

Alternative Measures of Personal Saving

By Marshall B. Reinsdorf

IN 2005, annual personal saving in the national income and product accounts (NIPAs) was negative for the first time since 1933, dipping to -0.4 percent of disposable personal income (DPI) (chart 1). This development, the culmination of a long slide in the personal saving rate that began in the 1980s, has sparked much interest in how personal saving is measured and its relation to broader concepts of national saving and changes in personal wealth. Among the reasons for this interest are concerns about whether families are saving enough for retirement and for protection against financial setbacks, whether the Nation has become too dependent on foreign funding for financing its investment needs, and whether spending levels that exceed current income can be sustained.

Different questions require different answers, and the NIPA measure of personal saving does not provide the answer to every worthwhile question about the saving behavior of persons. To provide additional information on this topic, this article presents updated estimates of alternative measures of personal saving and related concepts. These measures were introduced

in 2002 and updated in 2004.¹

Personal saving is the portion of personal income that is left over after personal current taxes and outlays for personal consumption expenditures, nonmortgage interest payments, and net current transfers to government and the rest of the world. It excludes capital gains because capital gains represent changes in the prices of assets that are already owned, not unspent portions of income receipts.² Personal saving represents the contribution from persons to national saving, which is the total amount that is available to fund investment in fixed assets, inventories, or foreign assets.

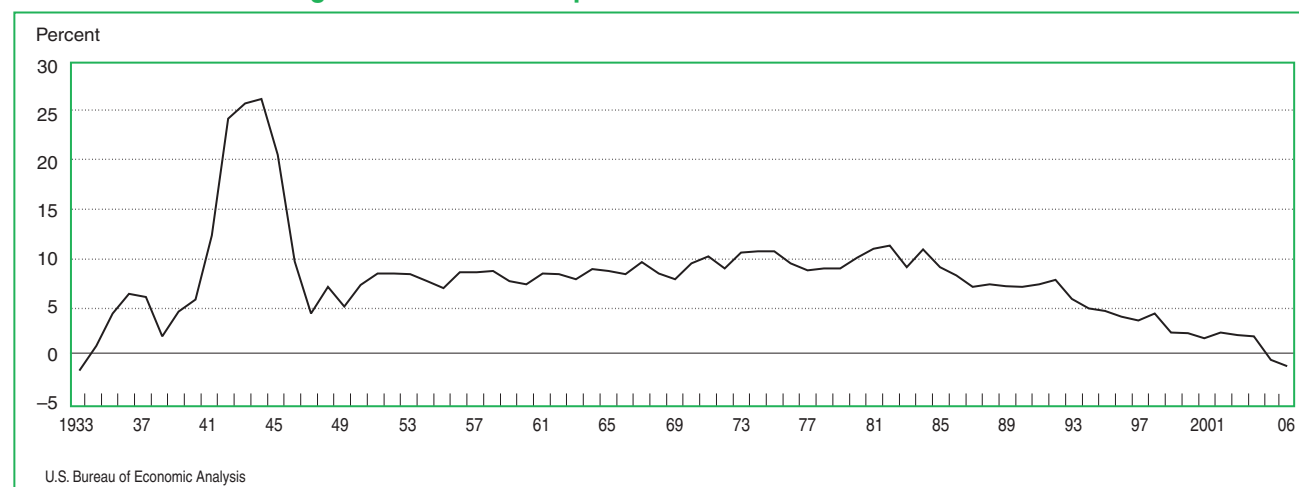
The alternative measures of personal saving discussed in this article differ from the NIPA measure in the way that they measure consumption or disposable personal income. However, they are still calculated as the residual that remains after consumption and re-

1. See Marshall B. Reinsdorf, "Alternative Measures of Personal Saving," *SURVEY OF CURRENT BUSINESS* 84 (September 2004): 17–27, and Maria G. Perozek and Marshall B. Reinsdorf, "Alternative Measures of Personal Saving," *SURVEY* 82 (April 2002): 13–24. These articles explain the advantages and disadvantages of the various measures in detail. They also provide an overview of the conceptual framework for measuring saving in the national accounts.

2. For more information on the treatment of capital gains in national income accounting, see Marshall B. Reinsdorf, "Saving, Wealth, Investment, and the Current-Account Deficit," *SURVEY* 85 (April 2005): 3.

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Chart 1. Personal Saving as a Percent of Disposable Personal Income



lated outlays are subtracted from disposable personal income. Three of the alternative measures provide additional detail about the components of personal saving by changing the definitions of sector boundaries or the treatment of a payment between sectors. These changes do not imply any increase or decrease in total national saving, but they do alter the amounts of saving attributed to each sector of the economy. A fourth alternative expands the definition of investment, thus implying a higher level of national saving.

To provide additional context, this article also discusses broader measures of saving, such as private saving, national saving, and measures of personal wealth that take capital gains into account.

Alternative Estimates of Personal Saving

Households and nonprofit institutions serving households

The NIPAs divide the domestic economy into three sectors: The business sector, the government sector, and the personal sector. The personal sector includes nonprofit institutions serving households (NPISHs), which account for most nonprofit institutions. This means, for example, that the medical care component of personal consumption expenditures (PCE) includes the expenses of nonprofit hospitals for providing medical care but excludes the sales of services to the patients of those hospitals.

The common practice of interpreting the personal saving rate as a measure of the saving behavior of households is reasonable because households are the predominant component of the personal sector. Nonetheless, a more precise picture of household behavior can be obtained by deconsolidating the personal sector into a household sector and a nonprofit sector and then calculating household saving as the amount of disposable household income that is left over after all household outlays. Household income differs from personal income because it excludes the rental income, interest, and dividends received by NPISHs and because it includes transfers from NPISHs received by households. Household outlays differ from personal outlays in two ways: (1) They exclude expenditures of NPISHs but include the sales of services to households by NPISHs, and (2) they exclude transfers from NPISHs to government and the rest of the world but include transfers from households to NPISHs.³

Until 1995 and again after 2002, the household saving rate was within 0.2 percentage point of the personal saving rate (chart 2). In between those years, the

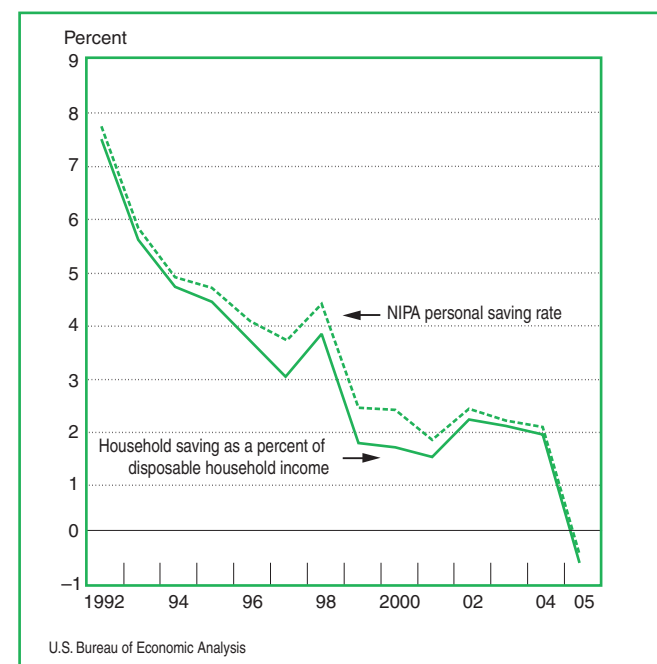
household saving rate fell substantially below the personal saving rate. In the late 1990s, transfers and bequests from households to NPISHs grew rapidly, partly reflecting large gains in stock prices, while expenditures of NPISHs accelerated gradually. As a result, saving by NPISHs increased, and the household saving rate fell faster than the personal saving rate. After the turn of the millennium, this process was reversed. Transfers to NPISHs fell or were flat, while the expenditures of NPISHs maintained their upward momentum. Indeed, the personal saving rate would have been half a percentage point higher in 2003 if the NPISH saving rate had remained at its value in 2000.

During the late 1990s, declines in the personal saving rate were often attributed to the effects of increases in personal wealth created by large capital gains. Yet, when subsequent declines in stock prices reduced personal wealth, the rebound in personal saving was disappointingly weak. A detailed look at the components of the personal sector reveals that household saving had a substantial bounce in 2002, remaining above its former trend line until 2004. In 2005, household saving again turned sharply down; just 0.2 of the 2.4-percentage-point drop in the household saving rate can be dismissed as an aberration due to the direct effects of Hurricanes Katrina, Rita, and Wilma.

Defined benefit pension plans

Pension plans, which are employer-sponsored retirement plans, are classified as defined benefit (DB) or defined contribution (DC) plans depending on their benefit formula. In a typical DB plan, pension benefit

Chart 2. Household Saving Rate



3. See NIPA table 2.9 and Charles Ian Mead, Clinton P. McCully, and Marshall B. Reinsdorf, "Income and Outlays of Households and of Nonprofit Institutions Serving Households," *SURVEY* 83 (April 2003): 13–17.

levels depend on length of service and some measure of average or final pay. In DC pension plans, funds for retirement are accumulated from employer and employee contributions, investment income earned on plan assets, and capital gains on plan assets. Historically, most employee retirement plans were DB pension plans, and they are still the predominant type of plan for government employees. In the private sector, however, for the past two decades, newly established pension plans have almost always been DC plans.

In the NIPAs, both DC and DB pension plans are included in the personal sector. In the case of DC plans, this approach is the only logical one, because the assets in these plans clearly belong to the plan participants. However, ownership of the assets held by DB plans is more ambiguous. The inclusion of these plans in the personal sector rather than in the sector of the employer who sponsors them can be justified in two ways: (1) Employers face formidable barriers to accessing DB plan assets for their own use, and (2) the assets of private DB plans by law should approximate the actuarial value of the pension promises made to the employees. However, even though employers cannot directly benefit from money in DB plans, they can benefit indirectly because growth in DB plan assets relieves employers of future obligations to make contributions, while plan losses have the opposite effect. Employers therefore bear the investment risk. Employers also have control over how DB plan assets are invested. Finally, retirees undoubtedly think of the benefits they receive from DB plans as income rather than as liquidations of assets that they owned all along. Tests of risk-bearing, control, and retiree perceptions can therefore justify an alternative treatment that treats employers as the owners of the assets in DB plans.

To calculate disposable personal income with DB pension plans outside the boundary of the personal sector, employer and employee contributions to DB plans, along with interest and dividend income from DB plan assets, are subtracted from the NIPA measure of disposable personal income. Benefits received by persons from DB plans are then added. The contributions and investment income exceed the plans' benefit payments, so the measure of disposable personal income falls after these adjustments. However, the measure of personal saving falls less than the measure of disposable personal income, because PCE must also be adjusted by removing administrative expenses of DB pension plans.⁴

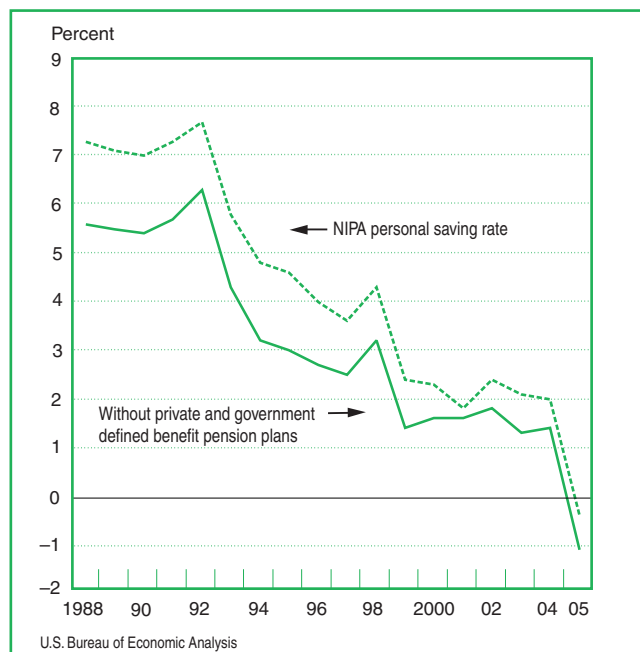
As is evident from comparing the alternative per-

sonal saving rate without DB pension plans with the NIPA personal saving rate in chart 3, the adjustments to the measures of personal income and personal consumption together imply that saving by DB pension plans added about 1.6 percentage points to the NIPA personal saving rate until 1995. Saving by DB plans then turned down until 2001, when it added just 0.1 percentage point to the personal saving rate. In 2002 and 2003, increases in contributions resulted in enough saving by DB plans to bring their contribution to the NIPA personal saving rate back up to 0.8 percentage point. After 1995, many sponsors of private DB plans were able to reduce their contributions without falling short of targeted plan funding levels because DB plan assets had large capital gains in the late 1990s. Conversely, in 2002 and 2003, funding gaps following capital losses in 2000–2002 compelled many plan sponsors to make large contributions. Even so, DB plans added only half as much to the NIPA personal saving rate in 2003 as in 1995. The difference between 2003 and 1995 in the DB plans' saving rate may be attributed to growth in their benefit expenses and, since 2000, to a lack of growth in their dividend and interest income.

Taxes on realized capital gains

Ironically, realized capital gains can have a negative effect on the NIPA measures of disposable personal income and personal saving. Capital gains are excluded from NIPA concepts of income whether they are realized or unrealized. However, realized capital gains are

Chart 3. Personal Saving Rate Without Defined Benefit Pension Plans



4. In making these calculations, state and local pension plans are all treated as DB plans because of a lack of separate data on the DB and DC plan components of their plan totals. These plans, however, are predominantly DB plans.

subject to Federal personal income taxes. Disposable personal income in the NIPAs is calculated by subtracting personal income taxes, including those attributable to capital gains, from personal income.

Capital gains are not taxed separately from ordinary personal income, and in a set of accounts that must cover the entire economy, the need to include capital gains taxes in government current receipts implies that they should be left in personal current taxes. Nevertheless, an alternative treatment of capital gains taxes that classifies them as capital transfers to government can provide a useful perspective on the saving behavior of persons. This alternative treatment raises the measures of disposable personal income and personal saving because capital transfers from persons to government are excluded from personal current taxes.⁵

To disentangle taxes on capital gains from taxes on ordinary income, an assumption is needed. The assumption is that the ordinary taxable income is received first, so that capital gains are the marginal source of taxable income. For any income tax return that reports capital gains, the tax on those gains can then be estimated as the absolute value of the change in the total tax due when capital gains are set equal to zero.⁶

The alternative saving rate that treats capital gains taxes as capital transfers averages almost 1 percentage point higher than the NIPA measure (chart 4). Moreover, the steepness of the decline in the personal saving rate between the early 1990s and 2005 is slightly reduced by the new treatment of capital gains taxes, so the alternative saving rate remains positive in 2005 at 0.6 percent of DPI. On the whole, however, the alternative personal saving rate has the same profile as the NIPA personal saving rate. A significant difference in slope is visible only from 1996 to 2000, which corresponds to the bull market period of the late 1990s with a 1-year lag.

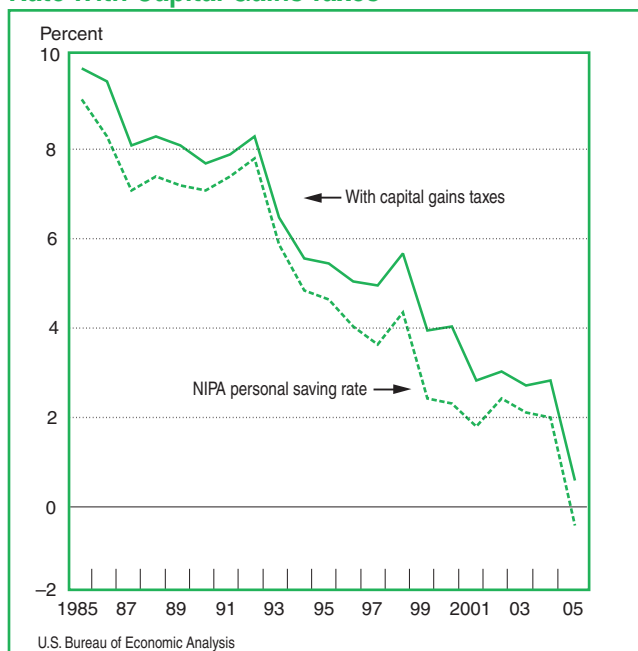
Consumer durable goods as investment

In the NIPAs, purchases by persons of motor vehicles and other consumer durable goods are treated as consumption expenditures rather than as investment. Un-

like real estate, these goods cannot be resold for at least as much as the original purchase price, so they are not a good store of value or a source of funding for retirement. They do, however, provide services over a number of years, and consumers reduce their future expenses when they purchase a durable good because a repeat purchase of that same good becomes unnecessary for the next few years. Therefore, purchases of durable goods may be treated as investment for some purposes. This treatment raises the measure of personal saving, because investment expenditures are not subtracted from disposable personal income in the calculation of personal saving.

One way to implement a treatment of consumer durable goods as investment would be to replicate the treatment of owner-occupied housing in the NIPAs. This treatment would require the estimation of a rental value for the use of the stock of consumer goods from which owners' expenses for depreciation, interest, and personal property taxes would be subtracted in order to obtain an imputed profit. This imputed profit would then be added to the rental income component of disposable personal income, resulting in a small rise in the denominator used to calculate the alternative personal saving rate. However, a much simpler method that gives a result that is identical for practical purposes is just to add the net investment in consumer durable goods to the NIPA measure of personal saving, keeping the NIPA measure of disposable personal

Chart 4. Personal Saving Rate With Capital Gains Taxes



5. In the NIPAs, capital transfers to government consist of gift and estate taxes.

6. Quarterly estimated taxes on capital gains realized in the fourth quarter (which include most of the capital gains distributions made by mutual funds) are not due until the following January, and taxpayers can wait until they file their tax return to pay the taxes if their capital gains are not large. Consequently, capital gains taxes are more likely than taxes on ordinary income to affect spending in the next calendar year. Chart 4 assumes that a fourth of the taxes on the capital gains realized in any calendar year are paid in the following calendar year. This raises the alternative saving rate by 0.2 percentage point in 2001 but lowers it by 0.1 percentage point in each of the 2 preceding years.

income as the denominator of the rate calculation. Net investment rather than gross investment is added because if durable goods are recognized as part of wealth, the decay in this wealth caused by their wearing out or obsolescence cannot be ignored.

Net investment in consumer durable goods ranges from under 1.0 percent of disposable personal income in the recession year of 1991 to around 3.0 percent of disposable personal income in 1985–87 and in 1999–2000 (chart 5). Since 2003, it has been 2.5 percent or less, so from 1985 to 2005, the cumulative decline in the personal saving rate with consumer durable goods is greater than the decline in the NIPA personal saving rate (a drop of 10.0 percentage points, compared with a drop of 9.4 percentage points). However, the timing of some of the decline is shifted to earlier years. Indeed, in the most recent decade, the inclusion of consumer durable goods slows the decline in the saving rate slightly. In 2005, adding consumer durable goods raises the measured saving rate to nearly 2.0 percent.

Broader Measures of Saving

Low personal saving is a less critical problem if saving in the other sectors of the economy is strong because saving in other sectors can substitute for personal saving for some purposes. In particular, financing the Nation's investment needs is an important role of personal saving, but saving by business (which consists of undistributed corporate profits) and by government also provides funds for this purpose. Saving by busi-

nesses may also increase the value of equity assets held by persons, helping their wealth to grow even if they are not saving any of their own income. For this reason, crediting the saving done by businesses to the persons who own the businesses may be viewed as a reasonable alternative way to measure personal saving.

The NIPAs, however, already contain a close approximation for this measure, because net private saving in NIPA table 5.1 combines saving by business and saving by persons.⁷ Net private saving as a percent of national income falls a bit less than personal saving after 2000 because saving by business increased (chart 6). Over the longer run, however, business saving as a percent of national income has been relatively stable, so that the long-run trend line of net private saving is roughly parallel to that of personal saving, with a difference in level of about 3.0 percentage points.

Net national saving is a comprehensive measure of net saving by government, business, and persons. In 1995–2001, net national saving was substantially higher than personal saving, an exception to the pattern that prevailed in 1976–94, when dissaving by

7. To consolidate corporate businesses with resident households and institutions that own them in a precise way, foreign business ownership by U.S. residents and U.S. business ownership by foreign residents would have to be taken into account. Net private saving is a good approximation for this precise concept because most of the equity of U.S. corporations is owned by households and nonprofit institutions in the personal sector, and a subtraction from private saving to account for the portion of the equity of U.S. businesses owned by nonresidents would be approximately offset by an addition to account for the equity in foreign businesses owned by U.S. residents.

Chart 5. Personal Saving Rate With Consumer Durable Goods as Investment

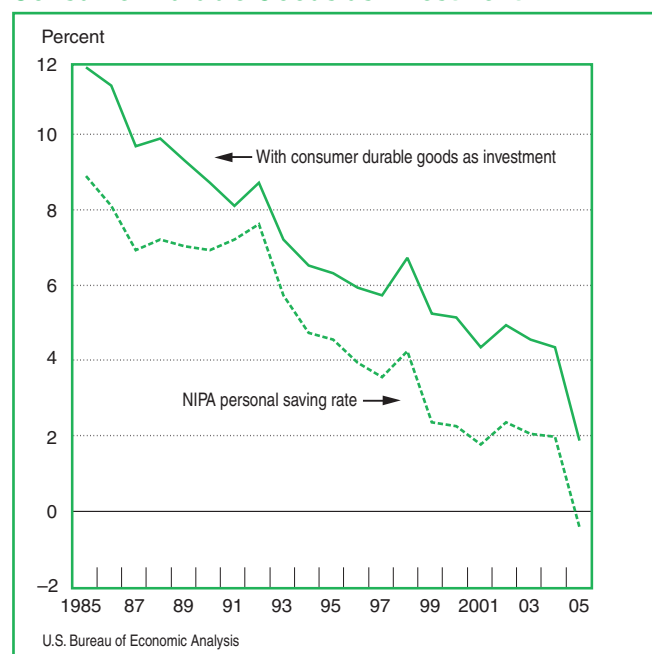
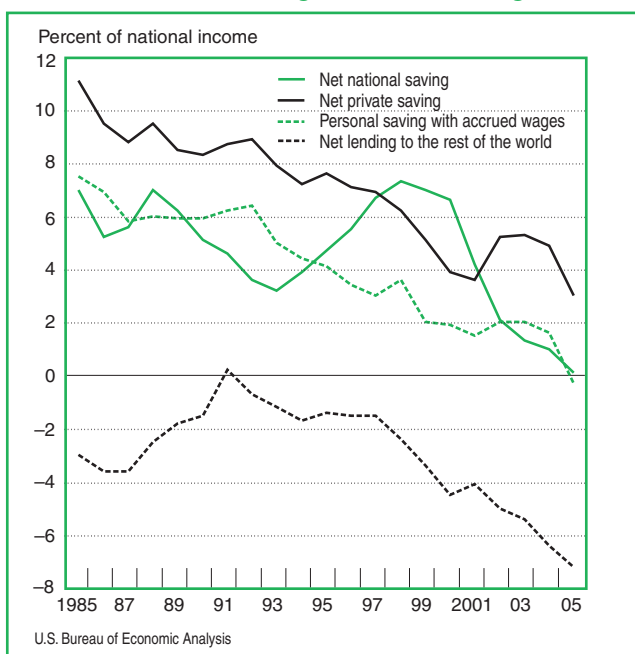


Chart 6. National Saving and Net Lending



government roughly cancelled out saving by business so that net national saving was similar to personal saving.

Net saving includes as an expense consumption of fixed capital, which is an estimate of the cost of wear and tear and obsolescence of the capital stock. Measures of gross saving ignore this noncash expense. Gross national saving has declined slightly less than net national saving. In 2001–2005, consumption of fixed capital ranged from 14.0 to 14.8 percent of national income, compared with about 13.5 percent in many earlier years. Since 2000, large losses due to the attacks of September 11, 2001, and to the hurricanes in 2004 and 2005 are one cause of the slightly higher expense for consumption of fixed capital after 2000. Changes in the composition of the capital stock have also contributed to it.

After adjustment for the statistical discrepancy, the excess of gross domestic investment over gross national saving equals the Nation's net borrowing, the amount of foreign saving that the Nation relies on to fund its investment needs. Domestic investment has not followed the same downward trajectory as national saving. As a result, the Nation's reliance on foreign saving to fund its investment needs has grown to levels that are unprecedented during the period for which BEA has data, 1929 to the present. Whether the current level of net borrowing represents an unsustainable imbalance has been the topic of much discussion, and questions have also been raised about the growing exposure of U.S. financial markets to foreign changes in investment philosophy or saving behavior.

Sources of Wealth Accumulation

Growth in personal wealth occurs either when current income is saved and used to acquire assets or to retire liabilities or when the prices of assets that persons already own rise and generate capital gains. Information on changes in personal wealth is not part of the NIPAs, but this information is available in the Federal Reserve Board's flow of funds accounts.

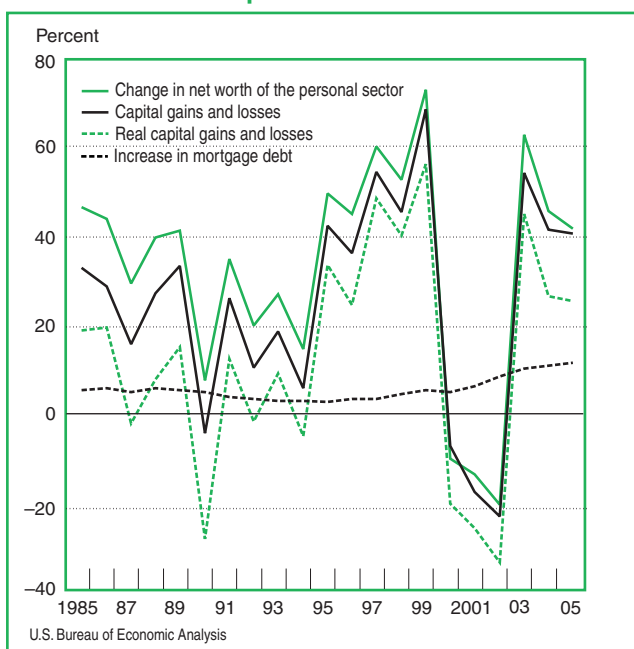
Capital gains and losses are generally a much more important source of change in personal wealth than saving out of current income (chart 7). They are, however, quite volatile. Furthermore, if indirect effects are considered, capital gains are responsible for a smaller share of growth in personal wealth than is suggested by the proximity of capital gains in chart 7 to change in net worth.

The change in the net worth in the personal sector's balance sheet generally has three significant components: A positive effect from net acquisitions of assets, a negative effect from growth in liabilities, and an ef-

fect from capital gains or losses. To analyze the change in net worth, the effect of growth in liabilities is conventionally offset against the net acquisitions of assets because this yields an estimate of personal investment. The convention of subtracting growth in liabilities from asset acquisitions might lead one to infer that growth in liabilities has no connection to capital gains, but this may not be true. In particular, ignoring the links between capital gains and liability growth can give an exaggerated impression of the degree to which capital gains drive increases in net worth.

Capital gains in general have been found to have positive effects on consumption, and some of the funds for this additional consumption are likely to come from debt. Moreover, capital gains on real estate—which have accounted for most of the personal sector's capital gains since 1999—tend to be coincident in timing with the growth of mortgage debt. Among the reasons for this pattern is that a fall in interest rates or a liberalization of credit standards raises both mortgage borrowing and demand for houses. Causality can run in the other direction, too, if decreases in home affordability induce buyers to choose larger or longer loans or if the rising ability of homeowners to furnish collateral induces them to do a cash-out refinancing or open up a home equity line of credit. In 2003–2005, increases in mortgage debt averaged 11.2 percent of disposable personal income. About three-quarters of this amount is linked to capital gains on real estate under the assumption that changes in persons' real estate

Chart 7. Measures of Wealth Accumulation as a Percent of Disposable Personal Income



equity equal 55 percent of changes in the value of their real estate assets.⁸

8. In 2003–2005, homeowner's equity averaged 54.7 percent of the value of their real estate. As the large capital gains of those years pushed up the value of personal real estate, the change in homeowner's equity was actually less than 55 percent of the change in the value of real estate. The assumption that 55 percent of the capital gains went into homeowner's equity may therefore be too high, implying that an even larger effect on growth of liabilities.

Conclusion

Alternative measures of personal saving neither change the conclusion that personal saving has fallen dramatically in the past two decades, nor do they imply any decrease in the record levels of national borrowing of recent years. They do, however, shed light on some of the underlying sources of influence on trends in personal saving.

Table 1. Alternative Measures of the Personal Saving Rate

[Percent]

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Households .....	.....	.....	.....	.....	.....	.....	.....	7.5	5.6	4.7	4.4	3.7	3.0	3.8	1.7	1.6	1.4	2.2	2.0	1.9	-0.5
Defined benefit pension plans excluded .....	.....	.....	.....	5.6	5.5	5.4	5.7	6.3	4.3	3.2	3.0	2.7	2.5	3.2	1.4	1.6	1.6	1.8	1.3	1.4	-1.1
Capital gains taxes included	9.7	9.4	8.0	8.2	8.0	7.6	7.8	8.2	6.4	5.5	5.4	5.0	4.9	5.6	3.9	4.0	2.8	3.0	2.7	2.8	0.6
Consumer durable goods as investment	11.9	11.4	9.8	10.0	9.4	8.8	8.2	8.8	7.3	6.6	6.4	6.0	5.8	6.8	5.3	5.2	4.4	5.0	4.6	4.4	1.9
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NIPA personal saving rate	9.0	8.2	7.0	7.3	7.1	7.0	7.3	7.7	5.8	4.8	4.6	4.0	3.6	4.3	2.4	2.3	1.8	2.4	2.1	2.0	-0.4
Change in net worth rate ¹	47.0	44.2	29.6	40.0	41.7	7.9	35.3	20.2	27.2	15.0	50.1	45.4	60.7	53.0	73.4	-9.8	-13.3	-20.1	63.2	46.0	42.0
NPISH saving rate ² .....	.....	.....	.....	.....	.....	.....	.....	3.0	2.7	2.2	3.0	3.9	7.0	5.8	6.7	7.2	3.3	2.0	1.0	1.3	1.6

1. As a percent of disposable personal income.

2. As a percent of income of nonprofit institutions serving households (NPISHs) plus receipts from sales.

NIPAs National income and product accounts

Table 2. National Saving, Investment, and Borrowing

[As a percent of national income]

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Personal saving with accrued wages	7.5	6.9	5.8	6.0	5.9	5.9	6.2	6.4	5.0	4.4	4.1	3.4	3.0	3.6	2.0	1.9	1.5	2.0	2.0	1.6	-0.3
Plus: Undistributed corporate profits	3.6	2.7	3.0	3.5	2.5	2.4	2.5	2.6	2.9	2.8	3.5	3.8	3.9	2.6	3.1	2.0	2.1	3.2	3.4	3.3	3.3
Equals: Net private saving	11.1	9.5	8.8	9.5	8.5	8.3	8.7	8.9	7.9	7.2	7.6	7.1	6.9	6.2	5.1	3.9	3.6	5.2	5.3	4.9	3.0
Plus: Net government saving	-4.1	-4.4	-3.2	-2.6	-2.3	-3.2	-4.2	-5.4	-4.7	-3.3	-2.9	-1.7	-0.2	1.2	1.9	2.7	0.6	-3.1	-4.1	-3.9	-2.9
Equals: Net national saving	7.0	5.2	5.6	7.0	6.2	5.1	4.6	3.6	3.2	3.9	4.7	5.5	6.7	7.3	7.0	6.6	4.2	2.1	1.3	1.0	0.1
Plus: Consumption of fixed capital	13.6	13.6	13.5	13.1	13.3	13.4	13.9	13.6	13.4	13.6	13.6	13.4	13.4	13.3	13.4	13.5	14.3	14.0	13.9	14.0	14.8
Equals: Gross saving	20.6	18.8	19.1	20.1	19.6	18.5	18.4	17.2	16.7	17.5	18.4	18.9	20.0	20.6	20.3	20.1	18.5	16.1	15.1	15.1	14.9
Net saving plus statistical discrepancy	7.5	6.4	6.1	6.5	7.0	6.4	5.9	5.4	5.6	6.2	6.3	6.8	7.6	7.1	6.5	5.2	3.2	1.9	1.8	1.7	0.7
Less: Net domestic investment	10.4	10.0	9.8	9.0	8.9	7.7	5.7	6.1	6.9	7.9	7.7	8.3	9.2	9.6	9.8	9.7	7.3	6.9	7.1	8.0	7.9
Less: Capital account transactions	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Equals: Net lending ¹	-3.0	-3.6	-3.6	-2.5	-1.8	-1.5	0.2	-0.7	-1.2	-1.7	-1.4	-1.5	-1.5	-2.4	-3.4	-4.5	-4.1	-5.0	-5.4	-6.4	-7.2

1. Net lending is the negative of net borrowing