALANCE, F.Y. 1960-1987
PERCENTAGE OF GNP

YEAR	CORPORATE			HOUSEHOLDS			TOTAL PRIVATE SECTOR		
	SAVINGS	INVESTMENT	BALANCE	SAVINGS	INVESTMENT	BALANCE	SAVINGS	INVESTMENT	BALANCE
1960	16.5	24.6	-8.1	11.8	6.6	5.2	28.3	31.2	-2.9
1961	16.5	29.9	-13.4	12.0	6.1	5.9	28.5	36.0	-7.5
1962	15.6	21.8	-6.2	12.3	6.7	5.6	27.9	28.5	-0.6
1963	15.9	23.7	-7.8	11.6	7.1	4.5	27.5	30.8	-3.3
1964	16.0	21.9	-5.9	11.2	7.3	3.9	27.2	29.2	-2.0
1965	15.8	19.1	-3.3	11.6	8.4	3.2	27.4	27.5	-0.1
1966	17.5	20.4	-2.9	11.9	8.3	3.6	29.4	28.7	0.7
1967	18.4	23.8	-5.4	13.0	8.9	4.1	31.4	32.7	-1.3
1968	19.7	24.1	-4.4	13.2	8.9	4.3	32.9	33.0	-0.1
1969	19.8	25.3	-5.5	12.7	9.2	3.5	32.5	34.5	-2.0
1970	18.7	27.5	-8.8	14.6	6.5	8.1	33.3	34.0	-0.7
1971	16.1	24.8	-8.7	14.9	5.2	9.7	31.0	30.0	1.0
1972	16.9	23.9	-7.0	15.1	5.3	9.8	32.0	29.2	2.8
1973	15.4	26.2	-10.8	16.9	5.4	11.5	32.3	31.6	0.7
1974	10.3	23.1	-12.8	19.7	8.3	11.4	30.0	31.4	-1.4
1975	8.4	17.9	-9.5	20.6	8.9	11.7	29.0	26.8	2.2
1976	9.1	16.2	-7.1	21.3	9.8	11.5	30.4	26.0	4.4
1977	9.5	15.2	-5.7	20.0	9.4	10.6	29.5	24.6	4.9
1978	11.4	13.9	-2.5	19.4	10.0	9.4	30.8	23.9	6.9
1979	11.7	16.1	-4.4	17.3	9.2	8.1	29.0	25.3	3.7
1980	11.3	17.0	-5.7	17.1	8.1	9.0	28.4	25.1	3.3
1981	10.6	16.9	-6.3	17.3	7.3	10.0	27.9	24.2	3.7
1982	11.2	16.2	-5.0	16.0	7.1	8.9	27.2	23.3	3.9
1983	11.0	15.3	-4.3	15.9	6.6	9.3	26.9	21.9	5.0
1984	11.4	15.9	-4.5	15.3	6.4	8.9	26.7	22.3	4.4
1985	11.8	17.2	-5.4	15.0	5.6	9.4	26.8	22.8	4.0
1986	-	-	-	-	-	-	-	-	5.8
1987	-	-	-	-	-	-	-	-	4.5

savings dropped from 16.1% of GNP to about 15.8%). The major factor behind the balancing in the private sector was the surge in surplus savings in the household sector which averaged approximately 7% of GNP throughout the period. Thus the household sector provided an important source of investment funds for the corporate sector during the high growth era.

Finally, from 1975 onwards, private savings has exceeded private investment by a substantial margin; with an average annual savings surplus of 4.2% of GNP between 1975 and 1985, and a peak of 6.8% in 1978. GNP growth rates were halved in the latter part of the 1970s but this had little impact on the ratio of private savings to GNP, which exhibited only marginal declines. During the period the average savings rate was about 28.4% of GNP, compared to around 31.2% of GNP between 1965 and 1974. Private investment, however, fell substantially, dropping from an average of 31.3% between 1965 and 1974 to only 24.4% after 1974.

An understanding of the reasons for the change from private sector savings deficit to surplus is crucial to any assessment of the sustainability of the current level of Japanese FDI. If the surpluses are maintained, the Japanese can, if they so choose, continue to invest heavily in foreign assets; with the choice being between direct and portfolio investments. To gain such an understanding, we will examine both components of the private sector balance, i.e., private sector savings and private sector investment.

6.1.1. Private Sector Savings

Table 6.1 shows that the two components of private sector savings, i.e., households and corporations, demonstrated markedly different responses to the post-1973 economic slowdown. Corporate profits fell dramatically in the period of economic stagnation which followed the 1973 crisis. This caused corporate sector savings to drop to an average of 10.7% of GNP after 1974, down from the 17.9% average between 1965 and 1974. Conversely, household savings increased sharply after 1973; rising from an average of 13% of GNP between 1960 and 1973 to over 20% between 1974 and 1978. Thereafter, the rate declined, averaging about 16% from 1979 to 1985.

Contrary to conventional theory, the high inflation of 1973-75 and the accompanying recession caused the acceleration of Japanese household savings rates during the 1974 to 1978 period. The rapid inflation resulted in substantial losses in the real value of accumulated savings in the household sector. Bank time deposits make up the largest proportion of financial assets; and the interest rates on these instruments were, and remain, controlled at very low levels by the Ministry of Finance (MOF). As indicated in Table 6.2, negative real interest rates on savings deposits continued until 1978, with even the highest yield

TABLE 6-2: INFLATION RATES AND TIME DEPOSIT RATES BY TYPE OF INSTITUTION,
1969 TO 1981, PERCENT

	POSTAL SAVINGS			COMMERCIAL BANKS			TRUST BANKS		
	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM	MAXIMUM	MINIMUM			
INFLATION	> 3 YEARS	*1 LESS THAN	> 3 YEARS	*1 LESS THAN	> 3 YEARS	*1 LESS THAN			
YEAR	RATES	1 YEAR	1 YEAR	1 YEAR	1 YEAR	1 YEAR			
1969	5.2	5.50	4.20	5.50	4.00	7.27	5.50		
1970	7.7	5.75 (4)	4.25 (4)	5.75 (4)	-	7.47 (3)	5.75 (4)		
1971	6.1	6.00 (2)	-	6.00 (2)	-	7.27 (9)	-		
1972	4.5	-	-	-	-	7.12 (4)	-		
1973	11.7	5.50 (8)	4.00 (8)	5.50 (8)	3.75 (7)	6.82 (7)	5.25 (7)		
		6.00 (4)	4.25 (4)	6.00 (4)	4.00 (4)	7.12 (4)	5.75 (4)		
		6.50 (7)	-	6.50 (7)	-	7.42 (7)	6.00 (7)		
		6.75 (10)	4.50 (10)	6.75 (10)	4.25 (10)	7.72 (9)	6.25 (9)		
1974	24.5	-	-	-	-	8.52 (12)	-		
		7.50 (1)	5.25 (1)	7.50 (1)	5.25 (1)	-	7.25 (1)		
1975	11.8	8.00 (9)	6.00 (9)	8.00 (9)	5.50 (9)	9.02 (9)	7.75 (9)		
		7.00 (11)	5.00 (11)	7.00 (11)	4.50 (11)	8.82 (8)	6.75 (11)		
1976	9.3	-	-	-	-	8.32 (11)	-		
1977	8.1	6.00 (5)	4.25 (5)	6.00 (5)	3.75 (5)	7.52 (5)	5.75 (5)		
		5.50 (9)	3.75 (9)	5.50 (9)	3.25 (9)	6.72 (9)	5.25 (9)		
1978	3.8	4.75 (4)	3.00 (4)	4.75 (4)	2.50 (4)	6.22 (4)	4.50 (3)		
1979	3.6	5.50 (5)	3.75 (5)	5.50 (5)	3.25 (5)	6.82 (5)	5.25 (5)		
		6.25 (8)	4.50 (8)	6.25 (8)	4.00 (8)	7.32 (8)	6.00 (8)		
1980	8	7.25 (3)	5.50 (3)	7.25 (3)	5.00 (3)	7.92 (2)	7.00 (3)		
		8.00 (4)	6.50 (4)	8.00 (4)	6.00 (4)	8.62 (3)	7.75 (4)		
		7.25 (12)	5.50 (12)	7.25 (12)	5.00 (12)	7.92 (12)	7.00 (3)		
1981	4.9	6.50 (4)	4.75 (4)	6.50 (4)	4.25 (4)	7.62 (5)	6.25 (4)		

Footnotes:

*1 Figures in brackets refer to month in which interest rates were changed.

Source: Bank of Japan, Economic Statistics Annual, 1985, p. 177-78; 1979, p. 73-74.

instruments losing 30% of their value between 1973 and 1978 ⁽⁷⁸⁾. According to Lincoln, the decline in the real value of savings prompted Japanese households to temporarily increase savings rates to recover these losses. This portfolio refurbishing, and the general disinclination to consume triggered by the uncertainty following the 1973 oil crisis, served as a powerful stimulus for increased savings after 1975. However, this was a temporary phenomenon and Japanese household savings rates as a percentage of GNP have been falling gradually since 1978. Nevertheless, current household savings rates are still higher than the average of the pre-1973 period and exceed those of all OECD nations except Italy ⁽⁷⁹⁾. (Even this exception may be somewhat illusory, since the Italian rate is greatly distorted by the existence of a large "underground", and undeclared, sector of the Italian economy.) In absolute terms, the 1985 level of household savings (nominal) was more than 336% that of 1972; even after applying the GNP deflator, the 1985 available pool of household savings was 66% higher than that of 1972.

The factors behind the high household savings rate in Japan have been a subject of lengthy debate with no clear consensus. Two principal reasons put forward are uncertain retirement incomes

⁷⁸ Edward J. Lincoln, Japan: Facing Economic Maturity, Washington: The Brookings Institution, 1988, p. 152.

⁷⁹ Atsushi Maki, "Why is the Japanese Household Savings Rate So High?," Keio Business Review, No.24, 1987, Tokyo: Keio University Press, 1987, p. 2.

which, in turn, is linked to inadequate social security pensions and extended longevities, and the high cost of housing. Both of these reasons are highlighted below.

6.1.1.1. The Need to Provide for Retirement

Insufficient social security pensions have often been cited as a principal factor behind high Japanese savings rates. The argument was more applicable during the 1950s and 1960s than it is today. Social security contributions as a percentage of GNP in Japan are now on a par with the U.S., the U.K. and Canada, although they are substantially below the levels in France, Sweden, Italy and West Germany ⁽⁸⁰⁾. However, the downward pressure of improved social security benefits on the savings rate has been negated by two factors. First, the mandatory retirement age for most Japanese companies is 55, although in recent years many companies have raised the age to 60 ⁽⁸¹⁾. Second, the average longevity in Japanese is the highest in the world with 1986 figures of 75 and 81 years for men and women, respectively ⁽⁸²⁾. These two factors

⁸⁰ Maki, "Why is the Japanese Household Savings Rate so High?," Keio Business Review, p. 3. As a percentage of GNP, social security contributions are 18.2% for France; 16.2% for Italy; 13.8% for Sweden; 12% for West Germany; 7.8% for Japan; 6.5% for the U.S. and U.K.; and 5.6% for Canada.

⁸¹ Kazuo Sato, "Savings and Investment," The Political Economy of Japan: Volume 1 - The Domestic Transformation, edited by Kozo Yamamura and Yasukichi Yasuba, Stanford: Stanford University Press, 1987, p.163.

⁸² Japan 1988, An International Comparison, Tokyo: Keizai Koho Centre, 1988, p. 8.

have lengthened the period which must be covered by savings generated in the principal working years. Although the average labour force participation by males over 65 is high by Western standards (see Table 6.3), Sato notes that the growing inverted pyramid structure of Japanese demographics will inevitably result in a larger number of people competing for the limited number of jobs available to the over 60 age-category of workers (⁸³). The rapid aging of Japan is also expected to place a greater burden on the working population to support an increasing number of retired workers. As noted by Sato (⁸⁴), "The social security burden on workers will rise to an intolerable level if the present benefit level is maintained. A debasement in the benefit structure is inevitable if the social security system is to remain solvent." These views are based on a classical concept of age-capability relationships and do not take into account the changing nature of technology and related labour demands. Nevertheless, the perception of a need to provide for a longer post-employment period may tend to support continued high savings rates in Japan.

The contrary argument has also been advanced; namely, that the rapid aging of Japan will result in a gradual decline in the savings rates. This view holds that retired or elderly workers are dis-savers and that, as the proportion of elderly to the

⁸³ Sato, "Savings and Investment", The Political Economy of Japan, Volume 1, p. 163.

⁸⁴ Ibid., p. 164.

TABLE 6-3: LIFE EXPECTANCY AND LABOUR PARTICIPATION RATIOS OF SELECTED COUNTRIES

COUNTRY	LIFE EXPECTANCY (YEARS)	LABOUR FORCE PARTICIPATION RATIO 1982 (PERCENT)		
		MALE	FEMALE	MALE 65+ YEARS
JAPAN	73.8 (1981)	89.2	55.9	38.3
UNITED STATES	69.9 (1979)	88.1	63.1	17.8
CANADA	70.2 (1977)	86.2	59.7	13.8
FRANCE	70.1 (1980)	79.8	56.0	5.9
GERMANY	69.9 (1981)	80.6	49.6	6.0
ITALY	69.7 (1977)	81.3	40.0	11.7
UNITED KINGDOM	70.4 (1978)	89.2	58.1	7.8

Source: Kazuo Sato, "Savings and Investment" The Political Economy of Japan, Vol 1, p. 147.

general working population increases, the proportion of households which are either not adding to, or drawing down, their savings stocks will also rise. The case for this view is by no means proven. As people age, their purchasing needs (especially for "big ticket" items such as houses, cars, etc.) may be significantly reduced. While affluent seniors in North America are a prime target for the marketing of expensive goods and services, Japanese seniors, used to a more frugal life style, may not follow the same pattern. Thus, with the probability of extended working life spans, older Japanese may continue to do what they have done throughout their adult lives; i.e., save. In addition, Hayashi (⁸⁵), notes that there is little cross-sectional indication of wealth being run-down during the retirement period. Helliwell (⁸⁶), suggests that this may be partly explained by the importance of bequests and inter-vivos gifts in the extended family system in Japan.

In view of this, the downward pressure on savings of the changing demographic structure of Japan may, at least, be offset to a considerable degree. The Economic Planning Agency, in its official long term forecast, has estimated the size of household

⁸⁵ Fumio Hayashi, "Why is Japan's Savings Rate So Apparently High?", NBER Macroeconomics Annual, 1986, Cambridge, Ma.: National Bureau of Economic Research, 1986, p. 196-197.

⁸⁶ John F. Helliwell, "Some Comparative Macroeconomics of the United States, Japan, and Canada," Discussion Paper No. 87-04, University of British Columbia Department of Economics, Vancouver, March 1987, p. 10.

savings in the year 2000 with and without demographic changes. Their findings indicate that the average savings rate, as a ratio of GNP, may decline by only 2 percentage points if demographic changes are factored in (⁸⁷).

6.1.1.2. The High Cost of Housing

The target-motive of owning a home and the high cost of housing relative to household income have been considered important stimuli for high household savings rates. The Japanese owner-occupancy rate has been remarkably stable for many years and, at a level of about 60 percent, is comparable to the United States where the cost of home ownership is considerably less (⁸⁸). Further, despite the massive concentration of the population in the six largest urban areas of Tokyo, Yokohama/Kanagawa, Osaka, Nagoya, Kyoto and Kobe, the trend towards urban, rather than suburban living continues. Illustrative of this trend is the growing concentration of multiple unit structures in high density urban areas (representing 38.4% of total housing in these areas versus 26.9% for the nation as a whole) where such units have doubled in number during the last 20 years (⁸⁹). This concentration of population has placed strong pressure on the available stock of

⁸⁷ Lincoln, Japan: Facing Economic Maturity, p. 79.

⁸⁸ Maki, "Why is the Japanese Household Savings Rate So High?," p. 4.

⁸⁹ Ibid., p. 4.

usable residential land and prices have exhibited massive increases, particularly in the six largest urban areas listed above.

Table 6.4 shows the residential land price indexes for the nation, the six largest cities, and all other districts. For the nation as a whole, average residential land prices have been growing at 13% per year since 1960. The same figure for the 6 largest cities and all other districts is 14% and 12%, respectively. However, since 1985, residential land prices have been increasing at 18% per year. As indicated in Table 6.5, the average price of residential land in Tokyo has, on average, risen at 24 percent per year between 1980 and 1987, and 73 percent between 1985 and 1987. Residential land prices in Kanagawa (which comprises Yokohama and Kawasaki city) to the south of Tokyo, have also realized substantial gains, rising at an annual average of 17% between 1980 and 1987, and 32% between 1985 and 1987. These two areas account for almost 15 million people, or roughly 12% of the total population of Japan.

Rising land prices since 1960, especially in the urban areas, have led to greater proportions of household income being allocated to savings for down payments. A 1983 survey indicated that the Japanese average acquisition price for a new home was 5 times the annual average household income with 39% of

TABLE 6.4: RESIDENTIAL LAND PRICE INDICES, JAPAN, F.Y. 1960-1987

COMPOUNDED ANNUAL RATE OF GROWTH

YEAR	AVERAGE	ALL OTHER DISTRICTS	SIX LARGEST CITIES	PERIOD	AVERAGE	ALL OTHER DISTRICTS	SIX LARGEST CITIES
1960	6.1	6.9	5.2	1960-1965	24.2	20.9	28.0
1961	8.5	9.5	7.5				
1962	11.3	12.0	10.6				
1963	13.5	13.8	13.1				
1964	15.8	15.6	16.0				
1965	17.9	17.8	17.9	1965-1970	13.5	14.9	12.0
1966	18.8	19.0	18.5				
1967	20.4	21.0	19.7				
1968	23.4	24.5	22.2				
1969	27.8	29.3	26.2				
1970	33.6	35.7	31.5	1970-1975	16.1	16.2	15.9
1971	39.9	42.3	37.4				
1972	45.8	48.4	43.1				
1973	60.9	62.2	59.5				
1974	75.0	78.7	71.3				
1975	70.8	75.7	65.9	1975-1980	7.2	5.7	8.7
1976	72.0	76.8	67.2				
1977	75.1	79.8	70.3				
1978	78.8	83.6	74.0				
1979	86.5	89.6	83.3				
1980	100.0	100.0	100.0	1980-1985	6.3	6.6	6.0
1981	111.3	112.0	110.6				
1982	120.3	122.6	117.9				
1983	126.1	129.7	122.5				
1984	130.6	134.4	126.8				
1985	135.9	137.9	133.8	1985-1987	10.0	2.7	17.0
1986	143.6	140.4	146.7				
1987	164.4	145.4	183.3	1960-1987	12.5	11.5	13.6

TABLE 6.5: AVERAGE PRICES OF RESIDENTIAL LAND OF SIX LARGEST
CITIES, PER ONE METRE SQUARED, 1000 YEN

YEAR	TOKYO	OSAKA	KANAGAWA	SAITAMA	KYOTO	NAGOYA	AVERAGE
1980	197	96	92	77	71	53	98
1981	225	112	106	99	80	63	114
1982	249	128	126	115	110	76	134
1983	268	150	157	127	132	92	154
1984	279	157	160	128	140	96	160
1985	297	165	163	129	145	97	166
1986	431	170	170	121	123	94	185
1987	890	184	283	158	128	98	290
RATE OF INCREASE							
1980-1987	24.0	9.7	17.4	10.8	8.8	9.2	16.8
1985-1987	73.1	5.6	31.8	10.7	-6.0	0.5	32.2

Source:

Ministry of Finance, Japan Statistical Yearbook, 1980-1987.

the purchase price being self financed (⁹⁰). In Tokyo, the 1983 ratio was 7.9 times annual income. Savings rates have had to accommodate to these greater equity demands. In the future, it is uncertain what the impact of the current level of housing prices will be on savings rates. The phenomenal increase in land prices since 1985, especially in the greater Tokyo area, has led to rising frustration among young urban workers who face growing obstacles to owning a home in the future. Indeed, the rise in land prices has sponsored a sharp demarcation line between landowners and the rest of Japan. As noted by one writer:

...Japan, which has prided itself on its egalitarian society, is suddenly becoming a nation of haves and have-nots. The haves are those with land; the have-nots, those without it. (⁹¹)

A 1987 survey by the Ministry of Health and Welfare indicated that nearly 50% of the nation's 38 million households are having trouble making ends meet despite average annual incomes of Canadian \$50,000 (⁹²). Although mortgage interest rates are low (around 6%), the average salaried worker can expect to take a lifetime to pay off his mortgage; with a good chance that his children may have to finish the job.

The high cost and increasing difficulty of home-ownership

⁹⁰ Sato, "Savings and Investment," The Political Economy of Japan, Volume 1, p. 608.

⁹¹ Edith Terry, "Why the Japanese Can't Relax," The Globe and Mail Report on Business, August 1989, p. 23.

⁹² Angela Bianchi, "Home Ownership an Elusive Dream for Most," The Financial Post, July 24, 1989, p. 26.

could be a crucial influence on the level of future Japanese savings rates. If potential buyers abandon the goal of home-ownership, monies which would have previously been set-aside for down payments may be diverted to other consumption purposes. This could result in a fall in the domestic savings rate. On the other hand, if the goal of home-ownership persists as a general objective, an even greater proportion of household income may have to be saved for this purpose, thus leading to an increase in the household savings rate.

In summary, the principal factors influencing the generally sustained high rates of Japanese household savings rates appear to be a continued concern for post-retirement welfare and rising housing costs. Savings rates reached their highest levels just after the 1973 oil shock, fuelled by a general uncertainty as to the future well-being of the economy and Japanese living standards. Since 1985, household savings rates have exhibited only marginal declines despite very significant increases in housing costs. This suggests that either house ownership (and, hence, a need to save for down payments) remains as a general goal, or that there has been an off-setting trend towards reduced confidence in the future. The latter hypothesis is not supported by the findings of a recent survey undertaken by the Bank of Japan. The survey indicated that business-confidence is at an all-time high (⁹³). If

⁹³ Ian Rodger, "Many Pressures Strain New Era," The Financial Post, July 24, 1989, p. 24.

Japanese households share this confidence, it could be expected that consumption would be stimulated and savings reduced. Indeed, despite problems relating to home-ownership and generally high living costs (the average Japanese household spends more than \$1500 per month on basic food supplies), a public opinion poll in 1988 indicated that more than 67% of those polled were either "fully" or "generally" satisfied with their way of life (⁹⁴). Thus the marginal decreases (relative to GNP) in household savings rates during recent years could be interpreted as being the net result of decreases due to higher public confidence in the future being largely off-set by increased savings to provide for the higher down-payments needed to buy housing in today's inflated market.

6.1.2. Private Sector Investment

The second contributor to the large private sector surpluses after 1974 was the substantial decline in corporate investment. The latter dropped to an average of 16.2% of GNP between 1975 and 1985 after attaining an average rate of 23.8% between 1965 and 1974. Accompanying this decline, corporate savings also fell during the period from 16.9% of GNP between 1965 and 1974 to 10.1% between 1975 and 1985. Despite this drop, the corporate sector savings deficit narrowed from about 6.9% of GNP between 1965 and 1974 to 5.5% of GNP after 1975. (See Table 6.1). Thus, corporations were no longer absorbing the excess savings in the

⁹⁴ Terry, "Why the Japanese Can't Relax," p. 20

household sector. As a result, the private sector, in aggregate, turned to surplus after 1974.

A number of factors contributed to the downturn in corporate investment after 1973. It is important to note that, while oil supply and price problems were the immediate cause of slower growth, precursors of this reduced growth rate had already manifested themselves prior to 1973 and would have inevitably prevailed, even in the absence of the oil crisis. An analysis of real GNP growth rates leading up to 1973 attest to this point. Although growth rates in excess of 12 percent were achieved during the 1960s, the 1970-73 average fell to 7.5 percent⁽⁹⁵⁾. The precursors included escalating land costs; rising shortages of labour and, hence, rising real wages; the closing of the technology gap with the West; and more stringent environmental regulations. These factors have prevailed in the slower growth period of the 1970s and 1980s and, as such, warrant brief discussion.

6.1.2.1. Rising Industrial and Commercial Land Prices

The rapid escalation of industrial land price rises in the 1960s and early 1970s increased the costs of developing new industrial and commercial sites and reduced the expected return from new operations. Between 1960 and 1970 land prices increased at phenomenal rates, averaging 20% and 25% for commercial and industrial land, respectively (see Tables 6.6 and 6.7). The rates

⁹⁵ Lincoln, Japan: Facing Economic Maturity, p. 3.

TABLE 6.6: COMMERCIAL LAND PRICE INDICES, JAPAN, F.Y. 1960-1987

COMPOUNDED ANNUAL RATE OF GROWTH

YEAR	AVERAGE	ALL OTHER DISTRICTS	SIX LARGEST CITIES	PERIOD	AVERAGE	ALL OTHER DISTRICTS	SIX LARGEST CITIES
1960	10.9	10.5	11.2	1960-1965	22.6	20.2	24.7
1961	16.1	14.2	17.9				
1962	20.9	17.6	24.2				
1963	23.9	20.7	27.1				
1964	27.2	23.2	31.1				
1965	30.1	26.4	33.8	1965-1970	10.9	13.5	8.7
1966	31.3	28.1	34.5				
1967	34.1	31.9	36.3				
1968	37.2	35.5	38.8				
1969	43.1	41.7	44.4				
1970	50.6	49.8	51.4	1970-1975	11.0	12.1	9.8
1971	56.7	56.9	56.5				
1972	62.5	63.2	61.7				
1973	76.8	76.5	77.0				
1974	90.1	91.4	88.7				
1975	85.1	88.1	82.1	1975-1980	3.3	2.6	4.0
1976	85.4	88.4	82.4				
1977	86.7	89.4	83.9				
1978	88.5	91.2	85.7				
1979	92.1	93.8	90.3				
1980	100.0	100.0	100.0	1980-1985	6.8	4.5	9.0
1981	107.5	106.9	108.1				
1982	115.0	113.2	116.7				
1983	121.3	117.9	124.6				
1984	128.5	121.3	135.7				
1985	139.1	124.5	153.6	1985-1987	17.4	4.9	26.7
1986	163.1	128.3	197.9				
1987	191.8	136.9	246.7	1960-1987	10.8	9.6	11.7

TABLE 6.7: INDUSTRIAL LAND PRICES, JAPAN, F.Y. 1960-1987

COMPOUNDED ANNUAL RATE OF GROWTH

YEAR	AVERAGE	ALL OTHER DISTRICTS	SIX LARGEST CITIES	PERIOD	AVERAGE	ALL OTHER DISTRICTS	SIX LARGEST CITIES
1960	8.8	9.7	7.9	1960-1965	28.8	24.7	33.2
1961	14.7	14.6	14.8				
1962	20.6	18.9	22.3				
1963	24.3	22.4	26.1				
1964	28.5	26.6	30.4				
1965	31.2	29.3	33.1	1965-1970	8.8	10.1	7.6
1966	32.2	30.3	34.0				
1967	34.0	31.7	36.3				
1968	38.0	35.1	40.9				
1969	40.6	40.3	40.9				
1970	47.6	47.3	47.8	1970-1975	13.2	13.7	12.6
1971	55.0	54.1	55.9				
1972	62.3	61.8	62.7				
1973	78.9	76.8	80.9				
1974	95.1	94.9	95.3				
1975	88.3	89.9	86.7	1975-1980	2.5	2.2	2.9
1976	88.7	90.4	86.9				
1977	89.3	91.1	87.5				
1978	90.4	92.2	88.5				
1979	93.4	94.7	92.0				
1980	100.0	100.0	100.0	1980-1985	4.4	4.2	4.6
1981	106.7	106.7	106.7				
1982	112.7	112.7	112.6				
1983	116.9	117.1	116.7				
1984	120.5	120.4	120.6				
1985	124.1	123.1	125.0	1985-1987	6.7	2.3	10.9
1986	128.4	125.5	131.2				
1987	141.2	128.8	153.6	1960-1987	10.4	9.7	11.2

of increase were even higher between 1960 and 1965, averaging 29% for industrial land (with the six largest city areas witnessing an annual growth rate of 33%), and 23% for commercial land (with the six largest urban areas realizing an annual growth rate of 25%). This rapid escalation continued into the early 1970s, with prices for industrial land increasing by 17, 15.5, 13.3 and 26.6 percent in 1970, 1971, 1972 and 1973, respectively. The corresponding increases for commercial land were 17.4, 12, 10.2 and 22.8 percent over the same period.

6.1.2.2. Rising Real Wages

In addition to escalating land costs, Japanese corporations also encountered rising real wage costs. During the previous period of rapid economic growth, much of the under-utilized labour in Japan had been absorbed, leading to tightened labour market conditions and rising real wages. Real wages grew at compounded annual rates of 6% between 1960 and 1970, 8% between 1965 and 1970, and in 1971, 1972, and 1973, they accelerated by 8, 10.4 and 9.5%, respectively (see Table 6-8). For unionized workers the 1974 "shunto" (spring wage offensive) resulted in an average, nominal wage increase of 32.9%, following an increase of 20.1% in 1973 (%). These high wage settlements served to reinforce the inflationary effects of rapidly increasing energy prices after 1973, and worked to retard economic activity.

[%] Lincoln, Japan: Facing Economic Maturity, p. 32.

TABLE 6-8: REAL WAGE INDICES AND COMPOUNDED ANNUAL
GROWTH RATES, F.Y. 1960-1987

YEAR	REAL WAGE INDEX	PERIOD	COMPOUNDED ANNUAL RATE OF GROWTH
1960	38.4	1960-1970	0.06
1961	40.6		
1962	41.9		
1963	42.6	1960-1965	0.04
1964	45.1		
1965	46.3		
1966	48.9	1965-1970	0.08
1967	52.6		
1968	56.8		
1969	62.4		
1970	67.8	1970-1980	0.04
1971	73.2		
1972	80.8		
1973	88.5	1970-1975	0.07
1974	90.5		
1975	92.9		
1976	95.6	1975-1980	0.01
1977	96.1		
1978	98.4		
1979	101.7		
1980	100.0	1980-1987	0.01
1981	101.1		
1982	101.8		
1983	104.0	1980-1985	0.01
1984	104.8		
1985	104.9		
1986	107.4		
1987	109.7	1985-1987	0.02
		1960-1980	0.04

6.1.2.3. Reduced Productivity Growth

The impact of higher wage costs was exacerbated by slower productivity gains. Rapid wage increases during the 1960s had been largely offset by improved productivity. Much of this improvement had been effected by the importation and adaptation of technology from the West. This process had enabled Japanese industry to make significant improvements in productivity at relatively low cost, without having to make corresponding expenditures on research and development. By 1973, Japan was more or less technologically equal to her Western trading partners, making it much more difficult to obtain the low cost, foreign technology which had supported previous investments. As noted by Lincoln (⁹⁷),

The impact of technological equality on capital formation was straightforward: because rapid increases in productivity based on imported technology were no longer possible, corporations could no longer expect the high levels of profit from new investment to which they had become accustomed. With lower expectations, investment de-accelerated. What had once been a powerful incentive for investment quickly evaporated in the mid-1970s.

6.1.2.4. Environmental Constraints

A further impediment to corporate investment after the advent of the 1970s was increasing public pressure on the central government to provide better environmental protection. The deadly Minimata mercury poisoning incident of the late 1960s and a host of other pollution-related incidents served to galvanize public

⁹⁷ Lincoln, Japan: Facing Economic Maturity, p. 44.

pressure for more stringent regulation of industry pollution levels and new developments. The government responded with legislation in 1970 which led to a quadrupling of public spending on pollution control between 1970 and 1973; to 430 billion yen, or \$1.6 billion at 1973 exchange rates (⁹⁸). Industry was also forced to increase pollution control spending to comply with government directives. By 1974, total private sector expenditures on pollution control was roughly two times the level of central government spending and on a par with that of local governments. These investments in pollution abatement, while socially imperative, increased the cost per unit of plant capacity and thereby acted as a dis-incentive to investment.

6.1.2.5. The Impact of the Oil Crisis

Superimposed on these other factors, the higher energy costs after 1973 posed a difficult (and for some industries, terminal) impediment to capacity expansion. Oil price increases brought a premature end to Japan's strategy of relying on heavy industry for economic growth. The increases in oil prices were of particular concern to Japan given its severe dependence on outside oil supplies. Energy-intensive industries which had grown up behind a wall of protective barriers, lost their international competitiveness and were forced to down-size or even close. The Japanese aluminum industry is a case in point; investment in

⁹⁸ Ibid., p. 49.

aluminum refining had been substantial during the 1950s and 1960s because of tariff barriers and high expected profits from utilizing state of the art technology. By 1984, because of the combined oil shocks, capacity in the aluminum industry had been greatly reduced and imports represented 71% of total aluminum consumption in Japan versus 7% in 1965 (⁹⁹).

⁹⁹ Lincoln, Japan: Facing Economic Maturity, p. 47.

6.1.2.6. The Investment Climate since 1973

The impact of the above factors on capital formation after 1973 was formidable. As noted, corporate sector investment fell substantially after 1973 in response to the combined effects of higher energy prices and the induced recession of 1975-1976. The accelerator principle meant that reduced economic growth required greatly reduced levels of corporate fixed investment. From 1966 to 1972 real GNP and corporate investment grew at rates of 9.4 and 15.0 percent, respectively. However, between 1974 and 1985, the growth of real GNP was reduced to an average of 3.8% and that of corporate investment to 3.9% (¹⁰⁰). In the immediate aftermath of the 1973 oil shock, the previous high rates of investment resulted in over-capacity in most industries. This removed most of the incentive for further investment. Indeed, the average capacity utilization index (1980 = 100) fell from 106 for the period 1965 to 1973, to 96 for the period from 1974 to 1984. Corporate profits also dropped substantially, thereby restricting the capacity to make new investment. The average ratio of recurring profits (¹⁰¹) to net worth decreased from 25.6% between 1965 to 1972 to 21.7% between 1974 and 1984. These figures, however, should be treated with some caution. Net worth is, as noted by Lincoln, often grossly under-valued in Japan because corporations carry land

¹⁰⁰ Lincoln, Japan: Facing Economic Maturity, p. 81.

¹⁰¹ "Recurring profits" is a before-tax measurement which includes non-operating income and expenses but excludes extraordinary gains and losses.

values at purchase cost on their books; this overstates the profits to net worth ratio. On the other hand, the average debt to equity ratio of Japanese companies was higher during the 1974-84 period than during the 1965-72 period, so the ratio of profits to assets used may not have reflected the same decrease.

The 1980s have seen a general recovery of the Japanese economy, especially since 1986. Corporate investment still remains substantially below its pre-1973 levels although in the last two years, corporate fixed investment has shown an upward trend, rising at rates in excess of 17% percent (¹⁰²). Nevertheless, the factors which led to slower capital formation in the 1970s are still largely applicable today and, in many respects, have been exacerbated by the rapid appreciation of the yen after 1985. As noted in Table 6.8, real wages have risen only marginally since 1975 but the 80% appreciation of the yen since 1985 has made Japan a relatively high-cost labour country even compared to the United States and most West European nations.

The problems of commercial and, to a lesser extent, industrial land prices have also intensified since 1985. Commercial land prices, which had been relatively quiescent during the 1970s and early 1980s, increased sharply between 1985 and 1987. Commercial land prices in the six largest urban areas rose at an average compounded rate of 63% per year (see Table 6.9). As shown in Table

¹⁰² Quarterly Economic Review, August 1989, Vol.19, No. 3,
Nomura Research Institute, Tokyo, 1989, p. 41.

TABLE 6.9: AVERAGE PRICES OF COMMERCIAL LAND OF SIX LARGEST CITIES, PER ONE METRE SQUARED, 1000 YEN

YEAR	TOKYO	OSAKA	KANAGAWA	SAITAMA	KYOTO	NAGOYA	AVERAGE
1980	636	353	261	202	201	129	297
1981	713	399	291	251	271	145	345
1982	866	460	320	285	330	185	408
1983	1117	684	395	324	433	236	532
1984	1333	753	419	335	459	260	593
1985	1894	855	464	351	481	308	726
1986	4211	1159	628	392	460	367	1203
1987	6493	2025	1279	658	606	473	1922
RATE OF INCREASE							
1980-1987	39.4	28.3	25.5	18.4	17.1	20.4	30.6
1985-1987	85.2	53.9	66.0	36.9	12.2	23.9	62.8

Source:

Ministry of Finance, Japan Statistical Yearbook, 1980-1987.

6.9, the average price of commercial land increased by 85%, 66% and 54% in Tokyo, Kanagawa, and Osaka, respectively during this 3 year period. The average cost per square metre for commercial land in Tokyo rose to 6.5 million yen in 1987, or about \$45,000 U.S. Increases in industrial land prices also underscore the problems facing firms wishing to make investments in new plant locations; as prices per square metre rose by an average of 48% and 28% per annum in Tokyo and Kanagawa, respectively between 1985 and 1987 (see Table 6.10). These land price increases, in conjunction with the appreciation of the yen, have made land in the greater Tokyo area the most expensive in the world by a large margin.

The high factor prices for labour and land have, since 1974, acted as powerful limits to capital investment. However, another prime reason for reduced investment has been the structural changes taking place in the Japanese economy. Recognizing the unfavorable prognosis for continued reliance on the heavy industrial sector, Japan has shifted its emphasis to an economy based on technology intensive manufactured products and service industries. This structural change has led to a very significant reduction in the investment requirements of the capital intensive heavy industries. It reflects, once again, the Japanese ability to adapt to radical adjustments in the domestic economic environment and clearly signals the maturation of the country's industrial economy. Given this re-direction of the Japanese economy, it seems reasonable to project that the stabilization of capital formation rates (at

TABLE 6.10: AVERAGE PRICES OF INDUSTRIAL LAND OF SIX LARGEST CITIES, PER ONE METRE SQUARED, 1000 YEN

YEAR	TOKYO	OSAKA	KANAGAWA	SAITAMA	KYOTO	NAGOYA	AVERAGE
1980	136	70	51	33	50	36	63
1981	152	79	54	45	54	39	71
1982	175	93	55	50	72	45	82
1983	208	113	85	61	102	56	104
1984	208	112	87	63	106	56	105
1985	212	124	99	67	100	58	110
1986	243	123	112	64	82	58	114
1987	462	136	162	81	89	59	165
RATE OF INCREASE							
1980-1987	19.1	10.0	18.0	13.7	8.6	7.3	14.7
1985-1987	47.6	4.7	27.9	10.0	-5.7	0.9	22.5

Source:

Ministry of Finance, Japan Statistical Yearbook, 1980-1987.

between 15 and 17% of GNP) experienced since 1975 will be continued into the future.

6.1.3. The Private Sector Surplus since 1986

Since 1986, the private sector savings surplus has narrowed, from a peak of about 32.3 trillion yen in 1986 to 17.8 trillion yen in 1987; and it is projected to fall further in F.Y. 1988 and 1989 to 15.1 and 13.3 trillion yen, respectively (¹⁰³).

The narrowing of the private sector savings surplus is a direct result of Japan's increasing emphasis on domestic demand led growth, rather than export led growth. Since 1986, the Japanese economy has been one led overwhelmingly by domestic demand. In F.Y. 1986 and F.Y. 1987, domestic demand contributed 2.8 and 5.8 percentage points to real economic growth, respectively (¹⁰⁴). Net exports, in the same two years, contributed minus 1.4 and minus 1.0 percent, respectively. Personal consumption has been leading the domestic demand based economic growth and has contributed 1.9 and 2.5 percent to real economic growth in F.Y. 1986 and F.Y. 1987, respectively. This consumption boom has been sponsored by improved employment; higher nominal wages and bonuses; increased leisure time; and strong housing investment due to the speculative land boom of 1985-87. In 1989, household residential

¹⁰³ Nomura Quarterly Economic Review Vol. 19, No. 1, Tokyo: NRI & NCC Co. Ltd, February 1989 p. 43.

¹⁰⁴ Nomura Quarterly Economic Review, Vol. 19, No.1, p. 15.

investment is expected to moderate somewhat, with residential housing starts easing from 1.65 million units in F.Y. 1988 to 1.53 million units in F.Y. 1989 (¹⁰⁵). Despite the 3% consumption tax imposed earlier this year, massive cuts in personal income taxes amounting 3.3 trillion yen are expected to maintain personal consumption at high levels over the next year, or so; thereby contributing a projected 2.8% to real economic growth in F.Y. 1988 and F.Y. 1989 (¹⁰⁶).

This consumption boom has led to a reversal of the trend towards lower corporate investment and there were sharp increases in such investment during 1987 and 1988. The increase in corporate investment has been due to the improved corporate profits which resulted from the expansion of domestic demand and the recovery in exports after 1987 (pre-tax profits before extraordinary items for all industries were up by 28.8% in 1988, compared to 1987); low inflation; continued low interest costs; and unexpectedly large productivity gains which have offset recent rises in real wage rates. According to the Nomura Research Institute, planned investment for F.Y. 1989 has risen to its highest level in 15 years, a projected 10.5% increase over F.Y. 1988 (¹⁰⁷).

However, the longevity of this increased consumption cycle is not clear, since it may have been fuelled, in part, by the wealth

¹⁰⁵ Ibid., p. 15.

¹⁰⁶ Ibid., p., 15.

¹⁰⁷ Nomura Quarterly Economic Review, Vol. 19, No. 1, p. 15

effect of increased stock prices and, especially, of soaring land prices (¹⁰⁸). In the longer term, it seems probable that the trend towards reduced investment intensity will be confirmed by the structural change which Japanese industry is undergoing. This change away from heavy industry as the vehicle of growth towards advanced technology intensive industries and the service sector, is likely to reduce the need for the huge, concentrated investments associated with blast furnace steel mills, refineries and similar installations. Further, the other side of the corporate sector balance is now improving. Corporate profits have significantly increased in recent years (especially in 1988) and, given the recent emphasis of the profit motive by most large Japanese companies, corporate savings can be expected to improve. Thus, the recent pattern of reduced corporate sector deficits is likely to continue and, indeed, strengthen. In this regard, it is worthy of note that by the end of fiscal 1988, the average ratio of net worth to total capital in the manufacturing sector was 31.1%, the first time that this ratio has exceeded 30% (¹⁰⁹).

In general, it seems the factors which have contributed to the private sector balances of recent years appear likely to have future validity.

¹⁰⁸ "The Consumption Boom in Japan", Tokai Monthly Economic Letter, No. 125, Tokai Bank, Tokyo, June 1989, p.5.

¹⁰⁹ "Corporate Profit Performance", NRI Quarterly Review, Nomura Research Institute, Tokyo, August 1989, p.20.

6.1.4. Implications of Private Sector Savings Surpluses

Despite its recent narrowing, the private sector savings surplus continues to be high, at around U.S. \$100 billion. This has significant implications for the remaining macro-economic balances of the Accounting Identity introduced in 5.1. As noted previously, private sector savings surpluses must be accommodated by government deficits or by current account surpluses. The latter, as defined in the balance of payments accounting framework, necessarily requires an equal capital account deficit. As will be shown in the following discussion, the private sector saving surplus up to 1982 was, to a large extent, absorbed by government deficits. Since 1983, however, the surplus has been assimilated by widening current account surpluses. These developments are discussed in the following section.

6.2. THE PUBLIC SECTOR BALANCE

Table 6.11 shows that, between 1975 and 1983, the private sector surplus was principally absorbed by increasingly large government (central, municipal and prefectural) fiscal deficits. Although bond issuances were legislatively permissible after 1949, the Japanese government practiced balanced budgets until 1966, when the first long-term public bonds were issued. Because of a tendency to underestimate economic growth, the government sector remained largely in surplus throughout this period, with an annual average surplus of about 2% of GNP. This situation changed after 1975, with fiscal deficits averaging 4% of GNP between 1975 and 1983 and peaking at 5.5% of GNP in 1978. Since 1984, the deficit has continued to narrow and is projected to be about 300 billion yen in 1989, down from Yen 19,100 billion in 1983.

Two important points emerge from Table 6-11. First, although the government deficit widened considerably after 1974, government investment as a percentage of GNP remained largely unchanged. During the 1970s, government investment averaged about 6.2% of GNP, only slightly higher than the 5.2% average of the 1960s. Second, government savings which averaged about 6.9% of GNP in the 1960-74 period, declined sharply after 1975 and averaged only 2.7% of GNP from 1975 to 1983.

The post-1973 deficits were caused by sustained, moderate government spending and lowered tax revenues. Nominal expenditure growth remained more or less constant, averaging 17.9% between F.Y.

TABLE 6.11: THE PRIVATE AND PUBLIC SECTOR BALANCE, F.Y. 1960-1987,
PERCENTAGE OF GNP

YEAR	TOTAL PRIVATE SECTOR			TOTAL PUBLIC SECTOR			BALANCE AVAILABLE FOR FOREIGN
	SAVINGS	INVESTMENT	BALANCE	SAVINGS	INVESTMENT	BALANCE	INVESTMENT
1960	28.3	31.2	-2.9	7.7	4.7	3.0	0.1
1961	28.5	36.0	-7.5	8.5	4.8	3.7	-3.8
1962	27.9	28.5	-0.6	8.2	5.7	2.5	1.9
1963	27.5	30.8	-3.3	7.5	5.3	2.2	-1.1
1964	27.2	29.2	-2.0	6.8	5.3	1.5	-0.5
1965	27.4	27.5	-0.1	6	5.4	0.6	0.5
1966	29.4	28.7	0.7	5.6	5.4	0.2	0.9
1967	31.4	32.7	-1.3	6.3	5.1	1.2	-0.1
1968	32.9	33.0	-0.1	6.9	5.1	1.8	1.7
1969	32.5	34.5	-2.0	7.5	5	2.5	0.5
1970	33.3	34.0	-0.7	6.8	5.1	1.7	1
1971	31.0	30.0	1.0	7	5.8	1.2	2.2
1972	32.0	29.2	2.8	6.2	6.3	-0.1	2.7
1973	32.3	31.6	0.7	6.9	6.4	0.5	1.2
1974	30.0	31.4	-1.4	6.3	6	0.3	-1.1
1975	29.0	26.8	2.2	3.3	6	-2.7	-0.5
1976	30.4	26.0	4.4	2.1	5.8	-3.7	0.7
1977	29.5	24.6	4.9	2.5	6.3	-3.8	1.1
1978	30.8	23.9	6.9	1.5	7	-5.5	1.4
1979	29.0	25.3	3.7	2.5	7.2	-4.7	-1
1980	28.4	25.1	3.3	2.7	7.1	-4.4	-1.1
1981	27.9	24.2	3.7	3.3	7.1	-3.8	-0.1
1982	27.2	23.3	3.9	3.2	6.8	-3.6	0.3
1983	26.9	21.9	5.0	2.8	6.4	-3.6	1.4
1984	26.7	22.3	4.4	3.9	6	-2.1	2.3
1985	26.8	22.8	4.0	4.8	5.6	-0.8	3.2
1986	-	-	5.8	-	-	-1.1	4.7
1987	-	-	4.5	-	-	-0.2	4.3

1970 and 1973 and 17.4% between F.Y. 1974 and 1979 (¹¹⁰). However, because of high inflation during this period, the growth in real expenditures decreased from an average of 13.9% to an average of 8.5%. The combined influence of sustained nominal expenditures and decreased tax revenues on the government balance is discussed below.

6.2.1. Government Expenditures after 1973

Some authorities have attributed the Japanese public sector deficit to the growth in social security spending which occurred after 1970 (¹¹¹). As can be seen in Table 6.12, in real terms, social security expenditures increased at an average of 15% per annum during the 1970s, while the general account budget grew at an average of 9.3% per year. The increase in social security spending reflected the political commitment of the LDP to improved social welfare conditions in Japan; a commitment which emerged after the public dissent of the late 1960s. Prior to 1973, old age pension benefits were only 20% of the average salary but the ratio jumped to 43% after 1974 and an indexation provision for inflation was added (¹¹²). The commitment to improved social conditions was also reflected in expanded public works programs during the 1970s,

¹¹⁰ Lincoln, Japan: Facing Economic Maturity, p. 92.

¹¹¹ Yukio Noguchi, "Public Finance," The Political Economy of Japan, Volume 1, p. 187-219.

¹¹² Ibid., p. 205.

TABLE 6.12: GROWTH OF BUDGETED GOVERNMENT SPENDING BY CATEGORY, F.Y. 1970-1986

REAL PERCENTAGE CHANGE OVER PREVIOUS PERIOD											
YEAR	1972	1974	1976	1978	1980	1981	1982	1983	1984	1985	1986
CATEGORY											
SOCIAL WELFARE:	30.2	36.3	33.8	26.7	13.8	4.0	1.3	0.2	3.6	-0.1	0.9
Social security	30.4	51.2	39.1	31.5	15.5	5.1	-0.2	-5.4	-5.5	2.5	3.5
Health	20.9	-4.2	2.2	8.7	6.3	-1.3	0.3	1.1	10.5	2.9	5.4
EDUCATION/SCIENCE	26.4	24.3	14.9	14.2	11.1	1.5	-1.6	-0.8	1.3	-2.5	-1.7
GOVT. PENSIONS	10.3	18.9	43.6	21.2	15.4	6.5	3.0	-0.8	-1.5	-2.7	-2.6
DEFENSE	24.7	9.4	7.7	11.0	13.1	3.8	3.8	6.8	6.0	5.3	116.7
PUBLIC WORKS	67.7	-17.6	10.9	38.0	9.6	-0.3	2.1	-1.5	-5.6	-1.0	-75.2
FOREIGN AID	14.4	3.6	-5.2	39.0	27.1	8.1	9.6	3.9	7.4	5.7	4.5
SMALL BUSINESS	26.0	9.9	22.9	40.1	-1.2	-1.2	-3.3	-2.6	-5.3	-8.8	-6.1
ENERGY					45.2	13.3	10.5	-1.1	8.1	1.0	-1.7
FOODSTUFF CONTROL	4.1	38.2	-21.1	-5.8	-4.4	2.8	-2.6	-8.8	10.5	-13.8	-14.1
OTHER	41.5	20.7	11.6	9.2	8.4	-2.1	-2.4	-2.2	-2.3	-1.2	-7.0
REVENUE SHARING	22.8	28.1	-15.2	31.4	27.4	7.9	-9.6	-4.4	18.7	3.5	3.2
DEBT SERVICE	41.9	37.0	87.6	58.1	58.9	17.4	1.9	17.4	11.6	8.6	8.7
TOTAL	34.4	16.0	12.7	26.9	18.7	5.0	-0.9	1.6	5.3	1.7	-1.7

although the latter tended to closely follow economic cycles. Noguchi attributes increased social welfare and public works spending to the favorable fiscal conditions of the early 1970s. By 1970, Japan had attained a "fiscal affluence", within which increased government expenditures could be supported by the "natural" increases in tax revenues which resulted from sustained economic growth (¹¹³). That this situation did not endure after 1974 is evidenced by the increase in government bond issues in the latter half of the 1970s. As a result, the largest increase in public expenditures between 1970 and 1986 was that relating to debt-service, which grew at an average real rate of over 39% per year.

Despite the significant annual increases in real government spending, expressed as a percentage of GNP, actual program expenditures remained surprisingly constant. Average government expenditure as a percentage of GNP grew from an annual average 14.6% of GNP during the 1970s to 17.1% after 1980 (see Table 6.13). However, most of this increase was due the rising cost of debt-service, which represented the largest single expenditure item on the general account by 1985 (see Table 6.14).

¹¹³ Ibid., p. 206.

TABLE 6.13: GOVERNMENT SPENDING BY CATEGORY AS A PERCENTAGE OF GNP,
F.Y. 1970-1986

YEAR	1970	1972	1974	1976	1978	1980	1981	1982	1983	1984	1985	1986
CATEGORY												
SOCIAL WELFARE:	1.5	2.5	2.2	2.8	3.2	3.3	3.3	3.3	3.2	3.1	3.1	3.0
Social security	0.9	1.4	1.4	1.8	2.1	2.2	2.3	2.2	2.0	1.8	1.8	1.8
Health	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
EDUCATION/SCIENCE	1.3	2.1	1.7	1.8	1.8	1.9	1.8	1.8	1.7	1.6	1.5	1.5
GOVT. PENSIONS	0.4	0.6	0.4	0.6	0.6	0.7	0.7	0.7	0.7	0.6	0.6	0.6
DEFENSE	0.8	1.3	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	2.1
PUBLIC WORKS	2.0	4.2	2.2	2.3	2.9	2.8	2.8	2.7	2.6	2.3	2.2	0.5
FOREIGN AID	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
SMALL BUSINESS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
ENERGY	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
FOODSTUFF CONTROL	0.5	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2
OTHER	1.3	2.3	1.8	1.8	1.8	1.8	1.7	1.6	1.5	1.4	1.3	1.2
REVENUE SHARING	2.3	3.5	2.9	2.3	2.8	3.2	3.3	2.9	2.7	3.0	3.0	3.1
DEBT SERVICE	0.4	0.7	0.6	1.1	1.6	2.2	2.6	2.5	2.9	3.1	3.2	3.4
TOTAL	11.1	18.5	13.9	14.3	16.4	17.6	17.9	17.2	17.7	16.8	16.4	16.3

TABLE 6.14: BUDGETED GOVERNMENT SPENDING BY CATEGORY, F.Y. 1970-1986

REAL EXPENDITURES, BILLIONS OF YEN												
YEAR	1970	1972	1974	1976	1978	1980	1981	1982	1983	1984	1985	1986
CATEGORY												
SOCIAL WELFARE:	2350	3060	4172	5582	7073	8049	8369	8474	8494	8803	8793	8868
Social security	1298	1692	2558	3559	4681	5405	5682	5670	5364	5070	5196	5378
Health	273	330	316	323	351	373	368	369	373	412	424	447
EDUCATION/SCIENCE	1983	2507	3116	3580	4087	4541	4611	4538	4503	4560	4444	4369
GOVT. PENSIONS	623	687	817	1173	1422	1641	1748	1800	1786	1760	1713	1668
DEFENSE	1217	1517	1659	1786	1983	2243	2328	2416	2580	2735	2881	6243
PUBLIC WORKS	2996	5024	4138	4590	6335	6942	6922	7069	6960	6567	6503	1612
FOREIGN AID	194	222	230	218	303	385	416	456	474	509	538	562
SMALL BUSINESS	104	131	144	177	248	245	242	234	228	216	197	185
ENERGY	0	0	0	0	294	427	484	535	529	572	578	568
FOODSTUFF CONTROL	702	731	1010	797	751	718	738	719	656	725	625	537
OTHER	1948	2757	3327	3713	4053	4395	4301	4198	4105	4011	3961	3683
REVENUE SHARING	3475	4269	5468	4638	6096	7769	8386	7582	7249	8602	8899	9184
DEBT SERVICE	602	854	1170	2195	3470	5513	6474	6598	7747	8647	9389	10207
TOTAL	16194	21759	25251	28449	36115	42868	45019	44619	45311	47707	48521	47686

Source:

Lincoln, Japan: Facing Economic Maturity, p. 92

6.2.2. Government Revenues after 1973

As noted above, the primary cause of rising government deficits during the 1970s was the decline in tax revenues. Both nominal and real receipts decreased markedly after 1975. In real terms, national tax receipts grew at an average of 11.7% between 1960 and 1973, fell consecutively in 1974 and 1975 by 7.2 and 14.5%, respectively, and averaged 6.5% growth thereafter (see Table 6.15). Thus, tax revenues were permitted to lag behind moderate increases in real spending. Lincoln (¹¹⁴) points out that:

The most striking feature (of government fiscal policy), in fact, is that all categories of expenditures continued to rise relatively rapidly in nominal terms, while taxes were allowed to lag behind. Thus, Japan did not get itself into large deficits because of a major burst of new spending so much as from a lack of revenue to support its relatively modest real increases in spending.

The real terms shortfalls in tax revenues initially occurred because of the economic recession which followed the oil shock of 1973. However, over the longer term, the principal reason for lagging tax receipts lay in the psyche of the Japanese public. Throughout the 1970s and early 1980s, tax reform was strongly opposed by powerful lobby interests. In 1979, the Ministry of Finance proposed that a 5% value added tax be imposed on all firms with sales in excess of 20 million yen. Opposition from small businesses, historically strong backers of the LDP, was so intense that prior to the 1979 election for the Lower House of the Diet, the Liberal Democratic Party (LDP) was forced to promise that it

¹¹⁴ Lincoln, Japan: Facing Economic Maturity, p. 96.

TABLE 6.15: PERCENTAGE REAL INCREASE IN TAX BURDEN,
F.Y. 1961-1987

PERCENTAGE INCREASE OVER PREVIOUS F.Y.
(REAL TERMS)

YEAR	GNP	NATIONAL INCOME	TOTAL TAXES	NATIONAL TAXES	LOCAL TAXES
1961	13.5	10.0	14.1	14.6	12.9
1962	5.4	8.7	6.2	3.7	12.6
1963	13.0	11.3	9.4	9.3	9.8
1964	11.1	8.7	10.7	10.8	10.6
1965	17.3	19.6	12.3	10.1	17.4
1966	11.6	10.1	7.2	6.5	8.8
1967	10.9	12.0	13.4	12.9	14.3
1968	11.9	12.6	14.8	15.1	14.1
1969	11.2	10.7	3.0	-2.4	14.1
1970	9.0	13.5	25.3	32.4	12.8
1971	5.7	2.2	4.2	2.8	6.9
1972	9.8	9.5	14.9	16.5	11.7
1973	8.2	6.2	18.1	19.7	14.9
1974	-2.4	0.8	-3.3	-7.2	5.0
1975	1.9	3.4	-12.3	-14.5	-8.1
1976	6.2	3.8	8.6	8.2	9.5
1977	4.8	4.4	5.5	3.7	8.7
1978	4.5	4.1	14.9	20.2	6.1
1979	4.3	3.9	6.7	4.3	11.3
1980	6.3	7.9	9.3	9.5	9.1
1981	2.6	1.4	11.5	13.9	7.1
1982	3.0	2.1	-2.4	-5.8	4.1
1983	3.5	4.4	5.9	5.9	5.7
1984	5.4	3.8	6.6	6.3	7.0
1985	4.2	4.5	5.5	4.8	6.8
1986	1.4	2.1	2.0	1.4	3.1
1987	4.4	4.4	3.8	5.1	1.8

Average increase over period:

1960-1973	11.8	11.7	12.4
1976-1987	6.5	6.5	6.7
1960-1974	17.7	17.3	18.8
1976-1987	9.6	9.6	9.8

would not introduce the tax. In spite of this, the LDP lost its majority in the lower house and was only able to retain power with the support of a number of independents (¹¹⁵). Other attempts to correct tax loopholes met with similar opposition. The attempt to introduce the "green card" system was a particularly illustrative example of the opposition to change. Prior to 1987, savers were not taxed on interest income earned by savings accounts which together totalled less than 3 million yen. Commercial banks were required to file information on all savings accounts to allow the authorities to determine if an individual's total accounts exceeded 3 million yen. However, the postal savings system, which has, by far, the country's largest deposit base, was only required to file reports on accounts which exceeded this amount. This loophole enabled depositors to open numerous accounts. (It is reported that the number of accounts in the postal savings system exceeds the population of Japan). In 1979, the Ministry of Finance (MOF) attempted to correct this weakness by proposing that every saver be issued a green identity card that would have to be produced whenever opening a tax-qualified savings account. However, the proposed reform was strongly opposed by the Ministry of Posts and Telecommunications which controls the postal savings system and by the public, who decried the proposal as an unwarranted intrusion of the government into their personal affairs (¹¹⁶). After three

¹¹⁵ Noguchi, "Public Finance," p. 209.

¹¹⁶ Lincoln, Japan: Facing Economic Maturity., p. 106.

years of unsuccessful attempts to have the program introduced, the MOF advanced a compromise proposal that a low rate of tax be charged on all interest income. This proposal was finally implemented in 1987.

6.2.3. The Pressure for Fiscal Austerity

As a result of the failure of tax receipts to match spending increases, government revenue shortfalls were met with increasingly large bond issues after 1973. Between 1973 and 1986, the proportion of bonds, in total government borrowing, increased from 69% to 81% (¹¹⁷). By 1978, the MOF began to voice increasing concern over the size of the deficits and to pressure the government to return to a balanced budget fiscal policy. The Ministry voiced several concerns, including the possibility that future fiscal policy could be constrained by the increasing debt-service requirements, a non-discretionary component on the general account budget. Additional arguments encompassed the burden placed on future generations; the potential "crowding-out" effect of private investment; the inflation potential of monetized government debt; and the removal of the natural limitation of government spending to government tax receipts.

As Lincoln has pointed out (¹¹⁸), many of these arguments were either not applicable, or tended to be less important than

¹¹⁷ Ibid., p. 140.

¹¹⁸ Lincoln, Japan: Facing Economic Maturity, p. 101-102.

construed by the Ministry of Finance. In view of the large private-sector surplus, the "crowding-out" argument was particularly weak; even at their height in the late 1970s and early 1980s, government deficits failed to fully absorb private sector surpluses. However, regardless of the strength of the counter arguments, the end of the 1970s brought a general, public and private sector consensus that government deficits should be curtailed. Indicative of this, in July 1980, newly-elected Prime Minister Suzuki announced that the issuance of deficit financing bonds would be eliminated by F.Y. 1984.

Several measures were introduced to achieve this goal. In F.Y. 1980, the ceiling for annual increases in budget requests for each ministry and government department was lowered from around 20% to 10%. Permissible increases were eliminated in F.Y. 1982; and after 1984, a "minus-ceiling" was introduced for certain expenditures (¹¹⁹). In addition, the government established the Ad Hoc Council on Administrative Reform in March 1981, with the mandate to assess government activities for methods of rationalizing expenditures. The Council, commonly known as Rincho, was headed by Toshio Doko, the retiring chairman of the Keidanren, a federation of economic organizations in Japan and the "voice of big business in Japan" (¹²⁰). The council recommended a policy of "fiscal reconstruction without tax increases" in which government deficits

¹¹⁹ Noguchi, "Public Finance," p. 211.

¹²⁰ Lincoln, p. 117.

were to be curtailed by decreases in expenditures rather than tax reform. To this end, the council proposed that the social security system be revised and that government-run monopolies such as the Japan National Railway, Nippon Telephone and Telegraph Corporation, and Japan Tobacco and Salt be privatized (¹²¹). The fiscal austerity program proved successful in reducing government bond issues; however, the target of eliminating all issuances by F.Y. 1984 was not achieved and has since been postponed to F.Y. 1990 (¹²²).

6.2.4. The Government Balance since 1984

Since 1984, a number of changes have taken place which indicate that the government is reconsidering its fiscal austerity program. This time, the pressure for change has been from external, rather than internal, forces. In particular, the large sustained surpluses in the Japanese current account balance has led to mounting pressure from the country's leading trade partners for fiscal expansion. In addition, the appreciation of the yen since 1985 by 80% has ushered in a new phase of Japanese macro-economic growth. Although the current account surplus has failed to decline substantially in dollar terms (due to the short term effects of yen appreciation through the J-curve effect, significant productivity gains in some key export industries, and the continuing popularity

¹²¹ Lincoln, Japan: Facing Economic Maturity, p. 118.

¹²² Noguchi, "Public Finance," p. 211.

of Japanese exports), the prospect of reduced current account surpluses in the future must be considered from the perspective of the macro economic identity presented earlier. As evidenced in Table 6.16, the private sector surplus was increasingly absorbed by large current account (merchandise trade) surpluses after 1980 as the government implemented its program of fiscal reform. As merchandise trade surpluses decline in the future, the economy may have to adjust by either reduced surpluses in the private sector or larger government deficits. This adjustment, however, could be postponed or reduced by offsetting changes in the services trade balance, which has posted increasingly large receipts of foreign investment earnings since 1980. The latter has important ramifications for the sustainability of Japanese foreign direct investment in the future and will be discussed in Section 9.0.

To some extent, some adjustment in the domestic sector has already started to occur in response to declining merchandise trade balances. Government expenditures on social infrastructure have been undertaken to stimulate domestic demand in light of the reduced demand in the export sector. These expenditures were encouraged by the Maekawa report of April 1986 which recommended that Japan reduce its reliance on exports for economic growth and move towards a domestic-demand driven economy. However, movements away from fiscal austerity have met with strong opposition from the Ministry of Finance and the Bank of Japan. In addition, certain actions taken by the government in 1989 would seem to indicate some

TABLE 6.16: THE DOMESTIC SECTOR AND CURRENT ACCOUNT BALANCE,
F.Y. 1960-1987, PERCENTAGE OF GNP

PERCENTAGE OF GNP							
YEAR	TOTAL PRIVATE SECTOR			TOTAL PUBLIC SECTOR			CURRENT
	SAVINGS	INVESTMENT	BALANCE	SAVINGS	INVESTMENT	BALANCE	ACCOUNT BALANCE
1960	28.3	31.2	-2.9	7.7	4.7	3.0	0.0
1961	28.5	36.0	-7.5	8.5	4.8	3.7	-1.8
1962	27.9	28.5	-0.6	8.2	5.7	2.5	0.0
1963	27.5	30.8	-3.3	7.5	5.3	2.2	-1.5
1964	27.2	29.2	-2.0	6.8	5.3	1.5	0.0
1965	27.4	27.5	-0.1	6	5.4	0.6	1.2
1966	29.4	28.7	0.7	5.6	5.4	0.2	0.9
1967	31.4	32.7	-1.3	6.3	5.1	1.2	-0.3
1968	32.9	33.0	-0.1	6.9	5.1	1.8	1.0
1969	32.5	34.5	-2.0	7.5	5	2.5	1.2
1970	33.3	34.0	-0.7	6.8	5.1	1.7	1.0
1971	31.0	30.0	1.0	7	5.8	1.2	2.5
1972	32.0	29.2	2.8	6.2	6.3	-0.1	2.2
1973	32.3	31.6	0.7	6.9	6.4	0.5	0.0
1974	30.0	31.4	-1.4	6.3	6	0.3	-1.0
1975	29.0	26.8	2.2	3.3	6	-2.7	-0.1
1976	30.4	26.0	4.4	2.1	5.8	-3.7	0.7
1977	29.5	24.6	4.9	2.5	6.3	-3.8	1.5
1978	30.8	23.9	6.9	1.5	7	-5.5	1.7
1979	29.0	25.3	3.7	2.5	7.2	-4.7	-0.9
1980	28.4	25.1	3.3	2.7	7.1	-4.4	-1.0
1981	27.9	24.2	3.7	3.3	7.1	-3.8	0.5
1982	27.2	23.3	3.9	3.2	6.8	-3.6	0.7
1983	26.9	21.9	5.0	2.8	6.4	-3.6	1.8
1984	26.7	22.3	4.4	3.9	6	-2.1	2.8
1985	26.8	22.8	4.0	4.8	5.6	-0.8	3.7
1986	-	-	5.8	-	-	-1.1	4.3
1987	-	-	4.5	-	-	-0.2	3.6

confusion as to the future direction of fiscal policy and efforts to reduce the private sector savings surplus. In terms of the latter, some of the tax reforms undertaken after 1987, have been directed at reducing the tax advantages of personal savings (i.e., the 20% tax levied on all interest income from savings accounts). At the same time, the consumption tax introduced in the spring of 1989 is biased against personal consumption. These reforms mean higher tax receipts which, when coupled with only moderate increases in government expenditures, seem to indicate that the LDP is unwilling to shift away from fiscal austerity.

6.4. THE DOMESTIC SECTOR - SUMMARY

The preceding sections have highlighted the factors behind the enormous pool of capital which has been available for offshore investment since the early 1980s. This pool can be traced to the private sector savings surplus where sustained high levels of household savings have more than offset the savings/investment deficits of the corporate sector. Up to 1986, declining savings rates in the private sector were more than matched by reductions in investment in the corporate sector so that net deficits are well below the pre-1975 levels. Since 1987, corporate investment has increased sharply and is expected to remain high in 1989. However, in the longer term, the structural change of the Japanese economy towards technology and service industries will reduce investment intensity and this, together with improved profits and higher

equity ratios, will probably limit the size of corporate sector deficits. As will be discussed in Section 9.0., these forces are likely to maintain the private sector surpluses at reasonably high levels.

Government actions since 1978 have contributed to the recycling of this excess capital in the domestic economy offshore. Notwithstanding the proposals of the Maekawa Report of 1986 and the recent modest stimulations of the economy, government practice suggests that fiscal austerity and balanced budgets are the principal policy aims. The recent, and politically unpopular consumption tax is the most evident manifestation of these objectives.

The inability of the domestic economy to absorb the excess savings of the private sector has been manifested in the huge increase in deficits on the capital account balance and cocommittant surpluses on the current account balance. As the current situation in the private and government sector balances appears unlikely to change dramatically in the near future, the disposition of these excess savings among various foreign investment uses becomes important in determining the sustainability of recent increases in foreign direct investment. As such, Section 7.0. will examine the external components of the macro-economic accounting identity from the perspective of the capital account balance.

7.0. EXTERNAL MACROECONOMIC COMPONENTS OF THE JAPANESE ECONOMY

The four external macroeconomic components of the Japanese economy are:

- * Net Foreign Direct Investment
- * Net Foreign Portfolio Investment
- * Net Foreign Short term Capital Investment
- and,
- * Net Official and Private Monetary Movements.

Each of the above components of the overall economic balance will be examined briefly.

7.1. NET FOREIGN DIRECT INVESTMENT

Japanese FDI is the focal subject of this paper. The net direct investment balance of Japan is a reflection of the power of the Japanese economy and, if continued at the current high levels, will be a powerful determinant of future economic developments well beyond Japan's own borders. Section 4.0. described the practice of Japanese foreign direct investment since World War II and, especially, since the mid-nineteen eighties, when foreign direct investment accelerated to dimensions of global strategic importance.

Net foreign direct investment must also consider the impact of foreign direct investment in Japan. To date, such investment has been relatively small; for the period F.Y. 1950 to F.Y. 1987,

cumulative direct foreign investment in Japan totalled approximately \$8.5 billion (¹²³). Until 1980, foreign investment in Japan was strictly regulated by government authorities initially to protect the country's precarious balance of payments position and then to protect "infant industries" from foreign competition. In the 1980s, however, foreign investment has been completely deregulated although, as noted by Higashi and Lauter (¹²⁴), foreign hostile acquisitions of Japanese companies are still discouraged.

Despite the lessening of regulatory restrictions on foreign investment in Japan, FDI still remains relatively weak in the 1980s. The reasons behind this mirror the factors responsible for Japan's FDI push offshore; high relative labour costs, exorbitant land prices and land use restrictions, and high energy costs. As a result, foreign investment to date has consisted primarily of investments in distribution, wholesaling and retailing as opposed to the set-up of production facilities, etc. There is some evidence that this may be changing as foreign companies seek new methods of penetrating Japanese markets and accessing Japanese technology. As noted by Higashi and Lauter (¹²⁵), during the latter

¹²³ Nippon, Business Facts and Figures, 1989, Jetro, Tokyo, 1989, p. 49.

¹²⁴ Chikara Higashi and G. Peter Lauter, The Internationalization of the Japanese Economy, Boston: Kluwer Academic Publishers, 1987, p. 161.

¹²⁵ Ibid., p. 161.

half of the 1980s,

More foreign companies decided that the only way to stay in the highly competitive Japanese marketplace was to establish a manufacturing and maybe even a research and development base. They concluded that investments in distribution facilities alone would not be sufficient in the future because not only does a production and research base enhance competitive abilities but it also makes the acquisition of the increasingly significant Japanese research findings much easier.

Although foreign investment may increase in Japan as a result of these issues in the future, the likelihood is that FDI in Japan will continue to be dwarfed by Japanese foreign investment abroad. Foreign investment will remain limited by the high costs of operating in the Japanese market.

7.2. NET FOREIGN PORTFOLIO INVESTMENT

Net foreign portfolio investment is, by far, the largest component of total Japanese net investment outflows. Purchases of foreign securities rose from U.S. \$10.3 billion in 1982 to U.S. \$296.9 billion in 1985 and to U.S. \$1,440.6 billion in 1988; during the same time frame, net purchases increased from U.S. \$6 billion in 1982 to U.S. \$88.8 billion in 1988, with a 1986 peak of U.S. \$100.1 billion in 1986¹²⁶). Net purchases of Japanese securities by non-Japanese, during the same period, ranged between U.S. \$1.2 billion in 1981 and minus U.S. \$2.8 billion in 1988.

¹²⁶ NRI Quarterly Review, Nomura Research Institute, Tokyo, August 1989, p.67

NFPI accounts for about 70 to 75% of total Japanese net foreign long term investments. Despite this, NFPI will be given only cursory examination in this analysis because, within the context of the paper, NFPI is only of interest as a competing utilization of excess Japanese savings. Furthermore, portfolio investments are predominantly made for the sole purpose of return and, in the long run, are of much less strategic importance than direct foreign investment, which seeks to shape and control policy of foreign based operations.

Although real Japanese net foreign portfolio investment has increased at a compounded annual rate of 134% since 1982 (see Table 7.1), it tended to fluctuate substantially prior to 1982. As indicated in Table 7.2, 91.4% of Japanese net foreign portfolio investment since 1980 has been directed towards bonds and only 8.6% has been invested in foreign securities. Nevertheless, securities investment showed a remarkable jump in F.Y. 1987, rising to U.S. \$16.9 from approximately U.S. \$7 billion in F.Y. 1986, although it dropped back to U.S. \$3 billion in F.Y. 1988. The United States remains the largest recipient of Japanese net foreign portfolio investment. According to Jetro (¹²⁷), nearly 70% of the total 1988 purchases were U.S. securities.

There are several factors behind the rise in net foreign portfolio holdings by the Japanese. From a macro-economic viewpoint, the rise in Japanese NFPI coincided with the easing of

¹²⁷ Nippon 1988, Jetro, Tokyo, 1989, p. 94.

TABLE 7.1: REAL JAPANESE NET FOREIGN PORTFOLIO
INVESTMENT, F.Y. 1960-1987, U.S.\$ BILLIONS

YEAR	REAL NET PORTFOLIO INVESTMENT US\$ BILLIONS	
1960	-0.06	
1961	0.03	
1962	0.20	
1963	0.41	
1964	0.39	
1965	0.22	
1966	-0.05	
1967	-0.02	
1968	0.82	
1969	2.09	RATE OF GROWTH
1970	0.52	PER ANNUM
1971	1.58	1983-1987 134%
1972	0.15	
1973	-2.84	
1974	-1.19	
1975	3.29	
1976	3.29	
1977	0.72	
1978	-3.01	
1979	-1.28	
1980	9.43	
1981	7.43	
1982	0.80	
1983	-2.74	
1984	-22.35	
1985	-38.34	
1986	-92.01	
1987	-82.10	

TABLE 7-2: INVESTMENT IN FOREIGN SECURITIES BY JAPANESE, F.Y. 1981
U.S. \$ MILLIONS

U.S. DOLLAR MILLIONS						
YEAR	STOCKS			BONDS		
	PURCHASE	SALE	NET	PURCHASE	SALE	NET
1981	937	697	240	9399	3591	5808
1982	1127	976	151	16970	10904	6066
1983	2105	1447	658	22906	10399	12507
1984	1569	1519	50	56347	29576	26771
1985	5484	4489	995	291376	237859	53517
1986	20917	13869	7048	1346989	1253965	93024
1987	70935	54061	16874	1274201	1200944	73257
1988	76560	73564	2996	1364061	1278248	85813

the government's fiscal deficit position and the release of large amounts of excess private savings for offshore investment. Many commentators point to the 1980 revision of the 1949 Foreign Exchange Control Law as a factor behind the increase in offshore securities investment after 1980. Under the 1949 law, all foreign exchange transactions were controlled unless otherwise excepted. The revised law of 1980 permitted all transactions unless excepted. However, the government did retain extensive powers to control transactions which might damage the domestic economy (¹²⁸). In reality, there had been de facto liberalization of foreign exchange transactions since the early 1970s but the new law was important in formalizing and codifying administrative practice. Lincoln notes(¹²⁹):

By confirming the validity of previous changes, the revision also legitimized continued liberalization; in effect it was a public statement that a new consensus had formed, an acknowledgement that in turn contributed to the momentum for further change in the same direction.

Administrative encouragement of the outflow of capital was a necessary plank of the government's policy of fiscal austerity. In addition, Japanese offshore investment also helped to maintain the low value of the yen which had been depressed as a result of the 1979 crisis; which improved the competitiveness of Japanese exports and generated offsetting surpluses on the current account balance.

¹²⁸ Lincoln, Japan: Facing Economic Maturity, p. 250.

¹²⁹ Ibid., p. 250-251.

Macro-economic developments external to Japan also contributed to the increase in net NFPI. These developments included the U.S. government's decision to pursue fiscal expansion after 1980 and the consequent need of the U.S. economy to attract large amounts of foreign capital to finance the resulting deficits. Unlike Japan, the U.S. private sector savings rate is very low (about 3% of GNP); thus, fiscal expansion had to be accommodated by an increase in capital inflows. This was achieved by a sharp increase in U.S. interest rates in the early 1980s. Coupled with strong economic growth and low inflation, its higher relative interest rates made the U.S.A. an attractive recipient country for foreign investment (see Table 7.3). As of March 1987, approximately 60 percent of Japanese foreign bond holdings were dollar denominated, principally in U.S. Treasury issues. ⁽¹³⁰⁾.

Return on foreign portfolio investment requires consideration not only of interest earned but also of the exchange rate at which earnings can be converted for repatriation. It is, therefore, somewhat surprising that the most substantial increases in Japanese FPI came after 1984 when the yen was appreciating rapidly. Indeed, it has been reported that the 23 major Japanese life insurance companies (which, together, hold about 30% of all foreign securities holdings) wrote off foreign exchange losses of \$14.8

¹³⁰ Aron Viner, The Financial Samurai, The Emerging Power of Japanese Money, London: Kogan Page Limited, 1988, p. 164.

TABLE 7.3: REAL DISCOUNT RATES, U.S. AND BANK OF JAPAN, AVERAGE
F.Y. 1961-1988

YEAR	REAL U.S. DISCOUNT RATE (AVERAGE)	REAL B.O.J. DISCOUNT RATE	REAL U.S. - JAPAN DISCOUNT RATE DIFFERENTIAL
1961	4.3	-0.64	-5.41
1962	1.2	3.04	1.84
1963	1.8	1.29	-0.48
1964	2.0	2.22	0.22
1965	2.5	11.21	8.67
1966	1.4	0.51	-0.90
1967	1.8	-0.48	-2.27
1968	0.5	1.01	0.53
1969	1.4	1.31	-0.12
1970	1.1	-1.37	-2.49
1971	0.2	-0.13	-0.34
1972	0.5	-0.72	-1.21
1973	-0.2	-5.62	-5.41
1974	-2.7	-11.58	-8.84
1975	-1.2	-1.16	-0.01
1976	-0.1	-0.62	-0.50
1977	-0.9	-1.56	-0.64
1978	0.8	-1.32	-2.07
1979	1.5	3.26	1.72
1980	1.9	3.41	1.50
1981	3.3	2.30	-1.02
1982	3.9	3.16	-0.71
1983	4.6	4.24	-0.36
1984	5.1	3.77	-1.37
1985	4.7	3.41	-1.30
1986	3.6	1.16	-2.45
1987	2.3	2.77	0.45
1988	2.8	2.14	-0.66

billion for the year ending March 31, 1987 (¹³¹). The largest increase in foreign securities holdings occurred in 1986 (net purchases of \$92 billion) when the yen appreciated from 238.54 yen to the dollar to 168.52 yen to the dollar. This increase may have occurred because Japanese investors mistakenly assumed that the appreciation of the yen had peaked. Nevertheless, the losses accrued in F.Y. 1986 did not prevent a further net portfolio investment of \$82 billion in 1987. Viner observes (¹³²):

The decline of the dollar has simply reduced the foreign currency expense of buying dollar assets while simultaneously reducing the chances that the holders will incur exchange rate losses in the future.

The other side of the NFPI equation is the inflow of foreign capital into Japan. Prior to 1980, the inflow of either portfolio or direct investment was generally discouraged by regulatory restrictions. The new Foreign Exchange Control Law of 1980 removed many of these restrictions (¹³³). Nevertheless, foreign investment in Japan has remained relatively small (see Table 7.4). From the portfolio investment perspective, this lack of interest may be attributed to the lower relative interest rates on Japanese

¹³¹ Viner, The Financial Samurai, p. 184.

¹³² Ibid., p. 184.

¹³³ Michele Schmiegelow, "The Reform of Japan's Foreign Exchange and Foreign Trade Control Law: A case of Qualitative Economic Policy," Japan's Response to Crisis and Change in the World Economy, edit. by Michele Schmiegelow, New York: M.E. Sharpe, Inc., 1986, p.19-22.

TABLE 7.4: INVESTMENT IN JAPANESE SECURITIES, BY NON JAPANESE, F.Y.
1981-1988, YEN BILLIONS

YEN BILLIONS

YEAR	STOCKS			BONDS		
	PURCHASE	SALE	NET	PURCHASE	SALE	NET
1981	5399.6	4576.7	822.9	5179.4	3953.2	1226.2
1982	4000.0	6320.2	-2320.2	6970.8	5846.1	1124.7
1983	7683.7	6640.9	1042.8	9746.5	9213.6	532.9
1984	8440.6	10157.6	-1717.0	14776.5	13960.4	816.1
1985	9381.0	10160.6	-779.6	25193.7	24044.6	1149.1
1986	17026.9	20617.0	-3590.1	41143.3	41528.7	-385.4
1987	23371.5	30822.9	-7451.4	43908.6	42915.6	993.0
1988	21995.2	21744.7	250.5	36088.0	38893.6	-2805.6

Source: Quarterly Economic Review, August 1989
Nomura Research Institute, Tokyo, p. 67

government bonds and the lower earnings potential of Japanese stocks (price earnings ratios average about 60 to 1 in Japan). The weakening value of the yen prior to 1984 has also been suggested as a contributing factor. However, the subsequent rapid appreciation of the yen has not been accompanied by a corresponding rise in portfolio investment by foreigners in Japan; suggesting that the latter may have had minimal impact on foreign long-term capital inflows (¹³⁴).

7.3. NET SHORT TERM CAPITAL INVESTMENT

As indicated in Table 7.5, net short-term capital movements are an erratic component of the balance of payments. These capital movements fluctuate substantially with changes in international short-term interest rate differentials and, particularly, with changes in foreign exchange rates. The net flows can be considerable; in 1987 and 1988, for example, net short term capital flows were \$20.5 and \$31.1 billion, respectively (¹³⁵). The relatively large positive inflows of capital during these two years presumably reflected foreign expectations of the continued appreciation of the Japanese yen/U.S. dollar exchange rate.

Although numerically substantial, short-term capital flows have not been considered extensively in this study due to the

¹³⁴ Lincoln, Japan: Facing Economic Maturity, p. 249.

¹³⁵ Quarterly Economic Review, August 1989, Vol. 19, No. 3, Nomura Research Institute, August 1989, p. 52.

TABLE 7.5: JAPAN'S BALANCE OF PAYMENTS, F.Y. 1961-F.Y. 1987,
MILLIONS OF U.S. \$

YEAR	CURRENT ACCOUNT BALANCE						LONG-TERM CAPITAL (B)	SHORT-TERM CAPITAL (C)	ERRORS (D)	BASIC BALANCE (A+B)	OVERALL BALANCE (A+B+D)
	TOTAL (A)	TRADE BALANCE	EXPORTS	IMPORTS	SERVICES	UNREQUITTED TRANSFERS					
1961	-982	-558	4149	4707	-383	-41	-11	21	20	-993	-952
1962	-48	401	4861	4460	-420	-29	172	107	6	124	237
1963	-780	-166	5391	5557	-569	-45	467	107	45	-313	-161
1964	-480	377	6704	6327	-784	-73	107	234	10	-373	-129
1965	932	1901	8332	6431	-884	-85	-415	-61	-51	517	405
1966	1254	2275	9641	7366	-886	-135	-808	-64	-45	446	337
1967	-190	1160	10231	9071	-1172	-178	-812	506	-75	-1002	-571
1968	1048	2529	12751	10222	-1306	-175	-239	209	84	809	1102
1969	2119	3699	15679	11980	-1399	-181	-155	178	141	1964	2283
1970	1970	3963	18969	15006	-1785	-208	-1591	724	271	379	1374
1971	5777	7787	23566	15779	1758	-252	-1082	2435	527	4695	7657
1972	6624	8971	28032	19061	-1883	-464	-4487	2137	1966	2137	6240
1973	-136	3688	36264	32576	-3510	-314	-9750	2407	-2595	-9886	-10074
1974	-4693	1436	54480	53044	-5842	-287	-3881	1778	-43	-8574	-6839
1975	-682	5028	54734	49706	-5354	-356	-272	-1138	-584	-954	-2676
1976	3680	9887	66026	56139	-5867	-340	-984	111	117	2696	2924
1977	10918	17311	79333	62022	-6004	-389	-3184	648	657	7734	9039
1978	16534	24596	95634	71038	-7387	-675	-12389	1538	267	4145	5950
1979	-8754	1845	101232	99387	-9472	-1127	-12618	2377	2333	-21372	-16662
1980	-10746	2125	126736	124611	-11343	-1528	2324	3141	-3115	-8422	-8396
1981	4770	19967	149522	129555	-13573	-1624	-9672	2265	493	-4902	-2144
1982	6850	18079	13663	119584	-9848	-1381	-14969	-1579	4727	-8119	-4971
1983	20799	31454	145468	114014	-9106	-1549	-17700	23	2055	3099	5177
1984	35003	44257	168290	124033	-7747	-1507	-49651	-4295	3743	-14648	-15200
1985	55019	61601	180664	119063	-4745	-1837	-73177	-1475	4034	-18158	-15599
1986	94139	10648	211293	109645	-5135	-2374	-144680	899	5698	-50541	-43944
1987	83474	94034	233435	139401	-5591	-3867	-119465	20502	-1490	-35991	-16979

unpredictability of their movements and generally transient nature of their impacts.

7.4. NET MONETARY MOVEMENTS

Net monetary movements include official interventions on the foreign exchange markets (accumulation of foreign reserves) and private holdings of foreign exchange and gold. Between F.Y. 1980 and F.Y. 1988, these monetary movements in aggregate totalled approximately -\$103.7 billion. Of this total, slightly greater than 70% was accounted for by official (net) positive purchases of foreign currencies and gold (¹³⁶). The balance reflected (net) positive holdings of foreign currencies and gold in the private sector.

The high variability and liquidity of these movements suggests that they will not be significant factors in determining the sustainability of direct foreign investment. For that reason, this paper has not considered official and private monetary movements in its analysis.

7.5. SUMMARY OF THE CAPITAL ACCOUNT BALANCE

As indicated in the previous sections, the principal components of the capital account balance are net foreign portfolio and direct investment and short term capital movements, with the remaining

¹³⁶ Quarterly Economic Review, Vol. 19, No. 3, Nomura Research Institute, Tokyo, August 1989, p. 52.

components acting as primarily balancing items. Of the former, the most important from a numerical standpoint is net foreign portfolio investment, representing about 70% of Japanese capital outflows. In order to understand the determinants of Japanese FDI, therefore, two issues become important. First, the factors behind the domestic private sector savings-investment differential must be understood and, secondly, the factors responsible for determining the level of net foreign portfolio investment must also be considered. Both these issues are treated in section 8.0, where the results of a regression model, based on the structure of the macro-economic accounting framework, are analyzed.

8.0. A STATISTICAL MODEL OF JAPANESE DIRECT FOREIGN INVESTMENT

In the preceding macro-economic discussion, it was postulated that the rapid growth in the amount of Japanese capital available for offshore investment, particularly since the mid-1980s, is attributable to structural changes in the Japanese economy since 1973. These structural changes have included the halving of economic growth rates and a consequent decrease in capital investment requirements; a sustained tendency towards large private sector savings imbalances; and the unwillingness of the government to absorb excess savings from the private sector by deficit financing after 1978. On this basis, section 7 delineated foreign direct investment as the residual of the total foreign investment funds available after allowing for other competing offshore investments such as net foreign portfolio investment and short-term capital investments.

This macro-economic approach provides a perspective of the source of funds used in direct and other foreign investment activities. In contrast, popular explanations of Japanese FDI have concentrated on the motivations for such investment including; the appreciation of the yen, protectionism in Japan's major export markets; and the reduced competitiveness of Japanese domestic production in some industries. More recently, the huge escalations in land prices have allowed Japanese investors, both individual and corporate, to use domestic land holdings as collateral for both direct foreign investments and expanded equity capital. The use of Japanese real

estate as security for foreign purchases is typified by the tactics of Shigeru Kobayashi, chairman and founder of the Shuwa Corporation, who owns over \$1.5 billion of U.S. real estate. Kobayashi notes that his recent increase in U.S. real estate acquisitions is "partly due to the soaring land prices in Tokyo, partly due to the appreciation of the yen and partly due to luck."

(¹³⁷)

The motivating influences noted above have validity as determinants used to allocate foreign investment resources between direct, portfolio and short-term foreign investments. However, they do not provide any insight into the source of the funds; nor do they offer any projections as to the sustainability of Japanese direct foreign investment in the future. The macro-economic approach described in this paper addresses these factors. It provides, in one package, a quantitative method for assessing and projecting the pool of capital surplus to domestic needs and providing a framework within which the allocational influences of exchange rates, trade policies and other factors can be judged.

The balance of this section will explain the results of a statistical model developed to test the validity of some these factors as explanatory variables of foreign direct investment by Japan.

¹³⁷ "The Shuwa Shogun," Tokyo Business Today, Tokyo, March 1987, p. 28.

8.1. RATIONALE AND METHODOLOGY OF STATISTICAL APPROACH

In section 5, an identity was introduced to explain the amount of capital available for foreign investment in terms of the amount generated and used in the domestic economy. This identity was,

$$\text{NFDI} + \text{NFPI} + \text{Sc} + \text{F} = (\text{S-I}) - (\text{G-T}) \quad (6)$$

Since NFDI is the focal point of this discussion, it is useful to reform the identity as follows,

$$\text{NFDI} = (\text{S-I}) - (\text{G-T}) - \text{NFPI} - \text{Sc} - \text{F} \quad (7)$$

From this perspective, the amount of capital dedicated to NFDI is dependent on the excess capital generated in the domestic sector, and the amount of the excess which is earmarked for net foreign portfolio investment (NFPI), net short-term capital investment (Sc) and net monetary flows (F).

Each component of this identity is determined by the interaction of a number of fundamental economic indicators. For example, it could be hypothesized that the private sector balance (S-I) is determined by the combined effects of interest rates, changes in income, and land prices on both savings and investment. Similarly, net foreign portfolio investment might be determined by the combined interaction of international interest rate differentials, the exchange rate etc. Because we have postulated that the components have some relationship with the level of net foreign direct investment, we can also hypothesize that the underlying determinants of the components may also explain, in part, NFDI.

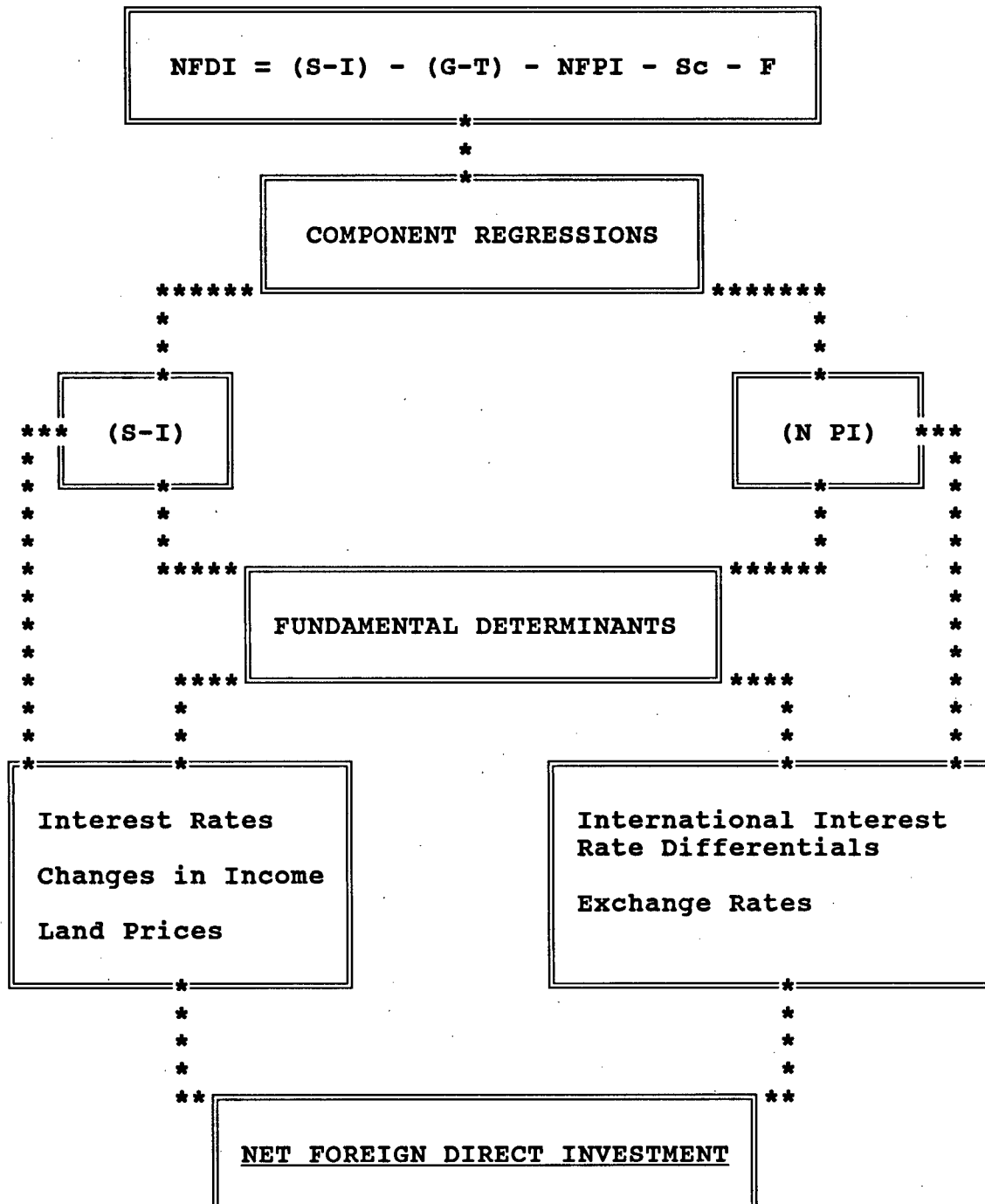
Based on this reasoning, we have regressed several perceived determinants of the components of identity (7) on net foreign direct investment. (The rationale behind the approach is depicted in Figure 8.1.) The hypotheses concerning the relationships of these variables with NFDI and the results of the model are explained in section 8.2. Because of the volatility of S_c and nature of F as a balancing item on the capital account, the determinants of these components will not be incorporated in the NFDI regression model. In addition, the government balance was included in the model as an exogenous factor, although this is somewhat problematic given the probability of interdependence between the government and private sector balances.

Therefore, the primary focuses of the NFDI regression model are the determinants of the private sector savings-investment balance and net foreign portfolio investment. This focus is justified by the macro-economic developments in Japan since 1973, specifically the exogenous increase in the excess savings generated in the private sector and the dominance of net portfolio investment in total Japanese offshore investment. Presumably, if we can determine the factors responsible for the generation of excess capital in the domestic sector and for its partial allocation to NFPI, some inference can be made regarding the forces behind NFDI.

In order to test the hypotheses concerning the relationship between perceived underlying determinants and NFDI, regression models were also developed for the individual components of the

FIGURE 8.1

Macro-Economic Rationale Behind Statistical Approach



identity; specifically those for (S-I) and NFPI. The rationale and results of these models are contained in sections 8.3. and 8.4., respectively.

It should be noted that the NFDI model represents a first attempt at explaining the factors behind foreign direct investment. A more formal approach would have to account for the problem of interdependence between the explanatory variables, a problem which is common among regressions using macro-economic data and which will be referred to in section 8.5.3. However, as a supplement to the foregoing macro-economic discussion, the model provides some useful, if albeit uncertain, results. The regressions and their results are discussed below.

8.2. NET FOREIGN DIRECT INVESTMENT

As stated earlier, the independent variables which have been regressed against net foreign direct investment have been chosen because of their perceived explanatory power in determining the components of identity (7). However, the independent variables real wages, real land prices, and the Yen/U.S. dollar exchange rate are also popularly regarded as factors behind the rise in Japanese foreign direct investment. The hypotheses and results of the model are listed below.

8.2.1. The NFDI Model: Hypotheses and Rationale

Before examining the hypotheses behind the NFDI model, it should be noted that both NFDI and NFPI (to be discussed in section 8.4.) are entered into the regression model as they appear in the balance of payments accounts i.e., negative numbers for net outflows and positive numbers of net inflows. The assumptions behind the NFDI model include:

*** Real Wages (W):**

Rising real wage costs in Japan has been proposed as a rationale behind the relocation of labour intensive industries from Japan to low labour cost countries. Thus, Japanese FDI would increase and foreign FDI would decrease, leading to a larger net outflow of foreign direct investment (i.e., NFDI would become more negative). This would suggest a negative relationship between NFDI and real wages.

*** Real Land Prices (L):**

Rising real land prices (associated with land shortages, environmental constraints, etc.) have also been suggested as a reason for the relocation of some Japanese industries offshore. In more recent years, it has also been contended that Japanese land assets have been used increasingly as collateral for purchases of foreign real estate. These two contentions would support a negative relationship between NFDI and real land prices.

* The Government Balance (GOV):

The Government (spending minus revenues) balance is entered into the model as an exogenous factor. This approach can be rationalized on the basis that the government sector absorbs, in part, some of the excess capital generated in the private sector (which in this model is described by real wages and real land prices). Therefore, the government balance is a determining factor in the amount of capital available for total offshore investment. As the government balance increases (i.e., the government deficit increases), the amount of capital available for total offshore investment declines. Under such conditions, foreign direct investment by Japanese will decrease, resulting in NFDI becoming less negative. Thus, the government balance should be positively correlated with NFDI.

* The Exchange Rate (EXCH):

It is a popular contention that the appreciation of the yen is the primary reason for the increase in Japanese offshore direct investment in recent years. (This phenomenon also occurred to some extent in the early 1970s when the yen appreciated rapidly after the introduction of floating exchange rates.) Based on this contention, Japanese NFDI should be positively correlated with the exchange rate.

- * The Bank of Japan-U.S. Discount Rate differential (DISC):
As will be discussed in section 8.4.1., if the spread (SPR) between the Bank of Japan discount rate and the U.S. Federal Reserve discount rate (i.e., the Bank of Japan discount rate minus the U.S. Federal Reserve discount rate) is increasing, FPI by Japanese will tend to decrease and FPI by foreigners in Japan will tend to increase. This should result in a positive relationship between SPR and NFPI. Since NFPI is a competing outlet for Japanese excess capital in the Japanese economy, the opposite should be true for Japanese net direct foreign investment (i.e. Japanese net direct foreign investment should be negatively correlated to SPR.)

Based on the above, the NFPI model can be written as:

$$DIR_t = \alpha_t - \beta_1(W)_t - \beta_2(L)_t + \beta_3(GOVT)_t + \beta_4(EXC) - \beta_5(SCR)_t + e_t$$

where DIR is net foreign direct investment, GOVT is the government balance and $e \sim N(0, \sigma^2)$.

8.2.2. The NFDI Model: Data Sources

Data for net foreign direct investment was taken from the IMF's International Financial Statistics, 1988 for Japan. The data, as noted, has been entered into the model as it is represented in the balance of payments statements (i.e. negative numbers for net outflows and positive numbers for net inflows) and is in billions of yen (see Appendix 1).

Real wages and land prices were taken from the Japan Statistical Yearbook (years 1970 through 1988). Both indices use 1980 as the base year. The real wage index is based on the nominal wage index (compiled from the average cash earnings of establishments with 30 or more regular workers) divided by the corresponding consumer price index for the year in question. The land price index represents the average land prices of the six largest urban areas in Japan (¹³⁸).

For EXCH, data were taken from the IMF's International Financial Statistics, Foreign Exchange Rate Supplement 1985 for data prior to 1985 and the Nomura Research Institute's Quarterly Economic Review, for 1986 and 1987. Data for the Bank of Japan discount rate were also compiled from the Japan Statistical Yearbook. The regression uses the average rate for the year in question. The discount rate data for the U.S. was taken from the Business Statistics, 1986 published by the U.S. Department of Commerce,

¹³⁸ These areas include: Tokyo, Kanagawa (Yokohama and Kawasaki City), Osaka, Kyoto, Sapporo and Nagoya.

Bureau of Economic Analysis and the monthly publication Economic Indicators (June 1989) prepared for the Joint Economic Committee by the Council of Economic Advisors. Both the Bank of Japan and U.S. discount rates were deflated by their respective GNP deflators to remove the effect of inflation (see Appendix 1).

All variables, with the exception of the real wage index, were deflated using the corresponding GNP deflator for each year to remove distortions associated with inflation.

8.2.4 Results of the NFDI Model

The results for the NFDI model are listed in Table 8.1. The signs of the estimated coefficients support the hypotheses of 8.2.1.; all estimated coefficients with the exception of the government balance were significant in terms of their t-values. Because of the insignificance of the government balance, a second regression was run omitting the latter as an explanatory variable. The results of the second regression are listed in Table 8.2. The estimated coefficients for the remaining explanatory variables changed marginally over Table 8.1. In addition, both the F-ratio and Durbin Watson statistics improved with the omission of GOVT (from 18.8 to 24.1, in terms of the former and from 1.56 to 1.63 in terms of the latter). The Durbin Watson statistic of 1.63 suggests the possibility of some positive auto-correlation in the error term; however, the D-W statistic is in the indeterminate range of 1.29 to 1.74 (for a 5% confidence level given the number

TABLE 8.1.: RESULTS OF NET FOREIGN DIRECT INVESTMENT MODEL (1)

DEPENDENT VARIABLE: DIR

INDEPENDENT VARIABLES: WAGE, LAND, GOVT, EXCH, SPR

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	STANDARD. COEFFICIENT	T-RATIO	SEQUENTIAL R-SQUARED	SIMPLE R-SQUARED
WAGE	-19.14	7.69	-0.7756	-2.49	0.6043	0.6043
LAND	-5.16	3.14	-0.2656	-1.64	0.6445	0.548
GOVT	0.01417	0.0228	0.0979	0.62	0.7193	0.0994
EXCH	3.67	1.62	0.4099	2.27	0.765	0.6699
SPR	-6212.5	2685.6	-0.5459	-2.31	0.811	0.295
CONSTANT	287.43	908.85	0	0.32		

R-SQUARED: 0.811

ADJUSTED
R-SQUARED: 0.767

DURBIN-WATSON: 1.56

F-RATIO: 18.88

TABLE 8.2.: RESULTS OF NET FOREIGN DIRECT INVESTMENT MODEL (2)

DEPENDENT VARIABLE: DIR

INDEPENDENT VARIABLES: WAGE, LAND, EXCH, SPR

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	STANDARD. COEFFICIENT	T-RATIO	SEQUENTIAL R-SQUARED	SIMPLE R-SQUARED
WAGE	-17.7	7.24	-0.7173	-2.45	0.6043	0.6043
LAND	-5.77	2.94	-0.2969	-1.96	0.6445	0.548
EXCH	3.96	1.52	0.4447	2.62	0.7331	0.6699
SPR	-6992.3	2342.4	-0.6145	-2.99	0.8077	0.295
CONSTANT	225.8	891.29	0	0.25		
R-SQUARED:	0.808					
ADJUSTED R-SQUARED:	0.774					
DURBIN-WATSON:	1.63					
F-RATIO:	24.14					

of observations and explanatory variables). Thus, the hypothesis of no autocorrelation cannot be rejected.

Turning to the simple R-squared results, the exchange rate would appear to have the largest explanatory power for Japanese net foreign direct investment. The interest rate differential has the least explanatory power. The overall R-squared for the regression is .81. Corrected for the distortion of the number of regressors, the adjusted R-squared is .77. These results suggest that there is a statistically significant negative relationship between net foreign direct investment and real wages, real land prices and the Bank of Japan-U.S. Federal Reserve discount rate spread and a positive relationship between net foreign direct investment and the exchange rate.

8.3. THE PRIVATE SECTOR BALANCE

Regression models were also developed for specific components of identity (7), namely (S-I) and NFPI. These regressions were conducted to test the model hypotheses contained in section 8.1, that explanatory variables used in NFDI model should be determinants of the components of identity (7). In order to reinforce the rationale behind the NFDI statistical approach, therefore, these regressions should show strong relationships between the components (S-I) and NFPI and the fundamental determinants used in the NFDI model.

The following sections examine the rationale and results behind the model developed for the private sector balance. It is important to determine the factors behind the private sector savings and investment differential from the perspective of determining the amount of excess capital in the domestic economy which is available for offshore investment. Three explanatory variables were selected to be regressed against (S-I), namely;

- * the real wage rate index (W);
- * the real land price index (L); and,
- * the real Bank of Japan discount rate (D).

8.3.1. (S-I) Model: Hypotheses and Rationale

Real wages were chosen as an explanatory variable because of their positive impact on real incomes and household savings. (Corporate savings, or retained earnings, could be negatively impacted by rising real wages; however, rising real wages should also be suggestive of economic growth and rising corporate profits.) From the perspective of investment, rising real wages increase operating expenses and reduce profit expectations of firms. As such, rising real wages should have a negative impact on planned investment. Based on this, it was hypothesized that the real wages should be positively correlated to the private sector balance.

The discount rate should also have a positive correlation with the private sector balance. Classical economic theory postulates

that present consumption is dependent on current and future income, the rate of interest and family preference. If the real interest rate rises, the present value of future income declines and current consumption will decrease. The corollary to this is increased current savings. In terms of investment, rising real interest rates result in a higher cost of funds thereby deterring current investment.

The relationship of land prices with the private sector balance is less intuitive. The level of savings could be stimulated by rising residential land prices as potential home-buyers set aside more money for larger down-payments. Conversely, Japanese land and housing prices have increased so dramatically over the last four years that home-ownership may be out of the reach of an increasing proportion of the population. If the latter is correct and potential home-buyers abandon the goal of home-ownership, savings previously set-aside for this purpose may be released for consumption, thereby reducing the savings rate. However, as noted in Section 6, savings rates have declined only marginally in spite of land price increases in excess of 70% per year in Tokyo since 1985. On balance, it is assumed that home ownership remains a fundamental objective of Japanese society and that real land price increases should have a positive impact on savings.

The impact of rising land prices on investment is clearer. Dramatically higher land prices act as a deterrent to new developments at home. On the other hand, companies with large land

holding inventories have seen a massive appreciation of their asset base; and a corresponding increase in the market assessment of their stock values. The large steel-making companies offer clear examples of land rich companies which have experienced huge increases in their market assessed value, while having poor profit performance in their ongoing operations.

In many cases, land-rich companies have taken the opportunity to make new share issues, thus using their land-fuelled prices to generate new equity funds. Some of these new funds have been directed towards FDI. Higher land values have also provided the collateral for direct foreign investment in real estate both by corporations and individuals. In fact, loans made by Japanese financial institutions for foreign real estate investments are typically secured by mortgages on domestic property, with the foreign real estate providing only secondary security (¹³⁹).

Thus, we have assumed that high land prices are positively correlated with savings and negatively correlated with domestic investment. Higher land prices have increased the need for down-payment related savings and have retarded plant development at home because of increased start-up costs. At the same time, however, foreign direct investment has become more attractive because the high value of domestic real estate acts as a pool of ready collateral for offshore investments. On this basis, the (S-I)

¹³⁹ William Krueger, "Japanese Real Estate: At Home and Abroad," Tokyo Business Today, Dec. 1988, p. 37.

balance should be positively correlated with rising land prices.

Given the above hypotheses, the original model for S-I was,

$$\text{PRIV}_t = \alpha_t + \beta_1(W)_t + \beta_2(L)_t + \beta_3(D)_t + e_t \quad (1)$$

where PRIV is the private sector savings-investment balance, W is real wages; L is real land prices; and D is the discount rate. The error term, e, is distributed normally with mean 0 and constant variance σ^2 .

8.3.2. (S-I) Model: Data Sources

All data for the following regressions are listed in Appendix 1. The data for the private sector balance were taken from annual data provided by the Japanese Economic Planning Agency in the Annual Report on National Income Statistics (years 1970 and 1971) and the Annual Report on National Accounts (years 1984 and 1987). Data for 1986 and 1987 were taken from the OECD Report on Japan, 1987 edition. The data cover the period from fiscal year 1960 to fiscal year 1987 and are recorded in billions of yen.

The explanatory variables, real wages, real land prices and the Bank of Japan discount rate are as described above in 8.2.2.

8.3.3. (S-I) Model: Results

Results for the (S-I) regression proved inconclusive due to limitations in the data set. A number of factors could explain these results. Included among these is the strong

multicollinearity between the explanatory variables as is evidenced in the correlation matrix for regression (1) listed in Table 8.3. (Correlations between the discount rate and wages and land prices were particularly high i.e., $-.95$ and $-.76$, respectively). Multicollinearity is a problem because it leads to high variability in the OLS estimators. This means that the estimated coefficients are imprecise and cannot be used reliably to test the underlying hypotheses of the model.

However, it is also likely that the model is mis-specified in some way (i.e. that the explanatory factors don't fully incorporate the true relationship between savings and investment). In addition, important determinants may have been omitted from the model which might bias the results.

The results of regression (1) are shown in Table 8.4. Contrary to the original hypotheses, the estimated coefficients for all explanatory variables showed a negative relationship with the dependent variable (S-I). The t-value for wages was insignificant (-0.10729). In addition, the Durbin Watson statistic was low (1.072) suggesting some first order auto-correlation of the error term.

Further regressions, contained in Table 8.5, which regressed the explanatory variables independently against (S-I) showed strong positive relationships between wages and (S-I) and between land and (S-I), but a negative relationship between (S-I) and the discount rate. However, because of the wide deviations of these

TABLE 8.3.: CORRELATION MATRIX FOR THE PRIVATE BALANCE REGRESSION

	WAGES	LAND	DISCOUNT RATE	PRIVATE BALANCE
WAGES	1.00	0.80	-0.95	0.85
LAND	0.80	1.00	-0.77	0.61
DISCOUNT RATE	-0.95	-0.77	1.00	-0.92
PRIVATE BALANCE	0.85	0.61	-0.92	1.00

TABLE 8.4.: RESULTS OF PRIVATE BALANCE REGRESSION 1

DEPENDENT VARIABLE: PRIV

INDEPENDENT VARIABLES: WAGE, LAND, DISC

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO	PARTIAL CORR.	STANDARD. COEFFICIENT	ELASTICITY AT MEANS
WAGE	-7.0493	65.703	-0.10729	-0.0219	-0.026339	-0.1118
LAND	-49.478	26.176	-1.8902	-0.36	-0.23476	-1.0379
DISC	-133000	27517	-4.8333	-0.7023	-1.123	-2.8197
CONSTANT	.24561	7751.5	3.1686	0.5431	0	4.9693

R-SQUARED: 0.8654

R-SQUARED
ADJUSTED: 0.8485

DURBIN WATSON: 1.072

F-RATIO: 51.421

TABLE 8.5.: RESULTS OF REGRESSIONS OF INDIVIDUAL EXPLANATORY
VARIABLES ON PRIVATE SECTOR BALANCE

DEPENDENT VARIABLE: PRIV

INDEPENDENT VARIABLES: WAGE

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO	PARTIAL CORR.	STANDARD. COEFFICIENT	ELASTICITY AT MEANS
WAGE	227.34	27.698	8.2078	0.8494	0.84943	3.6055
CONSTANT	-12878	2279.5	-5.6494	-0.7423	0	-2.6055
R-SQUARED:	0.7215					
R-SQUARED ADJUSTED:	0.7108					
DURBIN WATSON:	0.8825					
F-RATIO:	67.369					

TABLE 8.5 CONT'D: RESULTS OF REGRESSIONS OF INDIVIDUAL EXPLANATORY
VARIABLES ON PRIVATE SECTOR BALANCE

DEPENDENT VARIABLE: PRIV

INDEPENDENT VARIABLES: DISC

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO	PARTIAL CORR.	STANDARD. COEFFICIENT	ELASTICITY AT MEANS
DISC	-108670	9234	-11.758	-0.9176	-0.91757	-2.3038
CONSTANT	16329	1100	14.845	0.9458	0	3.3038
R-SQUARED:	0.8419					
R-SQUARED ADJUSTED:	0.8359					
DURBIN WATSON:	0.9032					
F-RATIO:	138.484					

coefficients from those produced in regression (1), the results are also suspect. Again, these regressions also had low Durbin-Watson statistics.

Because of the low Durbin Watson statistics, the above regressions were all corrected for first order auto-correlation. The results are contained in Table 8.6. and 8.7. Although the Durbin Watson statistic of the aggregate regression (Table 8.6.) improved substantially, the t-value for wages was insignificant. Only the discount rate showed strong significance in the corrected aggregate regression. In terms of the corrected individual regressions (Table 8.7.), real wages showed a significant positive relationship with the private sector balance as predicted by the hypothesis of 8.3.1. However, once corrected, the individual regression of land on PRIV became insignificant (t-value of 0.18).

The results for the discount rate were more interesting, demonstrating a strong negative relationship between the private balance and the discount rate. These results necessitate some re-thinking of the original hypothesis that the discount rate should have a positive relationship with the private sector balance. Savings rates in Japan have been relatively constant (with the exception of the years immediately following the 1973 oil crisis). In addition, interest yields on savings have remained regulated at low levels. Given this, the negative parameter estimate is more likely explained by the relationship between investment and the

TABLE 8.6.: RESULTS OF PRIVATE BALANCE REGRESSION 1
CORRECTED FOR FIRST ORDER AUTO-CORRELATION

DEPENDENT VARIABLE: PRIV

INDEPENDENT VARIABLES: WAGE, LAND, DISC

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO	PARTIAL CORRELATION	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
WAGE	5.8604	77.296	.075818	.0155	.021897	.092942
LAND	-37.283	28.665	-1.3006	-.2566	-.1769	-.78205
DISC	-120690	28854	-4.1826	-.6493	-1.0191	-.25586
CONSTANT	21213	8342.6	2.5427	.4607	0	4.2918

R-SQUARED: .8891

R-SQUARED
ADJUSTED: .8753

DURBIN-WATSON: 2.0393

TABLE 8.7.: RESULTS OF REGRESSIONS OF INDIVIDUAL EXPLANATORY
VARIABLES, CORRECTED FOR FIRST ORDER AUTO-CORRELATION

DEPENDENT VARIABLE: PRIV

INDEPENDENT VARIABLE: WAGE

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO	PARTIAL CORRELATION	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
WAGE	224.19	47.143	4.7556	.6821	.83767	3.5555
CONSTANT	-12360	3887.7	-3.1793	-.5291	0	-2.5008
R-SQUARED:	.8044					
R-SQUARED ADJUSTED:	.7969					
DURBIN-WATSON:	1.9135					

TABLE 8.7. CONT'D: RESULTS OF REGRESSIONS OF INDIVIDUAL EXPLANATORY
VARIABLES, CORRECTED FOR FIRST ORDER AUTO-CORRELATION

DEPENDENT VARIABLE: PRIV

INDEPENDENT VARIABLE: LAND

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO	PARTIAL CORRELATION	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
LAND	-6.8307	37.145	-.1839	-.036	-.03241	-.14328
CONSTANT	6519.5	6192.4	1.0528	.2022	0	1.319
R-SQUARED:	.7565					
R-SQUARED ADJUSTED:	.7471					
DURBIN-WATSON:	1.8045					

TABLE 8.7. CONT'D: RESULTS OF REGRESSIONS OF INDIVIDUAL EXPLANATORY
VARIABLES, CORRECTED FOR FIRST ORDER AUTO-CORRELATION

DEPENDENT VARIABLE: PRIV

INDEPENDENT VARIABLE: DISC

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO	PARTIAL CORRELATION	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
DISC	-106930	13066	-8.1838	-.8487	-.9029	-2.267
CONSTANT	16393	1616	10.144	.8935	0	3.3166
R-SQUARED:	.8811					
R-SQUARED ADJUSTED:	.8765					
DURBIN-WATSON:	2.0337					

discount rate. Several factors could be at work. First, the discount rate may not be an appropriate proxy for the interest rates charged for corporate borrowing. Second, the Japanese discount rate might be positively correlated with other world interest rates but demonstrate a lower variance over time. Thus, although Japanese domestic interest rates may have been rising, interest costs at home would have remained relatively low promoting domestic versus foreign investment. Finally, assuming again that Japanese discount rates were positively correlated with world interest rates, if the latter were rising, this might imply unstable economic conditions abroad (i.e. impending recession, etc). Assuming investors are risk-averse, under these conditions, domestic investment would be preferred to foreign investment.

8.4. NET FOREIGN PORTFOLIO INVESTMENT

Two explanatory variables were chosen to be regressed against net foreign portfolio investment (described as POR in the regression model). Again, the variables include annual data extending from fiscal year 1960 to fiscal year 1987. The variables chosen were:

- * The Yen/U.S. dollar (average annual) spot rate, (EXCH);
and,
- * The difference between the Bank of Japan and U.S. Federal Reserve (real) discount rates, (SPR).

8.4.1. NFPI Model: Hypotheses and Rationale

Because of the large proportion of U.S. securities in Japanese foreign portfolio investment (approximately 60-65%), the Yen/U.S. dollar exchange rate and the differential between the Bank of Japan and the U.S. Federal Reserve discount rates were chosen as possible explanatory variables for Japanese NFPI. The spot rate was used as the explanatory variable although forward rates could be considered more appropriate as offshore portfolio investment is motivated by expectations of future, not current, exchange rates. By definition, portfolio investment includes instruments with maturities of 1 year or more. However, the market for forward rates becomes thin after 180 days and past data on forward rates in excess of 12 months is difficult to find. In addition, academic studies (¹⁴⁰) suggest that forward rates incorporate other factors in addition to exchange rate expectations (such as a premium for aiding the hedging of exchange rate risk, transaction costs, and government intervention) which can result in substantial deviations between forward and actual future spot exchange rates (¹⁴¹). Empirical studies indicate that the spot rate tends to follow a random walk process such that the "market's best forecast of the

¹⁴⁰ See, for example, Richard M. Levich, "Are Forward Exchange Rates Unbiased Predictors of Future Spot Rates," Columbia Journal of World Business 14, No.. 4, (Winter 1979), p. 49-61.

¹⁴¹ Richard M. Levich, "Evaluating the Performance of the Forecasters," International Financial Management, Donald R. Lessard edit., New York: John Wiley and Sons, 1985, p. 218.

future spot rate is (approximately) the current spot rate." ⁽¹⁴²⁾
On the other hand, given that the explanatory variable chosen incorporates only average annual data, the spot rate may not adequately describe the actual international financial arbitrage effect.

Turning to the interest rate differential, discount rates were used because of the difficulty in finding similar interest-bearing instruments over the period in question in the U.S. and Japanese capital markets. The discount rate serves as a basic indicator of all other interest rates in the economy and can, therefore, be viewed as an appropriate proxy.

The relationship between the Yen/U.S. dollar exchange rate and NFPI is not intuitively obvious. If the current spot rate is useful in predicting future spot exchange rates, as suggested by the random walk hypothesis, as EXCH rises (implying a depreciation of the yen) then FPI by Japanese will increase (and FPI by foreigners in Japan will decrease) resulting in a larger outflow of net Japanese foreign portfolio investment (i.e. Japanese net foreign portfolio investment will become more negative). This would tend to support a negative correlation between the spot exchange rate and NFPI. This rationale might explain continued record amounts of investment by Japanese in foreign securities during 1986 (net purchases of \$92 billion) despite the 30%

¹⁴² Jacob A. Frenkel, "Flexible Exchange Rates, Prices and the Role of 'News'," International Financial Management, Donald R. Lessard, edit., New York: John Wiley & Sons, 1985, p. 131.

appreciation of the yen during the same year. Japanese investors mistakenly assumed that the yen appreciation had peaked.

In general, assuming the random walk theory holds, the relationship between the spot exchange rate and NFPI should be negatively correlated.

Turning to the interest rate differential (the BOJ discount rate minus the U.S. Federal Reserve discount rate), if SPR is increasing (implying a widening spread between the Bank of Japan and U.S. discount rates), foreign portfolio investment by Japanese will tend to decrease and portfolio investment in Japan by foreigners will tend to increase. This should lead to a positive increase in Japanese NFPI. Similarly, if SPR is decreasing (implying a narrowing differential between the BOJ and U.S. discount rates), foreign portfolio investment by Japan will tend to increase and portfolio investment in Japan will tend to decrease resulting in a larger outflow of foreign portfolio investment. Thus, the relationship between NFPI and SPR should be positive.

Thus, the model for NFPI can be expressed as:

$$POR_t = \alpha_t + \beta_1(SCR)_t - \beta_2(EXCH)_t + e_t \quad (2)$$

where POR is net foreign portfolio investment and $e \approx N(0, \sigma^2)$.

8.4.2. NFPI Model: Data Sources

Data for NFPI were taken from the IMF's International Financial Statistics, 1988 for Japan. The data, as discussed, are entered

into the model as they appear on the balance of payments (i.e. negative numbers for net outflows and positive numbers for net inflows) and is in billions of yen.

The data for the explanatory variables, EXCH and SPR are as described above in section 8.2.2.

8.4.3. NFPI Model: Results

The results of the regression (2) are listed in Table 8.8. The signs of the estimated coefficients were opposite to what was predicted in section 8.4.1. Because of the low Durbin Watson statistic of Table 8.8. (.68), the regression was corrected for first-order auto-correlation. These results are contained in Table 8.9. The Durbin Watson statistic remained low (1.35), suggesting second-order correlation. The estimated coefficients for both explanatory variables differed significantly from the regression contained in Table 8.8. (although the signs remained the same) and the T-value for SPR became insignificant. These results are largely attributable to the severe auto-correlation of the error terms and, because of this, cannot be used reliably to prove or disprove the hypotheses contained in Section 8.4.1.

TABLE 8.8.: RESULTS OF NET FOREIGN PORTFOLIO INVESTMENT MODEL

DEPENDENT VARIABLE: POR

INDEPENDENT VARIABLES: SPR, EXCH

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO	PARTIAL CORR.	STANDARD. COEFFICIENT	ELASTICITY AT MEANS
EXCH	56.65	11.499	4.9264	0.7018	0.9673	-13.117
SPR	-38939	14637	-2.6604	-0.4697	-0.52237	0.0040638
CONSTANT	-18092	3459.3	-5.2299	-0.7228	0	14.113
R-SQUARED:	0.5043					
R-SQUARED ADJUSTED:	0.4646					
DURBIN WATSON:	0.6774					
F-RATIO:	12.175					

TABLE 8.9.: RESULTS OF NET FOREIGN PORTFOLIO INVESTMENT MODEL
CORRECTED FOR FIRST ORDER AUTO-CORRELATION

DEPENDENT VARIABLE: POR

INDEPENDENT VARIABLES: SPR, EXCH

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO	PARTIAL CORR.	STANDARD. COEFFICIENT	ELASTICITY AT MEANS
EXCH	22.168	10.314	2.1493	0.3949	0.37852	-5.1327
SPR	-737.86	18196	-0.0406	-0.0081	-0.0099	0.0001
CONSTANT	-9391.1	4180.5	-2.2464	-0.4098	0	7.3256
R-SQUARED:	0.8032					
R-SQUARED ADJUSTED:	0.7874					
DURBIN WATSON:	1.3507					

8.5. LIMITATIONS OF THE NFDI RESULTS

As indicated in the preceding sections the results for the component regressions did not generally support the rationale underlying the choice of explanatory variables for the NFDI model. In addition, although the results listed in Table 8.1 appear to corroborate the hypotheses of section 8.2.1., a number of important qualifications must be noted. These qualifications restrict the value of the approach as a model for Japanese foreign direct investment.

8.5.1. Multicollinearity among the Explanatory Variables

A correlation matrix for the explanatory variables used in the NFDI model is provided in Appendix 2., page 2.2. As noted earlier, real wage and land prices are closely correlated (.80) as are real wages and the spot exchange rate (-.84) and the interest differential and real wages (-.89). Multicollinearity between the explanatory variables can result in large standard errors in the OLS parameter estimates so that the precision of the coefficients may be suspect. The presence of multicollinearity, therefore, makes it difficult to disentangle the marginal effects of explanatory variables on net foreign direct investment.

8.5.2. Auto-Correlation of the Residuals

As noted in 8.2.3., the Durbin-Watson statistic for the second NFDI model is 1.63. While this statistic is near the upper limiting distribution, there is still some suggestion of positive auto-correlation in the residuals. The existence of the latter tends to bias the R-squared upwards and may suggest some mis-specification in the model. With auto-correlation present, the standard deviations of the coefficients are under-estimated and thus, the coefficients of the explanatory variables may appear significant when they are not.

8.5.3. The Problem of Endogeneity

The approach has used the Ordinary Least Squares (OLS) technique to estimate the regression coefficients of the model. The OLS technique assumes that the explanatory variables are distributed independently of the residuals; if this is not the case then the regression coefficients can be biased, even asymptotically. Since the model described in this study makes use of macro-economic data, there is a strong likelihood that the regressors are not independent of the residuals and that a more formal approach using simultaneous equations is warranted.

8.5.4. Structural Change

If significant structural changes occur in an economy over a period under consideration, the regression coefficients may not be

stable over time and, therefore, may not be reliable estimators of the true effects of the independent variables. Given the macro-economic developments in the Japanese economy described in Section 6, it was decided to test for structural changes. In particular, regressions were run on foreign direct investment using the previously listed regressors for 2 time periods: 1960 to 1971 and 1972 to 1987. The demarcation year of 1971 was chosen for two reasons: (1) in 1971, the world moved from a fixed to floating exchange rate system, with the yen appreciating by almost 20% between 1970 and 1973; and (2) by 1971, the internal pressures associated with a decade of rapid economic growth (i.e., high land prices, higher real wages, higher inflation, etc.) were manifested in the dipping of Japanese real growth rates from 10% during the 1960s to 4.3% in 1971. Although 1973 could have also been chosen as the demarcation year, as noted in Section 6.0, the evolution towards slower growth in Japan began earlier.

The regression results of these two time periods are shown in Table 8.10. The regression coefficients differ significantly between periods, with the signs of the LAND, EXCH, and SPR changing over the two time frames. To further illustrate this problem, the individual regressors were plotted against foreign direct investment for the two time frames. The plots of these data are contained in Appendix 2, pages 2.33 through 2.36 for 1960 to 1971 and pages 2.37 through 2.40 for 1972 to 1987. These plots indicate that the location of the sample data fluctuated considerably over

TABLE 8.10: TESTING FOR STRUCTURAL CHANGE - 1960 TO 1971

DEPENDENT VARIABLE: DIR

INDEPENDENT VARIABLE: WAGE, LAND, EXCH, SPR

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	STANDARDIZED COEFFICIENT	T-RATIO	PARTIAL CORRELATION	ELASTICITY AT MEANS
WAGE	-6.8838	1.342	-1.5478	-5.1058	-.8879	4.8159
LAND	1.4295	.60897	.72221	2.3474	.6637	-1.055
EXCH	-7.3348	3.0645	-.44694	-2.3934	-.6709	35.862
SPR	118.25	398.57	.10435	.29677	.1115	-.079813
CONSTANT	2797.9	1170.7	0	2.39	.6703	-38.093
R-SQUARED:	.8886					
R-SQUARED ADJUSTED:	.8249					
F-RATIO:	13.956					
DURBIN WATSON	2.824					

TABLE 8.10 CONT'D: TESTING FOR STRUCTURAL CHANGE - 1972 TO 1987

DEPENDENT VARIABLE: DIR

INDEPENDENT VARIABLE: WAGE, LAND, EXCH, SPR

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	STANDARDIZED COEFFICIENT	T-RATIO	PARTIAL CORRELATION	ELASTICITY AT MEANS
WAGE	-62.145	15.643	-.79489	-3.9727	-.7676	6.3883
LAND	-16.316	6.8837	-.64866	-2.66	-.6257	2.3559
EXCH	-2.2909	2.718	-.22792	-.84288	-.2463	.59713
SPR	-698.92	5589.1	-.029726	-.12505	-.0377	-.026904
CONSTANT	.7978	2581.8	0	3.091	.6817	-8.3143
R-SQUARED:	.8239					
R-SQUARED ADJUSTED:	.7598					
F-RATIO:	12.863					
DURBIN WATSON	2.279					

the two periods. As such, the use of a simple linear regression equation to model the data is questionable. The large deviations of the coefficients suggest either of two problems: (1) that structural change did occur in the Japanese economy making it difficult to use regression analysis to model direct foreign investment, or (2) the model is mis-specified. In either case, the regression results listed in Table 8.7 are necessarily suspect.

8.5.5. Problems in the Data

The problems listed above are manifestations of the limited information contained in the data set. A number of problems with the data exist, some of which have already been alluded to. These problems include the use of annual averages for the spot rate and interest rates. As noted, the former was probably not appropriate as an explanatory factor for NFPI because of its inability to describe the actual international arbitrage effect. From the perspective of NFDI, given its longer time frame, the use of the annual average spot rate is not unreasonable.

The use of indexes for the real wages and land prices may also be inappropriate. In the case of real wages, the index incorporates the averages for a broad spectrum of industries which may cloud the relevant data if the impact of real wages on foreign direct investment is sector-specific. For example, the real wage index includes wages for sectors which do not engage in direct foreign investment such as agriculture and certain service sector

industries. Finally, the land index incorporates the average and land values (in the case of real land prices). These averages may understate the true explanatory power of each variable.

In addition, the data for the government and private sector balances came from two or more sources which could have resulted in further measurement problems. Finally, the data size was relatively small including only 28 (annual) observations.

8.6. SUMMARY

A number of conclusions can be gathered from the foregoing statistical attempt to explain Japanese net foreign direct investment. Based on the regression results contained in Table 8.1., there is some support, albeit weak, for the hypothesis that the determinants of the components of identity (7) are also determinants of Japanese net direct foreign investment. However, the model suffers from a number of problems which are particularly manifested in the results of the component regressions. These problems, as discussed, lie largely with the data set and the statistical problems noted in Section 8.5. and not necessarily with the underlying hypotheses of the model. The results and their associated problems underscore the limitations of the data used in the model and the difficulties of using the OLS technique with macro-data to determine the factors behind Japanese net direct foreign investment.

9.0. JAPANESE FDI: THE FUTURE

The future levels of Japanese direct foreign investment will be shaped by four considerations:

- a. the availability of funds for foreign investment;
- b. the requirements of the Current Accounts balance;
- c. the allocation priorities for these funds;
and,
- d. the acceptability of Japanese foreign direct investment in the recipient countries.

9.1. AVAILABILITY OF FUNDS

Any discussion of the future availability of Japanese foreign investment funds requires that we return to the macroeconomic identity introduced in section 5.0. It will be recalled that this identity can be stated as:

$$\text{NFDI} + \text{NFPI} + \text{Sc} + \text{F} = (\text{S-I}) + (\text{G-I}) + \text{E}$$

where: NFDI = net foreign direct investment

 NFPI = net foreign portfolio investment

 Sc = short term capital investment

 F = private and government monetary flows

 (S-I) = private sector balance (savings - investment)

 (G-I) = government sector balance

 E = errors and omissions.

In the case of Japan, errors and omissions are random in nature, usually quite small and, for current purposes, can be ignored. Private and government monetary flows may also be disregarded. Thus the total, internally-funded amount of money available for foreign investment (short and long term) can be assumed to be equal to the net private sector and government sector balances.

9.1.1. Private Sector Balance

The private sector balance reflects the levels of household savings, private residential investment, corporate savings and corporate capital outlays.

9.1.1.1. Household Savings

As in the past, future levels of household savings will be a function of the strength of the economy (GNP), real wage rates, the propensity to consume, the general perception of future security, the cost of real estate and the inherent tendency of the Japanese to save.

The general feeling is that the economy, buoyed by capital spending and strong domestic consumer demand, will stay reasonably healthy over the medium term, at least. Key industries, such as automobile manufacturing, have made very significant productivity gains to counter-balance the impact of the high yen. In fact, it has been stated that the automobile industry could be competitive in world markets even if the exchange rate rose as high as 95 yen

to the U.S. dollar(¹⁴³). The programs of rationalization and diversification of the established, heavy industrial companies are continuing, despite a number of initial set-backs. For example, since 1987 Nippon Steel has closed 4 of its 8 steelworks, will reduce its 1991 workforce to only 46% of the 1987 level, and expects a half of its 1995 revenue to accrue from non steel-making activities, as opposed to the current 20 percent (¹⁴⁴).

High utilization rates, strong corporate profits and a fairly tight labor market appear likely to continue the upward pressure on wages. However, the expanded use of automation, the decline in the ratio of organized labor, and the current round of efficiency enhancing investments will probably keep such increases within reasonable bounds. At the same, inflation is well under control (despite the appreciation of the yen) and this situation will be supported by the increased availability of imported goods. All in all, the prognosis would seem to be for a controlled, steady growth in real wages (¹⁴⁵).

Increased domestic consumption is being encouraged by a number of government initiatives. The recent reduction in personal income

¹⁴³ Kevin Done, "Car Wars After the Yen Shock", The Financial Times, London, May 12, 1989.

¹⁴⁴ "Japan's smokestack fire-sale"; The Economist; 19-25 August, 1989; p.51.

¹⁴⁵ "Labor supply and wage costs"; Japan Times, August 19, 1989; p. 7.

taxes and MITI's support of tax incentives to promote imports (¹⁴⁶) are examples of such initiatives. Conversely, the 3 percent consumption tax, introduced in April, will tend to restrict consumption. On balance, it can be expected that consumer spending will remain strong, but not more so than the anticipated growth in real purchasing power. Furthermore, the restraint shown last winter, during the long illness of the Emperor, is a clear indication that frugality is not far below the surface of the average Japanese consumer's buying habits.

As noted in section 6, the general level of confidence in Japan, both in business and at the individual level, is high; in addition there has been a significant improvement in the social services programs. Nevertheless, the in-grained habits of prudently providing for the future will die hard in Japan.

Finally, land prices in the Tokyo metropolitan have recently begun to rise again, after slight declines during the past 2 years (¹⁴⁷). The uncertain impact of higher real estate prices on savings has already been noted. Savings could go up as potential buyers put aside money for down payments which increase in lockstep with housing prices. On the other hand, higher prices could force potential buyers out of the market. However, during the third quarter of fiscal 1988, housing investment increased by 5.6

¹⁴⁶ "MITI supports tax incentives to promote imports"; Japan Times; August 18, 1989; p.12

¹⁴⁷ "Sumitomo Realty and Development Co.", Japan Times, Tokyo, August 19, 1989, p.9

percent, despite a significant reduction (to 1.62 million) in housing starts (¹⁴⁸). Overall, it is reasonable to assume that the current levels of real estate related savings will be maintained.

In summary, household savings in Japan should remain high for the foreseeable future. During the past few years, when Japanese foreign investment has exploded, the level of household savings has stayed fairly constant at around 15 to 16 percent. At this time there is little, if any, evidence to suggest that this will change.

9.1.1.2. Private Residential Investment.

Notwithstanding the very high cost of housing, home ownership in Japan remains at a level similar to that in the U.S.A. and is a basic life-style objective for Japanese people. It seems likely that this priority will be continued in the future and that savings and other consumption patterns will reflect this fact. As noted in the above discussion of household savings, the housing starts in the third quarter of fiscal 1988 amounted to an annualized rate of 1.62 million, about 9.3% below the comparable period in 1987. However, the average size of housing in 1988 was about 3.2% higher than in 1987 and total expenditures were about 6.5% higher than the 20.8 trillion yen spent on residential housing in 1987. For fiscal 1989 projected expenditures are about 5% lower than fiscal 1988

¹⁴⁸

"The Japanese Economy"; NRI Quarterly Economic Review
Vol.19, No.2; Tokyo, NRI & NCC Co.Ltd.; May 1989; p.2

(¹⁴⁹). In general, future residential construction may be somewhat reduced from the high levels of 1987, largely because the rental housing boom has run its course. Over the longer term, the "aging" of the Japanese population should introduce some structural reduction in the number of new homes required, but the latent demand is such that this structural process will occur over an extended period.

9.1.1.3. Corporate Savings

The corporate pre-tax profit performance of Japanese companies in fiscal 1988 for all industries was 27.4% higher than in 1987 and a recent survey indicated that 79% of companies contacted expected further increases in 1989. (¹⁵⁰) In addition to strong current operations (due to robust consumer demand, high levels of corporate investment and, in some industries, notable improvements in productivity), many of the companies have taken advantage of the high market prices of their stock (the average P/E ratio for the NRI 400 Composite was 59.1, as of March 1989 ¹⁵¹). These high prices, often supported by the huge increases in the value of land holdings, has enabled companies to reduce debt loads by issuing

¹⁴⁹ Nomura Quarterly Review Vol.19 No. 2; Tokyo: NRI & NCC Co. Ltd., May 1989; p.46.

¹⁵⁰ Quarterly Economic Review, May 1989, Nomura Research Institute, Tokyo, p. 19-21.

¹⁵¹ NRI Quarterly Economic Review, Vol. 19 No.2; Nomura Research Institute; Tokyo; May 1989; p.66.

treasury stock on advantageous terms. The steel industry is a good example of this trend, raising 210 billion yen in 1987 (¹⁵²). Stronger equity positions and high current earnings have enabled companies to make significant increases in their retained earnings. Overall, the majority of Japanese companies are stronger today than they were before the rapid appreciation of the yen, and the recent round of efficiency increasing investments will add to this strength. Further, the profit motive appears to be assuming a more dominant role in the strategic planning of many Japanese companies. Thus it is reasonable to assume that retained earnings (corporate savings) will continue to improve.

9.1.1.4. Corporate Investment

As noted previously, corporate investment has in the past couple of years reversed the downward trend of the post-1974 period. Within Japan, the motivation for new investment seems to be shifting from increased capacity (to meet foreign and, recently, strong domestic demand) to production efficiency and the development of new businesses (¹⁵³). The level of investment will continue to be supported by the search for productivity and labor saving improvements and by the recent cut in corporate income tax

¹⁵² "Japan's smokestack fire-sale"; The Economist; The Economist Newspaper Ltd, London; 19-25 August, 1989; p.51-52.

¹⁵³ "The Japanese Economy"; NRI Quarterly Review Vol 19 No.2; Nomura Research Institute, Tokyo; May 1989; p.6.

rates. However, the expectation is that the current spending boom will gradually slow down. MITI has already suggested that car makers reduce their investment plans because of potential over-capacity (¹⁵⁴). Finally, the higher levels of corporate savings will mean higher equity shares in future capital investments, with a corresponding reduction of demand on the household savings surpluses.

9.1.1.5. Summary of Private Sector Balance

In summary, the Private Sector balance can be expected to continue in strong surplus for at least the next few years. Household savings, despite government encouragement to increase domestic demand, is not likely to decrease significantly. Residential construction, with pent-up demand tending to be offset by high prices, should remain at, or near current levels. There is a good chance that the trend towards stronger profits and higher corporate savings will continue. On the other hand, corporate investments can be expected to remain stable, or gradually decline. Much of the investments which will be made will be in the area of improved efficiencies, which will tend to support profits and corporate liquidity.

¹⁵⁴ "MITI to warn carmakers to go slow"; The Japan Times; Tokyo; August 17, 1989; p.12.

9.1.2. Government Sector

As noted in section 6.2, the latter half of the 1970s and early 1980s eighties were characterized by large government deficits which soaked-up much of the private sector surpluses. Since 1978, the government has implemented fiscal austerity measures designed to achieve fiscal balance. In the medium term, the most important concerns about Japanese fiscal policy will be the extent to which expenditures are controlled, income collection improved, and borrowing strategy rationalized.

9.1.2.1. Expenditures

Given the strong performance of the Japanese economy, the use of public works spending as a stimulant can be expected to decline over the near and longer term periods. Conversely, there will be a gradual increase in spending on social welfare due to expanded participation in the program of retirement benefits and the need for ongoing improvements to the system. The net effect should be gradual and controlled increases in government expenditure, at growth rates well below those of the private sector.

9.1.2.2. Income

The government income in Japan has long been plagued with an inequitable and inefficient system of tax collection. Personal income tax burdens have been most unfairly distributed, with wage earners bearing a disproportionate share of the payments made.

Small businesses, professional people and, especially, farmers have not paid their fair share because of income concealment (¹⁵⁵). The 3% consumption tax, introduced in April was intended to be evasion-proof and to raise about 10 percent of the required government budget. Public opinion has been strongly opposed to the tax and, given the recent difficulties of the LDP party, it is not clear how strongly the Kaifu administration will maintain the tax's integrity. If the tax is maintained in its present broad form, the government's progress towards a balanced budget should be maintained. In the alternative, the government will have to find other sources of income or face growing deficits. All indications, especially the reactions of the Ministry of Finance and Keidanren (the leading business association), suggest that the government will display resolve in this matter.

In terms of the mechanics of raising debt funds, the government will move away from longterm bonds towards increased issues of treasury and financial bills. This will reduce the problems now being encountered as large amounts of 10-year bonds fall due and, at the same time, help to satisfy foreign demands that Japan's capital markets be further developed.

¹⁵⁵ "Deficit-ridden Japan caught between tax revolt and demographics"; Globe and Mail; Toronto; August 22, 1989; p. B7.

9.1.2.3. Summary of Government Sector Balance

Based on the available evidence, the most probable scenario for the Government Sector balance is one of gradual increases in expenditure, largely in the area of social services, and continuing attempts to improve the fairness and efficiency of the tax collection system. The government will move towards a better balance of financing instruments rather than the previous concentration on longterm bonds. Overall, the government posture is likely to be one of fiscal responsibility and an objective of balanced budgets. Thus, it is not likely that the government sector will resume its former role of absorbing a large part of the private sector surplus.

9.1.3. Summary of Macroeconomic Balance

In terms of the availability of internally generated funds for Japanese foreign investment, the macroeconomic identity identifies the supply side as being the sum of the private sector and government sector balances. The preceding discussion suggests that **neither of these balances is likely to experience sufficient change to materially affect the availability of funds for overseas investments.** Household savings, the primary source of surplus funds, is not expected to diminish to any great extent. Residential construction will remain fairly constant, with a probability of slight declines from the 1987 peak. In the corporate sector, a number of factors point to strong profit

performances, with a consequent improvement in retained earnings and corporate liquidity. Corporate investments should remain buoyant, but it is improbable that the corporate sector balance will deteriorate.

In the government sector, modest increases in social services expenditures should be offset by improvements in the tax collection systems, especially with the introduction of the visible and unavoidable consumption tax.

9.1.4. Other Factors

In addition to the macroeconomic considerations, a number of underlying determinants will impact on the availability of funds for foreign investment. These factors include:

- a. the high prices of Japanese real estate;
- b. the huge capital earnings which have accrued from stock market appreciations;
and,
- c. the earnings of off-shore investments.

9.1.4.1. Real Estate Market

The unparalleled appreciation of Japanese real estate during the past few years has been extensively discussed in prior sections. This expanded, and un-measured, base of collateral available to Japanese investors has been a significant facilitator of Japanese foreign investment in the past couple of years. The continuing

disparity between foreign (especially, North American) and Japanese real estate prices and interest rates is likely to encourage more Japanese foreign investment, both in fixed assets and interest earning securities.

9.1.4.2. Stock Market Earnings

Very large profits have been earned on the Tokyo Stock Exchange in recent years, with the weighted average stock price in the First Section rising from 528.67 yen in 1984 to 1,333.72 yen in 1988. It seems probable that Japanese investors have used at least some of the gains earned on the Tokyo Exchange to buy more modestly priced, higher return stocks in foreign countries.

9.1.4.3. Off-Shore Earnings

The large, and growing, inventory of direct foreign investment assets owned by Japanese investors will earn increasing amounts of profits. These profits (as will be discussed below) will, if repatriated, reduce the services deficit of Japan's Current Account balance, thus providing an equivalent off-set to any decrease which might occur in the country's Merchandise Trade. To the extent that these earnings are not repatriated, they will provide funds for Japanese foreign investment which are not accounted for by the macroeconomic identity. Clearly, should Japanese FDI continue at current rates, a point could be reached where the investments are self-sustaining.

9.2. THE REQUIREMENTS OF THE CURRENT ACCOUNT BALANCE

As discussed in section 5.0, any surplus in the domestic economy, i.e., the sum of the private and government sectors, must be balanced by a current account surplus. Under the macroeconomic concept of Balance of Payments (BOP), the value of what leaves the country must equal the value of what enters the country. Thus any current account surplus must be balanced by an equal deficit in the capital account. The capital account is composed of long and short term foreign investment, government and private monetary flows plus errors and omissions. As discussed earlier, we can, for the purposes of this discussion think of the capital account as the outflow of long and short term investments.

The current account surplus of the BOP is composed of the Merchandise Trade Balance (MTB) and the Services Sector Balance (SSB). In the case of Japan, recent MTBs have been heavily in surplus; while SSBs have been in deficit. The SSB deficit exhibited a significant increase in 1988 as a result of greatly expanded foreign travel expenditures by the Japanese. Apart from this increase in foreign travel, the SSB deficit has been declining in recent years as foreign earnings grew. These earnings could be returns on short term or portfolio investments, or they could reflect profits earned by foreign direct investment assets. The former type of earnings are likely to be repatriated to Japan. However, the FDI profits may be, and often are, retained off-shore to expand the capital base of the company that produced them, or

to fund other foreign direct investments.

The matter of repatriated earnings may assume some importance in Japan's future Balance of Payments strategies. As they grow, such earnings may reach a level whereby Japan can satisfy the wishes of its trading partners for reduced MTB, while still retaining a healthy Current Account Balance because of surplus Service Sector balances. This trend, which is already underway, will allow Japan to utilize its current MTB surpluses as the "Trojan Horse" by which Japanese companies are invited to compete in the "home" markets of Japan's trading partners.

9.3. THE ALLOCATION PRIORITIES OF FOREIGN INVESTMENT FUNDS

The allocation of foreign investment funds is fundamentally concerned with net longterm investments. Short term investments cycle rapidly and the measurement of the net levels of such investment are of limited value. Thus, should any allocation procedure be required, it must select between FPI and FDI. The merit of FPI may be judged solely on the basis of dividend or interest returns, while the merit of FDI requires assessment of a broader range of returns.

In considering the impact of any allocation process on either type of longterm investment, it is important to consider the relative sizes of the two demands for funds. Large amounts of FPI are a phenomenon of the post-1984 period. Prior to 1984, net FPI was often in deficit and seldom exceeded NFDI. However, since

1984, FPI has dominated net Japanese foreign investment and in 1988 amounted to about 72% of the total net longterm investment outflow. Of the US\$89 billion of NFPI in 1988, only US\$3 billion, or 3.4%, was associated with the purchase of stocks. In terms of total 1988 purchases, stocks accounted for only US\$76.6 billion, or 5.3% of the US\$1,440.6 billion of total FPI purchases. Thus, about 70% of all the 1988 net longterm foreign investment was associated with the purchase of bonds; largely in the U.S.A., and entirely motivated by the anticipations of higher returns. Performance-related foreign portfolio investments were restricted to about 2.5% of total net longterm investment in the stocks of foreign companies and about 28% of total net longterm foreign investment in the direct acquisition of control, or influencing, positions in foreign companies.

9.3.1. The Allocation of Funds to Direct Foreign Investment

There are five principal types of considerations which cause funds to be allocated to foreign direct investment, namely:

- a. the comparative returns on foreign and Japanese assets;
- b. the comparative production costs of foreign and Japanese plant locations;
- c. trade frictions and barriers to market entry;

- d. the procurement of resources which are not available in Japan and for which direct investment offers advantages of supply, security, or cost; and,
- e. strategic planning objectives.

9.3.1.1. Comparative Returns

In a number of areas the cost of comparable assets is very much higher in Japan than it is in other countries, such as the U.S.A. Comparative real estate prices are a good example of this situation. Japanese investors are buying foreign real estate, especially in North America, because prices are lower and returns very much higher. The higher returns are particularly attractive when combined with the lower interest rates offered by Japanese financial institutions, often with Japanese real estate holdings being used as collateral. Individual Japanese are also finding foreign real estate to be very captivating. It was recently reported that wealthy Japanese buyers have shifted their targets from Hawaii to southern California, where they are buying showcase homes which cost \$4 million, or more, each (¹⁵⁶).

The current advantages of off-shore asset purchases should persist. There are no indications of dramatic reversals in the Japanese economy, the value of the yen, or the cost of real estate in Japan.

¹⁵⁶ Japan Times; Tokyo; August 16, 1989;p.10

9.3.1.2. Comparative Production Costs

This has been one of the classical justifications for foreign direct investment. In the past, this rationale was used to justify the relocation of labor intensive, modest technology production to low wage areas. More recently, the rapid appreciation of the yen brought dollar-terms wages in Japan to the North American levels. This, together with the high cost of other factor inputs, such as energy and land, was thought to make a number of industries (even in more advanced technology sectors) non-competitive and force the relocation of much of Japan's manufacturing capacity. This so-called "hollowing-out" process impacted a wide range of production, from chop-sticks to automobiles. In reality, actual experience has been somewhat different than the first gloomy predictions. Many industries have indeed become non-competitive and have re-located. On the other hand, other industries have made very substantial gains in productivity which have more than off-set the currency appreciation. Perhaps the best example of this latter situation is the automobile industry. It has been reported that the Japanese automobile manufacturers could now remain competitive even if the yen appreciated to a level of 95 yen to the U.S. dollar. Profits in the industry have been at record levels in the past couple of years and the companies have enormous reserves of liquid assets. Toyota is reputed to be holding U.S.\$12 billion in such assets.

Overall, Japan has already shed much of its labor and energy intensive industry. Heavy industries such as ship-building and steel-making have reduced capacity and sought diversification both in terms of product and overseas investment. It is reasonable to believe that, in the absence of any further major changes in input costs, the surge of comparative cost driven relocation spawned by the yen appreciation is over. Comparative cost considerations will continue to motivate some relocation, but it is likely to be on a gradual basis. Further, the planned concentration on advanced technology and knowledge intensive industries will tend to reduce the problem of comparative input costs.

9.3.1.3. Trade Frictions and Barriers to Market entry

Again, this has been one of the classical reasons for foreign direct investment. As barriers to trade are raised, or threatened, Japanese companies have relocated plants in their major market countries. The production of television sets and automobiles in North America and Europe are principal examples of FDI motivated by this consideration.

The recent spate of plant development in North America by the Japanese automobile manufacturers was widely perceived as a means of avoiding legislated barriers against Japanese imports. At the time of the investment decisions, the impact of yen appreciation was also a significant consideration but, as discussed above, this

factor is probably of less importance today. As will be discussed below, it now appears that strategic considerations were also instrumental in the car makers' decisions.

The influence of trade frictions on the Japanese FDI decision making process is likely to strengthen in the future. Due to the success of the efficiency enhancement programs, stabilization of the yen and strong non-price competitiveness, Japanese exports are projected to increase by 11% in dollar terms, during fiscal 1989 (¹⁵⁷). Although imports have substantially increased, the trade surplus for fiscal 1989 is expected to amount to about U.S.\$97.3 billion, and the current account surplus to about U.S.\$77.5 billion. These continuing surpluses will lend further support to the protectionist groups in the United States and Europe.

9.3.1.4. Procurement of Resources

This consideration was the motivation for investments in iron, coal and non-ferrous metals before 1973; in oil and liquefied natural gas after 1973; and, currently, in pulp production in Canada. In recent years, this motivation has also been expressed by FDI aimed at the acquisition of technology and knowledge related resources. Japanese investment in American software companies illustrate this approach. Even more recently, Japanese companies are funding research centres which are located on, or close to,

¹⁵⁷ 'The Japanese Economy'; NRI Quarterly Review, Vol.19 No.2; Nomura Research Institute; Tokyo; May 1989; p.19

American university campuses such as the University of California at Irvine and Princeton (¹⁵⁸). This use of financial power to acquire, control, or monitor technology research and development is likely to play an increasing role in future Japanese FDI planning.

9.3.1.5. Longterm Strategic Plans

This factor is becoming increasingly important in the FDI decision making of Japanese companies; especially the large companies which intend to expand their trans-national influence and operations. There are strong indications that large Japanese companies are moving away from the defensive, reactive foreign direct investment decisions of the past towards offensive, overseas development strategies. Banking and financial services, automobiles, steel-making and advanced electronics appear to be target sectors for the Japanese companies. All five major steel producers in Japan, in concert with diversification and rationalization of domestic production capacity, have established joint venture operations with steel companies within the U.S.A. These joint ventures, which involve both financial and technical inputs from Japan, will mitigate complaints against Japanese imports and establish a Japanese presence in the internal steel industry and market of America.

¹⁵⁸ "Advanced Bio Class? That's Over in Hitachi Hall"; Business Week; New York; August 7, 1989; p.73.

The major Japanese banks, which are the 10 largest banks in the world, have embarked on a program of FDI which is intended to establish their pre-eminence as global financial institutions. It has been reported that Japanese interests now control more than 25% of California's banking assets (¹⁵⁹).

In another development, the Victor Company of Japan (JVC) has invested U.S.\$100 million in a Hollywood based film making joint venture. This investment could satisfy a number of requirements for JVC. It should be profitable; it will secure a source of films for its domestic (Japan) videocassette distribution system; and, above all, it provides JVC with a "window" on the film making centre of the world and a base from which it could use financial power to establish a major position in a global, lucrative service industry. Sony, which is JVC's biggest competitor in the videocassette market, bought CBS's record division in 1987 and is reported to be shopping for a film studio. It is interesting to speculate that the two Japanese entertainment giants may fight their future strategic battles through American subsidiary proxies.

Finally, the Japanese automakers have established, or are building, 10 plants in North America which will have a combined 1994 capacity of over 2.3 million units per year. In 1989, Japanese plants will produce about 14.7% of the North American output. It is difficult to judge whether this Japanese presence in the North American automobile market is the result of a series

¹⁵⁹ Japan Times; Tokyo; August 16, 1989; p.7.

of ad hoc responses to American government and union pressures, or if it reflects a set of carefully orchestrated, strategic plans to compete with the American automobile companies on their own ground.

The latter seems to be the more logical conclusion. Toyota et al. have firmly established themselves, at the invitation of the host countries, in the largest automobile market in the world; and it has been suggested that every three cars produced in their plants will displace one import and two Detroit cars (¹⁶⁰).

9.3.2. Allocation of Funds to Foreign Portfolio Investment

As previously stated, FPI decisions are based entirely on assessments of the various returns options available to the investors. These assessment take into consideration the security of the investment, the currency exchange risks involved, and the anticipated, or defined, net return. Analysis of Japanese investments in the recent past clearly indicates that the preference is for low risk instruments (bonds), in a secure host country (e.g., the U.S.A.) where the interest rates are high and the yen/dollar relationship is deemed to now be relatively stable. This trend can be expected to continue.

¹⁶⁰ "Shaking Up Detroit"; Business Week; N.York; August 14, 1989; p.74.

9.3.3. Allocations in a Competing Environment

Given the current projections as to future economic growth in Japan and the country's trade balance, it appears unlikely, from a macroeconomic perspective, that there will be restrictions of FDI due to shortages of investment funds.

Should the availability of investment funds decrease, however, it is probable that the reduction would impact FPI, rather than FDI. The rationale for this judgement is based on four points, namely:

1. The volume of FDI is only a fraction of the total net foreign investment.
2. The aggregate of all return considerations (i.e., financial, strategic and political) relating to a foreign direct investment should be competitive with bond interest rates.
3. Pre-1984 experience indicated that FDI was the dominant off-shore investment process; NFPI grew only because of the large surpluses in the Japanese economy; and,
4. Much of the Japanese FPI is controlled by the country's large life and general insurance companies which

usually have close keiretsu affiliations with the large companies which will make most of the FDI investments.

To summarize, it is unlikely that there will be any significant reduction in the funds available for Japanese foreign investment in general. In the unlikely event that such a reduction does occur, it would not be reflected in an equivalent reduction in the funds available for Japanese FDI.

9.4. ACCEPTABILITY

The preceding discussion in this section has determined that Japanese foreign direct investment is unlikely to be impeded by either macroeconomic considerations, or by preferential allocation of foreign investment resources to other types of foreign investment. It has also been concluded that FDI will continue to be an attractive option for Japanese companies; indeed, that it has become, and will continue to be, a central instrument in the strategic approach of many large companies as they move towards full trans-national status.

The remaining question is: will the host countries and communities continue to welcome Japanese FDI? The answer to this question is both complex and uncertain. It may be re-phrased as two questions: will there be legislated opposition to Japanese FDI? will there be un-official resistance to Japanese FDI?

Legislated opposition to Japanese investment is, within the North American and European context, likely to be restricted to specific sectors. Examples of such intervention include defense-sensitive industries (e.g., the review of Fujitsu's acquisition of Fairchild), transportation (usually subject to limitations for any foreign buyer) and, possibly, restrictions on real estate holdings by non-residents (e.g. Nebraska's law against foreign ownership of farmland). However, in most cases, the host country's espousal of market-place economics, regional competition for job-creating investments and the exposure of its own investors to similar restriction in other countries, will tend to act as a brake on such direct legislation.

Non-legislated opposition to Japanese FDI is a broader topic. Clearly, as the increasing presence of Japanese companies could result in an escalation of anti-Japanese sentiment. A great deal will depend on the corporate and community practices of the Japanese operated companies. To a large extent, this problem is an integral part of the larger issue of how Japanese companies will accommodate to the new roles of true multi-national corporations. This accommodation will have to address the current centralization of authority in the Japan head offices, or in the hands of officials despatched from such head offices. The problems associated with this adjustment are very complex and will be difficult of solution. Nonetheless, solutions will have to be found if Japanese companies are to adopt multi-nationalism and be

accepted in the host countries.

To-date the score card is mixed. In terms of employee relations, most Japanese firms have done an excellent job. They have, as in Japan, made great efforts to persuade employees that they have common interest with the company. Most Japanese companies in Europe and North America appear to have established very good employee relations; the recent defeat of the UAW's attempt to organize the Nissan plant in Smyrna, Tennessee attest to this. On the other hand, the tax exemptions and outright grants extracted by the Japanese automakers have generated significant adverse reaction at both the community and state levels in the United States. Unions generally resent the non-existent, or reduced influence, roles they play in Japanese-run auto plants. Similarly, local parts manufacturers clearly dislike the tendency of the Japanese companies to invite Japanese parts suppliers to establish plants in close proximity to the automobile plant and then to favour such companies in their procurement policies.

The principal battleground on which this issue of Japanese FDI acceptability will be fought is, of course, the United States. Xenophobic forces are at work in the U.S.A., and the country's long-held "open-market" principles are under attack. The facts are perhaps not as bad as some of the "revisionists" have led the American public to believe. In 1988, accumulated foreign direct investment in the U.S.A. (\$329 billion) did surpass accumulated American direct investment in other countries (\$327 billion).

However, since these investments were stated at cost, the evaluation was weighted towards recent purchases in the U.S.A. by foreigners, as compared to past investments by American buyers of foreign assets. Further, it should be noted that, despite the recent buying spree, foreigners only own about 3% of total American assets (which is much less than in many European countries) and less than 1% of American real estate. Among the foreign direct investors in the U.S.A., Japan is still a somewhat distant second to Britain (¹⁶¹).

Nevertheless, it is Japanese FDI which is perceived as the principal threat. Compared to other sources of FDI, Japan has more money to invest; Japanese economic power is greater and, currently and prospectively, more competitive with American industry and commerce; and Japanese investments in steel, car-making, electronics and banking are more visible and are perceived as having broader potential impact on the strategic options of the American economy.

The situation is rather ironic. To rectify its huge merchandise trade deficit, the United States must increase its exports of manufactured products. But, this increase cannot be achieved without significant improvements in production efficiency; and, since the capital required to finance such improvements is not available in the U.S.A., this mandates increased FDI. The Japanese

¹⁶¹ "Xenophobia rules", The Economist, London, August 26 - September 1, 1989, p. 68-70.

companies have both the financial and technical strengths needed to meet the American goals. However, the quid pro quo for such assistance will be to allow Japanese-owned, American-based operations to compete for the full American market (not a restricted import quota) on an equal basis with American companies. The acceptability of the remedy will largely depend on the sensitivity with which it is administered.

10.0. CONCLUSIONS

This study has attempted to explain the factors behind the rapid acceleration of Japanese foreign direct investment in the 1980s. The approach has been to combine macro-theory with the actual developments in the Japanese economy since 1973 to explain the current capital surplus position of Japan. In particular, on-going savings surpluses in the private sector, when coupled with the LDP's commitment to balanced budgets after 1978, have been suggested as a primary determinant behind the growing capital outflow from Japan after 1983.

It has been contended that these surpluses have been generated by several factors including: 1) the transition of Japan from a high-growth to mature economy and the resultant decline in corporate capital formation requirements; 2) rising relative real wages as a result of the 80% appreciation of the yen since 1984; and 3) the dramatic escalation of Japanese land prices. The latter, while deterring domestic investment in land-intensive industry at home, has also created a huge collateral base from which potential Japanese investors can finance offshore investments.

The study has also attempted to support its macro-economic rationale by developing a regression model designed to test the relationship of Japanese net FDI with real wages, real land prices, the Japanese Yen/U.S. dollar spot exchange rate, and the Bank of Japan and U.S. Federal Reserve discount rates differential.

Although supporting the macro-economic contentions to some degree, the results are limited by problems with both the methodology and data used to develop the model. Nevertheless, as an exploratory examination of the determinants of Japanese foreign direct investment, the model retains some merit.

Finally, the study has examined the future sustainability of Japanese foreign direct investment. This analysis, again, has relied on macro-economic theory and our analysis of current trends in the Japanese economy to conclude that the present level of Japanese foreign direct investment is sustainable. This conclusion is based on the premise that the factors which have created Japan's current excess capital position will prevail in the medium term. In addition, in the unlikely event that future surpluses are reduced, the study concludes that Japanese foreign portfolio, rather than foreign direct, investment will be impacted. Finally, it is suggested that the sustainability of Japanese FDI may be determined more by its future acceptability with recipient countries. The latter may represent the most serious impediment to the continuing drive of Japanese companies offshore, although this will be tempered in most cases by the host countries' commitments to unrestricted capital flows and domestic employment considerations.

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APPENDIX 1: DATA USED IN REGRESSION MODELS

YEAR	DIR	POR	PRIV	GOV	WAGE	LAND	EXCH	DISC	SPR
1960	-79.37	-22.20	-1492	-1569	38.4	22.9	360	0.219	0.115802
1961	-32.50	11.76	-4321	-144	40.6	45.0	360	0.215	0.124615
1962	-11.36	71.02	-306	1196	41.9	62.2	360	0.188	0.099004
1963	-19.02	146.74	-2226	1389	42.6	70.7	360	0.158	0.063131
1964	-46.88	140.63	-1545	1966	45.1	79.7	360	0.172	0.064732
1965	-30.39	80.11	-91	3762	46.3	72.9	360	0.152	0.032551
1966	-76.32	-18.42	708	4505	48.9	89.7	360	0.145	0.022121
1967	-71.78	-9.90	-1458	4448	52.6	88.1	360	0.144	0.030532
1968	-117.65	296.47	-125	3085	56.8	91.1	360	0.146	0.044101
1969	-112.11	751.12	-2652	5554	62.4	99.8	360	0.141	0.001011
1970	-187.50	187.50	-1065	875	67.8	86.0	360	0.131	-0.002780
1971	-96.65	550.30	1610	3570	73.2	120.1	349.33	0.108	-0.000090
1972	-305.97	44.78	4948	5261	80.8	128.0	303.37	0.093	-0.00307
1973	-935.54	-829.75	1147	892	88.5	149.3	291.7	0.121	-0.000300
1974	-675.79	-347.47	-2613	6156	90.5	146.1	292.08	0.127	-0.014200
1975	-771.28	1306.23	4183	14663	92.9	99.2	396.79	0.083	-0.033530
1976	-667.85	973.90	8888	13713	95.6	117.3	296.55	0.077	-0.012750
1977	-491.03	192.83	10371	8666	96.1	113.7	268.51	0.048	-0.036120
1978	-531.55	-632.09	15038	11985	98.4	111.7	210.44	0.037	-0.070800
1979	-605.40	-280.37	8761	10913	101.7	116.3	219.14	0.065	-0.072040
1980	-478.00	2138.00	8090	10666	100.0	100.0	226.74	0.073	-0.061180
1981	-1006.78	1639.53	9311	9538	101.1	105.1	220.54	0.053	-0.085000
1982	-971.46	198.86	10108	9260	101.8	110.1	249.08	0.048	-0.054920
1983	-717.66	-650.61	13416	9685	104.0	114.5	237.51	0.047	-0.034590
1984	-1322.76	-5308.77	12444	5819	104.8	119.0	237.52	0.047	-0.035060
1985	-1272.73	-9145.09	11782	2391	104.9	125.9	238.54	0.046	-0.023420
1986	-2165.01	-15505.86	19477	3305	107.4	141.2	168.52	0.027	-0.028430
1987	-2434.00	-11874.32	16004	7345	109.7	178.3	144.64	0.023	-0.025480

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HEAD(4) DIR POR PRIV GOV WAGE LAND EXCH DISC SPR
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plot dir exch
plot dir spr
sample 13 28
plot dir wage
plot dir land
plot dir exch
plot dir spr
OLS DIR WAGE LAND EXCH SPR/ ANOVA LIST
END

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|_OLS PRIV WAGE LAND DISC/ ANOVA LIST

REQUIRED MEMORY IS PAR= 4 CURRENT PAR= 40
 OLS ESTIMATION
 28 OBSERVATIONS DEPENDENT VARIABLE = PRIV
 ...NOTE...SAMPLE RANGE SET TO: 1, 28

R-SQUARE = 0.8654 R-SQUARE ADJUSTED = 0.8485
 VARIANCE OF THE ESTIMATE = 0.70725E+07
 STANDARD ERROR OF THE ESTIMATE = 2659.4
 MEAN OF DEPENDENT VARIABLE = 4942.6
 LOG OF THE LIKELIHOOD FUNCTION = -258.376

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)
 AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.80828E+07
 (FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)
 AKAIKE (1973) INFORMATION CRITERION- AIC = 15.903
 SCHWARZ(1978) CRITERION-SC = 16.094

	ANALYSIS OF VARIANCE - FROM MEAN			
	SS	DF	MS	F
REGRESSION	0.10910E+10	3.	0.36367E+09	51.421
ERROR	0.16974E+09	24.	0.70725E+07	
TOTAL	0.12608E+10	27.	0.46695E+08	

	ANALYSIS OF VARIANCE - FROM ZERO			
	SS	DF	MS	F
REGRESSION	0.17750E+10	4.	0.44376E+09	62.744
ERROR	0.16974E+09	24.	0.70725E+07	
TOTAL	0.19448E+10	28.	0.69456E+08	

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 24 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
WAGE	-7.0493	65.703	-0.10729	-0.0219	-0.26339E-01	-0.11180
LAND	-49.478	26.176	-1.8902	-0.3600	-0.23476	-1.0379
DISC	-0.13300E+06	27517.	-4.8333	-0.7023	-1.1230	-2.8197
CONSTANT	24561.	7751.5	3.1686	0.5431	0.00000E+00	4.9693

Hello/Bonjour -PNPN
 Welcome to SHAZAM - Version 6.1 - OCT 1988 SYSTEM=G PAR= 40
 |_READ(4) DIR POR PRIV GOV WAGE LAND EXCH DISC SPR

...SAMPLE RANGE IS NOW SET TO: 1 28
 |_STAT/ ALL PCOR

NAME	N	MEAN	ST. DEV	VARIANCE	MINIMUM	MAXIMUM
DIR	28	-579.79	630.08	0.39700E+06	-2434.0	-11.360
POR	28	-1282.0	4127.5	0.17036E+08	-15506.	2138.0
PRIV	28	4942.6	6833.4	0.46695E+08	-4321.0	19477.
GOV	28	5674.8	4355.1	0.18967E+08	-1569.0	14663.
WAGE	28	78.386	25.532	651.89	38.400	109.70
LAND	28	103.67	32.423	1051.2	22.900	178.30
EXCH	28	296.82	70.477	4967.0	144.64	396.79
DISC	28	0.10479	0.57701E-01	0.33294E-02	0.23000E-01	0.21900
SPR	28	0.13379E-03	0.55371E-01	0.30659E-02	-0.85003E-01	0.12462

CORRELATION MATRIX OF VARIABLES - 28 OBSERVATIONS

DIR	1.0000							
POR	0.81828	1.0000						
PRIV	-0.79668	-0.60430	1.0000					
GOV	-0.28174	0.15525	0.54537	1.0000				
WAGE	-0.77732	-0.40860	0.84943	0.66819	1.0000			
LAND	-0.74031	-0.50618	0.60793	0.40339	0.79624	1.0000		
EXCH	0.81846	0.60326	-0.88974	-0.41175	-0.83544	-0.68226	1.0000	
DISC	0.75416	0.45591	-0.91757	-0.67748	-0.94627	-0.76905	0.83314	1.0000
SPR	0.54244	0.15175	-0.71657	-0.76141	-0.89098	-0.69886	0.69691	0.90419

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|_AUTO PRIV WAGE LAND DISC/ ANOVA LIST

REQUIRED MEMORY IS PAR= 5 CURRENT PAR= 40

DEPENDENT VARIABLE = PRIV

..NOTE..R-SQUARE,ANOVA,RESIDUALS DONE ON ORIGINAL VARS

LEAST SQUARES ESTIMATION 28 OBSERVATIONS
BY COCHRANE-ORCUTT TYPE PROCEDURE WITH CONVERGENCE = 0.00100

ITERATION	RHO	LOG L.F.	SSE
1	0.00000	-258.376	0.16974E+09
2	0.39454	-255.829	0.14065E+09
3	0.43018	-255.768	0.13986E+09
4	0.43428	-255.763	0.13979E+09
5	0.43477	-255.763	0.13978E+09

LOG L.F. = -255.763 AT RHO = 0.43477

	ESTIMATE	ASYMPTOTIC VARIANCE	ASYMPTOTIC ST.ERROR	ASYMPTOTIC T-RATIO
RHO	0.43477	0.02896	0.17019	2.55466

R-SQUARE = 0.8891 R-SQUARE ADJUSTED = 0.8753
VARIANCE OF THE ESTIMATE = 0.58243E+07
STANDARD ERROR OF THE ESTIMATE = 2413.4
MEAN OF DEPENDENT VARIABLE = 4942.6
LOG OF THE LIKELIHOOD FUNCTION = -255.763

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)
AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.66564E+07
(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)
AKAIKE (1973) INFORMATION CRITERION- AIC = 15.709
SCHWARZ(1978) CRITERION-SC = 15.899

ANALYSIS OF VARIANCE - FROM MEAN			
	SS	DF	MS
REGRESSION	0.11210E+10	3.	0.37366E+09
ERROR	0.13978E+09	24.	0.58243E+07
TOTAL	0.12608E+10	27.	0.46695E+08

ANALYSIS OF VARIANCE - FROM ZERO			
	SS	DF	MS
REGRESSION	0.18050E+10	4.	0.45125E+09
ERROR	0.13978E+09	24.	0.58243E+07
TOTAL	0.19448E+10	28.	0.69456E+08

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 24 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
WAGE	5.8604	77.296	0.75818E-01	0.0155	0.21897E-01	0.92942E-01
LAND	-37.283	28.665	-1.3006	-0.2566	-0.17690	-0.78205
DISC	-0.12069E+06	28854.	-4.1826	-0.6493	-1.0191	-2.5586
CONSTANT	21213.	8342.6	2.5427	0.4607	0.00000E+00	4.2918

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DURBIN-WATSON = 1.0720 VON NEUMAN RATIO = 1.1117 RHO = 0.39454
RESIDUAL SUM = 0.63665E-11 RESIDUAL VARIANCE = 0.70725E+07
SUM OF ABSOLUTE ERRORS= 55461.
R-SQUARE BETWEEN OBSERVED AND PREDICTED = 0.8654
RUNS TEST: 13 RUNS, 13 POSITIVE, 15 NEGATIVE, NORMAL STATISTIC = -0.7468
COEFFICIENT OF SKEWNESS = 0.6962 WITH STANDARD DEVIATION OF 0.4405
COEFFICIENT OF EXCESS KURTOSIS = 0.1341 WITH STANDARD DEVIATION OF 0.8583

GOODNESS OF FIT TEST FOR NORMALITY OF RESIDUALS - 10 GROUPS

OBSERVED	0.0	0.0	2.0	7.0	6.0	7.0	2.0	3.0	1.0	0.0
EXPECTED	0.2	0.8	2.2	4.5	6.3	6.3	4.5	2.2	0.8	0.2

CHI-SQUARE = 4.4915 WITH 4 DEGREES OF FREEDOM

_OLS PRIV WAGE/ ANOVA LIST

REQUIRED MEMORY IS PAR= 4 CURRENT PAR= 40

OLS ESTIMATION

28 OBSERVATIONS DEPENDENT VARIABLE = PRIV

...NOTE..SAMPLE RANGE SET TO: 1, 28

R-SQUARE = 0.7215 R-SQUARE ADJUSTED = 0.7108

VARIANCE OF THE ESTIMATE = 0.13503E+08

STANDARD ERROR OF THE ESTIMATE = 3674.6

MEAN OF DEPENDENT VARIABLE = 4942.6

LOG OF THE LIKELIHOOD FUNCTION = -268.551

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)

AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.14468E+08

(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)

AKAIKE (1973) INFORMATION CRITERION- AIC = 16.487

SCHWARZ(1978) CRITERION-SC = 16.582

ANALYSIS OF VARIANCE - FROM MEAN

	SS	DF	MS	F
REGRESSION	0.90968E+09	1.	0.90968E+09	67.369
ERROR	0.35108E+09	26.	0.13503E+08	
TOTAL	0.12608E+10	27.	0.46695E+08	

ANALYSIS OF VARIANCE - FROM ZERO

	SS	DF	MS	F
REGRESSION	0.15937E+10	2.	0.79685E+09	59.013
ERROR	0.35108E+09	26.	0.13503E+08	
TOTAL	0.19448E+10	28.	0.69456E+08	

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 26 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
WAGE	227.34	27.698	8.2078	0.8494	0.84943	3.6055
CONSTANT	-12878.	2279.5	-5.6494	-0.7423	0.00000E+00	-2.6055

|_OLS PRIV LAND/ ANOVA LIST

REQUIRED MEMORY IS PAR= 4 CURRENT PAR= 40

OLS ESTIMATION

28 OBSERVATIONS DEPENDENT VARIABLE = PRIV

...NOTE..SAMPLE RANGE SET TO: 1, 28

R-SQUARE = 0.3696 R-SQUARE ADJUSTED = 0.3453

VARIANCE OF THE ESTIMATE = 0.30569E+08

STANDARD ERROR OF THE ESTIMATE = 5529.0

MEAN OF DEPENDENT VARIABLE = 4942.6

LOG OF THE LIKELIHOOD FUNCTION = -279.990

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)

AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.32753E+08

(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)

AKAIKE (1973) INFORMATION CRITERION- AIC = 17.304

SCHWARZ(1978) CRITERION-SC = 17.399

ANALYSIS OF VARIANCE - FROM MEAN

	SS	DF	MS	F
REGRESSION	0.46596E+09	1.	0.46596E+09	15.243
ERROR	0.79480E+09	26.	0.30569E+08	
TOTAL	0.12608E+10	27.	0.46695E+08	

ANALYSIS OF VARIANCE - FROM ZERO

	SS	DF	MS	F
REGRESSION	0.11500E+10	2.	0.57498E+09	18.809
ERROR	0.79480E+09	26.	0.30569E+08	
TOTAL	0.19448E+10	28.	0.69456E+08	

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 26 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
LAND	128.13	32.818	3.9042	0.6079	0.60793	2.6876
CONSTANT	-8341.1	3559.2	-2.3435	-0.4176	0.00000E+00	-1.6876

OBSERVATION NO.	OBSERVED VALUE	PREDICTED VALUE	CALCULATED RESIDUAL
1	-1492.0	-5407.0	3915.0
2	-4321.0	-2575.3	-1745.7
3	-306.00	-371.53	65.533
4	-2226.0	717.55	-2943.6
5	-1545.0	1870.7	-3415.7
6	-91.000	999.44	-1090.4
7	708.00	3152.0	-2444.0
8	-1458.0	2947.0	-4405.0
9	-125.00	3331.4	-3456.4
10	-2652.0	4446.1	-7098.1
11	-1065.0	2677.9	-3742.9
12	1610.0	7047.1	-5437.1
13	4948.0	8059.3	-3111.3
14	1147.0	10788.	-9641.4
15	-2613.0	10378.	-12991.
16	4183.0	4241.1	-58.071
17	8888.0	6688.3	2199.7
18	10371.	6227.1	4143.9
19	15038.	5970.8	9067.2
20	8761.0	6560.2	2200.8
21	8090.0	4471.7	3618.3
22	9311.0	5125.2	4185.8
23	10108.	5765.8	4342.2
24	13416.	6329.6	7086.4
25	12444.	6906.1	5537.9
26	11782.	7790.2	3991.8
27	19477.	9750.6	9726.4
28	16004.	14504.	1499.9

DURBIN-WATSON = 0.6367 VON NEUMAN RATIO = 0.6602 RHO = 0.67252
 RESIDUAL SUM = 0.72760E-11 RESIDUAL VARIANCE = 0.30569E+08
 SUM OF ABSOLUTE ERRORS = 0.12316E+06
 R-SQUARE BETWEEN OBSERVED AND PREDICTED = 0.3696
 RUNS TEST: 5 RUNS, 14 POSITIVE, 14 NEGATIVE, NORMAL STATISTIC = -3.8516
 COEFFICIENT OF SKEWNESS = -0.3221 WITH STANDARD DEVIATION OF 0.4405
 COEFFICIENT OF EXCESS KURTOSIS = -0.0304 WITH STANDARD DEVIATION OF 0.8583

GOODNESS OF FIT TEST FOR NORMALITY OF RESIDUALS - 6 GROUPS
 OBSERVED 1.0 2.0 11.0 10.0 4.0 0.0
 EXPECTED 0.6 3.8 9.6 9.6 3.8 0.6
 CHI-SQUARE = 1.9482 WITH 2 DEGREES OF FREEDOM

|_OLS PRIV DISC/ ANOVA LIST

REQUIRED MEMORY IS PAR= 4 CURRENT PAR= 40

OLS ESTIMATION

28 OBSERVATIONS DEPENDENT VARIABLE = PRIV

...NOTE..SAMPLE RANGE SET TO: 1, 28

R-SQUARE = 0.8419 R-SQUARE ADJUSTED = 0.8359
 VARIANCE OF THE ESTIMATE = 0.76649E+07
 STANDARD ERROR OF THE ESTIMATE = 2768.6
 MEAN OF DEPENDENT VARIABLE = 4942.6
 LOG OF THE LIKELIHOOD FUNCTION = -260.623

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)

AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.82124E+07

(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)

AKAIKE (1973) INFORMATION CRITERION- AIC = 15.921

SCHWARZ(1978) CRITERION-SC = 16.016

ANALYSIS OF VARIANCE - FROM MEAN				
	SS	DF	MS	F
REGRESSION	0.10615E+10	1.	0.10615E+10	138.484
ERROR	0.19929E+09	26.	0.76649E+07	
TOTAL	0.12608E+10	27.	0.46695E+08	

ANALYSIS OF VARIANCE - FROM ZERO				
	SS	DF	MS	F
REGRESSION	0.17455E+10	2.	0.87274E+09	113.862
ERROR	0.19929E+09	26.	0.76649E+07	
TOTAL	0.19448E+10	28.	0.69456E+08	

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 26 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
DISC	-0.10867E+06	9234.0	-11.768	-0.9176	-0.91757	-2.3038
CONSTANT	16329.	1100.0	14.845	0.9458	0.00000E+00	3.3038

CHI-SQUARE = 6.0268 WITH 2 DEGREES OF FREEDOM

|_AUTO PRIV WAGE/ ANOVA LIST

REQUIRED MEMORY IS PAR= 5 CURRENT PAR= 40

DEPENDENT VARIABLE = PRIV

..NOTE..R-SQUARE,ANOVA,RESIDUALS DONE ON ORIGINAL VARS

LEAST SQUARES ESTIMATION 28 OBSERVATIONS
BY COCHRANE-ORCUTT TYPE PROCEDURE WITH CONVERGENCE = 0.00100

ITERATION	RHO	LOG L.F.	SSE
1	0.00000	-268.551	0.35108E+09
2	0.55096	-263.787	0.24661E+09
3	0.55668	-263.789	0.24656E+09
4	0.55688	-263.789	0.24656E+09

LOG L.F. = -263.789 AT RHO = 0.55688

	ESTIMATE	ASYMPTOTIC VARIANCE	ASYMPTOTIC ST.ERROR	ASYMPTOTIC T-RATIO
RHO	0.55688	0.02464	0.15697	3.54773

R-SQUARE = 0.8044 R-SQUARE ADJUSTED = 0.7969
VARIANCE OF THE ESTIMATE = 0.94832E+07
STANDARD ERROR OF THE ESTIMATE = 3079.5
MEAN OF DEPENDENT VARIABLE = 4942.6
LOG OF THE LIKELIHOOD FUNCTION = -263.789

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)
AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.10161E+08
(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)
AKAIKE (1973) INFORMATION CRITERION- AIC = 16.134
SCHWARZ(1978) CRITERION-SC = 16.229

ANALYSIS OF VARIANCE - FROM MEAN			
	SS	DF	MS
REGRESSION	0.10142E+10	1.	0.10142E+10
ERROR	0.24656E+09	26.	0.94832E+07
TOTAL	0.12608E+10	27.	0.46695E+08

ANALYSIS OF VARIANCE - FROM ZERO			
	SS	DF	MS
REGRESSION	0.16982E+10	2.	0.84910E+09
ERROR	0.24656E+09	26.	0.94832E+07
TOTAL	0.19448E+10	28.	0.69456E+08

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 26 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
WAGE	224.19	47.143	4.7556	0.6821	0.83767	3.5555
CONSTANT	-12360.	3887.7	-3.1793	-0.5291	0.00000E+00	-2.5008

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DURBIN-WATSON = 1.9135 VON NEUMAN RATIO = 1.9844 RHO = 0.03240
RESIDUAL SUM = -1258.1 RESIDUAL VARIANCE = 0.95440E+07
SUM OF ABSOLUTE ERRORS= 59494.
R-SQUARE BETWEEN OBSERVED AND PREDICTED = 0.8039
RUNS TEST: 14 RUNS, 14 POSITIVE, 14 NEGATIVE, NORMAL STATISTIC = -0.3852

|_AUTO PRIV LAND/ ANOVA LIST

REQUIRED MEMORY IS PAR= 5 CURRENT PAR= 40

DEPENDENT VARIABLE = PRIV

..NOTE..R-SQUARE,ANOVA,RESIDUALS DONE ON ORIGINAL VARS

LEAST SQUARES ESTIMATION 28 OBSERVATIONS
BY COCHRANE-ORCUTT TYPE PROCEDURE WITH CONVERGENCE = 0.00100

ITERATION	RHO	LOG L.F.	SSE
1	0.00000	-279.990	0.79480E+09
2	0.67252	-269.046	0.35599E+09
3	0.83467	-267.663	0.31576E+09
4	0.88346	-267.493	0.30836E+09
5	0.89334	-267.481	0.30719E+09
6	0.89496	-267.480	0.30701E+09
7	0.89521	-267.480	0.30698E+09

LOG L.F. = -267.480 AT RHO = 0.89521

	ESTIMATE	ASYMPTOTIC VARIANCE	ASYMPTOTIC ST.ERROR	ASYMPTOTIC T-RATIO
RHO	0.89521	0.00709	0.08422	10.62936

R-SQUARE = 0.7565 R-SQUARE ADJUSTED = 0.7471
VARIANCE OF THE ESTIMATE = 0.11807E+08
STANDARD ERROR OF THE ESTIMATE = 3436.1
MEAN OF DEPENDENT VARIABLE = 4942.6
LOG OF THE LIKELIHOOD FUNCTION = -267.480

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)
AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.12650E+08
(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)
AKAIKE (1973) INFORMATION CRITERION- AIC = 16.353
SCHWARZ(1978) CRITERION-SC = 16.448

	ANALYSIS OF VARIANCE - FROM MEAN		
	SS	DF	MS
REGRESSION	0.95378E+09	1.	0.95378E+09
ERROR	0.30698E+09	26.	0.11807E+08
TOTAL	0.12608E+10	27.	0.46695E+08

	ANALYSIS OF VARIANCE - FROM ZERO		
	SS	DF	MS
REGRESSION	0.16378E+10	2.	0.81889E+09
ERROR	0.30698E+09	26.	0.11807E+08
TOTAL	0.19448E+10	28.	0.69456E+08

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 26 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
LAND	-6.8307	37.145	-0.18389	-0.0360	-0.32410E-01	-0.14328
CONSTANT	6519.5	6192.4	1.0528	0.2022	0.00000E+00	1.3190

|_AUTO PRIV DISC/ ANOVA LIST

REQUIRED MEMORY IS PAR= 5 CURRENT PAR= 40

DEPENDENT VARIABLE = PRIV

..NOTE..R-SQUARE,ANOVA,RESIDUALS DONE ON ORIGINAL VARS

LEAST SQUARES ESTIMATION 28 OBSERVATIONS
BY COCHRANE-ORCUTT TYPE PROCEDURE WITH CONVERGENCE = 0.00100

ITERATION	RHO	LOG L.F.	SSE
1	0.00000	-260.623	0.19929E+09
2	0.45778	-256.806	0.15046E+09
3	0.47391	-256.767	0.14994E+09
4	0.47490	-256.765	0.14991E+09

LOG L.F. = -256.765 AT RHO = 0.47490

	ESTIMATE	ASYMPTOTIC VARIANCE	ASYMPTOTIC ST.ERROR	ASYMPTOTIC T-RATIO
RHO	0.47490	0.02766	0.16631	2.85547

R-SQUARE = 0.8811 R-SQUARE ADJUSTED = 0.8765
VARIANCE OF THE ESTIMATE = 0.57659E+07
STANDARD ERROR OF THE ESTIMATE = 2401.2
MEAN OF DEPENDENT VARIABLE = 4942.6
LOG OF THE LIKELIHOOD FUNCTION = -256.765

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)
AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.61777E+07
(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)
AKAIKE (1973) INFORMATION CRITERION- AIC = 15.636
SCHWARZ(1978) CRITERION-SC = 15.731

	ANALYSIS OF VARIANCE - FROM MEAN		
	SS	DF	MS
REGRESSION	0.11108E+10	1.	0.11108E+10
ERROR	0.14991E+09	26.	0.57659E+07
TOTAL	0.12608E+10	27.	0.46695E+08

	ANALYSIS OF VARIANCE - FROM ZERO		
	SS	DF	MS
REGRESSION	0.17949E+10	2.	0.89743E+09
ERROR	0.14991E+09	26.	0.57659E+07
TOTAL	0.19448E+10	28.	0.69456E+08

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 26 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
DISC	-0.10693E+06	13066.	-8.1838	-0.8487	-0.90290	-2.2670
CONSTANT	16393.	1616.0	10.144	0.8935	0.00000E+00	3.3166

OBSERVATION NO.	OBSERVED VALUE	PREDICTED VALUE	CALCULATED RESIDUAL	
1	-1492.0	-7024.6	5532.6	I
2	-4321.0	-3969.5	-351.52	I
3	-306.00	-2629.0	2323.0	I
4	-2226.0	1114.5	-3340.5	I
5	-1545.0	-2817.7	1272.7	I
6	-91.000	355.19	-446.19	I
7	708.00	778.58	-70.583	I
8	-1458.0	909.49	-2367.5	I
9	-125.00	-383.78	258.78	I
10	-2652.0	885.47	-3537.5	I
11	-1065.0	500.78	-1565.8	I
12	1610.0	3206.0	-1596.0	I
13	4948.0	4912.3	35.652	I
14	1147.0	2741.8	-1594.8	I
15	-2613.0	1717.0	-4330.0	I
16	4183.0	4941.0	-757.97	I
17	8888.0	6575.6	2312.4	I
18	10371.	11606.	-1235.3	I
19	15038.	12014.	3023.9	I
20	8761.0	10678.	-1916.9	I
21	8090.0	8263.4	-173.37	I
22	9311.0	10490.	-1178.5	I
23	10108.	10588.	-480.42	I
24	13416.	10820.	2596.1	I
25	12444.	12340.	103.87	I
26	11782.	11985.	-203.46	I
27	19477.	13652.	5825.1	I
28	16004.	16769.	-765.18	I

DURBIN-WATSON = 2.0337 VON NEUMAN RATIO = 2.1090 RHO = -0.11673
 RESIDUAL SUM = -2627.5 RESIDUAL VARIANCE = 0.60314E+07
 SUM OF ABSOLUTE ERRORS = 49196.
 R-SQUARE BETWEEN OBSERVED AND PREDICTED = 0.8764
 RUNS TEST: 18 RUNS, 10 POSITIVE, 18 NEGATIVE, NORMAL STATISTIC = 1.7435

|_OLS POR EXCH SPR/ ANOVA LIST

REQUIRED MEMORY IS PAR= 4 CURRENT PAR= 40

OLS ESTIMATION

28 OBSERVATIONS DEPENDENT VARIABLE = POR

...NOTE...SAMPLE RANGE SET TO: 1, 28

R-SQUARE = 0.5043 R-SQUARE ADJUSTED = 0.4646

VARIANCE OF THE ESTIMATE = 0.91210E+07

STANDARD ERROR OF THE ESTIMATE = 3020.1

MEAN OF DEPENDENT VARIABLE = -1282.0

LOG OF THE LIKELIHOOD FUNCTION = -262.509

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)

AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.10098E+08

(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)

AKAIKE (1973) INFORMATION CRITERION- AIC = 16.127

SCHWARZ(1978) CRITERION-SC = 16.270

ANALYSIS OF VARIANCE - FROM MEAN

	SS	DF	MS	F
REGRESSION	0.23195E+09	2.	0.11598E+09	12.715
ERROR	0.22803E+09	25.	0.91210E+07	
TOTAL	0.45998E+09	27.	0.17036E+08	

ANALYSIS OF VARIANCE - FROM ZERO

	SS	DF	MS	F
REGRESSION	0.27797E+09	3.	0.92656E+08	10.159
ERROR	0.22803E+09	25.	0.91210E+07	
TOTAL	0.50599E+09	28.	0.18071E+08	

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 25 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
EXCH	56.650	11.499	4.9264	0.7018	0.96730	-13.117
SPR	-38939.	14637.	-2.6604	-0.4697	-0.52237	0.40638E-02
CONSTANT	-18092.	3459.3	-5.2299	-0.7228	0.00000E+00	14.113

OBSERVATION NO.	OBSERVED VALUE	PREDICTED VALUE	CALCULATED RESIDUAL	
1	-22.220	-2206.9	2184.7	I
2	11.760	-2550.1	2561.8	I
3	71.020	-1552.8	1623.8	I
4	146.74	-155.95	302.69	I
5	140.62	-218.25	358.87	I
6	80.110	1034.8	-954.70	I
7	-18.420	1441.0	-1459.4	I
8	-9.9000	1113.4	-1123.3	I
9	296.47	585.09	-288.62	I
10	751.12	2262.9	-1511.8	I
11	187.50	2410.7	-2223.2	I
12	550.30	1701.5	-1151.2	I
13	44.780	-786.00	830.78	I
14	-829.75	-1554.9	725.19	I
15	-347.47	-992.43	644.96	I
16	1306.2	5692.5	-4386.3	I
17	973.90	-795.63	1769.5	I
18	192.83	-1473.9	1666.7	I
19	-632.09	-3413.2	2781.1	I
20	-280.37	-2872.0	2591.7	I
21	2138.0	-2864.3	5002.3	I
22	1639.5	-2288.2	3927.8	I
23	198.86	-1842.6	2041.4	I
24	-650.61	-3289.7	2639.1	I
25	-5308.8	-3270.7	-2038.0	I
26	-9145.1	-3666.2	-5478.9	I
27	-15506.	-7437.8	-8068.0	I
28	-11874.	-8905.6	-2968.7	I

DURBIN-WATSON = 0.6774 VON NEUMAN RATIO = 0.7025 RHO = 0.65692
 RESIDUAL SUM = -0.31832E-10 RESIDUAL VARIANCE = 0.91210E+07
 SUM OF ABSOLUTE ERRORS= 63305.
 R-SQUARE BETWEEN OBSERVED AND PREDICTED = 0.5043
 RUNS TEST: 6 RUNS, 16 POSITIVE, 12 NEGATIVE, NORMAL STATISTIC = -3.4291
 COEFFICIENT OF SKEWNESS = -0.8703 WITH STANDARD DEVIATION OF 0.4405
 COEFFICIENT OF EXCESS KURTOSIS = 1.0257 WITH STANDARD DEVIATION OF 0.8583

GOODNESS OF FIT TEST FOR NORMALITY OF RESIDUALS - 6 GROUPS
 OBSERVED 1.0 2.0 9.0 14.0 2.0 0.0
 EXPECTED 0.6 3.8 9.6 9.6 3.8 0.6
 CHI-SQUARE = 4.6546 WITH 1 DEGREES OF FREEDOM

|_AUTO POR EXCH SPR/ ANOVA LIST

REQUIRED MEMORY IS PAR= 5 CURRENT PAR= 40

DEPENDENT VARIABLE = POR

..NOTE..R-SQUARE,ANOVA,RESIDUALS DONE ON ORIGINAL VARS

LEAST SQUARES ESTIMATION 28 OBSERVATIONS
BY COCHRANE-ORCUTT TYPE PROCEDURE WITH CONVERGENCE = 0.00100

ITERATION	RHO	LOG L.F.	SSE
1	0.00000	-262.509	0.22803E+09
2	0.65692	-251.901	0.10475E+09
3	0.85839	-250.374	0.91378E+08
4	0.90181	-250.424	0.90589E+08
5	0.90871	-250.452	0.90545E+08
6	0.90982	-250.457	0.90540E+08
7	0.91001	-250.458	0.90540E+08

LOG L.F. = -250.458 AT RHO = 0.91001

	ESTIMATE	ASYMPTOTIC VARIANCE	ASYMPTOTIC ST.ERROR	ASYMPTOTIC T-RATIO
RHO	0.91001	0.00614	0.07835	11.61447

R-SQUARE = 0.8032 R-SQUARE ADJUSTED = 0.7874
VARIANCE OF THE ESTIMATE = 0.36216E+07
STANDARD ERROR OF THE ESTIMATE = 1903.0
MEAN OF DEPENDENT VARIABLE = -1282.0
LOG OF THE LIKELIHOOD FUNCTION = -250.458

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)
AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.40096E+07
(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)
AKAIKE (1973) INFORMATION CRITERION- AIC = 15.203
SCHWARZ(1978) CRITERION-SC = 15.346

	ANALYSIS OF VARIANCE - FROM MEAN		
	SS	DF	MS
REGRESSION	0.36944E+09	2.	0.18472E+09
ERROR	0.90540E+08	25.	0.36216E+07
TOTAL	0.45998E+09	27.	0.17036E+08

	ANALYSIS OF VARIANCE - FROM ZERO		
	SS	DF	MS
REGRESSION	0.41545E+09	3.	0.13848E+09
ERROR	0.90540E+08	25.	0.36216E+07
TOTAL	0.50599E+09	28.	0.18071E+08

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 25 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
EXCH	22.168	10.314	2.1493	0.3949	0.37852	-5.1327
SPR	-737.86	18196.	-0.40551E-01	-0.0081	-0.98984E-02	0.77005E-04
CONSTANT	-9391.1	4180.5	-2.2464	-0.4098	0.00000E+00	7.3256

|_OLS DIR WAGE LAND EXCH SPR GOV/ ANOVA LIST

REQUIRED MEMORY IS PAR= 5 CURRENT PAR= 40

OLS ESTIMATION

28 OBSERVATIONS DEPENDENT VARIABLE = DIR

...NOTE...SAMPLE RANGE SET TO: 1, 28

R-SQUARE = 0.8102 R-SQUARE ADJUSTED = 0.7671
 VARIANCE OF THE ESTIMATE = 92457.
 STANDARD ERROR OF THE ESTIMATE = 304.07
 MEAN OF DEPENDENT VARIABLE = -579.79
 LOG OF THE LIKELIHOOD FUNCTION = -196.437

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)

AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.11227E+06

(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)

AKAIKE (1973) INFORMATION CRITERION- AIC = 11.622

SCHWARZ(1978) CRITERION-SC = 11.907

ANALYSIS OF VARIANCE - FROM MEAN				
	SS	DF	MS	F
REGRESSION	0.86850E+07	5.	0.17370E+07	18.787
ERROR	0.20340E+07	22.	92457.	
TOTAL	0.10719E+08	27.	0.39700E+06	

ANALYSIS OF VARIANCE - FROM ZERO				
	SS	DF	MS	F
REGRESSION	0.18097E+08	6.	0.30162E+07	32.623
ERROR	0.20340E+07	22.	92457.	
TOTAL	0.20131E+08	28.	0.71898E+06	

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 22 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
WAGE	-19.010	7.6969	-2.4698	-0.4659	-0.77033	2.5701
LAND	-5.1087	3.1415	-1.6262	-0.3276	-0.26288	0.91351
EXCH	3.6925	1.6209	2.2780	0.4369	0.41302	-1.8903
SPR	-6169.2	2693.2	-2.2906	-0.4388	-0.54214	0.14236E-02
GOV	0.13932E-01	0.22929E-01	0.60760	0.1285	0.96295E-01	-0.13636
CONSTANT	265.74	907.83	0.29272	0.0623	0.00000E+00	-0.45833

_OLS DIR WAGE LAND EXCH SPR/ ANOVA LIST

REQUIRED MEMORY IS PAR= 5 CURRENT PAR= 40

OLS ESTIMATION

28 OBSERVATIONS DEPENDENT VARIABLE = DIR

...NOTE...SAMPLE RANGE SET TO: 1, 28

R-SQUARE = 0.8071 R-SQUARE ADJUSTED = 0.7735

VARIANCE OF THE ESTIMATE = 89921.

STANDARD ERROR OF THE ESTIMATE = 299.87

MEAN OF DEPENDENT VARIABLE = -579.79

LOG OF THE LIKELIHOOD FUNCTION = -196.670

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)

AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.10598E+06

(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)

AKAIKE (1973) INFORMATION CRITERION- AIC = 11.567

SCHWARZ(1978) CRITERION-SC = 11.805

	ANALYSIS OF VARIANCE - FROM MEAN			
	SS	DF	MS	F
REGRESSION	0.86508E+07	4.	0.21627E+07	24.051
ERROR	0.20682E+07	23.	89921.	
TOTAL	0.10719E+08	27.	0.39700E+06	

	ANALYSIS OF VARIANCE - FROM ZERO			
	SS	DF	MS	F
REGRESSION	0.18063E+08	5.	0.36127E+07	40.176
ERROR	0.20682E+07	23.	89921.	
TOTAL	0.20131E+08	28.	0.71898E+06	

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 23 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
WAGE	-17.618	7.2466	-2.4312	-0.4522	-0.71393	2.3819
LAND	-5.6972	2.9472	-1.9330	-0.3738	-0.29316	1.0187
EXCH	3.9990	1.5191	2.6324	0.4812	0.44731	-2.0473
SPR	-6944.4	2339.1	-2.9688	-0.5264	-0.61026	0.16024E-02
CONSTANT	205.81	890.00	0.23125	0.0482	0.00000E+00	-0.35498

OBSERVATION NO.	OBSERVED VALUE	PREDICTED VALUE	CALCULATED RESIDUAL
1	-79.370	34.278	-113.65
2	-32.350	-191.59	159.24
3	-11.360	-134.63	123.27
4	-19.020	53.722	-72.742
5	-46.870	-52.709	5.8395
6	-30.390	188.36	-218.75
7	-76.320	119.28	-195.60
8	-71.780	4.7931	-76.573
9	-117.65	-180.52	62.872
10	-112.11	-29.520	-82.590
11	-187.50	-19.685	-167.81
12	-96.650	-370.45	273.80
13	-305.97	-712.43	406.46
14	-935.54	-1035.3	99.801
15	-675.79	-954.35	278.56
16	-771.28	-170.70	-600.58
17	-667.85	-872.31	204.46
18	-491.03	-810.41	319.38
19	-531.55	-830.93	299.38
20	-605.40	-871.87	266.47
21	-478.00	-794.07	316.07
22	-1006.8	-701.93	-304.85
23	-971.46	-837.48	-133.98
24	-717.66	-1088.8	371.10
25	-1322.8	-1125.2	-197.59
26	-1272.7	-1243.0	-29.737
27	-2165.0	-1619.4	-545.57
28	-2434.0	-1987.3	-446.68

DURBIN-WATSON = 1.5992 VON NEUMAN RATIO = 1.6584 RHO = 0.16496
 RESIDUAL SUM = -0.96634E-12 RESIDUAL VARIANCE = 89921.
 SUM OF ABSOLUTE ERRORS = 6373.4
 R-SQUARE BETWEEN OBSERVED AND PREDICTED = 0.8071
 RUNS TEST: 13 RUNS, 14 POSITIVE, 14 NEGATIVE, NORMAL STATISTIC = -0.7703
 COEFFICIENT OF SKEWNESS = -0.4631 WITH STANDARD DEVIATION OF 0.4405
 COEFFICIENT OF EXCESS KURTOSIS = -0.4634 WITH STANDARD DEVIATION OF 0.8583

GOODNESS OF FIT TEST FOR NORMALITY OF RESIDUALS - 10 GROUPS
 OBSERVED 0.0 2.0 1.0 4.0 7.0 5.0 7.0 2.0 0.0 0.0
 EXPECTED 0.2 0.8 2.2 4.5 6.3 6.3 4.5 2.2 0.8 0.2
 CHI-SQUARE = 5.7034 WITH 3 DEGREES OF FREEDOM

|_PLOT DIR WAGE

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
28 OBSERVATIONS

*=DIR

M=MULTIPLE POINT

400.00
317.95
235.90
153.85
71.795
-10.256
-92.308
-174.36
-256.41
-338.46
-420.51
-502.56
-584.62
-666.67
-748.72
-830.77
-912.82
-994.87
-1076.9
-1159.0
-1241.0
-1323.1
-1405.1
-1487.2
-1569.2
-1651.3
-1733.3
-1815.4
-1897.4
-1979.5
-2061.5
-2143.6
-2225.6
-2307.7
-2389.7
-2471.8
-2553.8
-2635.9
-2717.9
-2800.0

30.000 40.000 50.000 60.000 70.000 80.000 90.000 100.000 110.000
WAGE

|_PLOT DIR LAND

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
28 OBSERVATIONS

*=DIR

M=MULTIPLE POINT

400.00
317.95
235.90
153.85
71.795
-10.256
-92.308
-174.36
-256.41
-338.46
-420.51
-502.56
-584.62
-666.67
-748.72
-830.77
-912.82
-994.87
-1076.9
-1159.0
-1241.0
-1323.1
-1405.1
-1487.2
-1569.2
-1651.3
-1733.3
-1815.4
-1897.4
-1979.5
-2061.5
-2143.6
-2225.6
-2307.7
-2389.7
-2471.8
-2553.8
-2635.9
-2717.9
-2800.0

20.000 40.000 60.000 80.000 100.000 120.000 140.000 160.000 180.000
LAND

|_PLOT DIR EXCH

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
28 OBSERVATIONS

*=DIR
M=MULTIPLE POINT

400.00
317.95
235.90
153.85
71.795
-10.256
-92.308
-174.36
-256.41
-338.46
-420.51
-502.56
-584.62
-666.67
-748.72
-830.77
-912.82
-994.87
-1076.9
-1159.0
-1241.0
-1323.1
-1405.1
-1487.2
-1569.2
-1651.3
-1733.3
-1815.4
-1897.4
-1979.5
-2061.5
-2143.6
-2225.6
-2307.7
-2389.7
-2471.8
-2553.8
-2635.9
-2717.9
-2800.0

120.000 160.000 200.000 240.000 280.000 320.000 360.000 400.000 440.000
EXCH

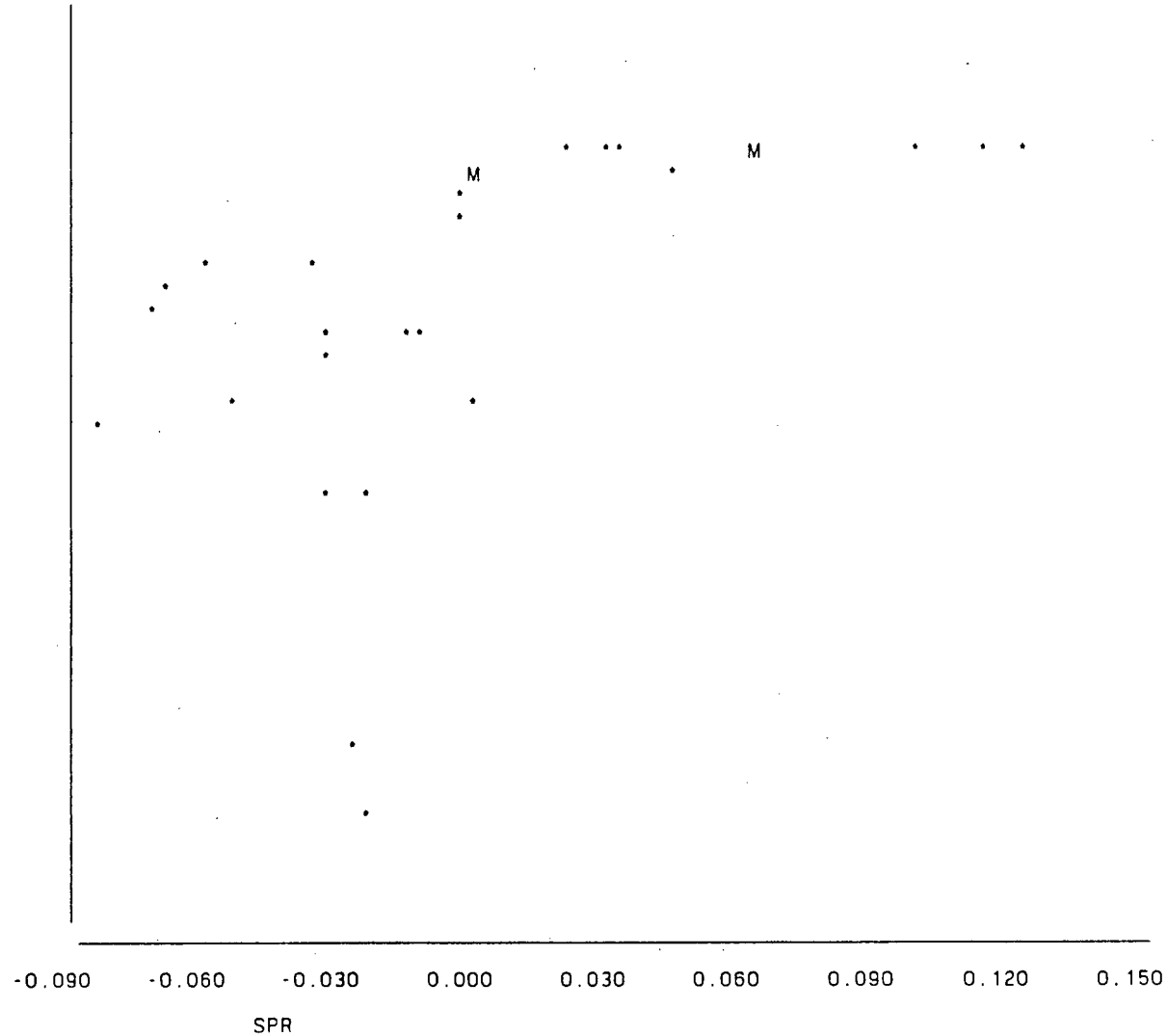
|_PLOT DIR SPR

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
28 OBSERVATIONS

*=DIR

M=MULTIPLE POINT

400.00
317.95
235.90
153.85
71.795
-10.256
-92.308
-174.36
-256.41
-338.46
-420.51
-502.56
-584.62
-666.67
-748.72
-830.77
-912.82
-994.87
-1076.9
-1159.0
-1241.0
-1323.1
-1405.1
-1487.2
-1569.2
-1651.3
-1733.3
-1815.4
-1897.4
-1979.5
-2061.5
-2143.6
-2225.6
-2307.7
-2389.7
-2471.8
-2553.8
-2635.9
-2717.9
-2800.0



|_SAMPLE 1 12

|_OLS DIR WAGE LAND EXCH SPR/ ANOVA LIST

REQUIRED MEMORY IS PAR= 4 CURRENT PAR= 40
 OLS ESTIMATION
 12 OBSERVATIONS DEPENDENT VARIABLE = DIR
 ...NOTE...SAMPLE RANGE SET TO: 1, 12

R-SQUARE = 0.8886 R-SQUARE ADJUSTED = 0.8249
 VARIANCE OF THE ESTIMATE = 447.40
 STANDARD ERROR OF THE ESTIMATE = 21.152
 MEAN OF DEPENDENT VARIABLE = -73.447
 LOG OF THE LIKELIHOOD FUNCTION = -50.4140

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)
 AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 633.82
 (FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)
 AKAIKE (1973) INFORMATION CRITERION- AIC = 6.3978
 SCHWARZ(1978) CRITERION-SC = 6.5998

	ANALYSIS OF VARIANCE - FROM MEAN			
	SS	DF	MS	F
REGRESSION	24976.	4.	6244.0	13.956
ERROR	3131.8	7.	447.40	
TOTAL	28108.	11.	2555.2	

	ANALYSIS OF VARIANCE - FROM ZERO			
	SS	DF	MS	F
REGRESSION	89710.	5.	17942.	40.103
ERROR	3131.8	7.	447.40	
TOTAL	92842.	12.	7736.8	

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 7 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
WAGE	-6.8838	1.3482	-5.1058	-0.8879	-1.5478	4.8159
LAND	1.4295	0.60897	2.3474	0.6637	0.72221	-1.5055
EXCH	-7.3348	3.0645	-2.3934	-0.6709	-0.44694	35.862
SPR	118.28	398.57	0.29677	0.1115	0.10435	-0.79813E-01
CONSTANT	2797.8	1170.7	2.3900	0.6703	0.00000E+00	-38.093

OBSERVATION NO.	OBSERVED VALUE	PREDICTED VALUE	CALCULATED RESIDUAL
1	-79.370	-60.597	-18.773
2	-32.350	-43.107	10.757
3	-11.360	-30.497	19.137
4	-19.020	-27.408	8.3875
5	-46.870	-31.562	-15.308
6	-30.390	-53.350	22.960
7	-76.320	-48.465	-27.855
8	-71.780	-75.228	3.4478
9	-117.65	-98.246	-19.404
10	-112.11	-129.46	17.346
11	-187.50	-186.80	-0.69530
12	-96.650	-96.650	-0.13856E-12

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DURBIN-WATSON = 2.8240 VON NEUMAN RATIO = 3.0807 RHO = -0.46827

RESIDUAL SUM = -0.32994E-11 RESIDUAL VARIANCE = 447.40

SUM OF ABSOLUTE ERRORS= 164.07

R-SQUARE BETWEEN OBSERVED AND PREDICTED = 0.8886

RUNS TEST: 9 RUNS, 6 POSITIVE, 6 NEGATIVE, NORMAL STATISTIC = 1.2111

COEFFICIENT OF SKEWNESS = -0.2933 WITH STANDARD DEVIATION OF 0.6373

COEFFICIENT OF EXCESS KURTOSIS = -1.2265 WITH STANDARD DEVIATION OF 1.2322

GOODNESS OF FIT TEST FOR NORMALITY OF RESIDUALS - 10 GROUPS

OBSERVED 0.0 0.0 1.0 3.0 2.0 3.0 3.0 0.0 0.0 0.0

EXPECTED 0.1 0.3 1.0 1.9 2.7 2.7 1.9 1.0 0.3 0.1

CHI-SQUARE = 3.2742 WITH 3 DEGREES OF FREEDOM

|_PLOT DIR WAGE

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
12 OBSERVATIONS

*=DIR

M=MULTIPLE POINT

30.000
23.846
17.692
11.538
5.3846
-0.76923
-6.9231
-13.077
-19.231
-25.385
-31.538
-37.692
-43.846
-50.000
-56.154
-62.308
-68.462
-74.615
-80.769
-86.923
-93.077
-99.231
-105.38
-111.54
-117.69
-123.85
-130.00
-136.15
-142.31
-148.46
-154.62
-160.77
-166.92
-173.08
-179.23
-185.38
-191.54
-197.69
-203.85
-210.00

35.000 40.000 45.000 50.000 55.000 60.000 65.000 70.000 75.000
WAGE

|_PLOT DIR EXCH

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
12 OBSERVATIONS

*=DIR

M=MULTIPLE POINT

30.000
23.846
17.692
11.538
5.3846
-0.76923
-6.9231
-13.077
-19.231
-25.385
-31.538
-37.692
-43.846
-50.000
-56.154
-62.308
-68.462
-74.615
-80.769
-86.923
-93.077
-99.231
-105.38
-111.54
-117.69
-123.85
-130.00
-136.15
-142.31
-148.46
-154.62
-160.77
-166.92
-173.08
-179.23
-185.38
-191.54
-197.69
-203.85
-210.00

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M

M

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348.000 349.500 351.000 352.500 354.000 355.500 357.000 358.500 360.000

EXCH

|_PLOT DIR LAND

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
12 OBSERVATIONS

*=DIR

M=MULTIPLE POINT

30.000
23.846
17.692
11.538
5.3846
-0.76923
-6.9231
-13.077
-19.231
-25.385
-31.538
-37.692
-43.846
-50.000
-56.154
-62.308
-68.462
-74.615
-80.769
-86.923
-93.077
-99.231
-105.38
-111.54
-117.69
-123.85
-130.00
-136.15
-142.31
-148.46
-154.62
-160.77
-166.92
-173.08
-179.23
-185.38
-191.54
-197.69
-203.85
-210.00

15.000 30.000 45.000 60.000 75.000 90.000 105.000 120.000 135.000
LAND

|_PLOT DIR SPR

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
12 OBSERVATIONS

*=DIR

M=MULTIPLE POINT

30.000
23.846
17.692
11.538
5.3846
-0.76923
-6.9231
-13.077
-19.231
-25.385
-31.538
-37.692
-43.846
-50.000
-56.154
-62.308
-68.462
-74.615
-80.769
-86.923
-93.077
-99.231
-105.38
-111.54
-117.69
-123.85
-130.00
-136.15
-142.31
-148.46
-154.62
-160.77
-166.92
-173.08
-179.23
-185.38
-191.54
-197.69
-203.85
-210.00

-0.020 0.000 0.020 0.040 0.060 0.080 0.100 0.120 0.140

SPR

|_SAMPLE 13 28

|_PLOT DIR WAGE

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
16 OBSERVATIONS

*=DIR
M=MULTIPLE POINT

-300.00
-361.54
-423.08
-484.62
-546.15
-607.69
-669.23
-730.77
-792.31
-853.85
-915.38
-976.92
-1038.5
-1100.0
-1161.5
-1223.1
-1284.6
-1346.2
-1407.7
-1469.2
-1530.8
-1592.3
-1653.8
-1715.4
-1776.9
-1838.5
-1900.0
-1961.5
-2023.1
-2084.6
-2146.2
-2207.7
-2269.2
-2330.8
-2392.3
-2453.8
-2515.4
-2576.9
-2638.5
-2700.0

80.000 84.000 88.000 92.000 96.000 100.000 104.000 108.000 112.000

WAGE

|_PLOT DIR LAND

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
16 OBSERVATIONS

*=DIR

M=MULTIPLE POINT

-300.00
-361.54
-423.08
-484.62
-546.15
-607.69
-669.23
-730.77
-792.31
-853.85
-915.38
-976.92
-1038.5
-1100.0
-1161.5
-1223.1
-1284.6
-1346.2
-1407.7
-1469.2
-1530.8
-1592.3
-1653.8
-1715.4
-1776.9
-1838.5
-1900.0
-1961.5
-2023.1
-2084.6
-2146.2
-2207.7
-2269.2
-2330.8
-2392.3
-2453.8
-2515.4
-2576.9
-2638.5
-2700.0

87.500 100.000 112.500 125.000 137.500 150.000 162.500 175.000 187.500

LAND

|_PLOT DIR LAND

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
16 OBSERVATIONS

*=DIR
M=MULTIPLE POINT

-300.00
-361.54
-423.08
-484.62
-546.15
-607.69
-669.23
-730.77
-792.31
-853.85
-915.38
-976.92
-1038.5
-1100.0
-1161.5
-1223.1
-1284.6
-1346.2
-1407.7
-1469.2
-1530.8
-1592.3
-1653.8
-1715.4
-1776.9
-1838.5
-1900.0
-1961.5
-2023.1
-2084.6
-2146.2
-2207.7
-2269.2
-2330.8
-2392.3
-2453.8
-2515.4
-2576.9
-2638.5
-2700.0

87.500 100.000 112.500 125.000 137.500 150.000 162.500 175.000 187.500
LAND

|_PLOT DIR EXCH

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
16 OBSERVATIONS

*=DIR

M=MULTIPLE POINT

-300.00
-361.54
-423.08
-484.62
-546.15
-607.69
-669.23
-730.77
-792.31
-853.85
-915.38
-976.92
-1038.5
-1100.0
-1161.5
-1223.1
-1284.6
-1346.2
-1407.7
-1469.2
-1530.8
-1592.3
-1653.8
-1715.4
-1776.9
-1838.5
-1900.0
-1961.5
-2023.1
-2084.6
-2146.2
-2207.7
-2269.2
-2330.8
-2392.3
-2453.8
-2515.4
-2576.9
-2638.5
-2700.0

120.000 160.000 200.000 240.000 280.000 320.000 360.000 400.000 440.000

EXCH

|_PLOT DIR SPR

REQUIRED MEMORY IS PAR= 3 CURRENT PAR= 40
FOR MAXIMUM EFFICIENCY USE AT LEAST PAR= 3
16 OBSERVATIONS

*=DIR
M=MULTIPLE POINT

-300.00
-361.54
-423.08
-484.62
-546.15
-607.69
-669.23
-730.77
-792.31
-853.85
-915.38
-976.92
-1038.5
-1100.0
-1161.5
-1223.1
-1284.6
-1346.2
-1407.7
-1469.2
-1530.8
-1592.3
-1653.8
-1715.4
-1776.9
-1838.5
-1900.0
-1961.5
-2023.1
-2084.6
-2146.2
-2207.7
-2269.2
-2330.8
-2392.3
-2453.8
-2515.4
-2576.9
-2638.5
-2700.0

-0.088 -0.075 -0.063 -0.050 -0.038 -0.025 -0.013 -0.000 0.012

SPR

_OLS DIR WAGE LAND EXCH SPR/ ANOVA LIST

REQUIRED MEMORY IS PAR= 4 CURRENT PAR= 40

OLS ESTIMATION

16 OBSERVATIONS DEPENDENT VARIABLE = DIR

...NOTE...SAMPLE RANGE SET TO: 13, 28

R-SQUARE = 0.8239 R-SQUARE ADJUSTED = 0.7598

VARIANCE OF THE ESTIMATE = 84976.

STANDARD ERROR OF THE ESTIMATE = 291.51

MEAN OF DEPENDENT VARIABLE = -959.55

LOG OF THE LIKELIHOOD FUNCTION = -110.506

MODEL SELECTION TESTS - SEE JUDGE ET.AL.(1985, P.242)

AKAIKE (1969) FINAL PREDICTION ERROR- FPE = 0.11153E+06

(FPE ALSO KNOWN AS AMEMIYA PREDICTION CRITERION -PC)

AKAIKE (1973) INFORMATION CRITERION- AIC = 11.600

SCHWARZ(1978) CRITERION-SC = 11.842

ANALYSIS OF VARIANCE - FROM MEAN

	SS	DF	MS	F
REGRESSION	0.43721E+07	4.	0.10930E+07	12.863
ERROR	0.93473E+06	11.	84976.	
TOTAL	0.53068E+07	15.	0.35379E+06	

ANALYSIS OF VARIANCE - FROM ZERO

	SS	DF	MS	F
REGRESSION	0.19104E+08	5.	0.38208E+07	44.963
ERROR	0.93473E+06	11.	84976.	
TOTAL	0.20039E+08	16.	0.12524E+07	

VARIABLE NAME	ESTIMATED COEFFICIENT	STANDARD ERROR	T-RATIO 11 DF	PARTIAL CORR.	STANDARDIZED COEFFICIENT	ELASTICITY AT MEANS
WAGE	-62.145	15.643	-3.9727	-0.7676	-0.79489	6.3883
LAND	-18.316	6.8857	-2.6600	-0.6257	-0.64866	2.3558
EXCH	-2.2909	2.7180	-0.84288	-0.2463	-0.22792	0.59713
SPR	-698.92	5589.1	-0.12505	-0.0377	-0.29726E-01	-0.26904E-01
CONSTANT	7978.0	2581.8	3.0901	0.6817	0.00000E+00	-8.3143

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