

Is Saving Too Low in the United States?

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A higher American savings rate would enhance our economic independence, reduce inflationary pressures, increase productivity, improve living standards and enable us to reduce what are still obscenely high interest rates after close to a decade of disinflation. What is needed is a national, nonpartisan effort to increase American savings, including better incentives for private retirement plans and a firm rein on taxes generally.

—Louis Rukeyser

America's savings crisis is a chimera. Different accounting methods make it seem as if the U.S. is dangerously behind Japan in savings and investment. But when the necessary adjustments are made the gap disappears.

—Paul Craig Roberts

The foregoing statement by Louis Rukeyser, host of the public television program "Wall Street Week," was published in his nationally syndicated newspaper column—run August 19, 1989 in the local Richmond newspaper [17]. Rukeyser also stated that the Japanese save at a rate three times the U.S. rate, which ". . . enables such foreigners to amass the means to both finance our deficits . . . and to buy American property."

Martin Feldstein, former Chairman of the President's Council of Economic Advisers, has also lamented the low rate of saving in the U.S. economy, stating:

The United States has long had one of the lowest saving rates in the world. . . . The low rate of saving means that the United States has a lower rate of income and possibly a substantially lower level of income growth than would otherwise be possible. The already low rate of saving fell precipitously in the 1980s. [7, p.4].

Observers in other countries are also concerned about declining savings rates. The British *Economist*, for example, has recently published an article concerning the worldwide reduction in the savings rate, stating:

. . . Over the past three decades saving has fallen sharply in almost every rich country. The industrial countries as a group have saved less than 10% of their income in the 1980s, compared with 15% or so in the 1960s. This decline has come at an awkward time. In the 1990s and beyond, demands on the world's pool of savings are likely to be huge. [21, p.13]

Feldstein, Rukeyser, and the *Economist* summarize fairly well the conventional wisdom about saving in the U.S. and world economies. But other observers contend that the conventional wisdom may be wrong. For example, in addition to Paul Craig Roberts (quoted above), Robert Eisner [5] and Robert J. Samuelson [18] have also written columns critical of the conventional wisdom. Eisner's piece is titled "Low U.S. Savings Rate: A Myth," while Samuelson's is titled "The Great Savings Debate: A Smoke Screen."

This article examines the concept of saving and evaluates the contentions that the growth rate of U.S. saving in the 1980s has been slow relative to its own past and slow relative to the rates of saving and investment registered in other countries. The paper is organized as follows:

- I. Saving and Investment Defined: these definitions are necessary for evaluating savings statistics
- II. National Income and Product Accounts (NIPA): definitions
- III. The Current Condition of U.S. Saving and Investment, NIPA basis
- IV. Alternatives or Complements to the NIPA: including United Nations System of National Accounts (UNSNA), Flow-of-Funds, Hendershott-Peek, Total Incomes System of Accounts (TISA), and Jorgenson-Fraumeni

- V. Comparison of Systems of National Accounts: The Historical Record: current and past U.S. savings compared under different methodologies
- VI. Interim Conclusions and Observations
- VII. U.S. Saving Relative to Saving in Other Industrial Countries
- VIII. Conclusions

I.

SAVING AND INVESTMENT DEFINED

What is saving? Children are encouraged to save by putting their loose change into a "piggy" bank. The concept of saving that parents attempt to teach their children is that if they refrain from spending now, they can get something better in the future. Thus, saving takes place when consumption is foregone.

The definition of saving from an economist's point of view is analogous to the view of saving that parents teach to children; namely, saving is refraining from consuming. Can one spend his income and still be saving? Yes. Suppose an entrepreneurial child who has a lemonade stand uses his earnings to buy additional lemons and sugar instead of putting them in the piggy bank. The parent would undoubtedly commend the child for using money wisely, but probably would not think that the child had saved the money. Economists, on the other hand, would consider the young entrepreneur's action as saving (and investing in inventory). The key is that goods purchased for investment are not consumed.

The Equality of Saving and Investment

In the case of the young entrepreneur, all of the money saved was invested. This concept—what is saved is invested—is important. Saving and investment are usually different acts by different people. Nonetheless, from an economist's viewpoint, the amount of total saving in an economy is always equal to the amount of total investment.

Thus, to an economist, a statement that the U.S. savings rate is too low is equivalent to a statement that the U.S. is consuming too much and investing too little of its national output. The debate about the adequacy of the savings rate, therefore, is essentially a debate about the future growth of the U.S. economy and whether there is sufficient plant and equipment spending to sustain adequate future economic growth.

The logic of the somewhat counterintuitive equality between saving and investment can be illustrated by the following simplification. A certain quantity of real goods and services will be produced in the economy this year. Those who buy the goods and services will either consume them or use them to produce other goods. Thus, national product (X) is equal to consumption (C) plus investment (I). By the same token, incomes (wages, rents, interest, and profits) are generated when the national product is produced. The sum of these incomes, known as the national income (Y), goes to firms and individuals, who either use it for consumption (C) or savings (S). Since national product is equal to national income, saving is equal to investment. Thus, in this simplified example,

$$X = C + I$$

and

$$Y = C + S,$$

so, because $X = Y$,

$$S = I.$$

II.

THE NATIONAL INCOME AND PRODUCT ACCOUNTS

The U.S. National Income and Product Accounts (NIPA) are compiled and reported quarterly by the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce. Virtually all of the debate about the existence or extent of a saving and investment shortage in the United States has to do with definitions used in the NIPA, mainly those relating to decisions about what goods and services to include in national production and, of those included, which to count as being "used up" or "consumed." A review of the NIPA is thus in order.

The NIPA defines National Income as the sum of wages, rents, interest, and profits, and Net National Product as the measure of national product that is conceptually equal to the National Income.¹ The Net National Product (NNP) thus is the NIPA account that corresponds to "X" in the conceptual example above. Gross National Product (GNP), which is the most widely publicized NIPA measure, is equal to NNP plus depreciation.

¹ Net National Product is not quite equal to National Income. It differs because of indirect business taxes, business transfer payments, statistical discrepancy, and subsidies.

NNP and GNP are measures of final goods and services produced in the country in a year, and they are divided into subaccounts by type of purchaser of the good or service. For example, NNP is broken down into Personal Consumption Expenditures (purchases by consumers), Net Private Domestic Investment (net purchases of investment goods and additions to inventory by businesses), Government Purchases of Goods and Services, and Net Exports. GNP has the same breakdown except that the investment account is Gross Private Domestic Investment, which is net investment plus depreciation.

The NIPA adopts the concept of saving discussed in the section above, namely, that saving is refraining from consuming. Thus, the NIPA defines personal saving as that part of personal income that is neither paid out in taxes nor spent for personal outlays.² Consistently, business saving is defined as that part of profits that is neither paid out in taxes nor distributed to shareholders, and government saving (or dissaving) is the combined budget surplus (or deficit) of federal, state, and local governments. The sum of personal, business, and governmental saving equals the sum of net private domestic investment and net foreign investment.³

The reader may have noticed that NNP differs from "X" in the simplified example of the preceding section in that it has separate government and foreign accounts. This segregation of the government and the foreign sectors results from special treatment accorded government and foreign investment spending. Government capital formation (or investment) is not recognized in the NIPA; government purchases of investment-type goods and services are not considered investment. Also, the funds used to purchase such goods are not considered to be saving. This treatment of government purchases is not followed by most countries.⁴

² Mainly purchases of goods and services for current consumption, but outlays also include interest payments to businesses and net personal transfer payments to foreigners.

³ Personal saving in the NIPA is derived by deducting personal taxes and personal consumption expenditures from personal income. Business saving is found by summing undistributed corporate profits (plus the inventory valuation and capital consumption adjustments), corporate and noncorporate capital consumption allowances, and net wage accruals. Government saving is the sum of the Federal and state and local budget surpluses (or deficits, which are counted as negative saving). Net foreign investment is defined as exports of goods and services less imports, transfer payments to foreigners, and government interest payments to foreigners.

⁴ See the discussion of the United Nations System of National Accounts, below.

The NIPA also segregate the foreign sector and include net exports (exports minus imports) as an element of national product. The rationale for this treatment is that when individuals (firms) purchase imported goods for consumption (investment) purposes, those goods are included in the personal consumption expenditure (domestic investment) account, but they are not produced in the United States, so they should not be included in the U.S. national product. On the other hand, when foreigners abroad buy U.S. goods, the value of the goods is not included in U.S. consumption or investment accounts, but the goods are produced in the U.S., so they should be included in the U.S. national product. This method works well for determining the market value of final goods and services produced in the U.S., which is the definition of national product, but because net exports are defined as part of investment, it can produce anomalies in the investment account.⁵

Critique of NIPA Investment

The NIPA definition of investment has been criticized for its treatment of net exports as foreign investment and because it excludes from investment: (1) all types of government spending, (2) all consumer durables purchases, (3) "human capital" spending, and (4) most research and development spending. Discussion of these criticisms follows.

Net foreign investment is defined as net exports less transfer payments to foreigners and government interest payments to foreigners. This definition means that a consumer in Japan who buys and eats an American-made frozen pizza adds to U.S. investment, while a police department in Maryland that buys a Japanese-made truck reduces U.S. investment.

⁵ Some economists have been concerned with the relation between saving rates and capital flows across countries. Their argument goes that since $X - M = S - I$, where $X - M$ is net exports, S is saving, and I is private domestic investment, any excess of investment over saving must be offset by a deficit in the balance of payments current account. This deficit in the balance of payments account is interpreted to mean that foreign capital flows into the deficit country to supplement domestic saving.

This seemingly simple argument is actually incredibly complex, involving real exchange rates, real interest rates, marginal propensities to consume and import, and potential investment opportunities. It is too complex to investigate here in any depth. Interested readers are invited to read Roger S. Smith's comprehensive review article [19]. Smith concludes that much of the economists' concern about the relation between savings rates and capital flows is misplaced.

Of these two examples, only the second transaction, which reduces measured investment, actually adds to the real capital stock in the U.S.

Although consumer purchases of new housing are defined as investment, the NIPA do not consider consumer purchases of durable goods to be investment. Thus, consumer purchases of automobiles are considered as current consumption even though automobiles, like houses and other capital goods, yield a stream of services over a period of many years. Business purchases of automobiles, on the other hand, are defined as investment.

A number of economists have criticized the treatment of government expenditures and consumer purchases of durables in the U.S. national income and product accounts. As Robert Eisner puts it:

If Hertz, Avis, or any other private company buys an automobile, that constitutes investment. If a police car or any other automobile is purchased by any branch of government, that shows up merely in "government purchases of goods and services." And automobiles purchased by households are part of personal consumption expenditures. Yet, in terms of economic theory and analysis, the automobile in each case, like any other durable good, is investment in that it will provide future services. . . . Is a nation really investing less if it builds highways and produces automobiles than if it invests in trains and busses? [6, pp. 6-7]

The NIPA definition of investment excludes expenditures for human capital (such as education, job training, health, etc.). These expenditures are classified as current consumption, as are other expenditures designed to maintain or improve one's ability to work. Business spending for research and development is also excluded from business investment.

Eisner has also criticized these exclusions:

Research and development efforts by business are treated as intermediate products, . . . research and development expenditures by nonprofit institutions turn up as consumption, . . . and government expenditures for research are buried in . . . government purchases of goods and services. Yet, research and development expenditures may well prove more of an economic investment in future output than much of what is currently treated as "gross investment." And what are we to make of the vast amounts of expenditures . . . for education, training, and health, let alone the raising of our children, which create the human capital on which our future depends? Can we confidently say that the United States is lagging far behind other nations in investment without counting R&D, education, government capital, and expenditures for household durables in ways that are comprehensive as well as comparable across countries? [6, pp. 6-7]

The implications of the exclusions of government and consumer purchases of investment-type goods, R&D spending, and human capital expenditures from the NIPA definition of investment have been analyzed extensively in the economics literature. Before discussing these analyses, this article examines the current condition of U.S. saving and investment as depicted by the NIPA.

III.

THE CURRENT CONDITION OF U.S. SAVING AND INVESTMENT, NIPA BASIS

Chart 1 displays gross saving as a percent of the Gross National Product and net saving as a percent of Net National Product. As the chart indicates, gross saving as a percent of GNP has declined in recent years. It averaged 16.5 percent from 1960 to 1981, 14.3 percent in 1982-1984, and 12.9 percent in 1985-1989.

A better measure of the potential effects of saving and investment on the economy, however, is given by net saving and investment, which exclude depreciation. It is important to know, for example, whether a firm's purchase of five new machines is made to add to its capacity or whether the five machines simply replace five old worn-out machines.

Chart 1 also illustrates that net saving has declined relatively more than gross saving in recent years. Net saving as a percent of NNP averaged 8.0 percent from 1960-1981, 3.0 percent from 1982-1984, and 2.4 percent from 1985-1989. This reduction in saving is consistent with the Feldstein-Rukeyser statements mentioned at the outset.

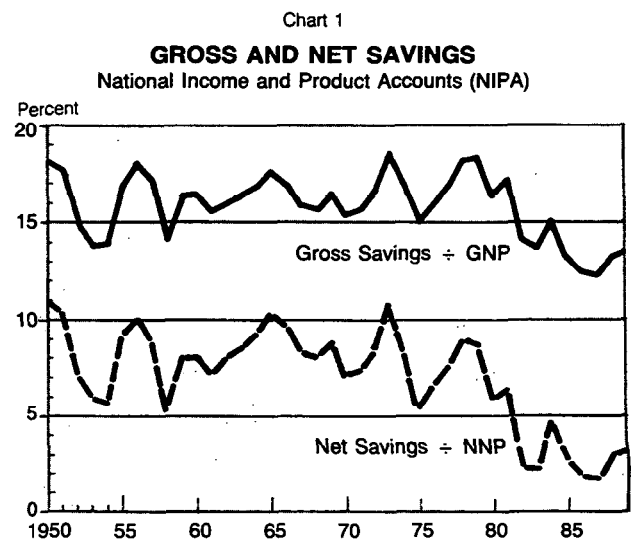
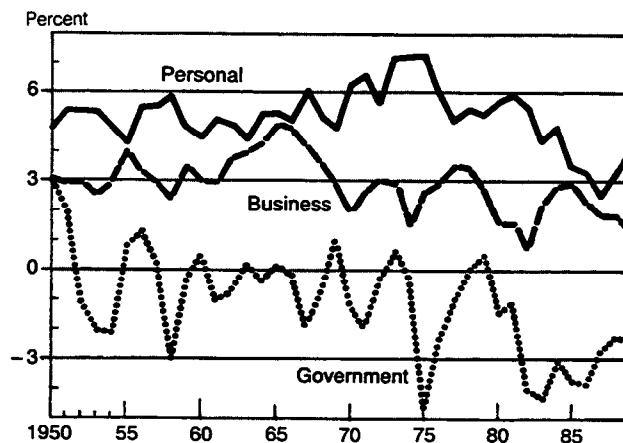


Chart 2 shows net personal, business, and government saving as percentages of NNP. Net business savings averaged 3.1 percent of NNP in 1960-1981, 1.9 percent in 1982-1984, and 2.0 percent in 1985-1989. Net personal saving averaged 5.6 percent of NNP in 1960-1981, 4.9 percent in 1982-84, and 3.4 percent in 1985-89. Net government saving (dissaving actually), on the other hand, fell from -0.7 percent of NNP in 1960-81 to -3.8 percent in 1982-84, recovering to -2.9 percent in 1985-89.

Federal, state, and local governments ran combined deficits that averaged 2.2 percentage points more of NNP in 1985-89 than in 1960-81. The culprit in government saving was the Federal government, however, because state and local governments ran larger surpluses in 1982-89 than in 1960-81. The Federal government deficit, by contrast, averaged 1.2 percent of NNP over 1960-81, 5.4 percent over 1982-84, and 4.3 percent in 1985-89.

Are saving and investment in the national accounts measured correctly, and if not, is mismeasurement or misinterpretation responsible for the U.S. "savings crisis?" Several economists have constructed alternative measures of national investment and saving. Many of these alternative systems of national accounts, particularly those that include nonmarket activities and/or human capital investment, yield estimates of saving and investment that are strikingly different from the NIPA estimates. The paragraphs below review these reconstructions and the arguments put forward by their proponents.

Chart 2
DISAGGREGATED NET SAVING
(as Percent of NNP)



IV. ALTERNATIVES OR COMPLEMENTS TO THE NIPA

A number of attempts are being made to provide measures of economic welfare that are legitimate alternatives to the BEA's National Income and Product Accounts. This article discusses five of these.

United Nations System of National Accounts (UNSNA)

This system of accounts is used for cross-country comparisons in all United Nations and OECD publications. It is fairly similar to the NIPA except in its treatment of government investment, where the UNSNA defines nonmilitary government construction and equipment purchases as investment while the NIPA does not. The U.S. provides national economic data to the UN and the OECD in UNSNA form, so the information is readily available to interested parties.

The Flow-of-Funds Accounts (FFA)

Flow-of-funds estimates are published quarterly by the Federal Reserve Board. The FFA measure saving differently from the way it is calculated for the NIPA, thus providing a readily available alternative source of estimates of national saving. The FFA system also differs from the NIPA in that net purchases of consumer durables are considered to be investment and the funds used to purchase them to be saving.

Saving in the FFA is figured in the following way. Individuals' saving is defined as the sum of individuals' increases in financial assets⁶ and tangible assets⁷ less their net increase in debt,⁸ both terms excluding the effects of asset revaluation. Saving so measured differs in concept from NIPA personal saving mainly because it includes: (1) Government insurance

⁶ Financial assets in this context include checkable deposits, time and savings deposits, money market fund shares, U.S. Treasury securities, U.S. Government agency securities, tax-exempt obligations, corporate and foreign bonds, open-market paper, mutual fund shares, other corporate equities, private life insurance reserves, private insured pension reserves, private noninsured pension reserves, Government insurance and pension reserves, and miscellaneous financial assets.

⁷ Tangible assets include owner-occupied homes, other fixed assets (including corporate farms), consumer durables, and inventories (also includes corporate farms).

⁸ Individuals' debt includes mortgage debt on nonfarm houses, other mortgage debt (includes corporate farm), consumer credit, security credit, policy loans, and other debt (includes corporate farms).

and pension reserves, (2) net investment in consumer durables, (3) capital gains dividends from mutual funds, and (4) net saving by farm corporations. In addition, the two measures of saving differ because of measurement differences, by an amount that is called the "household discrepancy."⁹

Hendershott-Peek Adjustments

Patric Hendershott and Joe Peek [10] adjusted the NIPA accounts to move the measurement of U.S. private saving closer to the concept of saving as a change in real wealth. Such a concept viewed saving as the difference between end- and beginning-of-period net worth (revalued to current prices). So defined, saving is equal to the change in real resources available for future consumption.

The Hendershott-Peek concept of saving is similar to that used in the FFA accounts. Indeed, Hendershott and Peek utilize FFA accounts quite liberally in making their adjustments to NIPA savings and investment. Beginning with the NIPA estimates of personal saving and investment, Hendershott and Peek, consistent with the FFA accounts, added net purchases of durable goods by consumers, sole proprietorships, and partnerships as well as net purchases of government life insurance and pension reserves.¹⁰ They also added OASI contributions, which are not defined as saving in the FFA.¹¹

Defining social security contributions as part of personal saving is controversial. The debate centers on whether social security "contributions" differ from ordinary taxes.¹² The answer depends upon whether the expectation of receiving future social security benefits affects current consumption spending. If, for example, individuals discount future social security benefits as illusory and therefore continue to save whatever amount they would have saved anyway,

⁹ See Wilson, Freund, Yohn, and Lederer [22] for a detailed analysis of the "household discrepancy."

¹⁰ A dollar of income put into a private retirement plan is considered to be a dollar of income saved, and a dollar of interest earned on those private retirement funds and not consumed is also considered to be a dollar saved.

¹¹ Hendershott and Peek froze the amount of the social security contribution to be added in 1981-85 at the 1980 real level. They argued that the promised rate of return on social security began to fall short of the market rate in the early eighties, so individuals would not have increased their contributions voluntarily after that time.

¹² They are treated as ordinary taxes in the NIPA.

social security payments should not be defined as saving.¹³

Hendershott and Peek also adjust saving to remove the inflation premium from interest income. This adjustment also makes sense theoretically; from the change-in-net-worth approach to saving, it is clear that a portion of interest payments in inflationary periods merely compensate for a decline in the real value of dollar-denominated assets. The mechanics of HP's actual adjustment procedure was criticized severely by de Leeuw,¹⁴ however, and it needs rethinking.

In any event, despite de Leeuw's criticisms, the Hendershott-Peek adjustments deserve serious consideration both as criticisms of the conventional accounts and as proposals for future change in the NIPA.

The Total Incomes System of Accounts (TISA)

Robert Eisner [6] has developed an extended system of accounts that he calls the Total Incomes System of Accounts (TISA). His system is based upon the assumption that there is a need for "... better measures of economic activity contributing to social welfare, more inclusive and relevant measures of capital formation and other factors of economic growth, and better and/or additional data to fit concepts of consumption, investment and production." [6, p.2] Eisner's system retains the NIPA's central focus on the measurement of final product, but TISA defines final product differently than the NIPA.

The TISA system is designed to "... include the income corresponding to all consumption and capital

¹³ The specific HP adjustments for social security have been criticized. Frank de Leeuw, in a commentary, argued as follows: "It would seem . . . that adjusting the present [NIPA] estimates to a change-in-wealth approach would require adding contributions to personal saving and subtracting benefit payments. . . . HP's adjustments do add contributions . . . but they do not subtract benefit payments. . . . This procedure has the peculiar consequence that, if contributions and benefits rise by identical amounts . . . personal saving rises." [10, pp. 224-25] The de Leeuw criticism of the HP social security adjustment seems appropriate. One can, however, accept the argument that social security contributions are saving and easily make the straightforward adjustment suggested by de Leeuw of including social security contributions in personal saving and excluding benefits. This adjustment may be made to NIPA personal saving simply by adding the social security surplus, because NIPA personal saving already includes social security benefit payments.

¹⁴ Particularly their assumption that the average real interest rate was constant (equal to the nominal rate in 1950) from 1950 through 1980.

accumulation, market or nonmarket, in all sectors of the economy." [6, p. 21] Eisner's TISA accounts thus include items of nonmarket product such as ". . . the services of government, household capital, unpaid household labor, and the opportunity costs of students' time." [6, p. 21]

Eisner classifies national defense, roads, and police services as intermediate product, while redefining a portion of commercial television, radio, newspaper, and magazine services as final product. He also subtracts expenses related to work from income and product and adds the value of employee training and human capital formation to income and product. Also, business product is reduced by the amount of intermediate product deemed to be received by government.

The Total Incomes System of Accounts also includes as output the value of government subsidies, the deficits of government enterprises, the services of volunteer labor, and the ". . . differences between opportunity costs of military conscripts and jurors and what they are paid." [6, p.21]

The TISA measure of capital accumulation includes NIPA's gross private domestic investment, plus (1) governmental acquisitions of structures and equipment and additions to inventory (\$125 billion in 1981), (2) household acquisitions of durable goods and additions to inventory (\$351 billion in 1981), and (3) investment in intangible capital in the form of research and development, education and training, and health (\$850 billion in 1981). As a result of these changes, the TISA gross national product was estimated to have been 54.4 percent larger than NIPA GNP in 1981, while TISA saving and investment measures were over three times larger than the NIPA measures.

TISA also provides estimates, as a supplement to conventional capital accumulation, of net revaluations of tangible assets¹⁵ (\$ - 153.7 billion in 1981). TISA thus equates current dollar net investment to the current dollar value of the real change in net worth, whether due to acquisition of newly produced capital or to changes in the value of existing capital.

Jorgenson-Fraumeni, Full National Product

Dale Jorgenson and Barbara Fraumeni [11] have developed a system of national accounting that in-

¹⁵ Net revaluations measure the changes in the nominal values of tangible assets less changes attributable to general price movements.

cludes investment in human and nonhuman capital, and consumption of market and nonmarket goods and services. According to Jorgenson and Fraumeni (JF), the NIPA understates the amount of economic activity in the U.S. by a very substantial amount, primarily because nonmarket activities are excluded.

The JF measure of capital formation puts investment in human capital at least four times the magnitude of investment in nonhuman capital. Thus, the JF national accounts assign a much larger relative importance to investment than the NIPA. "Full" investment in the JF system, where both human and nonhuman capital are included, constitutes around half of "full" product. "Full" consumption makes up the other half. The value of full product equals the value of outlays on the services of human and nonhuman capital, which take the form of both market and nonmarket labor and property compensation.

Labor compensation is about 90 percent of the total factor outlay, and nonmarket labor compensation, which includes investment in education, household production, and leisure time, accounts for more than 80 percent of labor compensation. The JF system assumes that both labor and property compensation are measured after taxes are deducted and subsidies accruing to individuals are added.

Consistent with the inclusion of gross human capital in the JF accounts, JF estimate the depreciation of human capital. Depreciation of human capital is defined as the sum of changes in lifetime labor incomes that occur with age for all individuals who remain in the population, and lifetime labor incomes of all individuals who die or emigrate. Depreciation of nonhuman capital is the sum of changes, in the current year, of asset values for all investment goods remaining in the capital stock and the asset values of all investment goods that are retired from the capital stock.

As a result of all of these adjustments, JF's "full" investment is substantially larger than Gross Private Domestic Investment as reported in the NIPA. In 1984, for example, JF estimated "full" investment to be \$6.15 trillion, of which \$5.12 trillion was human investment and \$1.03 trillion was nonhuman investment. NIPA gross private domestic investment was estimated to be \$0.66 trillion. As in the NIPA, Jorgenson-Fraumeni full investment equals JF full saving, except for statistical discrepancy. Also, full human capital equals full human saving.

V.
COMPARISON OF SYSTEMS OF
NATIONAL ACCOUNTS:
THE HISTORICAL RECORD

UNSNA Versus NIPA

Chart 3 shows UNSNA gross and net savings rates¹⁶ in comparison to NIPA gross and net saving rates. As the chart shows, UNSNA savings rates were consistently larger than NIPA rates, which is to be expected because saving in the UNSNA system includes funds to be used for government capital spending. UNSNA *net* saving does show a downward trend after 1973, but its downward movement is considerably more moderate than the trend in NIPA net saving. UNSNA net saving averaged 7.9 percent of net domestic product in the 1970-83 period and 6.6 percent of NDP in 1984-88. NIPA net saving, in contrast, averaged 8.0 percent of net national product in 1970-83 and 2.6 percent of NNP in 1984-88.

Flow-of-Funds Versus NIPA

Chart 4 shows individuals' saving from the flow-of-funds accounts (FFA) and the reconciliation of the FFA and NIPA personal saving rates over the 1952-89 time period. All three are plotted as percentages of NNP. The comparison shows, first, that FFA personal savings rates, even after reconciliation,

¹⁶ As percentages of gross domestic product (GDP) and net domestic product (NDP). GDP is the market value of output produced by factors of production *located* in a country, while GNP is the market value of output produced by factors of production *owned* by citizens of a country.

Chart 3
GROSS AND NET SAVING
NIPA vs. UNSNA

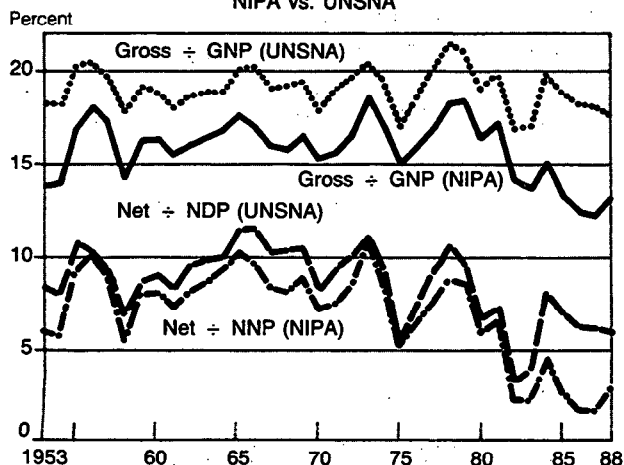
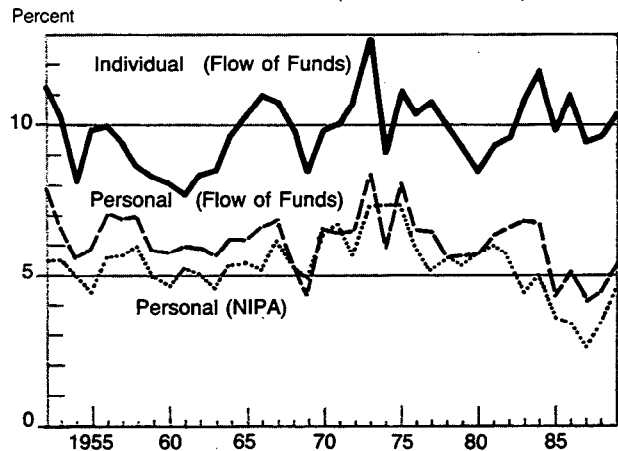


Chart 4
PERSONAL AND INDIVIDUAL SAVINGS ACCOUNTS
NIPA vs. Flow of Funds (as Percent of NNP)



remain generally higher than NIPA personal savings rates, and second, that FFA individuals' savings rates have shown no downward trend in recent years.

The differences between individuals' savings rates and personal savings rates¹⁷ are quite striking. Thus, although the point is valid that U.S. savings rates as measured by the National Income and Product Accounts have declined in recent years, individuals' savings rates, as derived from the flow-of-funds accounts, do not show similar declines.

The Hendershott-Peek Adjustments Versus NIPA

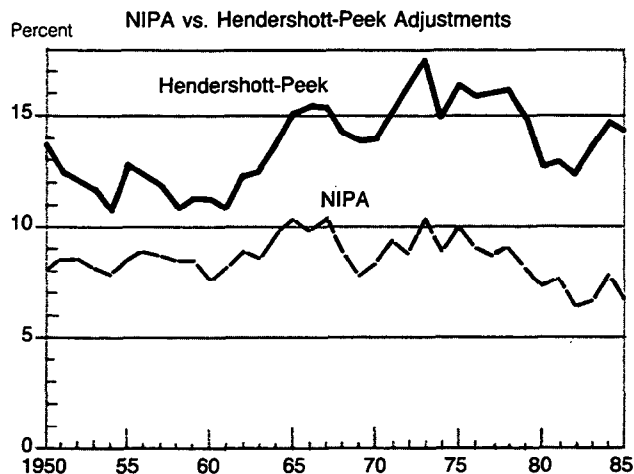
The estimates of net private saving rates as adjusted by Hendershott and Peck (with minor modifications¹⁸) are shown in Chart 5 in comparison to NIPA net private savings. Both rates are percentages of Net National Product. As the chart shows, the HP saving rate is almost twice as large as the NIPA rate. In the 1960-81 period, for example, the HP rate averaged 14.2 percent of NNP, while the NIPA rate averaged only 8.7 percent.

¹⁷ The major differences between individuals' saving and personal saving are that the former includes net investment in consumer durables and government insurance and pension reserves. NIPA Personal Income and FFA Personal Income differ by the amount of the household discrepancy. See discussion above, Section IV.

¹⁸ Because of de Leeuw's criticism, HP's adjustment for the inflation premium in interest income was not made. Also because of de Leeuw, the actual HP adjustment for social security contributions was modified. Following his suggestion (see footnote 13), the social security modification was made by adding the social security surplus to personal saving.

Chart 5

NET PRIVATE SAVINGS
(as Percent of NNP)



During the 1982-85 period, the HP rate averaged 13.5 percent while the NIPA rate averaged 6.7 percent.

The decline of private saving in recent years is considerably less severe when saving is measured with the HP adjustments. While the average NIPA saving rate fell 2.0 percentage points between the 1960-81 and the 1982-85 periods, the average HP saving rate fell only 0.7 percentage points. The major reason for the more moderate decline in the HP savings rate is that HP personal saving includes the social security surplus.

TISA Versus NIPA

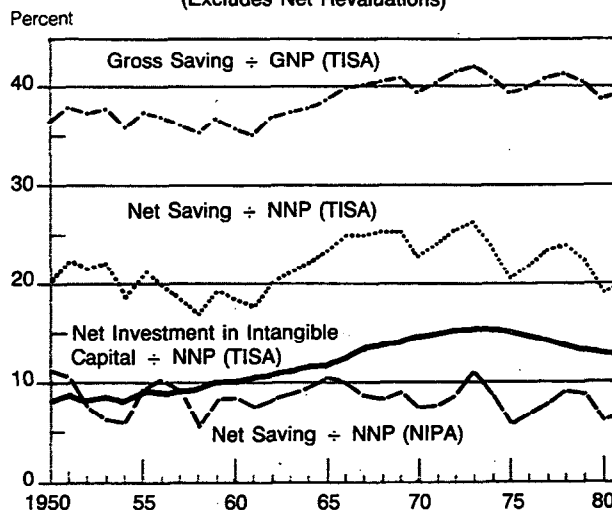
Chart 6 shows TISA gross and net saving as percents of TISA GNP and NNP as well as net investment in intangible capital as a percent of TISA net national product over the 1950-1980 period. NIPA net saving as a percent of NNP is shown for comparison. As the chart illustrates, TISA savings rates substantially exceed NIPA savings rates. In fact, in 1981, TISA net investment in intangible capital alone (as a percent of TISA NNP) was more than twice as large as NIPA net investment (as a percent of NIPA NNP). Moreover, TISA saving over the 1950-80 period shows no obvious overall downward trend. Net investment in intangibles seems to have peaked in 1972 and has since moved downward, but its 1981 level was well above the levels of the fifties.

Jorgenson-Fraumeni Versus NIPA

Chart 7 shows Jorgenson and Fraumeni's full gross and net investment as percentages of the corre-

Chart 6

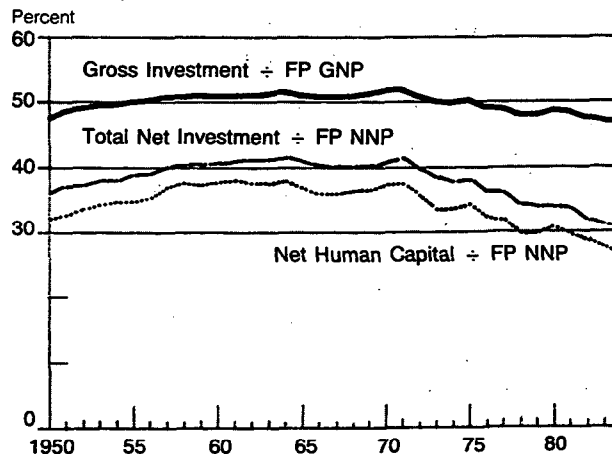
DOMESTIC INVESTMENT
(Percent of TISA GNP or NNP)
(Excludes Net Revaluations)



sponding estimates of full private GNP and NNP. Net human capital investment is also plotted as a percentage of full private NNP. The chart shows that full gross investment declined only about five percentage points from its 1970 peak to 1984. Full net investment, on the other hand, fell almost ten percentage points. The difference, which is depreciation, is mainly in the depreciation of human capital, as is shown in Chart 8.

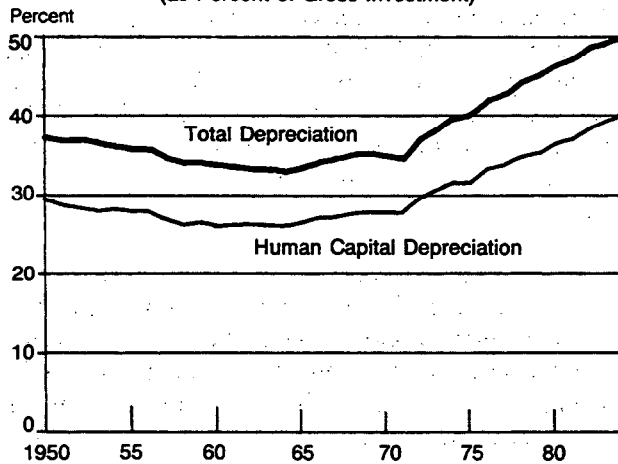
Chart 7

PRIVATE DOMESTIC INVESTMENT
JORGENSEN-FRAUMENI SYSTEM
(as Percent of Full Private GNP and NNP)



Source: Jorgenson and Fraumeni, "Lifetime Income and Human Capital," unpublished preliminary manuscript, August 1988.

Chart 8
**ESTIMATED DEPRECIATION
 JORGENSEN-FRAUMENI SYSTEM**
 (as Percent of Gross Investment)



Source: See Chart 6.

All Systems Compared

Chart 9 shows a comparison of net savings rates calculated from the NIPA, Jorgenson and Fraumeni, TISA, and Hendershott and Peek. As the chart shows clearly, the JF savings rates tower over the other rates. The TISA rates are next largest, followed by the Hendershott-Peek and flow-of-funds estimates. Lowest, and substantially below the flow-of-funds estimates, comes the NIPA.

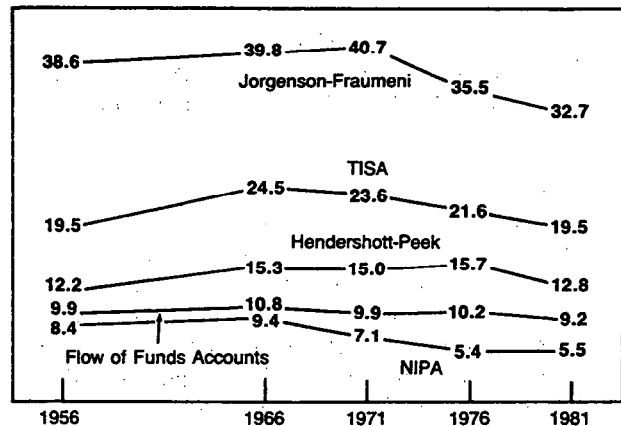
VI. INTERIM CONCLUSIONS AND OBSERVATIONS

Which system is best? Strong cases can be made for all of them. It seems especially clear, however, that if one is using the rate of saving as an indicator of the future rate of national economic growth (as do Feldstein and Rukeyser), it is not appropriate to exclude from saving funds used to finance investments in human capital, research and development, and the public infrastructure.

Moses Abramovitz believes investments in infrastructure and human capital to be key factors in explaining cross-country differences in economic growth. As he puts it:

Social capability is what separates less developed from advanced countries today and which, in the past, separated the late-comers among the countries that are now industrialized from the early entrants into what Kuznets called 'modern economic growth.' . . . [S]ocial capability . . . refers to a country's political institutions, its political

Chart 9
NET SAVINGS RATES COMPARED
 (selected years)
 (as Percent of Relevant NNP Estimate)



integration and the effective consensus in favor of development. These [attributes affect] . . . (1) the ranking of economic activity and of material welfare in the scale of social values, (2) the social sanctions that protect earnings, property and honest trade, and (3) the willingness and capacity of governments to create the physical infrastructure for private activity. Next, there is a country's technical competence for which, at least among Western countries, years of schooling may be a good proxy. [1, p.3]

Of the five alternative systems of national accounts, the saving and investment estimates from the UNSNA, flow-of-funds accounts, and the Hendershott-Peek system depart the least from the U.S. national income and product accounts. Do they indicate a savings slowdown?

The UNSNA-based saving rate had only a moderate decline between 1970-83 and 1984-88. Individuals' saving as measured by the flow-of-funds accounts showed no observable trend toward lower savings rates. Consistently, the HP-adjusted accounts indicated considerably higher saving and considerably less of a decline in the savings rate since the mid-seventies than did the NIPA. The least controversial systems, therefore, provide no evidence that the U.S. is in a "saving crisis."

Only the Jorgenson-Fraumeni estimates of *net* investment seem to be consistent with the existence of some sort of a U.S. saving crisis. But the post-1971 decline in the JF net investment rate is attributable to a declining rate of *human* capital spending, and that in turn is attributable to a rapid rise in human depreciation since 1971. If the JF data describe the

long-lamented U.S. saving crisis,¹⁹ the crisis is quite different in character from that envisioned by Rukeyser and Feldstein, *et al.*

VII. U.S. SAVING RELATIVE TO SAVING IN OTHER INDUSTRIAL COUNTRIES²⁰

This section of the article will review five different analyses of U.S. savings rates compared to savings rates in other advanced countries. Robert Lipsey and Irving Kravis [12, 13] have argued persuasively that although the United States currently is not a leader in saving among the major industrialized countries, much of the concern that the country is improvident is based upon a misinterpretation of the data. Mincer and Higuchi's study of on-the-job training in the United States and Japan [15], however, raises questions about Lipsey and Kravis's favorable conclusions, at least those relating to the relative levels of human capital investment in the United States and Japan. Fumio Hayashi [8, 9], on the other hand, reaches the conclusion that the difference between the U.S. and the Japanese savings rate is substantially overstated because of noncomparabilities in the definition of the national income and product accounts in the two countries.

Robert McCauley and Steven Zimmer [14] examine differences in investment spending in the United States, Britain, Japan, and Germany. They conclude that the cost of capital in Japan and Germany was lower than in the United States and the United Kingdom, and then argue that this higher cost of capital may explain the consistently lagging investment spending in the latter two countries.

David Aschauer [2] argues that a relatively low rate of public (governmental) investment spending in the United States can also explain some of its lagging investment and slower productivity growth.

Is the U.S. a Spendthrift Nation?

Lipsey and Kravis discuss the items that should be included in saving and investment²¹ and develop

¹⁹ As the rise in human depreciation after 1971 stemmed from the use of the life-cycle approach to estimating depreciation combined with the baby boom's effects on the age distribution of the population, the decline in JF net investment may be more of a measurement anomaly than a piece of reliable evidence of a saving crisis.

²⁰ Particularly the "Group of Seven" countries, which include Canada, France, West Germany, Italy, Japan, the United Kingdom, and the United States.

²¹ Lipsey and Kravis use gross saving and investment throughout because they are skeptical of cross-country comparisons of capital consumption measures.

a set of adjustments to incorporate spending for consumer durables, education, and research and development into the investment accounts. The effects of these adjustments on cross-country savings rates are given in Table I. As is shown in the table, when all of the adjustments are made, the difference between the U.S. rate of capital formation and that of the average of the rest of the Group of Seven countries is reduced from 4.7 percentage points to 3.3 percentage points.²²

Lipsey and Kravis discussed further adjustments that would be desirable if they were not precluded by data unavailability. One particularly important additional adjustment would have been to include in saving and investment the foregone earnings of students. As Lipsey and Kravis state, "As the proportion of working-age students attending institutions of higher education is higher in the United States than in all or most of the other countries, the inclusion of their foregone earnings in the form of investment would raise the U.S. investment rate and bring it closer to the average." [13, p. 73]

²² Lipsey and Kravis also make an adjustment for differences in military capital formation, which further reduces the differential to about 3.1 percentage points.

Table I
Gross Fixed Capital Formation
as a percent of Gross Domestic Product
average of individual year ratios, 1970-1984

	Conventional Measure	+ Education	+ Research & Development	+ Consumer Durables
United States	18.1	24.2	26.2	30.1
Canada	22.0	30.9	31.9	37.2
Japan	31.9	36.1	38.0 ^a	39.9 ^a
France	22.2	25.9	27.5	32.4
Germany	22.1	26.0 ^a	27.9 ^a	NA
Italy	19.8	24.9 ^b	25.7 ^b	29.0 ^b
United Kingdom	18.5	23.0	24.9 ^a	28.4 ^a
Average-US excluded	22.8	27.8	29.3	33.4

^a 1970-1983

^b 1970-1982

Source: Lipsey and Kravis, [12, pp. 47-50]
United Nations System of National Accounts

Lipsey and Kravis also argued that capital goods are cheaper relative to other goods in the U.S. than they are in many other countries. As a result, even with higher savings rates, investors in those other countries can not purchase as many investment goods as can investors in the United States.

Finally, Lipsey and Kravis consider a criticism that the U.S. funnels excessively large shares of its saving into residential construction and consumer durables, while other countries channel their saving into more productive forms of investment, such as machinery and equipment. They conclude that “. . . the share of capital formation going into residential building has not been exceptionally high in the United States.²³ . . . [Also], the share of producer durables . . . in conventional capital formation was above average in the U.S.” [13, pp. 41-2] This view is shared by Tatom [20], who has argued that U.S. investment in equipment in the eighties was quite strong, especially in the first half of the decade.

Can On-the-Job Training be Ignored?

Lipsey and Kravis's conclusion about the narrowing of the differential between the U.S. and the Japanese savings rates after adjustment for human capital investment might well have been reversed if their study had included on-the-job training. Jacob Mincer and Yoshio Higuchi [15] recently reported the results of a massive study of differences in training in Japan and the United States that used microdata from the Panel Studies of Income Dynamics for the United States, and microdata from the “Employment Structure Survey” for Japan.

The Mincer and Higuchi study began with two observations: (1) that workers in Japanese firms have lower turnover rates than workers in U.S. firms and (2) that wages of workers in Japanese firms tended to rise more rapidly with years of tenure than did wages of workers in U.S. firms. They then showed that lower worker turnover rates were not cultural traits peculiar to Japanese workers, noting that the very low turnover rates in Japan are postwar phenomena, and that turnover rates and wage profiles for American workers in Japanese plants located in the United States were similar to those of Japanese workers in Japan. Both the lower turnover rates and the higher wage profiles, they argued, stemmed from Japanese firms' on-the-job training programs.

²³ Seven of fourteen countries studied (Belgium, Denmark, Finland, France, Germany, and Italy) had higher shares over 1960-1984.

Mincer and Higuchi then argued persuasively that the more intensive formation of human capital on the job in Japanese firms resulted from those firms being forced to cope with rapid technological change in the post-World War II period. They reached that conclusion for the following reasons:

- (i) There were strong reductions in turnover during the 1950s, when economic growth accelerated. . . . (ii) There was a lack of deceleration in the wage profile of mature workers relative to younger workers in Japan—suggesting continuous training and retraining processes characteristic of rapid technological change. (iii) There were larger declines in wages of workers in Japan who interrupted their labor force participation for several year periods than in the wages of comparable U.S. workers. [15, p. 124]

Finally, they observed that research using U.S. data also suggested that the more rapid the productivity growth in an industry, the greater the demand for education and training.

The Mincer-Higuchi study, therefore, has rather disturbing implications about the future prospects of the U.S. economy relative to those of the Japanese economy. Even if Lipsey and Kravis are correct in arguing that the U.S. invests more of its GNP in education than does Japan, the Mincer-Higuchi study implies that the U.S. expenditures may not be as efficient in forming usable human capital and promoting productivity growth.

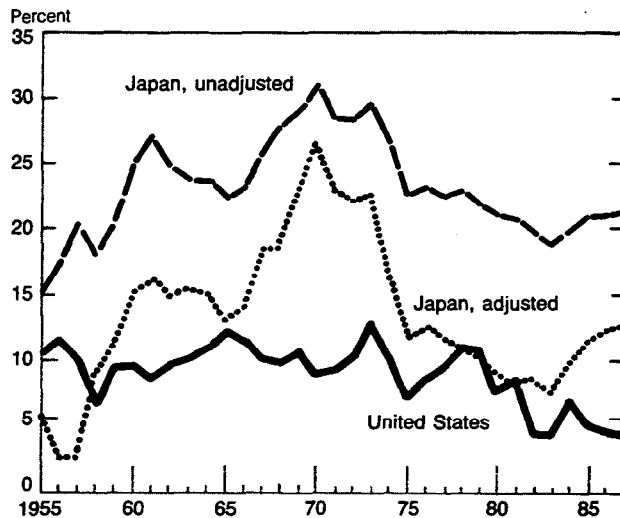
Is Japan's Savings Rate High?

Fumio Hayashi shows that the Japanese national accounts value depreciation at historical cost, while it is valued at replacement cost in the U.S. national accounts. Relative to the U.S., therefore, Japanese saving is overstated by the amount of the difference between depreciation at historical cost and depreciation at replacement cost. He also notes that the U.S. national income accounts fail to recognize government capital formation, while the Japanese accounts, following the UNSNA, do.

Hayashi reconciles the U.S. and Japanese accounts by changing the Japanese depreciation data to a replacement cost basis and by making Japanese government saving correspond to the NIPA definition of U.S. government saving. These adjustments make a very large difference in the Japanese saving rate.

Chart 10, which is taken directly from Hayashi's article, illustrates the difference in the unadjusted and adjusted savings rates for Japan. It shows that, adjusted for accounting differences, the national saving rate in Japan rose substantially from 1955 to

Chart 10
NATIONAL SAVING RATES
 (as Percent of Net National Product)



Note: Reprinted from NBER Working Paper No. 3205, p. 27, Fumio Hayashi.

1970 but after that time it began to decline, finally converging with the U.S. rate by the late 1970s. As Hayashi states:

To people unaware of the differences in national income accounting, the discrepancy between Japan's unadjusted saving rate and the U.S. rate appears quite substantial—even ominous. But by now it should be clear that most of the apparent discrepancy is due to accounting differences between the two countries. [8, p. 5]

Hayashi concluded that “the phenomenon of high Japanese saving rate is limited to the period of 1965-1975” [9, p. 7]. Japan's relatively high savings rates in that ten-year period presumably came about in response to Japan's efforts to reconstruct its capital stock, which had been severely damaged in World War II.

As the chart shows clearly, however, after 1980 the adjusted savings rate for Japan began to rise again while the U.S. saving rate continued to fall. Hayashi discounts the divergence in the rates since 1980, however, arguing that since Japan's reconstruction was completed in the early 1980s, the Japanese and U.S. savings rates should converge in the future.²⁴ This prediction is debatable.

²⁴ To explain the divergence in savings rates since 1983, Hayashi offers two competing explanations. The first is that, owing to the U.S. dollar's post-1983 depreciation against the Yen, the Japanese have been saving more to offset capital losses and diminished rates of return on their holdings of U.S. bonds. This explanation assumes that the Japanese wish to maintain a constant wealth-to-income ratio. The second explanation is that the divergence stems from differences in the two countries' budget policies.

Lawrence Christiano [4] examined the analysis underlying the Hayashi “reconstruction” hypothesis in an article immediately following Hayashi's in the Federal Reserve Bank of Minneapolis's *Quarterly Review*. He concluded that the Hayashi hypothesis, with its implications about the future convergence of savings rates in the U.S. and Japan, was not implausible, but he argued that further verification would be required before it could be accepted.

Costs of Capital as Determinants of Investment Spending

McCauley and Zimmer, as noted earlier, found that the cost of capital was lower in Japan and Germany than it was in the United States and the United Kingdom. They investigated, and subsequently rejected, differences in income tax structures as important determinants of the relatively low cost of capital in Japan and Germany. Rather, they attributed the “cost of capital gap” to two basic factors: (1) Japanese and German households are thriftier; and (2) the Japanese and German economies face lower risk from economic instability. These two factors will be examined in turn.

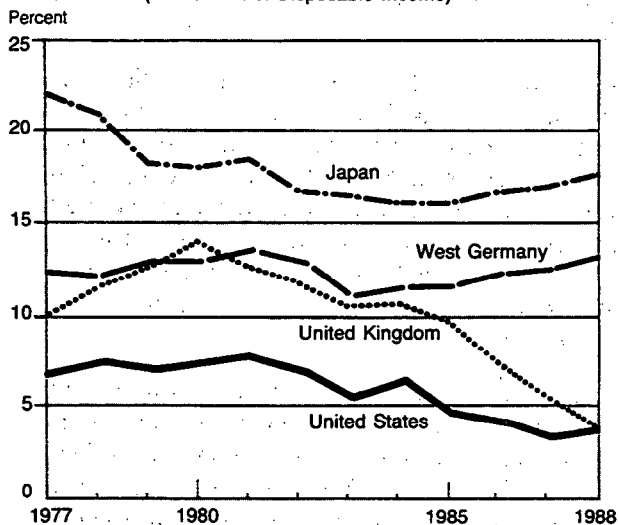
Chart 11 demonstrates the differences in thriftiness. Household saving amounted to about 17 percent of disposable income in Japan and 13 percent in Germany in 1988, but only about 4 percent of disposable income in the U.S. McCauley and Zimmer attribute much of the cross-country difference in thriftiness to cross-country differences in the availability of consumer credit.

Chart 12 demonstrates the differences in household debt as a share of disposable income across the four countries. This chart shows a much higher (though narrowing) use of credit in the U.S. and U.K. than in Japan and Germany. McCauley and Zimmer cite a report by the President's Commission on Industrial Competitiveness that “. . . juxtaposed ‘low interest rates on business debt’ in Japan with a two-tier, regulated rate structure in which interest rates are far higher on consumer loans than on business loans.” [14, p. 18] They conclude that “. . . the Japanese and German financial systems formerly did not pump much credit to consumers but now circulate credit more evenly, though American and British consumers may still enjoy a stronger flow.” [14, p. 18]

McCauley and Zimmer also attribute the lower cost of capital in Japan and Germany to more stable rates of GNP growth (particularly in Japan) and lower rates of inflation. They argue that as a result of this

Chart 11

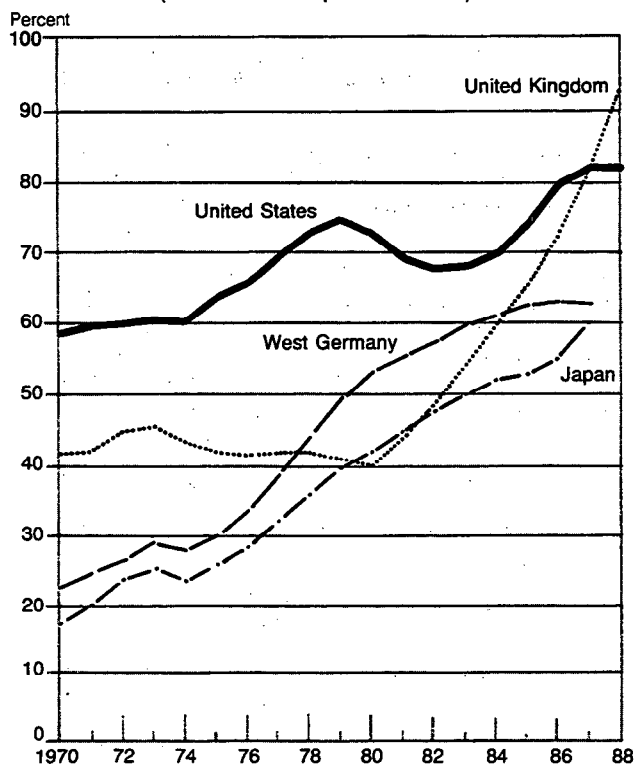
HOUSEHOLD SAVING RATES COMPARED
(as Percent of Disposable Income)



Source: Organization for Economic Cooperation and Development.
Note: Reprinted from Robert N. McCauley and Steven A. Zimmer, "Explaining International Differences in the Cost of Capital," *Federal Reserve Bank of New York Quarterly Review*/Summer 1989, p. 17.

Chart 12

HOUSEHOLD DEBT
(as Percent of Disposable Income)



Source: Organization for Economic Cooperation and Development.
Note: Reprinted from McCauley and Zimmer, (see Chart 10), p. 18.

economic stability, and relatively close relations between nonfinancial corporations and banks, Japanese and German firms are able to use less expensive shorter-term floating-rate debt, while U.S. firms must regularly issue long-term fixed-rate debt to insure against inflation-caused rises in short rates.

Public Investment Spending in the Group of Seven

David Aschauer [2] points out that while private savings and investment levels are important determinants of economic growth, another determinant exists—the share of government spending devoted to public investment.

Aschauer follows the U.N. System of National Accounts in distinguishing between public investment and public consumption. He therefore treats public purchases of nonmilitary investment-type goods as public investment. Public investment thus defined includes such things as roads, highways, dams, water and sewer systems, mass transit, airport facilities, port facilities, etc. Aschauer argues persuasively that these kinds of expenditures have “positive direct and indirect effects on private sector output and productivity growth.” [2, p.17]

Aschauer finds that the United States used a far smaller percentage of its gross domestic product for public net (of depreciation)²⁵ investment in the 1967-85 period than any other of the Group of Seven industrialized countries. The differential between Japan and the U.S. is especially striking. Japan used 5.1 percent of its GDP for public net investment over the 1967-85 time period, while the U.S. used less than one percent.

VIII.
CONCLUSIONS

Abramovitz argues that the slower rate of productivity growth in the U.S. is an understandable implication “. . . of a process of international productivity catch-up and convergence that is, in certain conditions, natural and foreseeable and, in the long-run sense, desirable. Desirable not only for the countries that are catching up, . . . but also desirable for the . . . United States.” [1, p. 1]

In the same vein, Lipsey and Kravis argue that the U.S. savings rate, while not stellar, is not too bad, and they conclude that “. . . Americans are not

²⁵ Aschauer does not adjust for cross-country differences in definitions of depreciation.

significantly less forward-looking than people in other countries." Hayashi also concludes that after adjustment, net savings rates in Japan and the U.S. are not too different.

Mincer and Higuchi, on the other hand, show that Japanese firms use managerial policies that promote better human development and more rapid worker acceptance of technological advances. They argue, furthermore, that the Japanese firms adopted these policies out of necessity after World War II, and that U.S. firms are not likely to change their policies toward human investment unless they are forced to do so for one reason or another.

McCauley and Zimmer and Aschauer also reach gloomy conclusions. McCauley and Zimmer conclude that ". . . a considerable gap in the cost of capital between the United States and Great Britain, on the one hand, and Japan and Germany, on the other, is likely to remain open." [14, p. 25] Aschauer concludes that too much of U.S. governmental spending goes into public consumption. He expects the United States to continue to have relatively slow growth unless the government increases its public investment expenditures.

Abramovitz and others have pointed out that investment in human capital and expenditures for research and development may well be the key to the future economic growth of the U.S. relative to that of other countries. Investment in human capital is difficult to measure, however, even within one country over time.

Many economists (including Abramovitz and Lipsey and Kravis) use either years of education or educational expenditures as proxies for investment in human capital, but real monetary expenditures for education or years of schooling may not capture the quality of education provided. For example, countries that have relatively minor problems with drugs and violence in the schools may provide the same levels of education more efficiently than countries with major drug and violence problems. Also, as Mincer and Higuchi show, on-the-job training may do more than traditional forms of educational expenditure to increase human capital in times of rapid technological change.

Given these alternative interpretations, what can one conclude about the U.S. rate of saving and investment? Is the savings crisis a "chimera," as Paul Craig Roberts writes in *Business Week*, or is it real, calling for a national nonpartisan effort, as Louis Rukeyser argues? No categorical answer emerges, but

there is probably an element of truth in some of the lamentations about the outlook for future economic growth in the U.S. relative to that of its stronger rivals.

On the other hand, as was shown in the first part of this paper, virtually all of the debate about the existence or extent of a saving shortage in the United States is based upon NIPA data, and the so-called shortage does not show up in savings rates derived from alternative national accounting systems. Eisner, Roberts, and Samuelson are thus also correct in pointing out that the concern about the savings crisis is overblown.

In any event, the remedy for slow economic growth in the United States is clearly not as simple as raising the conventionally measured savings rate. In fact, a number of endeavors that would increase future economic growth, such as directing more government spending toward infrastructure items and toward human capital (improving the education and training system and promoting public health and safety), actually would *lower* the conventionally measured savings rate.

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