JAPAN'S HIGH SAVING RATE REAFFIRMED

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ABSTRACT

Compared to the U.S. national accounts, the Japanese accounts understate consumption and government spending, and therefore overstate the national saving rate. Recently, Hayashi has recalculated Japan's national saving according to the American Department of Commerce definition and found that from the mid-1970s until today, Japan's national saving rate is nearly halved.

In this paper, we argue that Hayashi's adjustments to the Japanese income accounts are exaggerated, and present measures of Japanese and U.S. private saving that are immune from national income accounting biases. Our saving measures are constructed from the balance sheets of the household sectors in the United States and Japan. Far from being equal, we find that the two country gap in saving rates in the early 1980s has averaged between 15 and 30 percentage points, depending on the measure.

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1. Introduction.

U.S.-Japan comparisons of aggregate saving rates have traditionally been based on the national income accounts. Recently, the notion that Japan's national saving rate is high has been challenged by Hayashi (Hayashi, 1986,1989,1990). Hayashi argued that before comparisons are made, the definitions of consumption and government spending in the two countries must be made consistent. Relative to the U.S. national accounts, the Japanese accounts understate consumption and government spending. First, in Japan, depreciation is treated at historical cost, and in times of high inflation, the historical cost depreciation will tend to underestimate the true cost of capital consumption. Second, since government spending in the Japanese accounts does not include government investment, the Japanese government budget deficit is lowered relative to the American deficit. Hayashi carefully recalculates Japan's national saving according to the American Department of Commerce definition and finds that from the mid-1970s until today, Japan's national saving is nearly halved (Figure 1). Figure 1 shows that during the early 1980s, there is almost no difference between American and Japanese saving rates.

In this paper, we argue that Hayashi's adjustments to the Japanese income accounts are probably exaggerated, and present measures of Japanese and U.S. private saving that are immune from the above income accounting biases. We find that the Japanese saving rate is indeed much higher than the American saving rate.

Far from being equal, the two country gap in saving rates in the early 1980s has averaged between 15 to 30 percentage points, depending on the measure. The gap after 1985 appears to have widened further.

This paper is organized as follows. Section 2 shows that Hayashi's estimates of replacement cost depreciation imply implausibly that Japanese capital depreciates at a rate three times as fast as American capital. It is likely that Hayashi has imputed to Japanese depreciation, unrelated residual items, or that the Japanese Economic Planning Agency, which constructs the National Accounts, has exaggerated the true cost of capital consumption.

Section 3 presents our measures of saving constructed from the balance sheets of the household sectors in the United States and Japan. If there are no capital gains to reproducible capital and land, then our measures of saving will equal the national accounts definition of private saving: corporate retained earnings plus household income minus consumption. The U.S.-Japan saving gap becomes much larger according to our measures because of the large capital gains to reproducible capital and especially to land that Japan has experienced during the post-war period.

2. Hayashi's Implausibly High Replacement Cost Depreciation Estimates for Reproducible Capital.

Figures 2 (a) and (b) exhibit the current account surpluses for the United States and Japan. If both the current surplus

(CAS) and gross domestic investment (I) are high, then gross saving must be high.[1]

The ratios of gross investment to GNP are shown in Tables 1 (a) and (b). Unlike in the Department of Commerce definition, investment here, taken from the OECD National Accounts, is inclusive of government investment.[2] On average, the ratios of nominal investment to nominal GNP are lower than the "real-real" ratios; in both countries, there has been a fall in the relative price of capital goods.

Between 1975 and 1987, the gross saving rate, (CAS+I)/GNP, for Japan was on average higher than that in the United States by 14.7 percentage points. Figure 1 shows that during this period, Hayashi's estimates of the average Japan-U.S. gap in the net saving rates was about 2 percent. Since government investment is treated identically in both countries, Hayashi would be attributing much of the 12.7 (=14.7-2) point gap to the two countries' differing depreciation accounting practices. Depreciation at historical cost will understate that at replacement cost during and after the inflationary 1970s.

Tables 2 (a) and (b) depict replacement cost depreciations for the United States and Japan as fractions of

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[1] In the Japanese national accounts, national saving differs from the sum of the current account surplus and domestic investment by the statistical discrepancy, which is usually small. For example, in 1981, the statistical discrepancy was 0.513 trillion yen, when gross national saving was 47.012 trillion yen.

[2] It appears that what is reported as American government investment in the OECD accounts is the sum of non-military durable purchases by the Federal, state and local governments.

GNP and the beginning of period capital stock.[3] The value of depreciation for Japan between 1970 and 1984 is from Hayashi (1986).[4] His method was applied to update to 1987, the replacement cost of private capital, excluding consumer durables.[5] All American data except for the depreciation of government capital are from the Department of Commerce's Survey of Current Business.[6]   As expected, the table shows that Japanese depreciation rates are very high compared to the United States. The U.S.-Japan gap in the ratios of total depreciation to GNP ranges from 10.5 percent in 1977 to 15.1 percent in 1982.[7] The magnitude of the gap in private depreciation/GNP is similarly large.[8]

Columns 3 and 4 display implicit depreciation rates, and

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[3]For both countries, GNP and depreciation are divided by their respective deflators.

[4]Hayashi (1989, 1990) only present graphs showing the gap between Japanese and American net saving rates. No values for replacement cost depreciation are given.

[5]Hayashi's calculation of the replacement cost of consumer durables and government capital proved intractable, requiring the application of the perpetual inventory method to stock and flow data from 1970 in primary sources not readily available.

[6]The depreciation of government capital is from the OECD National Accounts, Detailed Tables.

[7]Hayashi (1986) overstates the U.S.-Japan depreciation gap. By using the Department of Commerce capital consumption data, Hayashi neglects to include in his estimates of American depreciation, the depreciation of government capital. Essentially he is comparing Table 2 (a), column 2 with Table 2 (b) column 1. The correct comparison is performed in the text.

[8]Private depreciation is the sum of corporate (non-financial and financial) and household depreciation.

again, the two country gap is significant. It appears
unreasonable that implicit depreciation rates in Japan are often
three times that in the U.S. Assuming straight-line
depreciation, a dollar of capital installed at time t would after
10 years be worth 60 cents in the United States, but only 25
cents in Japan.[9]   Given the high Japanese investment rates in
Table 1, it would seem that the vintage of Japanese capital is on
average lower than the vintage of American capital; since newer
capital would tend to have longer service lives, for the same
dollar of capital, Japanese depreciation should be lower.

There are at least two reasons why Japanese replacement cost
depreciation may be overestimated. First, Hayashi estimates the
Japanese replacement cost-historical cost differential from the
reconciliation tables linking investment to the change in the
market value of the capital stock. Official calculations of
depreciation at replacement cost by the Economic Planning Agency
exist, but are not released. Its value must be inferred from the
"reconciliation balance," which is equal to,

Capital gains + (Replacement Cost-Historical Cost gap) +
Residual.

Hayashi obtains his depreciation gap by subtracting from the
balance, capital gains, but his measure is an overestimate of the

[9]For implicit depreciation rates, we have used 0.12 for Japan
and 0.04 for the United States.

gap by the amount of the residual.[10] It is not possible from the national accounts to determine the magnitude of the residual, but it may be large during some years. For example, the entire capital stock of Okinawa appeared in the reconciliation balance for several years after the islands were returned to Japan in May 1972, which may explain why Hayashi's estimates of replacement cost depreciation are especially high for 1973 and 1974.

Second, in calculating their (unreleased) estimates of replacement cost depreciation, the Economic Planning Agency use the same asset service lives that are used by Japanese corporations for tax purposes. These service lives seem to be considerably shorter in Japan than in the United States for the same asset. For example, the "useful life" of an automobile in Japan is 4 years, but on average is 7 in the United States (Uno(1987), p. 103; Ture (1967), p.185).[11] At least until the

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[10]According to the Economic Planning Agency (1978), the residual includes reclassifications of capital that occur in a given year. For example, at the end of the year when a publicly owned firm is privatized, the capital stock of the firm will show up as the residual in the reconciliation account for private sector capital.

[11]The table below compares the average service lives of some common capital assets.

	U.S.	Japan
Engines and Turbines	21	16
Ships and Boats	22	9
Railroad Tracks	51	26
Residential Structures	80	25
	(single family house)	(wooden)

For the service lives on other assets, see for the U.S., Department of Commerce, 1982, p.T17-T20, for Japan, EPA, 1964, p.190-194.

late 1970s, the Japanese government had a policy to stimulate

corporate investment through tax incentives, and the short

service lives may have been part of this policy (Ishi, 1989, p.

177).

3. American and Japanese Saving at Asset Market Values.

If we accept the Haig-Hicks-Simon (HHS) concept of income as

that which can be consumed without decreasing the real value of

wealth, then income and saving should include real capital

gains.[12]   Differences in depreciation accounting should not

bias our U.S.-Japan comparisons of the HHS measure of saving.

Other things being equal, a country with a higher rate of capital

depreciation should have lower capital gains and the market value

of wealth should increase more slowly.   In this section we

compare the asset holdings of American and Japanese households

and show that the market value of Japanese assets has increased

faster than the value of American assets.

Table 3 depicts the ratio of net wealth to net disposable

income for U.S. and Japanese households.[13]   In spite of the

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[12]For a careful statement of the Haig-Hicks-Simon income
concept, see Bradford (1989).

[13]Net wealth is the difference between gross wealth and
household liabilities.   Gross wealth includes inventories, non-
reporducible assets such as land, the structure of the owner
occupied home, and financial assets such as money, deposits, bonds,
and equities.   Disposable income is defined as household income
minus the sum of direct taxes, social security payroll taxes, and
various minor fines and fees. For Japan and the United States, the
household sector includes private unincorporated enterprises and

persistently high level of postwar Japanese saving, the ratio of
non-land assets to DI in Japan still appears to be smaller in
Japan than in the United States. It is, however, well-known that
in the balance sheets of the Japanese household sector, equity
and land are substantially underestimated (Ando, 1985).[14] The
underestimate of corporate equity arises mainly because non-
publicly traded stocks are valued in the national accounts at
par, usually at 50 yen per share.[15] Table 4 column (2) shows

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not-for-profit organizations.

[14]In 1984, corporate equity held by the household sector was
reported in the balance sheets to be only 15 percent of the market
value of assets held by the corporate sector. A painstaking
analysis of Hoshi and Kayshap (1990) of 353 Japanese manufacturing
firms listed on the Tokyo stock exchange revealed that in 1984,
Tobin's q was 1.10.
   The Economic Planning Agency imputes the value of land held by
the household sector using the National Land Agency's "Posted Land
Values" Koji-chika. It is estimated that in recent years, the
Koji-chika is about 70 percent of the market value of land. Since
there are no official compilations of the actual transactions
prices of real estate, it is not possible to develop a series for
the market value of Japanese land.

[15]For example, the par value of Bank of Japan stock is 100 yen,
and there are a million shares outstanding. On very rare
instances, Bank of Japan equity is exchanged over-the-counter and
in January 1990, shares were traded at 680 thousand a share.
   Most unlisted corporations in Japan are very small. A firm
can adopt the corporate form with 7 employees and 100,000 in
capitalization, and take advantage of limited liability and
generous physical capital depreciation tax allowances. To be
listed on a stock exchange, a firm's equity must be above a given
amount, be widely traded, and the firm must run a profit two years
in succession. In Japan at the end of March 1990, there were
975,861 corporations, and 4872 were listed on the two sections in
Tokyo, and the seven regional stock exchanges. Unfortunately,
without information on the market values of unlisted firms, it is
difficult to accurately adjust upwards, the equity reported in the
national accounts. In the text, a crude attempt is made to
estimate the market value of unlisted firms by assuming that the q
ratio of unlisted firms is unity and equal to that of listed firms.

the levels of Japanese household non-land assets, Non-land*, when the equity of unlisted firms is valued at market prices. The calculation procedure, described in the Appendix, assumes that Tobin's q for listed firms is one and equal to the q of unlisted firms.[16] The market valuation of unlisted firms raises Japanese non-land/disposable income ratios by over 50 percent.

According to the Harrod-Domar identity, the steady-state saving rate, s is equal to g*W/Y, where g is the growth rate of real income and W/Y is the wealth-income ratio.[17] Table 5 shows the equilibrium saving rates for the two countries for various combinations of g and W/Y. Since the Japanese economy was probably not in the steady-state until the late 1970s, s is also calculated for the period starting in 1978.

When non-real estate wealth is adjusted upwards to reflect the market valuation of unlisted firms, the derived saving rates for Japan become higher that America's. When wealth includes land, the Japanese saving rates rise to over twice the American rates.

The saving rate derived from the Harrod-Domar condition is valid only when the wealth-income ratio is constant. Table 6 and

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[16]It was not possible to adjust the equity holdings of Japanese households prior to 1970. Before 1970 in the Japanese household balance sheets, the value of equities for listed firms were not at market but at "book," the price of the stocks at the time when the stocks were obtained.

[17]In the steady-state, the wealth income ratio is constant. If income grows at g, saving or the change in wealth must equal g*W. The saving rate that keeps the wealth-income ratio constant is g*W/Y.

Table 4 column (3) depict the ratio of the annual changes in real wealth to real disposable income.[18] Because the volatility in year-to-year asset prices makes international comparisons difficult, period averages are shown at the bottom of the table. Averages over sub-periods show that the Japanese first-differences have been rising since the mid-1960s, while that for the United States have been falling. The Japan-U.S. gap in the changes in non-land wealth has widened to about 15 points in the early 1980s.[19] The Japanese saved 15 percent of their disposable income; Americans saved none.

The inclusion of land in wealth greatly increases the U.S.-Japan gap in the first-differences of wealth. The average Japanese changes in wealth over the period 1956 to 1987 and 1986 to 1987 are now over three times and nine times that in the United States.

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[18] $(W(t)-W(t-1))/DI(t)$. Both nominal household wealth and nominal disposable income are deflated by the GNP deflator.

[19] Ignoring the change in the household's ownership of inventories, government bonds, and physical assets, the change in household non-land assets is equal to,

$$k(t+1)K(t+1) - k(t)K(t) - dk(t+1)K(t+1) + p(t+1)L(c) - p(t)L(c),$$

where $k(t)$ is the price of capital goods relative to consumption goods, $K(t)$ is the capital stock, d is the annual rate of capital depreciation, $p(t)$ is the price of land, and $L(c)$ is the land held by the corporate sector, assumed constant. At the end of 1987, the Japanese corporate sector held over 28 percent of the value of privately owned land. Note that when $k(t)=k(t+1)$ and $p(t)=p(t+1)$, the change in wealth will equal private income minus consumption. During the 1980s, the capital gains in corporate land holdings have been on average much larger in Japan than in the United States, which may help explain part of the rising gap in the first-differences of household non-real estate wealth between the two countries.

Can the capital gains on land be included in "saving?" If the capital gains arise because of increases in lifetime income, then present and future consumption opportunities can rise without decreasing wealth; saving in the Haig-Hicks-Simon sense has occured. Dekle (1990) shows that for Japan, the capital gains on land has raised consumption during most of the post-war period. Japanese households appear to view the increase in land prices as increases in their lifetime consumption opportunities.

4. Concluding Comments.

Economic data from different countries are usually not directly comparable. The U.S. and Japanese saving rates as reported in their respective national accounts are no exception. Hayashi's careful efforts at adjusting the Japanese saving rates deserve much praise, but his estimates of replacement cost depreciation are unrealistically high compared to American depreciation rates. The household balance sheet data that we examine do not suffer from the type of biases that Hayashi attempts to correct.

Our results that the gap in U.S.-Japan saving rates is high and increasing is troubling. Unless policymakers urgently address the issue of low American saving, American real economic growth may continue to lag behind Japan's.

Appendix 1: Construction of Table 4.

a) Column 1: Average Tobin's q from the National Accounts.
    The figures are derived from dividing the value of equity held by the household sector by the net wealth (shomi-shisan) of the non-financial and financial sectors.

b) Assume that Average Tobin's q for both listed and unlisted Japanese corporations is one. The assumption of unitary Tobin's q for listed corporations appears to be satisfied for Japan in the 1970s and 1980s.   For example, Hoshi and Kayshap (1989) have painstakingly calculated tax-unadjusted Tobin's q for 353 Japanese manufacturing firms listed on the Tokyo stock exchange, and found that between 1976 and 1984, q ranged from .92 to 1.10.

    Since in practice Japanese firms with fewer employees have smaller q ratios, and since unlisted firms on average are smaller than listed firms, the wealth-income ratios in the Table may be somewhat biased upwards. However, the possibility of arbitrage by the buying and selling of unlisted firms suggest that the q of unlisted firms on average may not diverge far from the q of the listed firms.

    The division of one by the numbers in column 1 gives the ratio of the market value of equity to the value of equity as reported in the National Accounts. The replacement costs cancel out.

c) Column 2. The market valuation of equity held by the household sector is derived by multiplying the household equity reported in the National Accounts by the inverse of column 1. Other household non-land assets are added and the sum is divided by the disposable income of households.

d) Column 3 is equal to $\{W(t)-W(t-1)\}/DI(t)$, where $W(t)$ is end of period Non-land* wealth.

Figure 1: National Saving Rate

Percent of Net National Product

Source: Hayashi (1990)

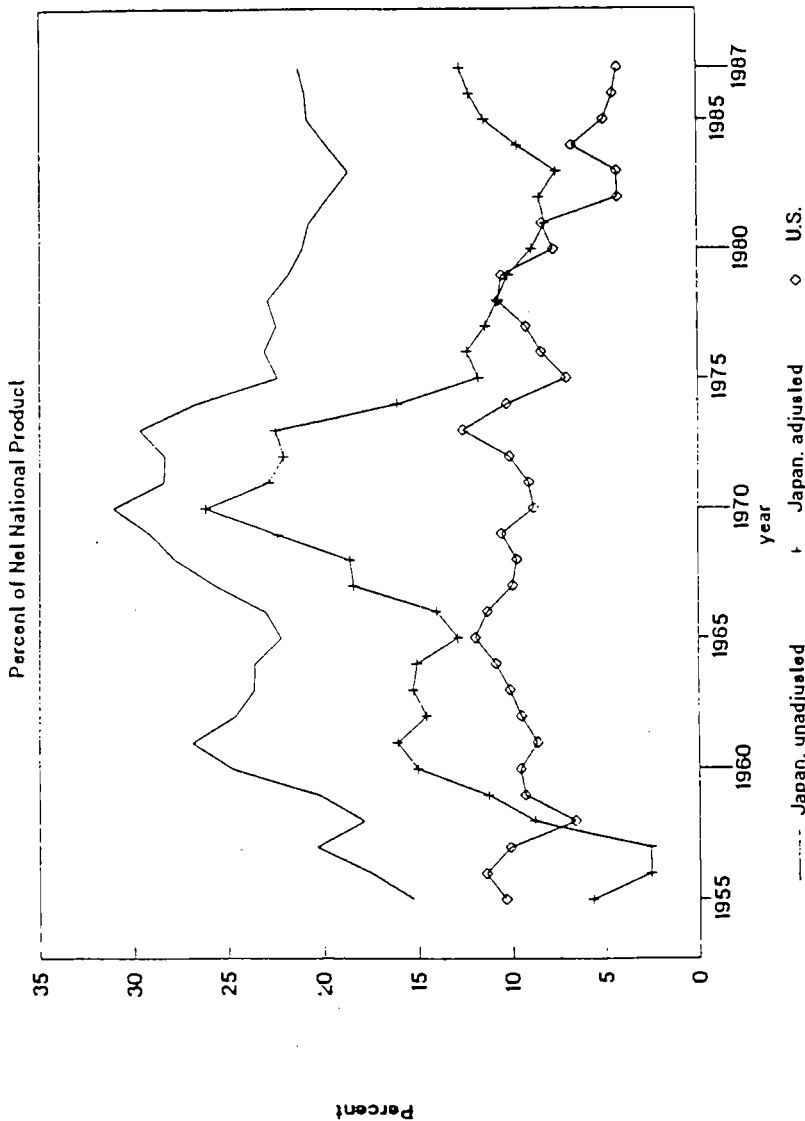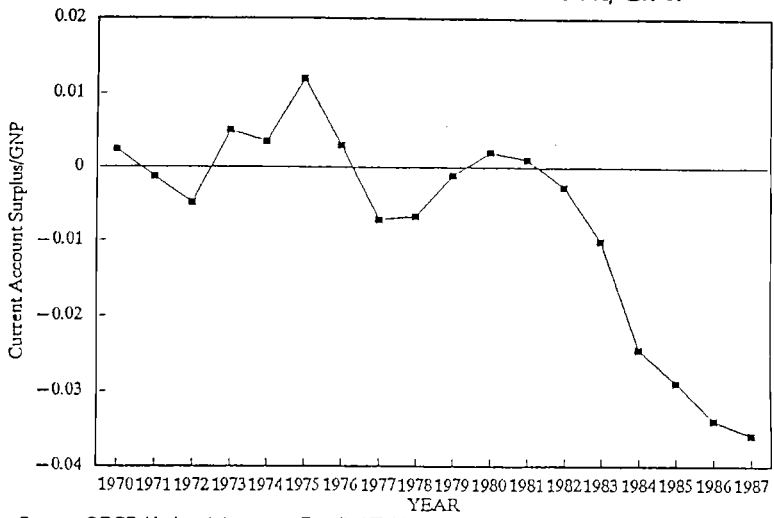Japan. unadjusted   + Japan. adjusted   ◇ U.S.

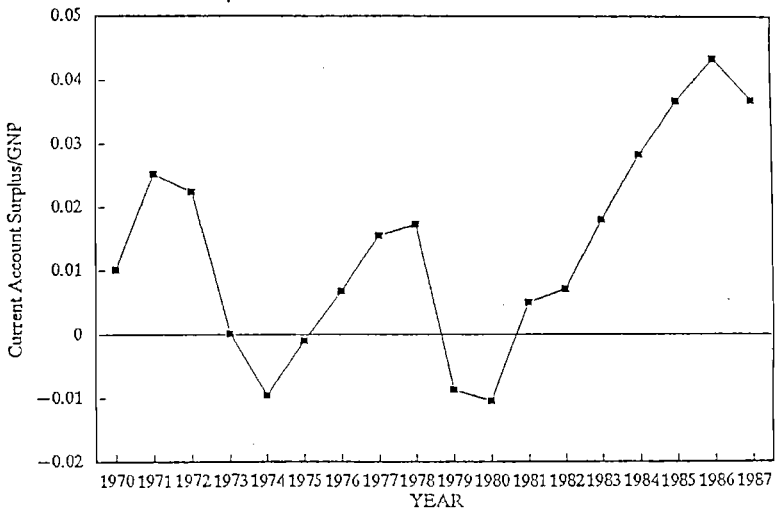Percent

year

Figure 2(a)

America's Current Account/GNP

Source: OECD National Accounts: Detailed Tables

Figure 2(b)

Japan's Current Account/GNP

Source: OECD National Accounts

Table 1(a)

American and Japanese Gross Investment Rates

A. Nominal Investment/Nominal GNP

U.S.

Year	Total/ GNP	Inventory/ GNP	Resid./ GNP	Non-resid./ GNP	Other Struc./ GNP	Equip/ GNP
1970	0.176	0.002	0.038	0.034	0.031	0.072
1971	0.181	0.008	0.048	0.033	0.030	0.070
1972	0.187	0.007	0.048	0.032	0.029	0.078
1973	0.191	0.011	0.052	0.034	0.029	0.077
1974	0.184	0.008	0.040	0.034	0.032	0.078
1975	0.169	-0.003	0.035	0.029	0.031	0.073
1976	0.171	0.007	0.041	0.026	0.030	0.074
1977	0.183	0.014	0.049	0.024	0.028	0.081
1978	0.195	0.013	0.051	0.027	0.030	0.087
1979	0.198	0.006	0.049	0.029	0.031	0.089
1980	0.185	-0.002	0.039	0.030	0.032	0.084
1981	0.179	0.009	0.035	0.029	0.033	0.082
1982	0.165	-0.004	0.029	0.029	0.033	0.074
1983	0.172	-0.003	0.045	0.025	0.027	0.075
1984	0.180	0.017	0.048	0.027	0.025	0.079
1985	0.181	0.006	0.047	0.029	0.025	0.080
1986	0.177	0.005	0.051	0.027	0.021	0.077
1987	0.173	0.008	0.050	0.027	0.020	0.076

JAPAN

Year	Total/ GNP	Inventory/ GNP	Resid./ GNP	Non-resid./ GNP	Other Struc./ GNP	Equip./ GNP
1970	0.391	0.035	0.071	0.058	0.074	0.154
1971	0.357	0.015	0.069	0.056	0.074	0.144
1972	0.351	0.014	0.074	0.055	0.075	0.134
1973	0.380	0.017	0.087	0.059	0.081	0.137
1974	0.373	0.026	0.079	0.056	0.085	0.127
1975	0.328	0.003	0.076	0.054	0.084	0.110
1976	0.319	0.006	0.078	0.051	0.080	0.104
1977	0.311	0.007	0.075	0.049	0.080	0.102
1978	0.312	0.005	0.074	0.049	0.081	0.103
1979	0.329	0.083	0.074	0.056	0.084	0.108
1980	0.322	0.067	0.064	0.061	0.085	0.105
1981	0.315	0.054	0.062	0.059	0.084	0.105
1982	0.304	0.046	0.060	0.057	0.079	0.102
1983	0.283	0.0008	0.053	0.051	0.080	0.098
1984	0.282	0.004	0.050	0.049	0.078	0.102
1985	0.284	0.007	0.048	0.048	0.075	0.105
1986	0.281	0.004	0.050	0.046	0.074	0.106
1987	0.291	0.002	0.059	0.042	0.078	0.109

Table 1(b)

American and Japanese Gross Investment Rates

B. Real Investment/Real GNP

U.S.

Year	Total/ GNP	Inventory/ GNP	Resid./ GNP	Non-resid./ GNP	Other Struc./ GNP	Equip/ GNP
1970	0.189	0.003	0.040	0.039	0.039	0.071
1971	0.193	0.009	0.051	0.037	0.036	0.069
1972	0.199	0.009	0.057	0.036	0.035	0.072
1973	0.202	0.013	0.052	0.036	0.033	0.080
1974	0.190	0.009	0.041	0.034	0.033	0.082
1975	0.169	-0.003	0.034	0.029	0.031	0.073
1976	0.172	0.007	0.040	0.026	0.031	0.074
1977	0.181	0.014	0.046	0.025	0.028	0.081
1978	0.189	0.015	0.045	0.027	0.030	0.087
1979	0.190	0.006	0.042	0.028	0.028	0.091
1980	0.179	-0.005	0.033	0.028	0.029	0.088
1981	0.176	0.009	0.031	0.029	0.028	0.089
1982	0.168	-0.005	0.026	0.029	0.028	0.084
1983	0.183	-0.003	0.048	0.025	0.029	0.081
1984	0.198	0.018	0.051	0.027	0.029	0.091
1985	0.204	0.006	0.049	0.029	0.029	0.096
1986	0.200	0.006	0.054	0.027	0.025	0.094
1987	0.199	0.008	0.052	0.026	0.025	0.097

JAPAN

Year	Total/ GNP	Inventory/ GNP	Resid./ GNP	Non-resid./ GNP	Other Struc./ GNP	Equip./ GNP
1970	0.377	0.032	0.073	0.058	0.083	0.131
1971	0.359	0.014	0.074	0.059	0.084	0.128
1972	0.364	0.014	0.080	0.059	0.085	0.125
1973	0.383	0.017	0.084	0.059	0.088	0.134
1974	0.361	0.024	0.076	0.054	0.086	0.121
1975	0.328	0.003	0.076	0.054	0.084	0.111
1976	0.324	0.007	0.078	0.051	0.080	0.110
1977	0.324	0.007	0.075	0.050	0.080	0.112
1978	0.335	0.006	0.077	0.050	0.083	0.119
1979	0.344	0.010	0.071	0.054	0.080	0.128
1980	0.330	0.008	0.062	0.056	0.076	0.128
1981	0.327	0.008	0.057	0.048	0.077	0.137
1982	0.323	0.007	0.055	0.046	0.073	0.142
1983	0.299	0.002	0.056	0.048	0.082	0.111
1984	0.303	0.006	0.052	0.046	0.077	0.122
1985	0.310	0.009	0.051	0.044	0.075	0.131
1986	0.318	0.007	0.053	0.045	0.075	0.136
1987	0.331	0.003	0.062	0.046	0.078	0.143

Notes to Tables 1(a) and 1(b).
Source: <u>OECD National Accounts, Detailed Tables.</u>

Note: Total, total investment; Inventory, inventory investment; Resid.:
residential structures; Non-resid.: non-residential structures that are
buildings such as plants, business and government offices; Other Struc.:
structures that are not buildings, such as bridges, roads, and railway
tracks; Equip.: equipment.

Table 2(a)

UNITED STATES

Depreciation of Fixed Reproducible Capital as a Proportion of
GNP and the Net Capital Stock

YEAR	Gov.and Private Deprec./ GNP (1)	Priv. Deprec./ GNP (2)	Gov.and Private Deprec./ Total Capital (3)	Private Deprec./ Private Capital (4)
1970	0.094	0.079	0.039	0.046
1971	0.099	0.085	0.041	0.048
1972	0.104	0.089	0.043	0.050
1973	0.105	0.090	0.042	0.050
1974	0.089	0.074	0.033	0.038
1975	0.093	0.077	0.035	0.040
1976	0.099	0.085	0.039	0.045
1977	0.104	0.090	0.041	0.047
1978	0.102	0.088	0.040	0.046
1979	0.094	0.079	0.036	0.041
1980	0.079	0.064	0.029	0.032
1981	0.076	0.061	0.029	0.031
1982	0.061	0.047	0.024	0.024
1983	0.079	0.065	0.030	0.032
1984	0.089	0.076	0.035	0.039
1985	0.091	0.077	0.035	0.039
1986	0.091	0.078	0.035	0.039
1987	0.091	0.077	0.035	0.038

Source: Capital Stock, GNP, and depreciation of Private Capital, Survey of
Current Business, Department of Commerce, various issues. Depreciation of
Government Capital, OECD, National Accounts, Detailed Tables.

Table 2(b)

JAPAN

Depreciation of Fixed Reproducible Capital as a Proportion of
GNP and the Net Capital Stock

YEAR	Gov.and Private Deprec./ GNP (1)	Priv. Deprec./ GNP (2)	Gov.and Private Deprec./ Total Capital (3)	Private Deprec./ Private Capital (4)
1970	0.137	0.126	0.139	0.167
1971	0.161	0.147	0.125	0.148
1972	0.166	0.151	0.121	0.141
1973	0.193	0.175	0.123	0.143
1974	0.245	0.223	0.127	0.147
1975	0.205	0.183	0.109	0.126
1976	0.209	0.187	0.111	0.128
1977	0.209	0.186	0.123	0.123
1978	0.208	0.185	0.116	0.123
1979	0.216	0.190	0.118	0.124
1980	0.222	0.195	0.122	0.123
1981	0.210	0.182	0.111	0.116
1982	0.212	0.184	0.104	0.114
1983	0.214	0.186	0.102	0.114
1984	0.215	0.187	0.101	0.115
1985	-----	0.123	-----	0.082
1986	-----	0.137	-----	0.087
1987	-----	0.189	-----	0.120

Source;Depreciation, for 1970-1984, Hayashi (1986). For 1985-1987, the
authors' calculation using the method of Hayashi (1986). For 1985-1987, we
did not calculate the depreciation of government capital. The depreciation
of private capital for 1985-1987, unlike Hayashi (1986), does not include the
depreciation of consumer durable goods. GNP and Government and Private
Capital stock figures are from the Japanese National Accounts, 1986 and 1990
editions.

Table 3

Net Wealth-Net Disposable Income (DI) Ratios

for U.S. and Japanese Households

	U.S. Households			Japanese Households		
Year	Wealth/ DI	Land/ DI	Non-Land/ DI	Wealth/ DI	Land/ DI	Non-land/ DI
1955	4.83	0.17	4.66	3.13	1.85	1.28
1956	4.84	0.19	4.65	3.22	1.91	1.31
1957	4.63	0.19	4.44	3.27	1.97	1.30
1958	4.97	0.20	4.77	3.34	2.05	1.29
1959	4.93	0.20	4.73	3.32	2.04	1.28
1960	4.85	0.22	4.63	3.43	2.16	1.27
1961	5.08	0.22	4.86	3.45	2.15	1.30
1962	4.77	0.22	4.55	3.45	2.23	1.22
1963	4.87	0.21	4.66	3.50	1.99	1.51
1964	4.79	0.21	4.58	3.25	1.99	1.26
1965	4.78	0.23	4.55	3.19	1.92	1.27
1966	4.57	0.22	4.35	3.24	1.94	1.30
1967	4.76	0.23	4.53	3.32	2.00	1.32
1968	4.88	0.23	4.65	3.47	2.14	1.33
1969	4.62	0.23	4.37	3.64	2.31	1.33
1970	4.42	0.22	4.20	3.79	2.41	1.38
1971	4.49	0.22	4.27	4.32	2.66	1.66
1972	4.59	0.23	4.36	5.25	3.25	2.00
1973	4.23	0.24	3.99	5.34	3.33	2.01
1974	4.04	0.25	3.79	5.64	3.33	2.31
1975	4.15	0.25	3.90	4.22	2.44	1.78
1976	4.28	0.27	4.01	4.33	2.30	2.03
1977	4.29	0.30	3.99	4.18	2.26	1.92
1978	4.35	0.34	4.01	4.39	2.37	2.02
1979	4.49	0.36	4.13	4.86	2.67	2.19
1980	4.65	0.37	4.28	5.12	2.90	2.22
1981	4.54	0.39	4.15	5.11	3.13	2.28
1982	4.48	0.37	4.11	5.53	3.19	2.34
1983	4.55	0.38	4.17	5.57	3.16	2.41
1984	4.36	0.37	3.99	5.67	3.17	2.50
1985	4.47	0.37	4.10	5.83	3.24	2.62
1986	4.55	0.38	4.17	6.58	3.83	2.75
1987	4.58	0.40	4.18	7.91	4.81	3.10

Source: For the United States, National Balance Sheets, 1988 edition, Federal Reserve Board. For Japan, National Income Accounts.

Table 4

The Ratio of Japanese Household Non-land Wealth to Disposable
Income When the Equity of Unlisted Corporations is Valued at
Market Prices

	Q from the National Accounts (1)	Non-land*/ DI (2)	Change in Non-land*/ DI (3)
Year			
1970	0.14	2.88	
1971	0.15	2.90	0.19
1972	0.24	3.14	0.50
1973	0.18	3.51	0.71
1974	0.13	3.33	-0.07
1975	0.12	3.18	-0.02
1976	0.14	3.15	0.10
1977	0.12	3.17	0.09
1978	0.16	3.23	0.18
1979	0.15	3.57	0.44
1980	0.13	3.77	0.23
1981	0.13	3.87	0.16
1982	0.11	3.98	0.19
1983	0.13	3.95	0.08
1984	0.15	3.96	0.12
1985	0.16	4.04	0.17
1986	0.22	4.15	0.25
1987	0.24	4.61	0.57
AVERAGES			
1971-75		3.21	0.26
1976-80		3.38	0.21
1981-85		3.96	0.14
1986-87		4.38	0.41
1971-87		3.61	0.23

Note: See Appendix 1 for details in the construction of the three
columns. Average Tobin's Q observed in the Japanese National
Accounts is the ratio of corporate equity held by the household
sector to the net wealth of the non-financial and financial
corporate sectors. The market value of both listed and unlisted
firms is assumed to be equal to the replacement cost of the net
wealth of the firms (q=1). Non-land* is the value of household
non-land assets when the equity of unlisted corporations is valued
at market prices.

Table 5

U.S. and Japanese Saving Rates Derived from the Harrod-Domar Condition

$$s= W/Y*g$$

Saving Rates (in percent)

	(1)	(2)
Japan	W/Y= Non-land/DI	W/Y= Land + Non-land/DI
1955-1987 g= 7.8%	W/Y= 1.79 s= 13.14	W/Y= 4.35 s= 33.07
1978-1987 g= 4.2%	W/Y= 2.44 s= 10.25	W/Y= 5.66 s= 23.78
1978-1987 g= 4.2%	W/Y= Non-land*/DI W/Y= 3.93 s= 16.51	
U.S.	W/Y= Non-land/DI	W/Y= Land+Non-land/DI
1955-1987 g=3.2%	W/Y= 4.28 s= 13.69	W/Y= 4.59 s= 14.69
1978-1987 g= 2.9%	W/Y= 4.50 s= 13.05	W/Y= 4.13 s= 11.98

Source: Tables 3 and 4. Non-land* corrects for the underestimate of corporate equity that is reported in the Japanese national accounts.

Table 6

Annual Changes (First-Differences) in the Wealth-Disposable Income

Ratios for U.S. and Japanese Households

	U.S. Households			Japanese Households		
	Change in Wealth/DI	Change in Land/DI	Change in Non-land/DI	Change in Wealth/DI	Change in Land/DI	Change in Non-land/DI
Year						
1956	0.24	0.028	0.21	0.26	0.16	0.11
1957	-0.11	0.0059	-0.11	0.18	0.10	0.08
1958	0.35	0.0056	0.34	0.35	0.25	0.10
1959	0.12	0.057	0.066	0.27	0.17	0.10
1960	0.025	0.024	0.0010	0.40	0.30	0.10
1961	0.30	0.0054	0.29	0.33	0.19	0.13
1962	-0.10	0.0062	-0.11	0.31	0.25	0.063
1963	0.28	0.0049	0.28	0.13	0.00038	0.13
1964	0.21	0.0088	0.20	0.27	0.16	0.11
1965	0.27	0.069	0.26	0.15	0.057	0.094
1966	0.077	0.0035	0.042	0.31	0.18	0.14
1967	0.37	0.0040	0.37	0.36	0.24	0.13
1968	0.33	0.014	0.32	0.43	0.31	0.12
1969	-0.04	0.012	-0.053	0.54	0.39	0.15
1970	-0.03	-0.00010	-0.029	0.47	0.30	0.17
1971	0.20	0.010	0.190	0.64	0.33	0.31
1972	0.20	0.012	0.190	1.33	0.83	0.50
1973	-0.056	0.026	-0.082	0.58	0.38	0.20
1974	-0.0087	0.020	-0.029	-0.81	-0.69	-0.12
1975	0.24	0.0014	0.23	0.027	-0.32	0.059
1976	0.15	0.026	0.13	0.35	-0.0072	0.35
1977	0.022	0.035	-0.013	-0.0016	0.043	-0.045
1978	0.29	0.051	0.25	0.38	0.19	0.18
1979	0.32	0.039	0.28	0.61	0.37	0.24
1980	0.31	0.019	0.29	0.46	0.35	0.11
1981	-0.017	0.028	-0.046	0.43	0.30	0.13
1982	-0.18	-0.031	-0.15	0.26	0.14	0.12
1983	-0.02	0.0047	-0.025	0.26	0.084	0.17
1984	-0.05	-0.0017	-0.049	0.29	0.12	0.17
1985	0.21	0.0044	0.21	0.33	0.17	0.15
1986	0.19	0.028	0.16	0.88	0.66	0.22
1987	0.14	0.027	0.11	1.51	1.087	0.42
AVERAGES						
1956-60	0.13	0.024	0.10	0.29	0.20	0.086
1961-65	0.19	0.0062	0.18	0.24	0.13	0.106
1966-70	0.14	0.013	0.13	0.42	0.28	0.14
1971-75	0.12	0.014	0.10	0.35	0.16	0.19
1976-80	0.22	0.034	0.19	0.36	0.19	0.17
1981-85	-0.012	0.0011	-0.0013	0.31	0.17	0.15
1986-87	0.17	0.028	0.14	1.19	0.88	0.32
1956-87	0.13	0.015	0.12	0.38	0.23	0.15

Source: for Japan, National Income Accounts. For the U.S., Federal
Reserve Board, National Balance Sheets.
Numbers may not add up due to rounding.

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