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WHAT IS NATIONAL SAVING?: ALTERNATIVE MEASURES IN HISTORICAL AND INTERNATIONAL CONTEXT

David F. Bradford

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ABSTRACT

Most discussion of national saving behavior is based on national income account data. This paper lays out some of the main alternative conceptions of saving and to present data comparing recent U.S. saving behavior with its own past and with that of other nations. I argue, in particular, that more attention should be paid to measures of national wealth at asset market values. The main empirical contribution is to pull together data from the national balance sheets on wealth at market value compiled for the United States by the Flow of Funds Division of the Board of Governors of the Federal Reserve System (1989) and by various agencies sources in three other countries for which market value figures could be found: Japan, and Sweden, and the United Kingdom.

David F. Bradford
Woodrow Wilson School
Princeton University
Princeton, NJ 08544

Introduction

There is among policy makers and commentators a virtual consensus today that the United States saves too little, and there is only scattered disagreement whether something can and should be done about it. But the journalistic analysis, if not the professional opinion, is based on a rather unreflective reliance on one, or perhaps two, statistical measures of national saving behavior. It would assist discussion of these issues to have in view the multiple meanings of the term saving. My object in this paper is to lay out some of the main alternative conceptions of saving and to present data comparing recent U.S. saving behavior with its own past and with that of other nations.

National Income, Consumption, and Saving

We may start at the beginning with the identity: $Y = C + S$, income equals the sum of consumption and saving. The simplicity of this identity is only apparent. All it accomplishes is to establish a relationship among three measures of economic performance, and thereby to

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imply that giving an empirical or accounting content to any two of the concepts implies the empirical or accounting content of the third. National income accounting generally starts with definitions of income and consumption (by households and governments) from which saving is defined by subtraction. All beginning students of economics learn this, that saving is a residual.

Analysis of U.S. national saving is quite likely to start with the income data and definitions of the U.S. Commerce Department's National Income and Product Accounts (NIPAs). (For a clear exposition of saving concepts in the U.S. National Income and Product Accounts see Holloway (1989).) To make life confusing, the term "income" in the NIPAs is attached to factor payments, and distinguishes between taxes that fall on factor payments and those that do not (indirect business taxes). It is doubtful that this is an economically meaningful distinction. When speaking of the nation, I here use the terms "income" and "product" interchangeably, and mean "product" (gross or net) as measured in the NIPAs. Instead of income, consumption, and saving, in the NIPA context the three related notions are, then, product, consumption and saving. Which two of the three are fundamental (in determining the third as a residual) in the case of the NIPAs is not immediately obvious.

National income and product accounts are primarily focused on measuring output, of which there are two major conceptions, gross and net. The beginning students' deceptively simple truism applies to the concepts of gross national income (or product) and gross national saving. Gross national product, "the market value of the goods and services

produced by labor and property supplied by residents of the United States," (U.S. Department of Commerce, 1986) and consumption, personal and governmental, can reasonably be described as fundamental ideas. Together (by subtraction) they define gross saving.

Gross national product may, perhaps, be of behavioral interest because of its relationship to aggregate employment of labor. But it has always been recognized, and more advanced students understand, that a gross measure of output is defective as a measure of performance because it ignores the using up of national capital, and that gross saving is purely an accounting residual concept, with no normative or behavioral interpretation. As measures of economic performance, the more advanced students look to net national product (or income) and net national saving. To reach net product, net investment and net saving, it is necessary to subtract an allowance for the using up of the reproducible capital stock. Here, the defining ideas are consumption and net investment (or saving), the latter understood as the increase in the nation's capital stock. We will have it about right if we think of net product (income) as definitionally equal to the sum of consumption (personal and governmental) and saving (the change in the reproducible capital stock owned by U.S. residents).

Now it is thus true that net national saving is equal to the difference between net national product (income) and national consumption, but it is misleading to describe net saving as defined as a residual. That is because net saving has a normative and behavioral interpretation as the change in the nation's capital stock. The

interpretation is normative, because we regard more capital as desirable, and it is behavioral because we think people and businesses seek to optimize the level of capital. Indeed, it is reasonable to describe net national product (income) as the piece of the identity that is defined residually (as the sum of consumption and net saving), even if this is disguised by the way the statisticians describe the derivation of net national product as gross national product less the depreciation of the capital stock (capital consumption allowances).

Whereas gross saving does not have normative content, net saving does. It measures the increment to the nation's capital stock. When we speak of saving as an indicator of economic performance we have in mind this quality, that it measures a change in a stock of wealth or productive potential. From a policy perspective, the difference among alternative measures of saving consists of differences among the stocks of wealth or capital to which the saving is an increment.

Wealth and Capital

The Flow of Funds Division of the Board of Governors of the Federal Reserve System (1989) compiles balance sheets for the various private sectors of the U.S. economy. Table 1 gives a summary of the figures on the national net worth for year-end 1988. Note that the figures do not include the assets of governments, whereas the financial liabilities of governments are in effect treated as national liabilities. Another, less obvious, feature of the data is the treatment of asset location. "Domestic net worth" consists of reproducible assets plus land located in the United States. The reproducible assets other than consumer durables

constitute the stock that is augmented each year by "net private domestic investment" in the NIPAs. To obtain a figure representative of the aggregate of the capital owned by U.S. residents it is necessary to add assets located abroad but owned by U.S. residents ("direct foreign

Table 1

National Net Worth of the United States
Year end, 1988

	Millions of dollars	Percent Distributions	
Domestic net worth	14964435	104	100
Reproduceable assets	11410041	76	100
Residential structs.	4235330		37
Nonres. plant & eq.	4364789		38
Inventories	1003997		9
Consumer durables	1805925		16
Land at market	3554394	24	
Net claims on foreign	-558463	-4	
Foreign assets U.S. owned	738367		
U.S. assets foreign owned	-1296830		
U.S. gold & SDRs	20789	0	
Total consolidated national net assets	14426761	100	

Source: Federal Reserve Board, Balance Sheets For the U.S. Economy Flow of Funds publication C.9, October 1989, p. 5

investment" plus financial claims on foreigners, including portfolio equity), to subtract the corresponding foreign claims against U.S. assets, and to add the U.S. stock of gold and SDRs.

Note, too, that, except for land and net international portfolio investment in corporate equities, the assets are carried on the national balance sheet on a "financial accounting basis," by which I mean to draw the analogy with the financial accounting for a business firm and to contrast with estimated market value. (For an extensive discussion of the issues see Bradford, 1989; for a good introduction to financial accounting concepts, see Foster, 1986). "Financial accounting" for assets is often the only method available, and I do not mean to imply by the term a crude historical cost record. The Federal Reserve data on reproducible assets are the U.S. Department of Commerce (1987; see also Musgrave, 1983, January 1986, August 1986) "current" (i.e., replacement) cost estimates. For this reason, the "total consolidated national net assets" in the table is not the same as the aggregate wealth represented by those assets. I shall have more to say on this point below.

We may draw attention to some of the components of total consolidated net assets: According to the Federal Reserve Board, as of the end of 1988, the "net claims on foreign" item was negative. This amounts roughly to saying that U.S. residents owed more to foreigners than the other way around, but it is important to keep in mind that the direct investment stocks are valued at replacement, rather than market value. Land value is estimated to have accounted for almost a quarter of the tangible assets located in the United States. Of the reproducible assets, housing and industrial plant and equipment are of almost exactly the same importance, together accounting for 75 percent. Inventories

account for almost 10 percent, and consumer durables at 16 percent, make up the rest.

Table 2 presents data on the aggregate wealth of U.S. households (including nonprofit institutions). The household totals in Table 2 include all the assets indirectly owned by households via life insurance and pension reserves. The household totals therefore include government financial obligations, directly or indirectly owned, and they furthermore make no allowance for the implicit liability of U.S. taxpayers to foreign holders of U.S. government financial obligations. A better measure of national wealth is therefore obtained by netting out these financial liabilities, yielding "national wealth at market value" in Table 2.

Where possible, the market values of assets have been used in Table 2, in particular, for land and corporate equity. For this reason, as well as slightly different coverage, the national wealth in Table 2, at $13.8 trillion, differs from the consolidated national net asset total of $14.4 trillion in Table 1.

I have already remarked that the Federal Reserve Board's national balance sheets do not include assets of governments. We should remember that the figures also exclude a form of wealth that swamps both private and public tangible capital in importance: human capital. For recent studies of the magnitude of these two forms of investment, see Jorgenson and Fraumeni (1989) and Boskin, Robinson and Huber (1989).

Table 2
Wealth of Residents of the United States
at Market Value, Year End 1988

	Millions of dollars	Percent Distributions	
Household-owned tangible assets	6560104	48	100
Owner-occupied structures & land	4388381		67
Other struct's & nonprofit tangible	3185804		49
Consumer durables	1805925		28
Net financial assets	7205731	52	
Net household financial assets	9334094		
Total private financial assets	12600638		100
Deposits and credit market instr.	4543226		36
Corporate equities	2242924		18
Lif ins. & pension fund reserves	2906337		23
Equity in noncorp. bus. (note)	2654300		21
Misc. other	253851		2
Total private liabilities	3266544		
Public sector fin. assets less liab's	-2128363		
National wealth at market value	13765835	100	
Memo: Net household-owned assets	15894198		

Note: Household equity in noncorporate business includes equity in noncorporate private financial institutions, omitted in the Federal Reserve's Household sector sector balance sheet.

Source: Federal Reserve Board, Balance Sheets For the U.S. Economy, Flow of Funds publication C.9, October 1989.

U.S. Saving in International Context: National Accounts Measures

We turn now to some data on the behavior of national saving over time in the United States and in selected foreign countries, as reflected in national accounts. Table 3 presents decade averages of annual savings rates for the United States since 1950. The right hand column shows the ratio of national saving (net national product less government and personal consumption) to GNP, taken from the NIPAs. As is well known, there has been a sharp drop in the NIPA net national saving rate in the

Table 3

U.S. National Saving, NIPA Definition
Decade Average Percent of GNP

1950-1959	7.4
1960-1969	7.9
1970-1979	7.1
1980-1988	3.0

Sources: U.S. Department of Commerce, National Income and Product Accounts of the United States, 1929-82; Survey of Current Business, July 1987-89.

1980s. Figure 1 displays the annual data from the NIPAs, together with its downward trend line.

National accounting within the OECD follows rules laid down in the System of National Accounts (SNA) developed by the United Nations, which differ in various ways from the conventions of the U.S. NIPA (Blades and Sturm, 1982). Probably most important among the differences is in the treatment of government expenditure. In the case of the NIPAs, all government expenditure on goods and services is regarded as consumption,

whereas the SNA divides government expenditure into consumption and investment components, and keeps track of the associated capital stocks, depreciation, etc. In fact, although the United States federal government does not distinguish current and capital expenditures in its budget, the U.S. Commerce Department does compile and publish the figures. These are incorporated in the multi-nation compilations of the OECD.

A second difference between U.S. practice and that of all the other OECD countries is in the denominator typically chosen for measuring economic magnitudes. In the United States it is usual to express

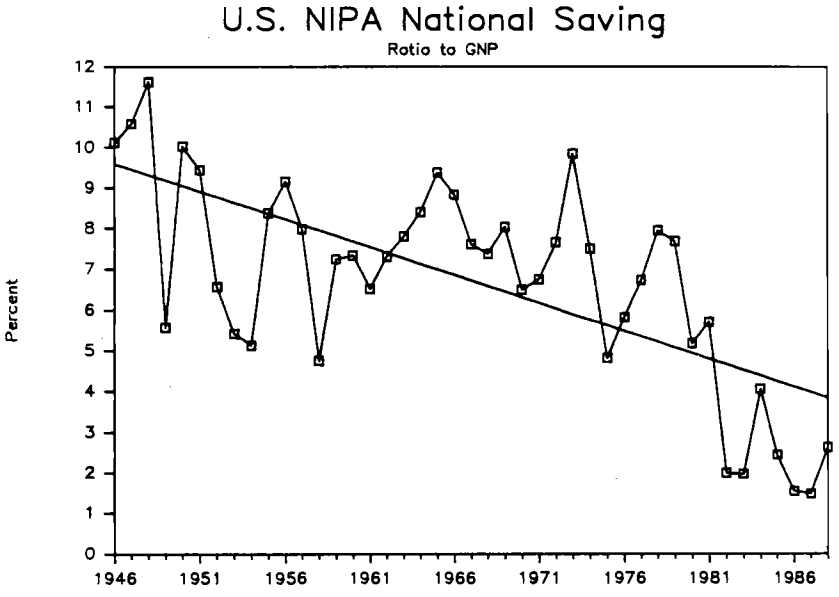

Figure 1
Source: U.S. Department of Commerce.

aggregates such as consumption as fractions of GNP, or perhaps NNP. In the other OECD countries, the typical denominator is gross or net domestic product (GDP or NDP). For purposes of exploring long-term saving trends, the difference is not important. Table 4 suggests the difference implied by the differing treatments of government expenditure in the two accounting systems. The left-hand column shows the U.S. national saving rate (as a ratio to net domestic product) according to the SNA definitions; the right-hand column adds government net investment

Table 4

U.S. National Saving, Two Definitions
Decade Average Percent of NDP

	SNA	NIPA-type measure
1960-1969	10.9	9.2
1970-1979	9.3	8.6
1980-1987	4.3	4.0

Source: OECD

Notes: SNA stands for the System of National Accounts, used by the OECD.

to the SNA definition. Because net government capital formation has been positive over the decades covered, the SNA saving rate is larger than the "NIPA" saving rate. We can infer from the table the rate of net capital formation by U.S. governments has dropped from about 1.7 percent of NDP in the 1960s to about 0.3 percent of NDP in the 1980s. (Barry Bosworth has suggested to me that major influences on the decline have been the completion of the interstate highway system and the slowdow in construction of new schools attributable to the shifting demographic

structure of the country.) Figure 2 displays the annual time series, with trend lines. Again, a sharp decline of the savings rate is evident in both measures.

Having national accounts prepared under a common system permits

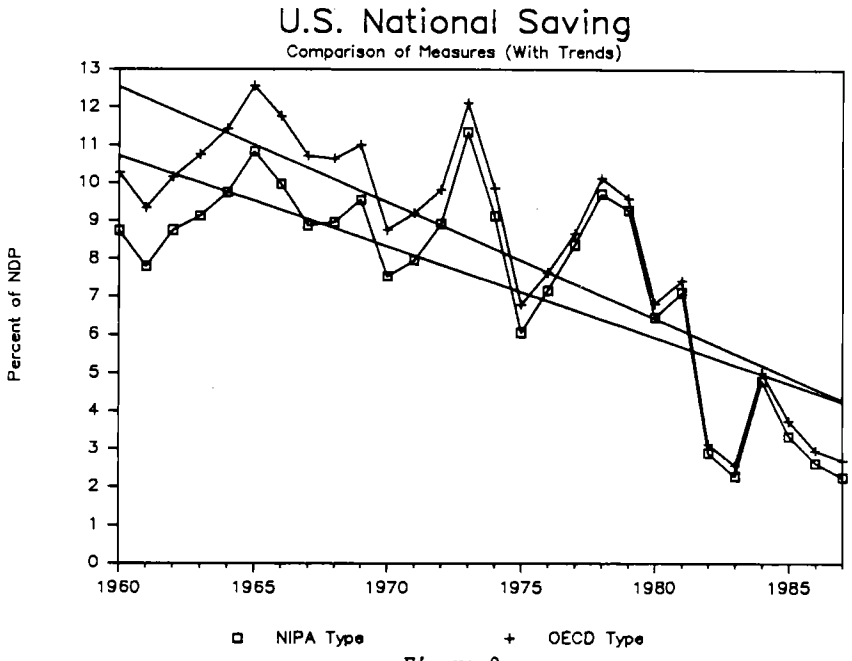

Figure 2
Source: OECD. For details, see data appendix.

international comparisons free of one possibly significant source of differences. Table 5 presents 5-year averages of average national saving rates for six countries: the United States, the United Kingdom, Japan,

Sweden, the Federal Republic of Germany, and Canada. Large differences are noticeable, particularly in the high saving propensity of Japan. In most countries, there has been a decline of national savings rates in recent years. Figure 3 displays annual national savings rates, based on the same OECD data, for four of the countries for which I have also assembled data on wealth at market value (to be discussed below).

One should not be too quick to draw conclusions from these international differences. Blades and Sturm (1982) warn that

Table 5

Comparison of National Accounts Saving Rates in 6 Countries
National Saving as a Percent of NDP

	U.S.A.	U.K.	Japan	Sweden	F.R.G.	Canada
1963-1967	11.5	11.1	23.5	17.1	19.0	12.3
1968-1972	9.9	12.2	28.9	15.8	19.0	12.0
1973-1977	9.0	7.2	24.8	13.0	13.9	13.7
1978-1982	7.4	7.3	21.2	5.9	11.0	11.7
1983-1987	3.4	6.4	20.3	6.7	11.5	8.4

Source: OECD

depreciation conventions have not been unified under the SNA, and Barry Bosworth has expressed to me the view that the Japanese national accounts understate depreciation, which would tend to increase the numerator relative to the denominator of the Japanese national saving rate. Hayashi (1989) has suggested that the relatively large place of land value in Japanese wealth also gives a somewhat misleading quality to a simple comparision of national account saving rates.

Personal Saving and the Flow of Funds

Thus far we have concentrated on national saving, for which all accumulation by U.S. residents, whether directly on their own account or indirectly via retained earnings of corporations, is aggregated. The NIPAs also distinguish the income and expenditure of various sectors of

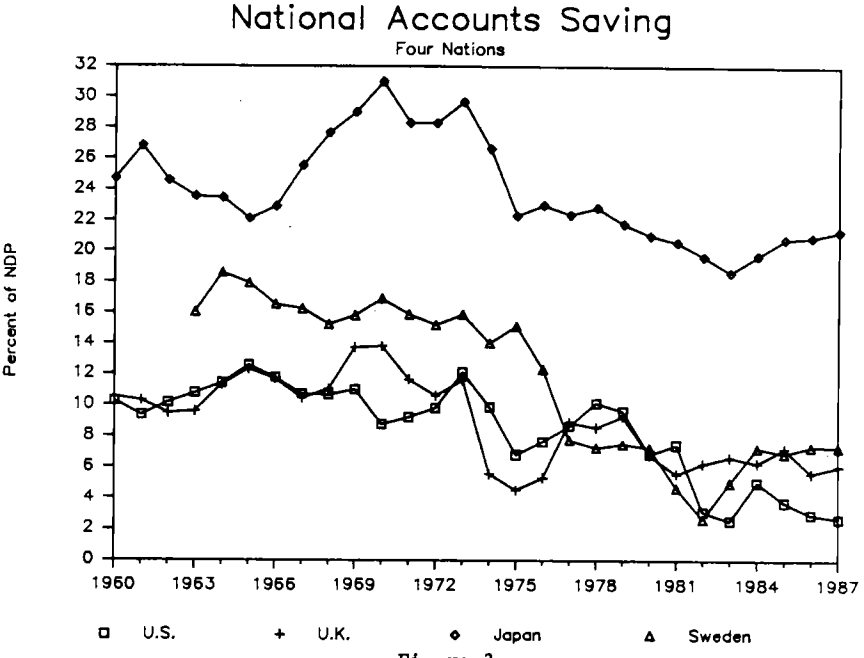

Figure 3
Source: OECD. For details, see data appendix.

the economic system, in particular, of the household or personal sector (which includes nonprofit institutions as well as households in the ordinary sense of the term). The data for Personal Income and Outlays are presented in the Table 2 series in the Survey of Current Business. The underlying idea of personal income is the payment to households for

supplying productive services (plus net transfers), but its implementation emphasizes cash flow to households, as reflected in such transactions as receipt of wages, dividends, etc. In the context of defining income for purposes of taxation, economists customarily argue that accruing gain is equivalent to, say, interest payments as a reward to the capitalist who supplies capital services, but accruing gains and losses on assets held by households are not included in NIPA personal income. Accrual accounting (in the usual financial accounting sense) is applied to directly-owned businesses (and so income of proprietors is net of depreciation on capital used in the business, for example).

As mentioned, economics casts doubt on the validity of cash flow income as a good measure of the compensation for services rendered by or the economic opportunities of a household. Most obviously, a family that owns a readily marketable asset that increases in value during the year is in much the same position as one that owns a bank account to which the same amount of interest is credited during the year. (That is the argument for including real capital gains in income subject to tax.) Similarly, a worker whose employer deposits a certain amount in a defined-contribution pension plan is arguably in the same position as one who receives the payment in cash and makes a deposit in an IRA. There is thus considerable question whether personal income is a useful concept, either behaviorally or normatively.

Be that as it may, the NIPAs provide us with a measure of a statistically well-defined quantity, personal income. It includes most transfer payments from the government (Social Security benefits and the

like). The worker's share of payroll tax "contributions" for social insurance is deducted from amounts reported as received as wage and salary disbursements by employers. (The employer's share is not regarded as received by the employee in the first place.)

Of course, employee contributions to social insurance are not the only compulsory outlays by households. So the NIPA defines "disposable personal income" as what is left from personal income after paying income taxes (along with other similar taxes; the rather odd line item in the accounts is "personal tax and nontax payments"). Personal saving is disposable personal income less "personal outlays" (personal consumption expenditures, constituting the vast bulk, plus consumer interest plus personal transfer payments to foreigners).

The Flow of Funds Section of the Board of Governors of the Federal Reserve System also provides a measure of personal saving, alternative to that presented in the NIPAs. (For a clear discussion, see John F. Wilson et al (1989).) It differs conceptually from NIPA personal saving in two respects. First, the Flow of Funds Account (FFA) saving measure treats net acquisition of consumer durables as a form of saving, whereas in the NIPAs outlays on consumer durables are simply regarded as a component of personal consumption expenditures. Second, the FFAs adopt a slightly different definition of personal income, counting in certain credits from government insurance programs and capital gains distributions from mutual funds, items excluded from the NIPA definition of personal income.

There is, however, a further difference between the NIPA and FFA personal saving that is in some ways more important. This difference is

in the nature of the data. In the NIPAs, personal saving is a residual between a measure of personal income and a measure of consumption. (For a clear display of the NIPA concepts in this respect, see Table 2.1 in the Survey of Current Business.) By contrast, FFA personal saving is a direct measure of the net acquisitions of assets by households. It should be emphasized, though, that apart from the two specific differences already mentioned the NIPAs and FFAs purport to measure the same thing. That is, both use the same basic concepts of income,

Table 6

United States Personal Saving, Flow of Funds and NIPA

	Net Capital Expenditure	Acquisition of Financial Assets (Net)	FFA Net Personal Saving	Income Adjustments (incl CD's)	FFA Personal Saving NIPA Basis	NIPA Personal Saving	Household Discre-pancy	Household Discrep. to NIPA Saving
1949-1958	0.065	0.022	0.087	0.033	0.054	0.045	0.009	0.207
1959-1968	0.048	0.036	0.083	0.028	0.055	0.046	0.009	0.207
1969-1978	0.047	0.044	0.091	0.033	0.058	0.054	0.004	0.080
1979-1988	0.046	0.037	0.083	0.038	0.045	0.038	0.007	0.202

Sources: Federal Reserve Board and U.S. Dept. of Commerce. Figures are the average ratio to GNP for each decade.

consumption and saving.

The differences in statistical approaches has resulted in sometimes fairly large differences in saving rates. Table 6 presents data on NIPA personal saving side by side with FFA personal saving, both as defined in the FFAs, and as the NIPA personal saving rate would be if derived from the FFAs. The left hand columns of the table show how FFA personal saving is built up from data on net capital expenditures (from the NIPAs, including purchases of consumer durables less the depreciation

on the stock of consumer durables) and acquisitions of financial assets less increases in financial liabilities. (I have presented all the data as decade averages of ratios to GNP). The net of these three forms of saving is FFA personal saving. For the last decade, the FFA saving rate thus defined has been, at 8.3%, at the same level as it was in the 1960s. That is considerably below the levels of 9.1% during the 1970s, and 8.7% during the 1950s.

The FFAs provide data permitting us to construct an estimate of personal saving according to NIPA definitions of income. The required adjustments are also shown in Table 6. The NIPA personal saving rates (again, as ratios to GNP) are substantially below the FFA personal saving rates. The main reasons for the difference are the inclusion of acquisitions of consumer durables and extra receipts (credits from government insurance and mutual fund capital gains distributions) in income and saving according to the FFAs. And of these, the investment in consumer durables is the larger piece (though both adjustments are significant). Like the FFA personal saving rate, the NIPA personal saving rate estimated from the FFAs is down in the 1980s from its high level in the 1970s,

The FFA estimate of the NIPA saving rate differs from the actual NIPA saving rate because of the different statistical sources used. The NIPA figures are also shown in Table 6. The difference between the two is known as the "household discrepancy," and it has always been volatile but generally positive (that is, direct estimates of household net acquisitions of assets exceed the amount implied in the national income

data). As Figure 4 shows, the household discrepancy had appeared to be declining as a fraction of the saving being measured until the 1980s, when its volatility and apparent magnitude increased. As discussed in detail in Wilson et al (1989), there is no single explanation for the discrepancy, which must be regarded as one measure of our uncertainty about the household's saving behavior.

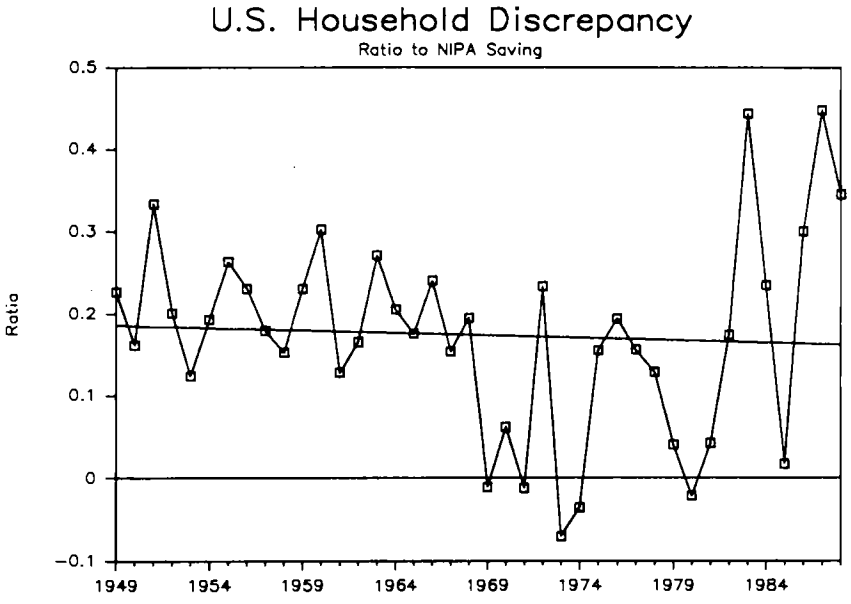

Figure 4
Source: U.S. Federal Reserve; U.S. Department of Commerce.

The ratio of personal saving to disposable personal income (DPI) is often referred to as the "personal saving rate" and is used as a measure of the saving choices of households. The line labeled "NIPA" in Figure 5

shows the annual personal saving rate for the United States from 1949 to 1987. The well-known downward trend in the NIPA personal saving rate since the mid-1970s is dramatically clear. The other two lines in the graph show the estimate of the NIPA concept of the personal saving rate from the FFAs, together with the FFA personal saving expressed as a ratio

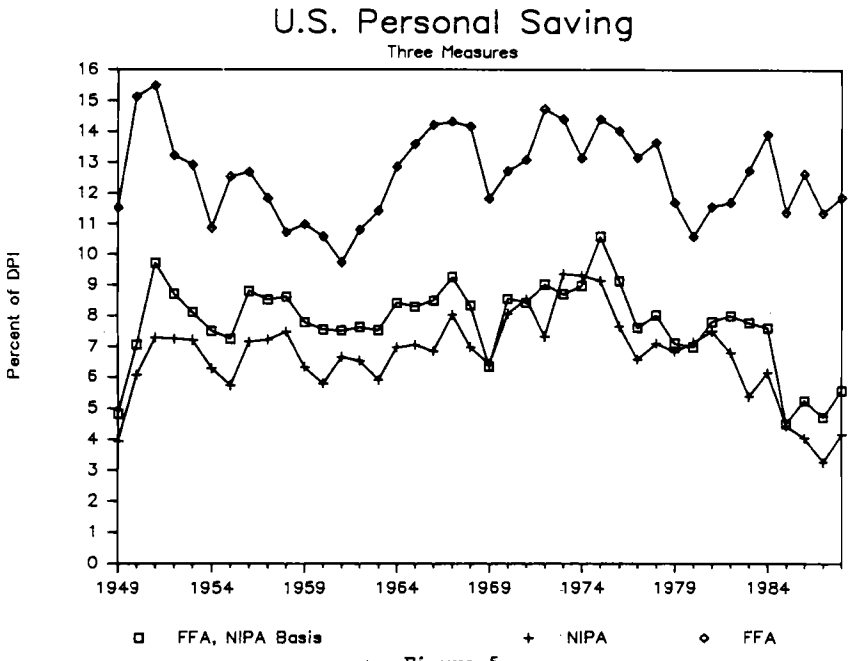

Figure 5
Sources: U.S. Federal Reserve, U.S. Department of Commerce.

to disposable personal income. The figure suggests what Table 6 also may have led us to expect, that for purposes of sizing up the broad trend it does not matter too much whether one uses the personal saving rate from the NIPAs or the estimate of the same quantity from the FFAs. It does apparently matter somewhat more whether one looks at the NIPA concept or

the FFA concept, as there is much less evidence of a pronounced down trend in the latter (the top line in the future).

My own inclination is to prefer (slightly) the FFA personal saving concept, including its extra income elements and including consumer durables in saving. But both measures are lacking in depending upon somewhat arbitrary drawing of lines about what constitutes disposable personal income.

As I have suggested, one may reasonably doubt that disposable income is a good measure of the opportunities of households, dependent as it is on the degree to which households see through various transactions to underlying economic reality (such as accruing gains and losses or the change in pension claims). A better measure of the resources out of which households in the aggregate may be thought to draw their consumption is the amount of national output that is left over after the government's exhaustive uses. Laurence Kotlikoff has provided the figures in Table 7 to measure the behavior of households in relation to their real economic opportunities. Table 7 shows the behavior over time of two measures of national saving. The first is a version of the usual national saving rate, constructed by adding to national output estimates of the flows of services from government tangible capital (excluding military capital) and from consumer durables, and making similar modifications of the NIPA figures for personal and government consumption. The national saving rate in the first column of Table 7 thus differs from the usual national saving rate in using these modified

Table 7
Net National Saving Rates, Corrrected Measures

Period	(Y-G-C)/Y	(Y-G-C)/(Y-G)	G/Y
1940-1949	.086	.101	.271
1950-1959	.133	.167	.203
1960-1969	.130	.166	.215
1970-1979	.118	.152	.223
1980-1985	.072	.093	.230

Source: Lawrence J. Kotlikoff, testimony before the Ways and Means Committee of the U.S. Congress, 1989.

Notes:

Y is NIPA net national product plus imputed rent on consumer durables and government tangible assets (excluding military equipment) less depreciation on the stock of consumer durables and government tangible assets (excluding military equipment).

G is NIPA government expenditures less government expenditures on tangible assets (excluding military equipment) plus imputed rent on the government's stock of tangible assets (excluding military equipment).

C is NIPA personal consumption less consumer expenditures on durables plus imputed rent on the stock of consumer durables.

Imputed rent on an asset is calculated as annual depreciation plus 3 percent times the stock of the asset. Annual depreciation of consumer durables and government tangible assets as well as the stocks of consumer durables and government tangible assets are reported in the U.S. Dept. of Commerce's Fixed Reproducible Tangible Wealth in the United States, 1925-85.

income and consumption concepts and in having net rather than gross product in the denominator. This national saving rate is larger than the usual NIPA measure, but it also displays a sharp downturn in the 1980s. The second column presents a modified "personal" saving rate, one that in effect regards there as being no substitutability between government and

personal consumption and therefore conceives of households as making their choices out of what is left over from national output after government consumption has been subtracted. This modified personal consumption rate shows an even more marked decline in the 1980s, suggesting that households are "to blame" for the decline in saving, not the government, whose claims have only modestly increased.

National Accounts and Market Value Saving

The national accounts of the United States and other countries generally seek to produce a measure of "current production" of goods and services ("the market value of the goods and services produced by labor and property supplied by residents of the United States"). Since the measure of production is value, not physical units, there are many definitional problems, particularly associated with what may be generically described as accruing changes in value. For example, the value of an inventory of wine, held from the beginning of the year to the end, typically increases. This increase in value, if it occurs in the context of a wine producing business, is presumably economically equivalent to the increase in value of the grapes that are grown in the field, harvested, and sold to the wine producer. It is probably not, however, captured in either business or national income accounts. Much the same can be said of most other accruing changes in value of assets (up and down).

It turns out that accruing changes in value are significant elements of the economic performance of the U.S. economy. Figure 6

displays, for example, the ratio of the market value of the net assets of U.S. nonfinancial corporations to their replacement value for the period 1948-88. Two aspects are notable. First, the market value of corporate equity is typically considerably below the replacement cost of the

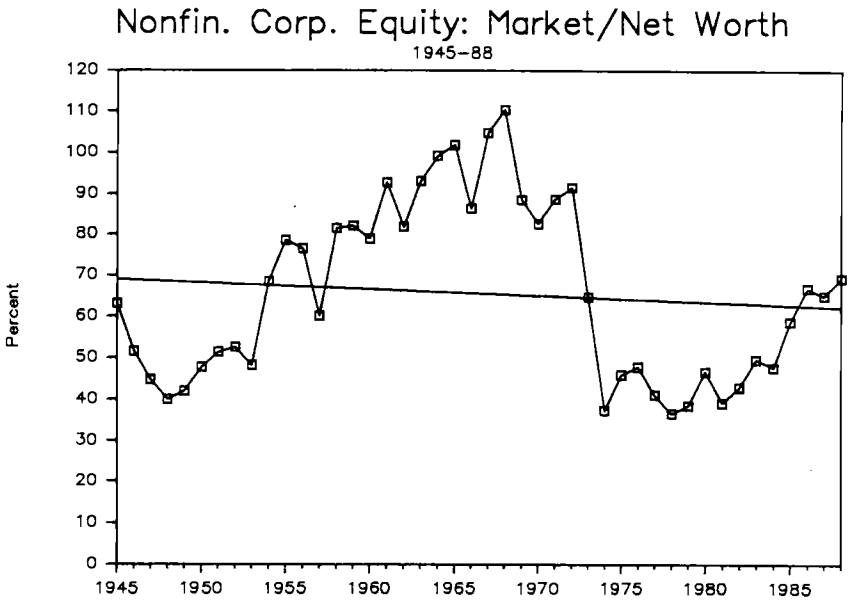

Figure 6
Source: U.S. Federal Reserve

underlying physical assets, including land. Second, the ratio of market to accounting value is far from constant, having varied over a range between 37 and 110 percent during the 40-year period.

In the economic theory of household consumption, it is the market value of wealth, not its accounting value, that plays an economic role. (A number of authors have emphasized this point, developed at length in Bradford (1989).) Saving by a household consists in accumulation of wealth as valued in asset markets, and is measured by the change in the value of wealth between the beginning and end of the accounting period.

Table 8

U.S. National Savings Percentage Of GNP
Decade Averages
Comparison of Measures

	Market Value Without Government Assets	Market Value With Government Assets	NIPA
1950-59	14.8	16.6	7.4
1960-69	10.0	12.0	7.9
1970-79	6.9	9.2	7.1
1980-88	7.0	7.1	3.0

Sources: NIPA saving is net national saving (see Table 3); market value saving is the year to year change in national wealth at market value based on the Federal Reserve Board National Balance Sheets (see Table 2), deflated to 1982 price levels using the GNP deflator, and augmented by Commerce Department estimates of the replacement value of government capital.

The Flow of Funds Division's National Balance Sheets provide data from which we can construct a measure of the aggregate of household wealth. Table 8 presents decade averages of the ratio of national saving to GNP when national saving is defined as the annual change of aggregate wealth of U.S. households (including the claims they hold indirectly through pension funds and the like). The first column of the table shows

saving rates when wealth is defined as in Table 2, exclusive of government assets and with government debt netted out of household wealth. The second column shows the rates when national wealth is extended to incorporate the net worth of governments, using the Commerce Department estimates of government capital stocks. These rates are sometimes higher, sometimes lower than the national saving rates according to NIPA (third column of the table). As with the NIPA saving rates, a downward trend is suggested, but starting earlier. As Michael Williams has pointed out to me, inasmuch as the major difference between the market value and NIPA saving measures consists in accruing value changes, it is perhaps to be expected that the market value measure will tend to anticipate the changes in the NIPA measure.

Figure 7 displays the annual data on national market value saving, together with NIPA saving, where national market value saving is defined to include the value of government assets. Because the value of assets is highly volatile (the main driving element in the data is the stock market), it generates a jagged picture. Its sawtooth record contrasts with the smooth path of the NIPA saving rate, but it also drifts downward.

Students of taxation generally accept what has come to be known as the Schanz-Haig-Simons (SHS) definition of income for purposes of income taxation (Bradford, 1986). The SHS definition does not treat saving as a residual, but rather defines income as the sum of the taxpayer's consumption and change in wealth during the year, where wealth is

measured at market value. Having a time series of national wealth at market value puts us in position to produce a measure of aggregate SHS income: the sum of the year to year change in wealth and the aggregate consumption, defined consistently. Consistent definition of consumption requires an imputation for the flow of consumption services for forms of

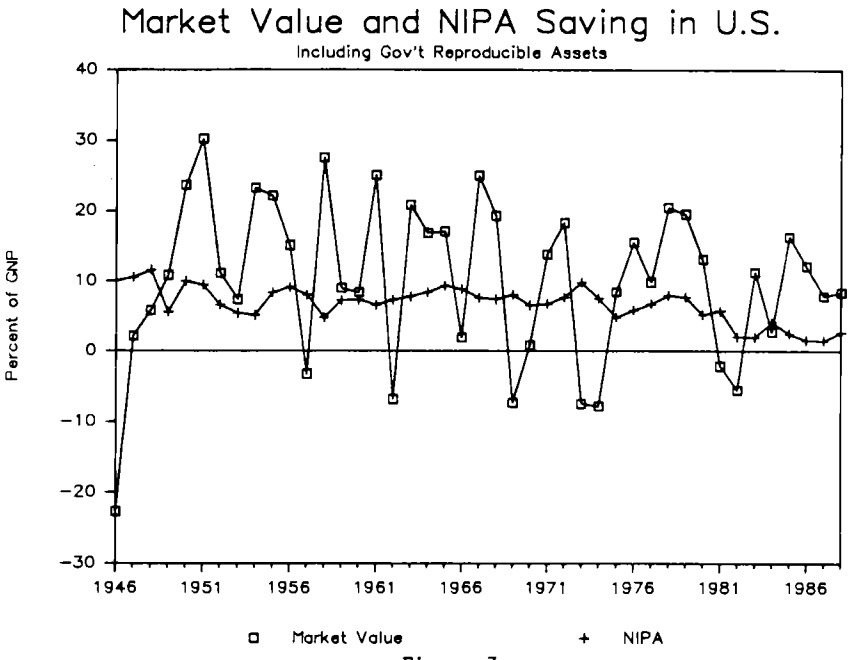

Figure 7
Sources: U.S. Federal Reserve; U.S. Department of Commerce.

wealth not used for production for market.

We have put together a series for aggregate SHS income using private wealth (i.e., excluding government assets). Imputed consumption out of consumer durables is calculated as the sum of the depreciation of the stock of durables during the year and the assumed yield on the stock.

The latter is calculated as 5.2 percent of the average of the beginning and end of year stocks. (The 5.2 percent real rate of return is the average real rate of return on owner occupied housing implicit in the Commerce Department's imputation of the rental value in the NIPAs.) Depreciation is the year-to-year change in real stock plus "gross

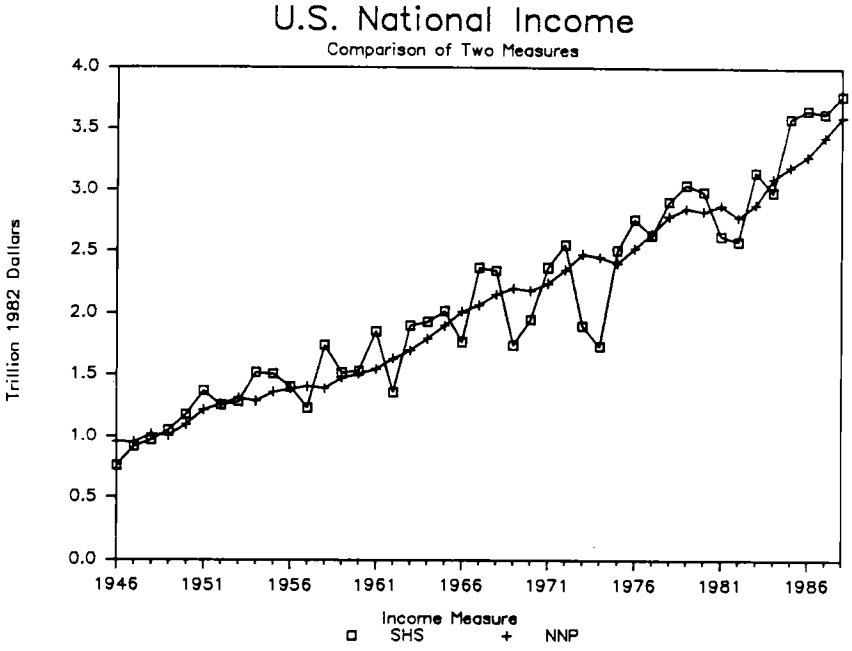

Figure 8
Sources: U.S. Federal Reserve; U.S. Department of Commerce.

investment," i.e., outlays on consumer durables. Figure 8 displays the graph of the resulting national SHS income series, together with the net national product from the NIPAs. Since the two measures have so much in common, it will not be surprising that they follow roughly similar paths, but the SHS measure is very considerably more volatile.

The object of saving is the accumulation of wealth which in turn supports consumption. High rates of consumption, conversely, may imply "too low" rates of saving. In this section I present data on the effects of U.S. saving behavior as reflected in the accumulation of wealth and

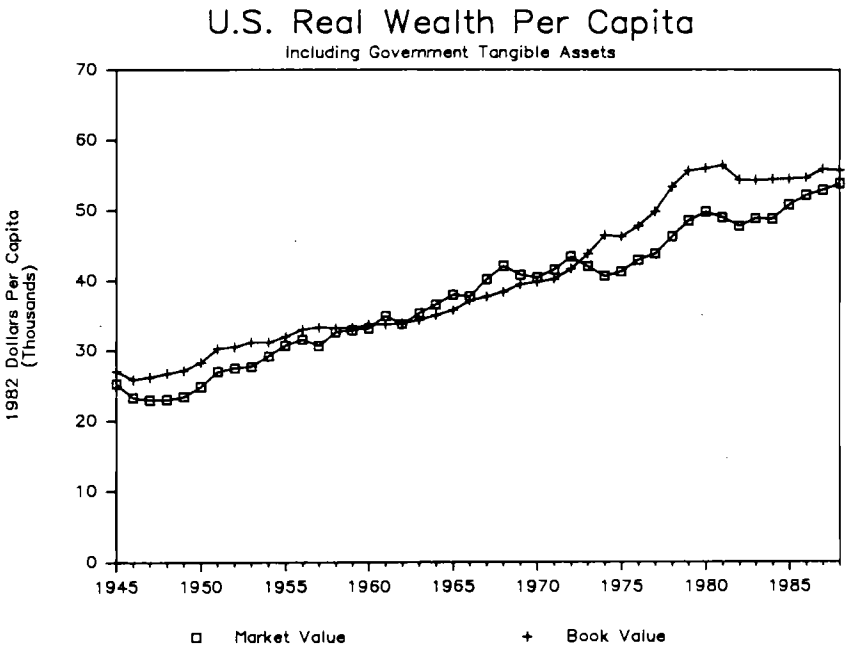

Figure 9

Sources: U.S. Federal Reserve; U.S. Department of Commerce; Economic Report of the President.

measures of consumption. Figure 9 makes clear what is not readily inferred from the study of saving rates, that over a forty year period

Saving, Capital Formation and Economic Performance

U.S. residents have achieved a fairly steady increase in wealth per capita. The data graphed include government tangible assets in the measure of wealth, which, in the case of tangible assets, is converted from current-value to constant-dollar units by deflating at an estimate of the end-of-year GNP deflator. The path denoted "book value" describes the history of the accounting value of capital, per capita, whereas the path labeled "market value" uses the market value for corporate equity. The "accounting value" here is the "total consolidated national net assets" of Table 1, deflated, augmented by the Commerce Department estimate of the value of the government tangible capital stock. Land is included at market value in both wealth concepts. The figure reveals that in the aggregate (as well as in the case of equity claims to U.S. nonfinancial corporations), "book" value has generally been below market, and substantially so since the early 1970s. The data also show a significant contrast between a slight down trend in "book" wealth per capita since the late 1970s and something more like continuation of the historical uptrend in the market value wealth.

The object of production is consumption, but too much consumption implies too little accumulation. Figure 10 shows what has been happening to per capita consumption, both private and government. The data in the figure follow the NIPA convention of treating all government purchases of goods and services as consumption. But purchases of consumer durables are treated two alternative ways, either as simple consumption (again, as

in the NIPAs), or as an imputed rent on a stock. (The imputation method has been described above.) It is rather striking how little difference it makes which approach is taken to measuring aggregate consumption. The pronounced upward trend in both private and government consumption per capita is both evidence that the economy is delivering the goods to U.S.

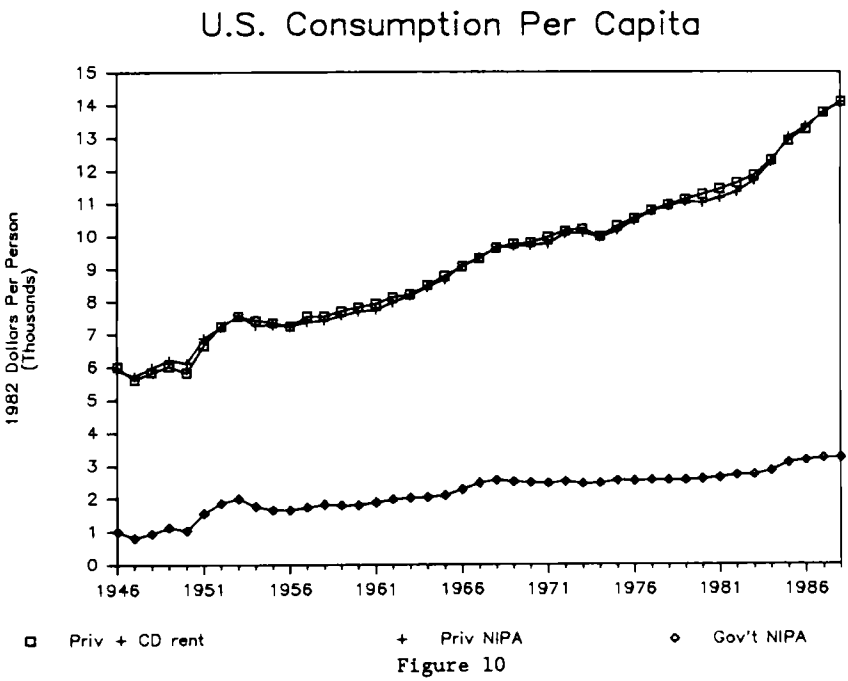

Figure 10
Source: U.S. Department of Commerce.

residents and a signal that their saving may be, in some sense, deficient.

The theory of consumption behavior models individuals as seeking to smooth their consumption over their lifetimes, or at least over an extended future run of years. This model does not readily generate a

particular relationship between consumption and income, but with appropriate simplifying assumptions it does suggest a constant ratio between consumption and wealth, including human wealth. One place to look for a shift in the consumption behavior of U.S. residents, then, is in the ratio of consumption to the piece of wealth we can observe.

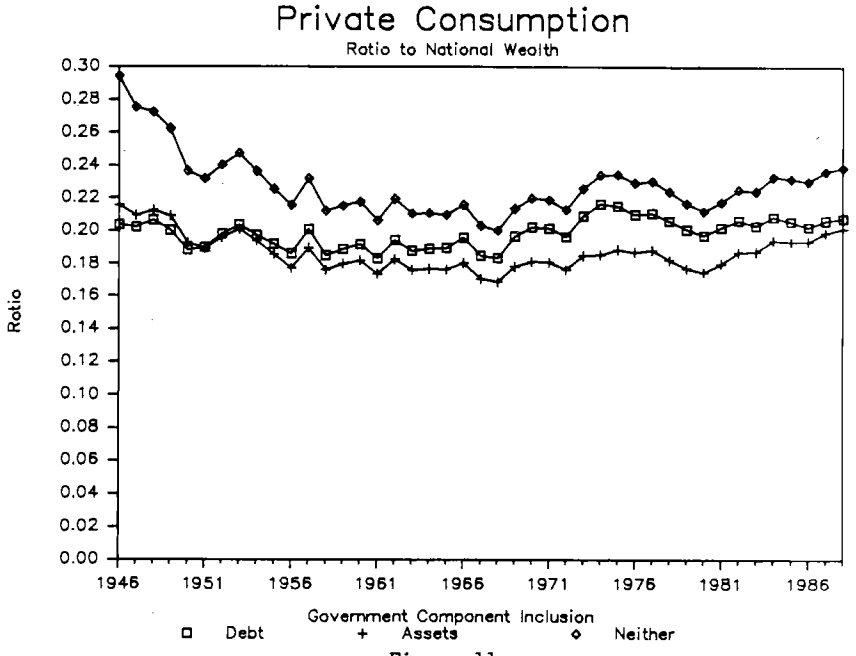

Figure 11

Source: U.S. Federal Reserve; U.S. Department of Commerce.

Figure 11 plots the ratio of aggregate private consumption (including the imputed rent on consumer durables) to three different versions of national wealth. The first and smallest is national wealth excluding both government assets and debt. This is the wealth that would govern the behavior of households that see through the government debt in their

aggregate portfolio to the future taxes they must pay to service and retire that debt, but do not see through the veil of government to the assets their taxes and lending to government may be financing. (Alternatively, they see through to the assets and do not believe they will have a positive yield.) The second, and since the early 1950s the second in size too, is aggregate wealth including the value of government debt but excluding government assets. This is the wealth most people seem to regard as operative in household calculations. In other words, government issue of bonds has the effect of increasing the perceived stock of wealth to be held by someone. It is the wealth of a world of fiscal illusion (in which, perhaps, we live). Third, and largest, is the stock of wealth including government assets. If government assets are really productive (at least of reduced future taxes), this is the wealth that should operate in the world of super-rational households who see through the government veil.

It is obvious from inspection of the figure that there has been no very sharp break in recent years with behavior in the past as reflected in the chosen ratio of consumption to wealth. I can see in the differences in the curves some support for the fiscal illusion view, that consumption is regulated to maintain a constant ratio to the stock of wealth including government. A growing stock of debt will cause the level of consumption to rise relative to one or the other "rational" perceptions of wealth (to include government). In recent years, certainly, the ratio of consumption to wealth including government debt has risen relative to its ratio to either of the other two wealth

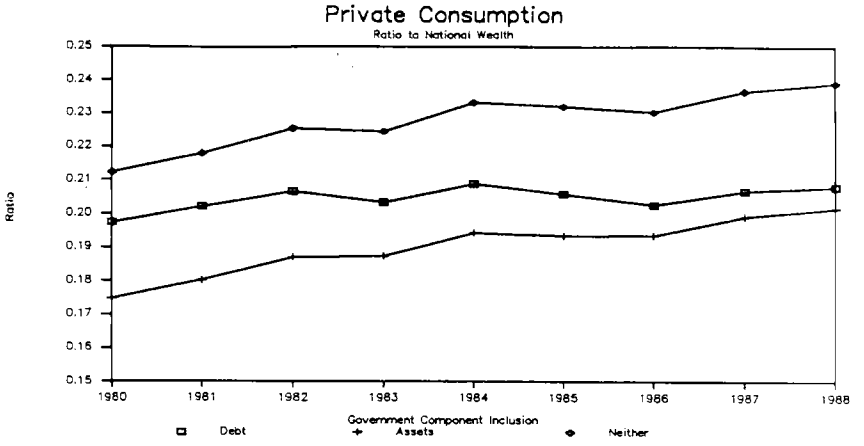

Figure 12
Source: U.S. Federal Reserve; U.S. Department of Commerce.

measures. Figure 12 gives a magnified excerpt from Figure 11, covering the period 1980-87.

I noted above the fact that aggregate wealth at book value has been declining or constant for the past few years. Figure 13 presents another facet of the same fact, showing the tangible capital stock (including inventories, housing, consumer durables and government reproducible assets) per U.S. worker (represented by the civilian labor force) annually since 1948. The divergence from trend of this very broadly conceived capital labor ratio, while not conclusive evidence of suboptimal performance, is quite noticeable. The failure of book value to track market value is important to this record, and one should not be too quick to accept the view that it is "real" capital, as measured in the current-value accounts kept by the Commerce Department, that contributes to the productivity of workers. Certainly, the entrepreneur expects to get the same extra productivity out of the last $1,000,000

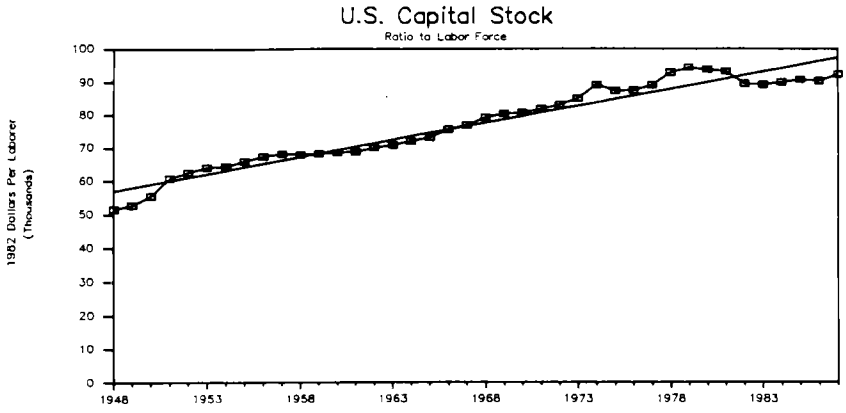

Figure 13
Sources: U.S. Federal Reserve; U.S. Department of Commerce; Economic Report of the President, 1989.

spent on any form of capital, be it in the form of machines, or patents, or land.

U.S. Saving in International Context: Market Value Wealth and Saving

In the previous section we looked at the recent saving behavior of the United States in comparison with its own past, with reference particularly to the accumulation of wealth measured at market value and to consumption in relation to the value of wealth. In this section we return to the comparison of U.S. behavior with that of other countries. Although comparable national accounting data are available for a large group of countries, estimates of national wealth are available for few. We have been able to assemble such data for three countries, in addition to the United States: the United Kingdom, Japan, and Sweden.

There are three figures for each of the four countries, in each case for as long a time series as we have been able to construct. The

first presents wealth per capita, where wealth is defined as the market value of privately owned assets, excluding government debt. The second displays a national saving rate (national saving to GNP or GDP), for savings defined as the change in market value wealth and on a national accounts basis. The third figure in each case shows the ratio of market value wealth to GNP or GDP, as suggestive both of possible differences in economic structure across the four countries and of possible shifts in the character of production within each.

The data reveal a good deal of diversity. In the case of the United States, the good news is that the real wealth per capita is right about on its forty-year upward trend line (Figure 14a). U.S. residents have managed to accumulate about $800 (1988) per person per year over that period. The saving behavior described in Figure 14b is a repeat of an earlier display. The wealth-output ratio in the United States has wavered around 2.8 over the whole period and shows no obvious trend (Figure 14c).

The British story, for which we have a good bit shorter record, reveals a drop in wealth per capita in the early 1970s, just as in the United States, but a rather longer and stronger upward trend since then (Figure 15a). (I shall return shortly to a more careful international comparison.) The path of the market value saving rate has even wider swings than that of the U.S. rate, around a similarly downward-drifting national accounts measure (Figure 15b). At a fairly steady 3, the wealth to output ratio is close to that of the United States (Figure 15c).

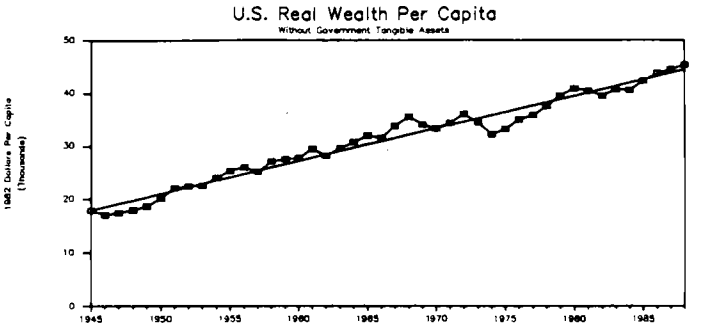

Figure 14a

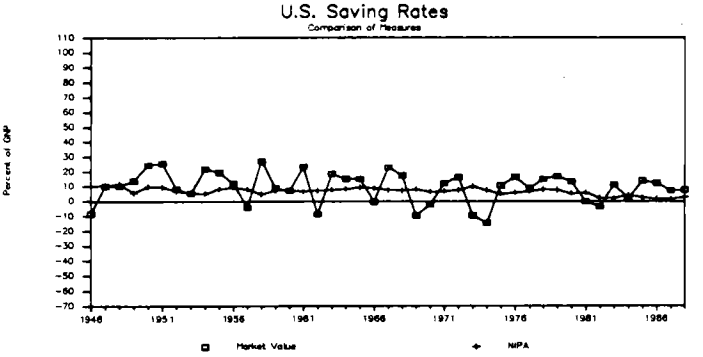

Figure 14b

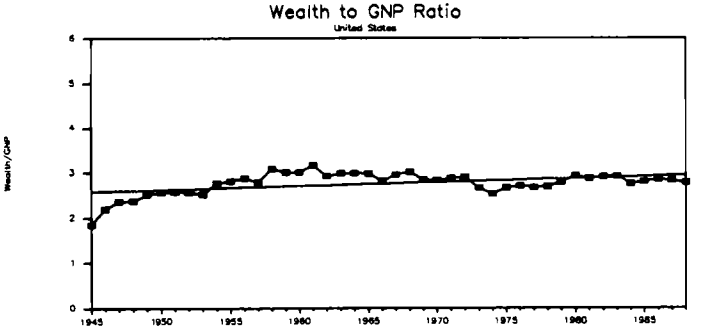

Figure 14c

Sources: U.S. Federal Reserve; U.S. Department of Commerce; Economic Report of the President, 1989.

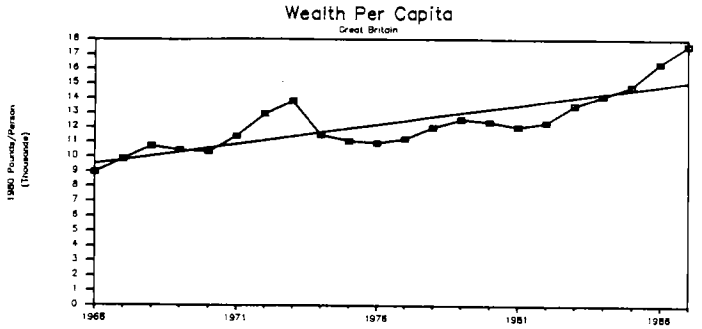

Figure 15a

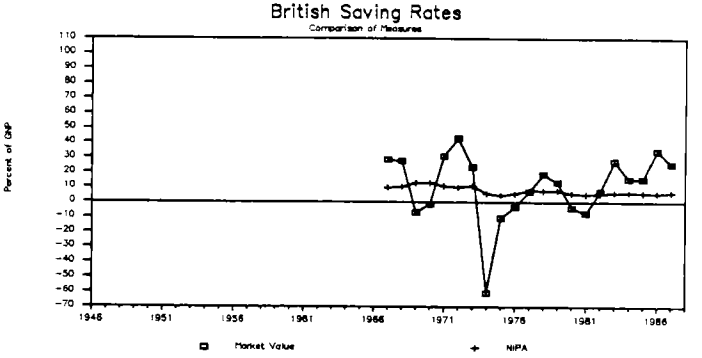

Figure 15b

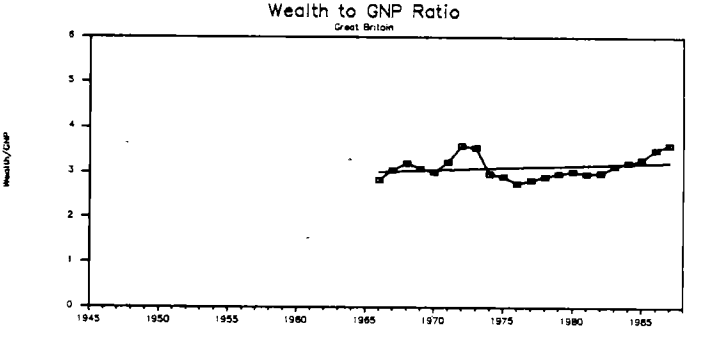

Figure 15c
Sources: See data appendix.

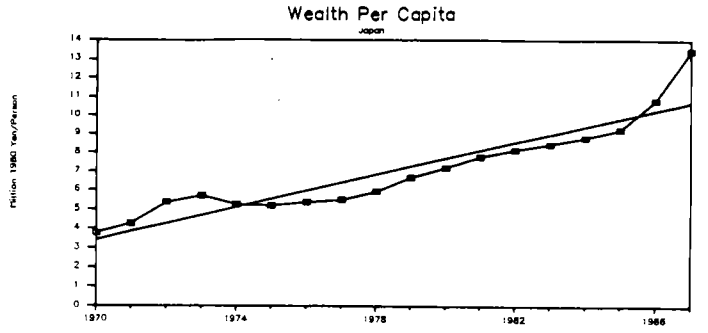

Figure 16a

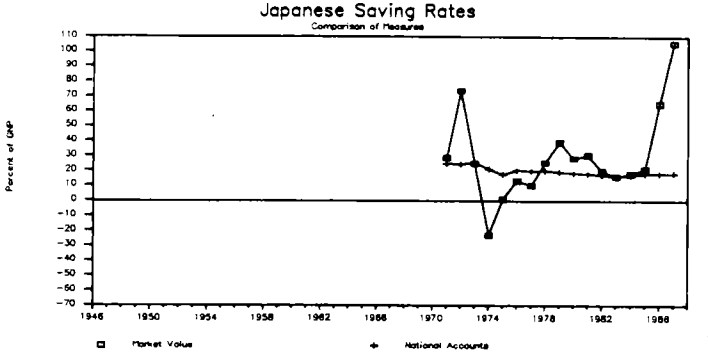

Figure 16b

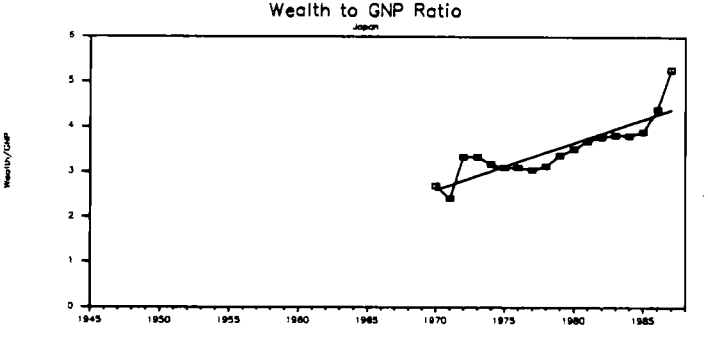

Figure 16c
Sources: See data appendix.

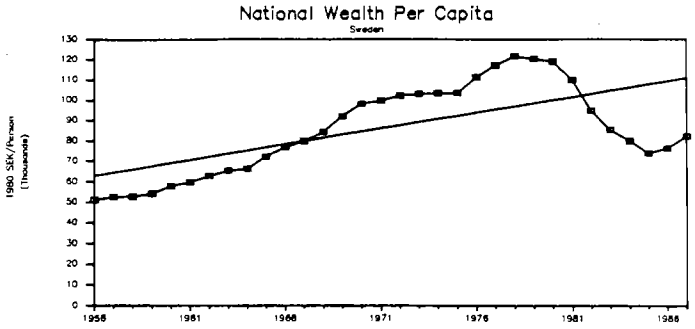

Figure 17a
Sources: See data appendix.

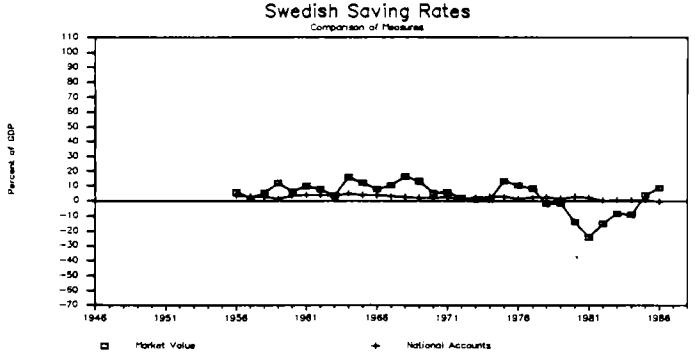

Figure 17b
Sources: See data appendix.

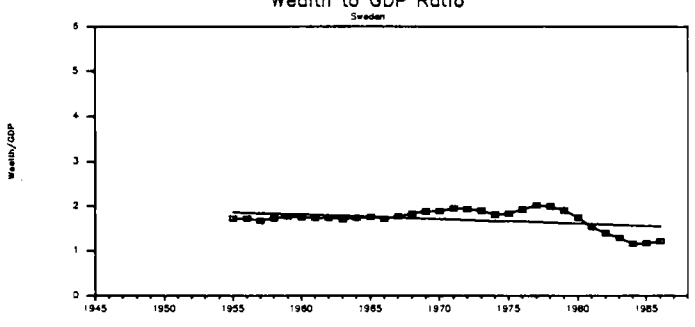

Figure 17c
Sources: See data appendix.

In Japan, wealth per capita has increased steadily and rapidly (Figure 16a). The comparative behavior of market value and national accounts measures of national saving rates is qualitatively similar to that in the countries already discussed (Figure 16b). The different feature in the Japanese record is the strong upward drift in the wealth to output ratio, from about 3 at the end of the 1960s to more than 5 in 1987 (Figure 16c). The shift could be a sign that assets are "overvalued".

Sweden presents the most surprising picture. After twenty years of steady increase, from the mid 1950s to the mid 1970s, per capita wealth turned sharply down, falling by 1985 to about its 1965 level (Figure 17a). The saving rates are, naturally, consistent with this path, with large negative saving in the late 1970s to the mid 1980s (Figure 17b). For Sweden, even the national accounts saving rate is negative in 1986 (when the market value saving rate is significantly positive). Since there has been no sharp contraction in Swedish national output, it follows that the wealth to output ratio also fell sharply in the 1977-1984 years (Figure 17c). As in the case of Japan, one wonders if the market is "improperly" valuing Swedish assets, in this case undervaluing them. It is also of interest that, even in the period when it was fairly steady, the wealth to output ratio in Sweden was, at about 1.8, substantially below that observed in the other countries, perhaps a signal of undiscovered differences in coverage of the data.

The wealth per capita amounts for the four countries were presented in constant real units of the respective currencies. It is naturally of

interest to compare the four countries' wealth accumulation. Figures 18 and 19 make the attempt. Figure 18 plots on a single graph the relative paths of per capita wealth, indexed to 1969, the earliest year in the data for Japan. The remarkable rate of accumulation in Japan, compared with the other countries, jumps out of the figure, as do the strong recent growth in wealth in Britain and the slump in wealth per capita in Sweden.

Figure 19 uses GDP purchasing power parity exchange rates compiled by the OECD to convert all four wealth per capita series to 1982 U.S. dollars of purchasing power. Naturally, one has to take with a grain of salt the idea of selling one's house in Japan to acquire U.S. consumer goods. Still, the rapid growth in Japanese per capita wealth (from almost the bottom to the top of the group) is striking, as are the recent tendency toward convergence of British and U.S. levels and the low level of Swedish wealth. Given the evident high living standard in Sweden, one has, again, to wonder whether there is an undiscovered difference in coverage of the data.

In view of the exceptional character of Japan's economic performance and the high degree of current U.S. interest in Japan, I have prepared two further figures comparing the two countries. Figure 20 displays annual data on the fraction of national private wealth consisting of land value. It is widely known that real estate prices in Japan are very high, but it may not be generally appreciated that land value accounted for nearly 90 percent of the country's wealth as early as 1970, and did not account for less than 70 percent during the period

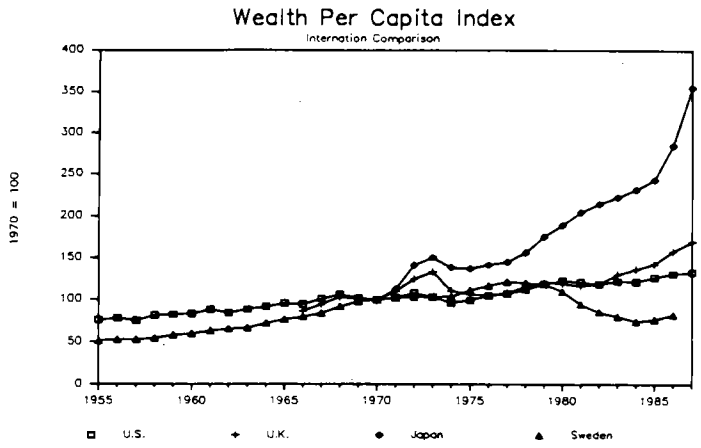

Figure 18
Sources: See individual country figures.

1970-87. The comparable fraction for the United States drifted upward from about 20 percent in 1970 to about 25 percent in 1987.

It might be argued that high wealth owing to high land prices ought

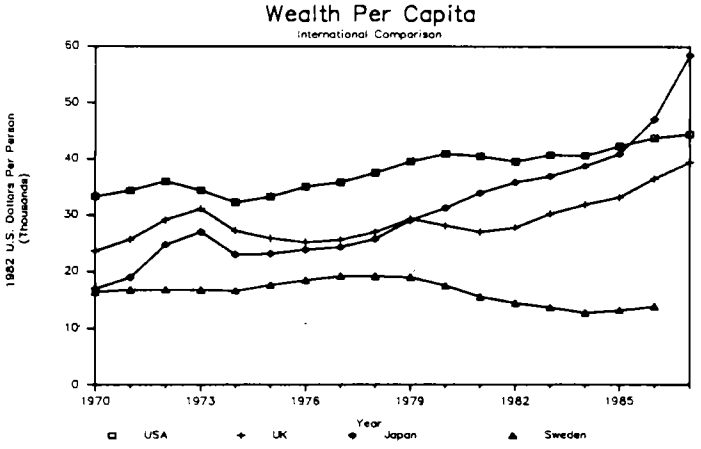

Figure 19
Source: Conversion based on GDP purchasing power parity exchange rates from OECD Annual National Accounts, 1987.

to be interpreted as bad, rather than good, a signal of crowding and agricultural protection. Figure 21 presents wealth per capita in the United States and in Japan, converted to U.S. 1982 dollars of purchasing power using the OECD purchasing power parity exchange rates. In wealth-less-land per capita, Japan is substantially below the United States.

Concluding Remarks

In devoting as much attention as I have to matters of measurement, I have perforce had to slight the development of policy assessment and policy analysis. I may perhaps be permitted to close with some only loosely supported reflections.

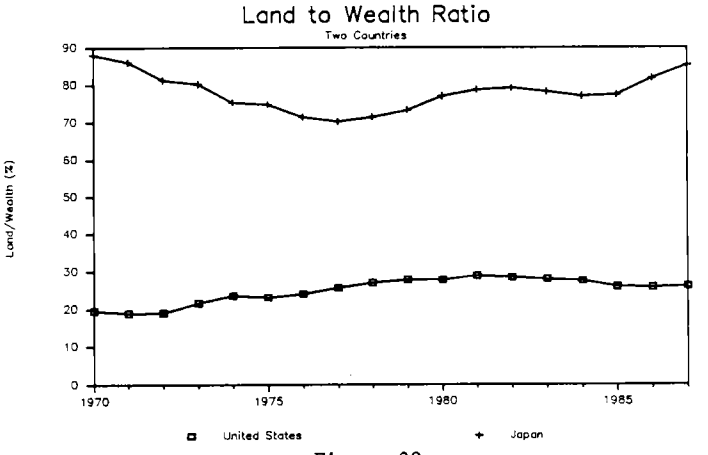

Figure 20

Sources: U.S. data are from U.S. Federal Reserve; U.S. Department of Commerce; for Japanese data see appendix.

The major question under discussion is why the United States is saving so little. I would translate that question into why the United States is consuming so much. On my reading of the record of the behavior of wealth in the sense that most people mean the term, the recent

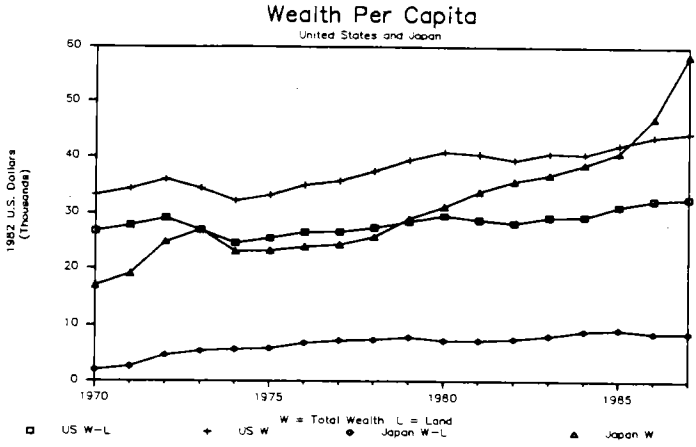

Figure 21

Sources: U.S. data are from U.S. Federal Reserve; U.S. Department of Commerce; for Japanese data see appendix.

consumption (and therefore saving) behavior of the American public is not glaringly out of line with its past behavior. A reasonable standard of consistency with past behavior would be for consumption to maintain its past ratio to wealth. Figure 22 presents a further excerpt from Figure 11, in this case showing the trend in the consumption/wealth ratio from 1946-79 and its projection through 1988, where wealth is interpreted to include the public's holding of government debt and to exclude government assets. It will be seen that the consumption/wealth ratio in the 1980s is very close to its historic trend value. (Obviously, a plot of one or two variables against time is not an analytical model. I said these reflections would be loosely supported. And in any case, most argumentation on this subject is at this level.)

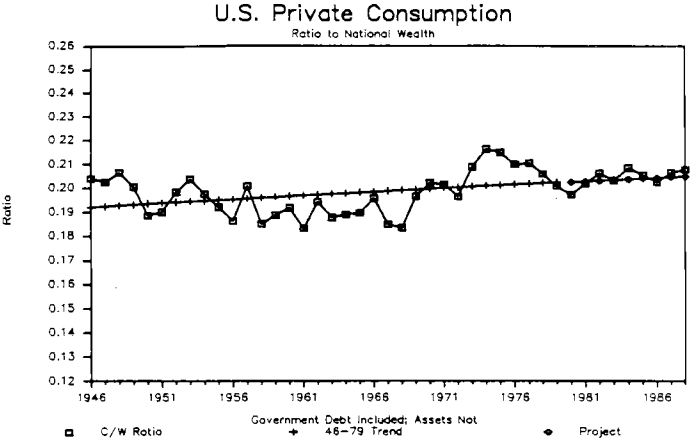

Figure 22
Sources: Same as Figure 11.

From a policy perspective, of course, the regularity of consumption suggested in Figure 22 is not welcome, insofar as it reflects private prudence, but not public prudence, which might rather imply a steady ratio between consumption and wealth exclusive of government debt and perhaps inclusive of government assets. It is thus possible to find U.S. consumption behavior explicable in terms of what people perceive as their circumstances, but too low by reference to their actual circumstances.

By "actual circumstances" I here mean the market assessment of the aggregate wealth of the country. There is a further question whether one should rely on the market assessment in thinking about policy, and whether the U.S. consumers have historically "believed" the financial market results in the way that my projection in Figure 22 implies they might. It is notoriously hard to outguess the market. But Pat

Hendershott has suggested (see his commentary below) that the measured consumption/wealth ratio has tended to do that, being lower in stock market booms than in busts. Presuming we are presently in a boom, consumption is then unexpectedly high, relative to wealth, in comparison with past behavior, and the basis for policy concern is all the greater. The hypothesis seems to me well worth further exploration.

We should, I think, recognize that even if the American public had shifted its behavior toward a higher consumption, lower accumulation path, it is not self-evident that that fact alone provides a basis for a policy to reverse that choice. Nor is it immediately clear that it should be a matter of policy concern that Americans choose to accumulate less rapidly than Japanese.

One might argue *that most people are insufficiently reflective* about their saving behavior. Most people apparently never accumulate anything beyond a bare minimum of financial assets (although it isn't clear that they rationally should, given social security and other retirement resources.) But some of the studies of IRAs, for example, indicate that people are not much motivated by a calculus of rate of return and are much motivated by advertising. Though philosophically not very attractive, a dose of paternalism sometimes seems rather sensible.

I do think, though, that there are reasons quite consistent with respect for the rationality of our fellow citizens to advocate significant changes in policy toward accumulation. By and large, existing policy discriminates against accumulation. (I was interested to see the survey evidence gathered by John Immerwahr (1989) to the effect

that the American public regards accumulation as socially bad.) It would be easy to compile a long list, from the income tax to asset tests for receipt of health insurance benefits or scholarships. In many such cases, the anti-accumulation feature may be a necessary screen to focus some sort of help on the truly needy, but I wonder how carefully the matter has been considered.

To be sure there are exceptions, such as the heavy government investment in schooling and the income-tax free imputed return on investment in consumer durables and owner-occupied housing. But even some of the apparent exceptions, such as tax-sheltered retirement saving, are often organized with features (the contribution ceiling) that negate their effects at the critical margin.

Steps to ameliorate some of the many penalties on accumulation might reasonably be justified on grounds of a presumption in favor of neutrality toward saving. But one might argue that policies should not be merely neutral but rather promote saving because it has positive externalities. To the extent that each of us places a positive value on the <u>current</u> standard of living of others, it is in our interest to encourage each other to save.

APPENDIX

Notes on the International Data

General considerations

Except where specifically indicated to the contrary, the figures reflect the following conventions, adopted in part because data needed to improve upon them are lacking or unreliable:

1. National government tangible assets are ignored.
2. All government spending is classified as consumption.
3. Local government assets and liabilities are ignored; local governments are treated as having zero net worth.
4. Consumer durables are counted as part of national wealth.

United Kingdom

All publications referred to in this section are by the Central Statistical Office in London.

GNP Deflator

The deflator used for an end-of-year stock is the average of the fourth and following first quarter figure.

1979-1987 Monthly Digest of Statistics, March 1989, p. 6.

1957-1978 Economic Trends Annual Supplement, 1987, pp. 5-6.

Real GNP

Nominal GNP has been taken from the same sources as the GDP deflator. Nominal GNP is converted to real terms using GDP deflators.

National Accounts Saving

United Kingdom National Accounts, 1988, pp. 36-37.

Population

Monthly Digest of Statistics, October 1989, p. 19, and Annual Abstract of Statistics, 1987, p. 6. Midyear estimates for the current and following years are averaged to approximate the year-end figures.

Personal Sector Net Worth

1976-87 United Kingdom National Accounts, 1988, p. 87. The stock of consumer durables, detailed in the same source, are added in.

1975 C.G.E. Bryant, "National and Sector Balance Sheets," Economic Trends, May 1987 (pp. 92-119), p. 102.

1966-1974 Central Statistical Office, "Personal Sector Balance Sheets," Economic Trends, January 1978 (pp. 97-107), p. 102; C.W. Pettigrew, "National and Sector Balance Sheets for the United Kingdom," Economic Trends, November 1980 (pp. 82-100), p. 92. The former source is annual but does not include non-profit organizations, while the latter has balance sheets at three-year intervals. The figures used in the paper are from Pettigrew, with the gaps filled using the CSO report to indicate approximate year-to-year changes.

Public Net Worth

Public net worth is public corporation net worth plus national government financial assets minus national government liabilities.

1976-1987 United Kingdom National Accounts, 1988.

1975 C.G.E. Bryant, "National and Sector Balance Sheets," Economic Trends, May 1987 (pp. 92-119).

1966-1974 C.W. Pettigrew, "National and Sector Balance Sheets for the United Kingdom," Economic Trends, November 1980 (pp. 82-100). Because these balance sheets are at three-year intervals, interpolation has been used. The public debt series in Financial Statistics, February, 1978-82, Table s11, have been used to estimate year-to-year changes.

Japan

Private Net Worth

Kokumin Keizai Keisan Nempo (Annual Report on National Accounts; hereafter "KKKN"), 1989, Economic Planning Agency, pp. 346-353, line 6. Consumer durables have been added using KKKN 1989, page 413; 1988, page 445; 1986, page 387; 1983, pages 628-9. A change in definition of the consumer durable measure between 1983 and 1986 forced a modification of some of the figures for consistency. The difference is insignificant in comparison to total wealth.

Government Net Worth

KKKN 1989, pages 364-5; 1988, pages 384-5; 1983, pages 522-6. The figure is the net financial assets of the central government and social security fund.

GNE Deflator

KKKN 1989, pages 130-3; 1988, page 504-5. For 1980-1987, the given figure is the average of the fourth and following first quarter figures. Before 1980, the given figures are the average of the annual figures for the current and following years.

Real GNP

Keizai Tokei Nempo (Economic Statistics Annual), 1976-1988, Bank of Japan. The pages for 1988 are 337-8. Nominal GNP is deflated using the GNE deflator.

National Accounts Saving

KKKN 1989, pages 82-3; 1988, pages 82-3; 1983, pages 10-11.

Population

Japanese Statistical Yearbook, 1987, Statistics Bureau, Management and Coordination Agency, page 24; Keizai Tokei Nempo (Economic Statistics Annual), 1988, page 300. Populations are as of October 31.

Sweden

Private Net Worth; Price Index; National Accounts Savings

Estimates provided by Lennart Berg.

National Debt

Statistisk Årsbok (1958-1988), Sveriges officiella statistik, Statistiska Centralbyrån, Stockholm 1958-1988. In 1988, table 284, page 249.

Population

Statistisk Årsbok (1963, 1981, 1988), Sveriges officiella statistik, Statistiska Centralbyrån, Stockholm. In 1988, table 241, page 231.

International Comparisons

Purchasing Power Parity

For purposes of international comparison, wealth per capita is converted to U.S. dollar units using the purchasing power parity ratios published in the National Accounts Main Aggregates Volume 1, 1960-1987, OECD Department of Economics and Statistics, Paris, 1989, pages 150-51. The U.S. dollar figures are converted to constant 1982 dollars using the GNP deflator.

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