

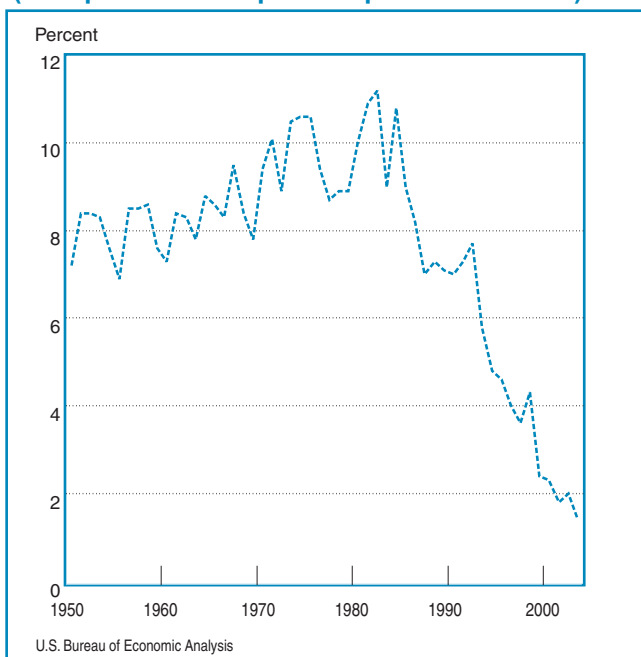
## Alternative Measures of Personal Saving

By Marshall B. Reinsdorf

THE range of questions that are asked about personal saving indicates the need for alternative definitions of personal saving. Recently, economists and policy makers have asked questions, such as the following: “Are families putting aside sufficient resources for retirement and for protection against financial setbacks?” “Are levels of spending on current consumption that leave little to provide for future needs sustainable?” “Is saving too low to provide adequate funds for U.S. investment needs?” “Is the United States too dependent on foreign capital?” “Are additional incentives for saving needed?”

Many of the recent questions about personal saving have been inspired by the steep decline in the personal saving rate. According to the national income and product accounts (NIPAs), the personal saving rate averaged 10.4 percent in the first half of the 1980s, but in 2003, it was 1.4 percent—its lowest level since 1938 (chart 1). Alternative measures of personal saving can aid in the interpretation of this decline, and some of

**Chart 1. Personal Saving**  
(As a percent of disposable personal income)



the alternatives can also shed light on changes in national saving, which combines saving by persons with saving by business and saving by government.

This article begins with an overview of the concepts of income and saving that are used in the NIPAs.<sup>1</sup> Second, estimates of four alternative measures of personal saving are presented and discussed. Third, data from the Federal Reserve Board’s flow of funds accounts are used to examine the accumulation of personal wealth. Fourth, broader measures of saving that include business and government are considered.

### Overview of the Concepts

Saving consists of amounts that are set aside from current income rather than spent on consumption or related purposes. Income is sometimes defined in a way that makes saving identical to change in wealth, but a narrower definition of income is appropriate for the NIPAs. Consistent with the focus of the NIPAs on the measurement of the economic value of current production, national income is defined as the income arising from current production. As a result, national income is theoretically equal to net national product.<sup>2</sup> Furthermore, measures of income and saving in the NIPAs exclude holding gains, some of which are subject to capital gains taxes. Holding gains represent changes in the price of capital assets that already exist, not additions to the real stock of produced capital assets. Because changes in asset prices result in changes in wealth that are not included in saving as it is defined in the NIPAs, saving is not synonymous with wealth accumulation. Instead, saving is one component of wealth accumulation, and holding gains or losses is the other component.<sup>3</sup>

1. For a detailed discussion of the conceptual issues involved in measuring personal saving, see Perozek and Reinsdorf (2002).

2. The NIPA estimate of national income generally differs from the NIPA estimate of net national product, and the difference between these estimates is known as the statistical discrepancy.

3. In addition to saving and holding gains or losses, capital transfers and statistical discontinuities (such as destruction of assets in disasters or the incorporation of previously unrecognized assets) can cause changes in wealth. Capital transfers to government are shown in NIPA table 5.10. Assets destroyed in disasters are included in “other changes in volume of assets” in NIPA table 5.9.

To calculate the measure of personal saving published in NIPA table 2.1, personal outlays for personal consumption expenditures (PCE), for interest payments on consumer debt, and for current transfer payments are subtracted from disposable personal income. The NIPA definition of personal saving is well suited to answering questions about the domestic sources of funding for U.S. investment needs. It represents the portion of personal income that is directly invested by persons in capital assets, such as residential structures, or that is made available to other sectors for financing their investment needs.

Like the NIPA measure, the alternative measures of personal saving are calculated as the amount of personal income left over after taxes and after outlays for consumption and related items. They differ from the NIPA measure because they use different definitions for the relevant measures of personal income, of personal current taxes, and of personal outlays.

**Income.** Some alternative definitions of personal income change the boundary between the personal sector and the business or government sectors of the economy. Personal income includes income received on behalf of households by entities such as nonprofit institutions serving households and pension funds. However, many households are only dimly aware of the income that is received on their behalf, so this income may have little influence on household consumption expenditures.

Alternative definitions of sector boundaries affect only the distribution of national income, but other kinds of changes in the definition of personal income do imply a different level for national income. For example, personal interest income may be measured using a real interest rate, which excludes the inflation premium that compensates lenders for reductions in the purchasing power of their principle.<sup>4</sup> The use of a real interest rate also implies lower mortgage interest expenses in the rental income of persons and lower nonmortgage interest expenses in personal outlays. Perozek and Reinsdorf (2002, 24) found that using real rates of interest to calculate the personal saving rate resulted in a downward adjustment of 1.5 to 2.4 percentage points in 1980–92. However, they found an adjustment of only 0.5 to 1.2 percentage points in 1993–2000, and Bosworth (2004, 7) reports an adjustment for real interest rates of about 0.7 percentage point in 2000–2003.

**Personal current taxes.** Personal current taxes (in-

4. An adjustment for real interest rates would affect national saving because the net indebtedness of the United States to the rest of the world is not zero.

come taxes) are deducted from personal income in the calculation of disposable personal income. A number of differences exist between the NIPA definition of personal income and the definition of income that the Internal Revenue Service (IRS) uses to determine personal tax liabilities (see Ledbetter 2004). One of these differences has been a source of concern for the measurement of the personal saving rate. The inclusion of taxes on realized holding gains in personal taxes is viewed by some as inconsistent with the exclusion of these gains from personal income. Holding gains are viewed differently from the other taxable items excluded from NIPA personal income because holding gains are not counted at all in the NIPAs, but the other items just reflect differences in timing or sectoring in the recognition of income.

**Personal outlays.** Like personal income, personal outlays are affected by the definition of the boundary of the personal sector. For example, if income received by pension plans is excluded from personal income, the PCE component of personal outlays must also be adjusted to exclude the plans' administrative expenses.

Other kinds of changes in the definition of personal outlays have implications for the level of national saving. In particular, net acquisitions of consumer durable goods are classified as investment in the Federal Reserve Board's flow of funds accounts, but in the NIPAs, they are part of PCE. In addition, closing costs to purchase or mortgage a residence can be classified as a current expense because they do not add to the net equity in real estate of the household sector, or they can be classified as residential investment because they yield a stream of benefits that stretches over the period of tenancy in the residence or over the life of the mortgage.<sup>5</sup> Reclassifying an item in PCE as an investment raises both the measure of personal saving and the measure of national saving.

## Alternative Estimates of Personal Saving

### Households and nonprofit institutions serving households

In the NIPAs, the domestic economy has three sectors—a business sector, a government sector, and a personal sector (or households and institutions sector). The personal sector includes the nonprofit institutions serving households (NPISHs) that provide medical care, recreation (including sporting and cul-

5. In the NIPAs, most real estate closing costs are expensed. An alternative measure of personal saving with these costs amortized over 7 years is virtually identical to the NIPA measure in most years, but in 2003, it is higher by about 0.3 percent of DPI, and in 2002 and 1998, it is higher by about 0.2 percent of DPI.

tural activities), education and research, religious and welfare activities, and personal business services. Personal saving is the sum of saving by households and saving by NPISHs.

Often, the presence of the NPISHs is ignored, and the personal saving rate is used to answer questions about the saving behavior of households. Nevertheless, the contribution of NPISHs to personal income and personal saving is not negligible, so a saving rate for a households sector is appropriate for questions that specifically concern households.

Accounts of the income and outlays of households for 1992 forward were added to the NIPAs as part of the 2003 comprehensive revision (see NIPA table 2.9). In these accounts, the household saving rate is calculated as the difference between disposable household income (DHI) and household outlays expressed as a percent of DHI. To calculate DHI, rental income, interest and dividends, and transfers from business or government to NPISHs are subtracted from personal income, and transfers to households from NPISHs are added. The net amount subtracted from personal income is generally less than 0.5 percent of personal income. Similarly, to calculate household outlays, transfers from households to NPISHs are added to personal outlays, transfers from NPISHs to government and the rest of the world are subtracted from personal outlays, and expenditures by NPISHs to provide program services to households are replaced by sales of program services to households. The net amount subtracted from personal outlays is usually near zero because the sum of sales of program services and transfers from households approximate NPISH expenditures and because almost all transfers from NPISHs go to households.

Since NPISHs add more to personal income than they do to personal outlays, the household saving rate is lower than the personal saving rate. However, chart 2 shows that the effect on the measured saving rate is generally modest.<sup>6</sup> From 1992 to 1996, the average difference between the household saving rate and the personal saving rate is 0.2 percentage point, and from 1997 to 2002, the average difference is about 0.6 percentage point. Saving by NPISHs accounts for less than a tenth of total personal sector saving before 1997 and for about a quarter of total personal sector saving in 1998–2002. The values for the household saving rate (and for the other alternative measures of the personal saving rate) are shown in table 1.

The difference between the household saving rate

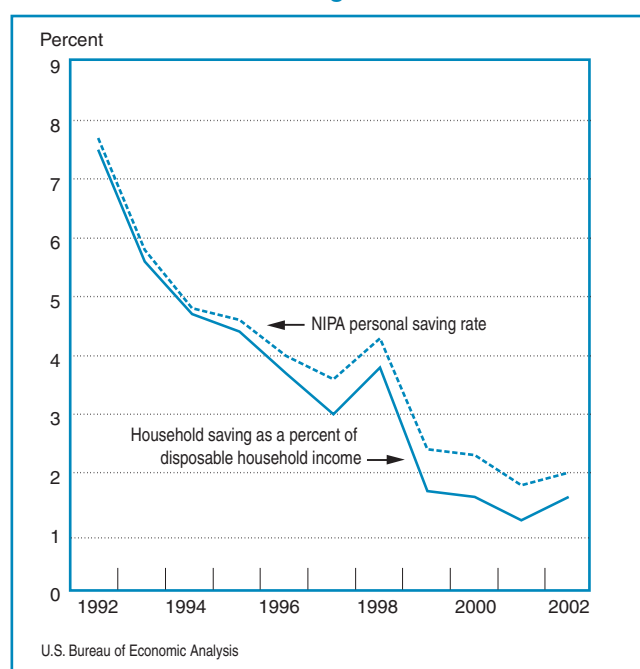
and the personal saving rate is largest in 1999 and 2000, when it reaches 0.7 percentage point. In those years, unusually large transfers from households to NPISHs reduced household saving and increased non-profit saving. These transfers may have been influenced by the large holding gains that households enjoyed from 1995 to 1999. The significant effect of transfers from households to NPISHs on the household saving rate suggests two difficulties in separating household saving from NPISH saving. First, some of these transfers could be regarded as capital transfers rather than as transfers out of current income because they are bequests or large gifts for capital purposes, such as establishing an endowment or constructing a building.<sup>7</sup> Second, donors sometimes retain a measure of control over the use and management of their donated funds, so the household sector may not entirely lose its ownership rights when the transfers occur.

### Defined benefit pension plans

Pension plans are retirement plans that are offered to employees. Two categories of pension plans can be distinguished on the basis of the type of formula used to set benefits—defined benefit (DB) plans and defined contribution (DC) plans. Historically, most pension plans used a formula that involved years of service and some measure of average pay or final pay to define their benefit levels. Since the late 1980s, however,

7. At present, the available source data lack the information necessary to distinguish capital transfers from current transfers, so all gifts to NPISHs are treated as current transfers in the NIPAs.

Chart 2. Household Saving Rate



6. The values for 2001 and 2002 that are plotted in chart 2 are projections; the estimates for these years from the 2004 NIPA annual revision are not yet available.

newly established plans have been predominantly DC plans, which base their benefits on the accumulated contributions from employers and employees and on the returns earned on their investments. Furthermore, in the past 10 years, many traditional DB plans have altered their benefit formulas to become “cash balance” plans, which are plans that define the promised benefits in terms of a stated account balance. Even though cash balance plans have some of the characteristics of DC plans, they are classified as DB plans.

Pension plans are included in the personal sector in the NIPAs, so these plans are treated as if their assets were directly owned by the employee beneficiaries. Employer contributions to pension plans and the investment income of these plans are included in personal income, and the administrative expenses of the plans are included in PCE. Furthermore, benefit payments to retirees are excluded from personal income because they are analogous to withdrawals from a bank account owned by the retirees.

Treating 401(k) accounts and other DC plans as employee property and placing them in the personal sector is clearly appropriate, because employees bear the investment risk and usually have considerable control over plan assets, including the ability to withdraw them or to borrow against them under some circumstances. However, the ownership of the assets held by DB plans is more ambiguous.

On the one hand, including DB plans in the personal sector may be appropriate because their assets are designated for use in payment of employee benefits and are generally inaccessible to creditors in the event of the employer’s bankruptcy. In addition, contributions to these plans are treated as an expense by employers, and under ideal—albeit unrealistic—circumstances, these contributions reflect the actuarial value of the pension rights earned by employees.

On the other hand, excluding DB plans from the personal sector may be appropriate because employers make the investment decisions and bear the investment risk of these plans, including cash balance plans. Employers must make up any shortfalls in plan assets, and they can benefit from excess plan assets by reducing their contributions.<sup>8</sup> Employees, in contrast, can

8. The tax and legal status of excess assets in DB plans has varied over the years. In the 1980s, employers were effectively able to transfer excess pension plan assets back to their own balance sheets, but these transfers are now subject to a prohibitive tax rate. Ippolito (2003) argues that conversions of traditional DB plans to cash balance plans can enable employers to benefit from a plan’s excess assets without incurring a tax liability. Conversions to cash balance plans or adoptions of DC plans may also represent attempts to increase the appeal of the pension plan in an era of increased worker mobility and to attract younger workers (Coronado and Copeland 2003; Friedberg and Owyang 2004).

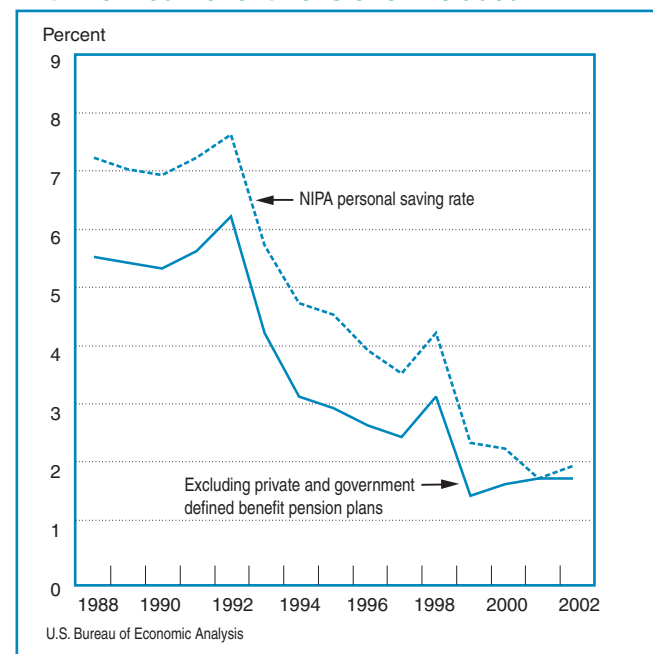
access DB plan assets only by retiring, and even then, they receive no extra money if the plan has excess assets or outstanding investment returns. Therefore, for some purposes, such as explaining consumption behavior, the recognition of personal income when the DB plans pay benefits rather than when they receive contributions from employers is reasonable.<sup>9</sup>

To calculate an alternative measure of personal saving that excludes DB pension plans from the personal sector requires three adjustments to the NIPA measure of personal saving. First, the income received by these plans from employer contributions, from rental income, from dividends, and from interest must be removed from personal income. Second, the benefits paid by these plans net of employee contributions to these plans must be added to personal income. Third, the administrative expenses of these pension plans must be removed from PCE.

An alternative measure of personal saving that excludes DB pension plans from the personal sector is shown in chart 3. The plans that are excluded consist of virtually all private employer DB plans, all Federal employee pension plans except the Thrift Savings Plan, and all state and local government pension plans,

9. However, some benefits are not immediately available to households for spending, because they are used to purchase annuities from life insurance companies. Sales of group annuities by life insurance companies averaged 21 percent of the NIPA estimate of pension benefits paid in 2001–2002 (American Council of Life Insurers 2003, table 8.1).

**Chart 3. Alternative Personal Saving Rate With Defined Benefit Pensions Excluded**



which are predominately DB plans.<sup>10</sup> The alternative measure implies that, on average, saving by DB pension plans contributed 1.6 percentage points to the NIPA personal saving rate in 1988–95. In 1996, however, pension plan saving as a percent of disposable personal income (DPI) began to decline, and by 2001, it had reached zero. A reduction in saving by pension plans thus contributed substantially to the decline in the personal saving rate.

Private and state and local government pension plans generally rely on holding gains to help fund their benefits, so for them, holding gains are a substitute for the items in the NIPA measure of saving. Employers decreased their contributions to these plans in the years after they had large holding gains, and in the case of the private plans, they decreased their contributions after the plans had holding losses. In particular, pension plans had unusually large holding gains from 1995 to 1999 (flow of funds accounts, table R.100), and declines in employer contributions to private plans and to state and local government plans in 1996 and later years account for about 0.4 percentage point of the decline in their saving as a percent of DPI. In 2000–2002, the plans had holding losses, and a rebound in employer contributions to private DB plans more than accounted for the gain in pension plan saving of 0.2 percent of DPI in 2002. The tendency of private employers to adjust their contributions after their DB plans have holding gains or losses is probably partly a consequence of regulatory restrictions on contributions to overfunded plans and regulatory requirements of extra contributions to underfunded plans.<sup>11</sup>

Reductions in contributions to plans that had holding gains do not completely explain the decline in saving by pension plans. The decline was also caused by rapid growth in benefits. In particular, contributions to private and state and local government plans fell from 1.6 percent of DPI in 1995 to 1.0 percent of DPI in 2001, but benefits paid by these plans grew from 2.4 percent of DPI in 1995 to 3.0 percent of DPI in 2001. Bosworth (2004, 5) attributes the growth of benefits to

the maturing of these plans. The *Pension Insurance Data Book 2003* (table S.32) supports this interpretation: In 2001, 51.4 percent of the participants in single employer plans covered by the Pension Benefit Guaranty Corporation were still employed by the plan's sponsor, and 24.6 percent were receiving retirement benefits; in contrast, in 1985, 72.2 percent of the participants were still employed by the plan's sponsor, and a mere 18.7 percent were receiving benefits.

The growth of the actuarial liabilities of DB plans slows when their participants retire, so a fall in saving by these plans is to be expected as their participants move into the later stages of the life cycle. Determining whether holding gains and slower growth of actuarial liabilities account for the entire decline in saving by these plans requires measures of actuarial assets and liabilities that are beyond the scope of the accounts published by the Bureau of Economic Analysis (BEA). Actuarial measures are, however, available from other sources. Some of these measures suggest that holding gains and slow growth of actuarial liabilities do not completely account for the low saving by DB pension plans in recent years. Private DB plans had more aggregate assets than aggregate liabilities up to the end of 2001, but Belt (2004) reports that the private DB plans were underfunded in the aggregate at the end of 2003. Similarly, Bonafede, Foresti, and Yang (2004) report that state government plans had assets amounting to just 82 percent of their liabilities in 2003, down from 115 percent in 2000.

### Taxes on realized holding gains

Realized holding gains have a positive effect on personal current taxes in the NIPAs because they are subject to capital gains taxes, yet they have no effect on personal income in the NIPAs. As a result, when households have large taxable holding gains, their higher tax payments tend to depress the growth of DPI in a way that can be inappropriate for some questions. For example, changes in measured personal saving that are caused by taxes on holding gains differ from the kind of changes in household spending behavior that the saving rate is often used to investigate. Furthermore, as a tax on a capital transaction, capital gains taxes can logically be classified as capital transfers to government, just as estate taxes are. (Capital transfers are excluded from personal taxes in the NIPAs.)

Nevertheless, within the framework of the NIPAs, the inclusion of capital gains taxes in personal current taxes has important practical and theoretical advantages. As a practical matter, the measurement of personal taxes is more straightforward if taxes on holding

10. The data needed to exclude DC plans for state and local government employees are unavailable, but in 2003, TIAA-CREF, the largest administrator of DC plans for state and local government employees, received contributions for its state and local government plans that equaled 4.7 percent of the total contributions to all state and local government pension plans (NIPA table 6.11D). Data are also unavailable for some small private DB plans that file IRS Form 5500EZ.

11. Holding gains on assets that households own directly may have only a small effect on household saving. According to an often cited estimate, only about 3 percent of capital gains are used for consumption (see Porterba 2000), and some authors have found that capital gains have a negligible effect after one quarter (Ludvigson and Steindel 1999). However, Juster et al. (2004) estimate that every dollar in holding gains on directly held corporate equities reduces saving by 19 cents.

gains are included, because holding gains are not taxed separately from the rest of taxable income. Second, taxes on holding gains may theoretically belong in personal current taxes because current income, not the realized holding gains, must be used to pay the capital gains tax if the household is to have as much wealth after selling an appreciated asset and paying the tax as it did at the time of the sale. (Indeed, many transactions that generate a capital gains tax liability do not provide funds that the household could use to pay the tax: Capital gains distributions from mutual funds are often reinvested to keep the account from losing value when the distribution is made.) Third, excluding taxes on holding gains from personal saving allows these taxes to be included in government saving, which seems sensible since they provide revenue to the government.

The advantages of including capital gains taxes in personal current taxes in the NIPAs are not an obstacle to treating capital gains taxes differently in an alternative measure of personal saving. An alternative measure of the personal saving rate that leaves Federal taxes on capital gains in DPI is shown in chart 4. Since the last quarterly payment of estimated taxes is due after December 31<sup>st</sup>, the alternative measure of personal saving in chart 4 is based on the assumption that three-quarters of the taxes on holding gains are paid in the year when the gains are realized, and one-quarter are paid in the following calendar year. (The effects of the deduction for net capital losses, which is limited to

\$3,000, are ignored.)

The alternative measure of personal saving as a percent of adjusted DPI is higher than the NIPA measure by 0.5 percent in 1991–92 and by 1.65 percent of DPI in 2000. Taxes on capital gains were unusually high in 1996–2001, when realized holding gains ranged from 4.4 to 9.0 percent of DPI; in 1990–95, they ranged from 2.3 to 3.1 percent of DPI. As a result, from 1992 to 2001, the decline in the alternative personal saving rate was 0.5 percentage point less than that in the NIPA measure. The alternative saving rate also fell less than the NIPA measure in 1986, when many investors chose to realize holding gains in the expectation of an increase in tax rates.

### Consumer durable goods

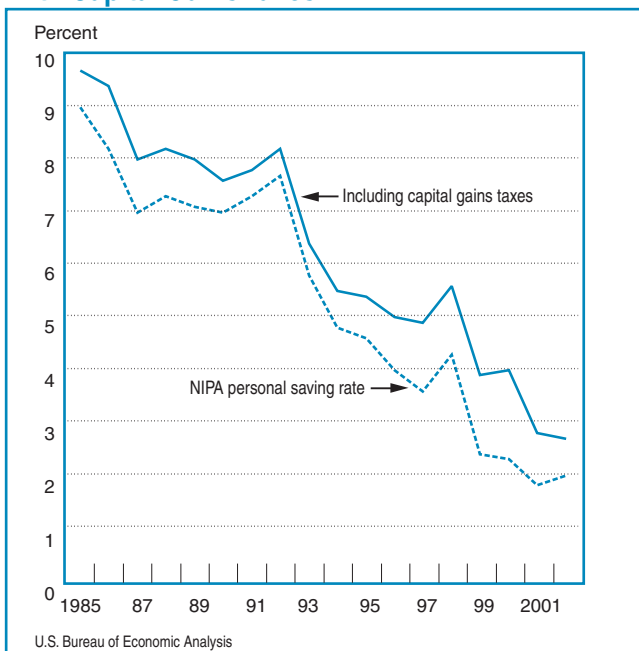
In the calculation of personal saving, consumption expenditures are subtracted from DPI but investment expenditures are not. Therefore, the measure of the personal saving rate depends on which expenditures are classified as consumption and which expenditures are classified as investment.

Consumer durable goods can be classified either as consumption items or as investment items, depending on the context. In general, an expenditure should be classified as an investment if it generates a stream of future services or future income that raises future consumption possibilities. In the NIPAs, goods that last for 3 years or more are classified as durable, so consumer durable goods do produce a stream of future services for their buyer. Nevertheless, practical and conceptual considerations preclude their inclusion in investment in the NIPAs.

However, for purposes of constructing an alternative measure of the personal saving rate, including consumer durable goods in investment has some conceptual advantages. It avoids certain paradoxes, such as physically identical motor vehicles counting as investment when the purchaser is a business but as current consumption when the purchaser is a household. Moreover, important types of consumer durable goods retain significant value in used asset markets for many years, so they are a form of wealth. Indeed, consumer durable goods are included in measures of personal sector saving and wealth in the flow of funds accounts.

In principle, a treatment of consumer durable goods as investment should parallel the treatment of owner-occupied residences in the NIPAs. For owner-occupied residences, the NIPAs impute rental income as equal to imputed space rent less cash expenses and an imputed expense for consumption of fixed capital

**Chart 4. Alternative Personal Saving Rate With Capital Gains Taxes**



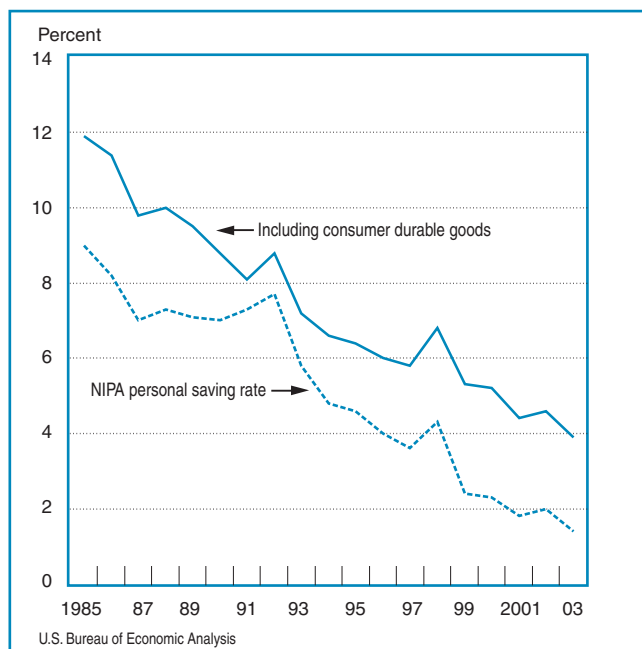
(CFC). (CFC is the NIPA measure of capital stock depreciation from deterioration and obsolescence.) However, for calculating an alternative measure of the personal saving rate, a simpler treatment suffices.

This simple alternative measure of the personal saving rate is calculated as the sum of the NIPA personal saving rate and net investment in consumer durable goods as a percent of DPI. Net investment in consumer durable goods is calculated by subtracting the estimate of current-cost CFC from the estimate of historic-cost gross investment in consumer durable goods in BEA's fixed assets accounts.<sup>12</sup> The result is about the same as if CFC expenses were substituted for the expenditures on consumer durable goods included in the NIPA measure of PCE. In nonrecession years, depreciation of the existing stock of consumer durable goods as measured by CFC amounts to 70 to 80 percent of gross investment in consumer durable goods, and in the recessions of the early 1980s and 1991, CFC exceeds 90 percent of gross investment in consumer durable goods.

The alternative measure of the personal saving rate that treats consumer durable goods as investment is shown in chart 5. In 1985–89, the alternative measure was 2.7 to 3.2 percentage points higher than the NIPA

12. The term “gross” refers to the treatment of CFC, not to the treatment of sales of used durable goods to other sectors. Historic-cost gross investment in consumer durable goods in the fixed assets accounts is slightly lower than gross expenditures on durable goods in the NIPAs, primarily because of differences in valuation for cars.

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



personal saving rate, and in 1998–2003, it was 2.5 to 2.9 percentage points higher. On the whole, the alternative saving rate exhibited the same downward trend as the NIPA personal saving rate, but its cyclical behavior was different. In the recession of 1991, a contraction in purchases of durable goods changed a rise of 0.3 percentage point in the NIPA personal saving rate into a fall of 0.7 percentage point in the alternative personal saving rate. In the recession of 2001, a decline in net investment in durable goods was also evident, and even more pronounced declines occurred in the recessions in the years preceding the period shown in chart 5; thus, this alternative saving rate is less suitable than the NIPA personal saving rate for measuring recession-inducing contractions in demand.

In addition to a higher alternative measure of the personal saving rate, the treatment of consumer durable goods as an investment implies a higher alternative measure of the national saving rate. Adding net investment in consumer durable goods to net national saving raises it by about 2.5 percent of national income in 1985–87 and by slightly more than 2 percent of national income in 1998–2003. However, these increases in national saving do not imply an improvement in the balance between national saving and domestic investment needs, because the alternative treatment of consumer durable goods also implies higher investment needs.

### Estimates of Wealth Accumulation

Broader measures of change in wealth are useful for answering questions about the ability of households to maintain their future consumption levels, and they may help to explain the behavior of some components of personal saving. For example, someone seeking to reach a target amount of wealth for a particular purpose, such as retirement, can save less when holding gains boost the value of their assets. Sponsors of DB pension plans, in particular, often seem to behave as “target” savers.

Estimates of the assets and liabilities of the personal sector are available in the flow of funds accounts of the Federal Reserve Board. These accounts also provide estimates of holding gains and losses for assets such as real estate and corporate equities, including equities held indirectly through mutual funds, pension funds, personal trusts and estates, and life insurance contracts. However, debt instruments, such as bonds, are carried at book value in the flow of funds accounts, so they are excluded from the calculations of holding gains and losses.

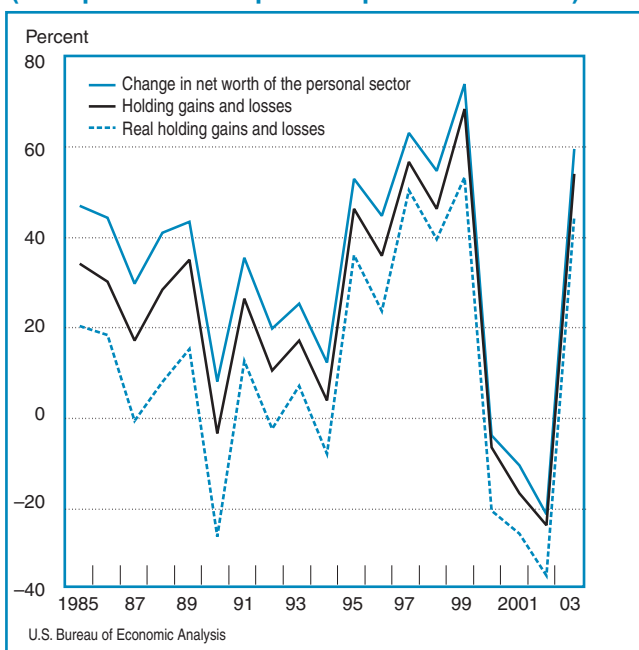
Holding gains and losses make wealth changes quite

volatile (chart 6). These gains and losses arise mostly from the volatility of equity prices, and they range from -24 to +68 percent of DPI. Because of this volatility, holding gains must be regarded as different from ordinary income. Economists have long theorized that windfalls should have less effect on consumption than “permanent” types of income. Yet holding gains are even more transitory than windfall income—which is simply nonrecurring income—because holding gains may not only fail to recur, but also may be reversed by holding losses.

In 1995–99, the unusual run of large holding gains helped to raise personal net worth by more than 70 percent (chart 6). These gains ranged from 36 to 68 percent of DPI, or in real terms, from 24 to 54 percent of real DPI; in contrast, real holding gains never exceeded 21 percent of DPI in 1985–94.<sup>13</sup> However, these gains were followed by an unusually long run of holding losses, which accelerated from 6 percent of current-dollar DPI in 2000 to 24 percent in 2002, or in real terms, from 20 to 35 percent of real DPI. As a result, at the end of 2003, the personal sector had returned to its position of 1995 as measured by its financial net worth as a percentage of DPI.

13. The real holding gains exclude the portion of holding gains that merely preserves the purchasing power (as measured by the price index for PCE) of opening stocks and of flows during the year.

**Chart 6. Measures of Wealth Accumulation  
(As a percent of disposable personal income)**



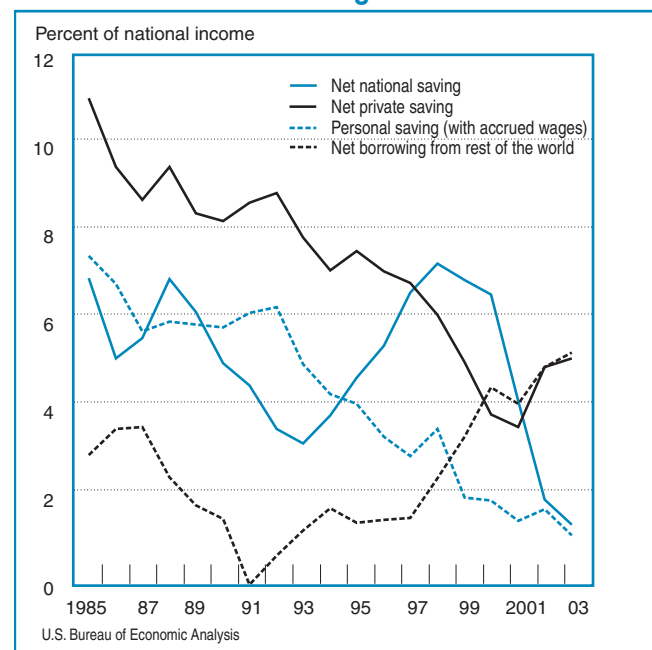
### Broader Measures of Saving

The importance of personal saving partly stems from its historical role as the main source of the national saving that is used to fund the capital investment required for economic growth. Hence, low saving by the personal sector presents less of a problem for the funding of capital stock growth if saving by other sectors is high.

The contributions of the business and government sectors to national saving are included in measures of saving that are broader than personal saving. Net private saving combines personal saving and the saving by corporate business as measured by its undistributed profits, so it is unaffected by the difficulties in defining the boundary between saving by persons and saving by business; for example, saving by business indirectly adds to personal wealth because the owners of a corporation are the ultimate owners of the corporation's assets. Net national saving (labeled simply as “net saving” in NIPA table 5.1) is a broad measure of saving that also includes saving by government.

Net national saving, net private saving, personal saving, and net borrowing as a percent of national income are shown in chart 7. Private saving exceeds personal saving by 2 to 4 percent of national income because of saving by corporate business. However, in 2002, the downward trend in private saving—which

**Chart 7. Net National Saving**





had paralleled the trend in personal saving—was broken by an increase in saving by business that raised net private saving to 5 percent of national income.

Net national saving did not pick up when net private saving did, because dissaving by the government sector offset the increase in saving by business. Indeed, in 2003, net national saving fell to a 69-year low of 1.4 percent of national income. The strong influence of government saving on national saving after 1993 is at odds with “Ricardian equivalence” theories of household saving that imply that farsighted households who want to smooth their consumption will tend to offset changes in saving by government and keep national saving stable.

Net borrowing in chart 7 primarily reflects the gap between net domestic investment and net national saving (though in the early 1990s, net borrowing is 1 to 2 percentage points lower than this gap would imply because of the effects of the statistical discrepancy). The definition of net borrowing includes net sales by U.S. residents to nonresidents of financial and tangible assets and the net increase in indebtedness to nonresidents. A nation’s net borrowing equals its net investment in fixed capital and inventory accumulation less its net saving plus adjustments for capital account transactions and for the statistical discrepancy (see table 2).<sup>14</sup> A sharp decline in investment pushed net borrowing slightly below zero in the recession of 1991. From 1994 to 1997, net borrowing was flat, because increases in investment were matched by increases in national saving, but from 1998 to 2003, net borrowing rose.

The NIPA measures of personal saving and private saving are net of CFC, which is an estimate of the minimum amount of investment that is needed to maintain the level of the existing capital stock. Therefore, another way to broaden these measures—and the measure of net national saving—is to include CFC. An advantage of gross measures of saving is that the expense for CFC is an imputation, not a cash outlay. For example, homeowners usually omit the depreciation of their residence from the list of expenses in their budgets, and Ruggles and Ruggles (1992, 122) argue that CFC for residences should be included in an alternative measure of personal saving.<sup>15</sup>

Including the estimates of CFC for residences, for unincorporated businesses, and for fixed capital

owned by NPISHs in personal saving shifts its level up by about 4 percentage points but has little effect on its downward slope. In contrast, CFC has tended to rise slightly faster than private investment because of the growing importance of equipment and software—which have shorter service lives than structures—in the business sector’s capital stock. As a result, measures of gross private saving and gross national saving declined less than the corresponding measures of net saving. From 1985 to 2003, both gross private saving and gross national saving as a percent of gross national income declined 4.7 percentage points. In contrast, net private saving as a percent of net national income declined 5.9 percentage points, and net national saving as a percent of net national income declined 5.6 percentage points.

### Conclusion

Alternative definitions of personal saving shed light on the behavior of the NIPA measure of personal saving and on the underlying saving behavior of households. One question that might be asked is whether they can help to explain the steep decline in the NIPA measure of personal saving. No single alternative measure of personal saving differs from the NIPA measure sufficiently to be able to account on its own for most of the change in the NIPA measure. Collectively, however, the alternative measures imply effects that can account for much of the portion of the long-term decline that occurred in the 1990s. (An interpretation of these effects as causes of the decline would, however, require assumptions about the behavior of households that are not necessarily correct.)

Saving by DB pension plans raised NIPA personal saving by 1.6 percent of DPI in 1990, but only by 0.6 percent in 2000. Capital gains taxes subtracted 0.6 percentage point from the NIPA personal saving rate in 1990 and 1.7 percentage points in 2000. Net investment in consumer durable goods was 1.8 percent of DPI in 1990 and 2.6 percent of DPI in 2000. In addition, the effect of inflation on interest rates implied an adjustment to personal saving of 2.4 percent of DPI in 1990 and of 1.2 percent of DPI in 2000, according to Perozek and Reinsdorf (2002). If the effects of all the alternative measures are summed—a 1.0-percent effect from pension plans, a 1.1-percent effect from capital gains taxes, a 0.8-percent effect from consumer durable goods, and a 1.2-percent effect from inflation on interest rates—the combined contribution accounts for 4.1 percent of the 4.7-percent decline in NIPA personal saving from 1990 to 2000. However, these effects are only approximately additive, and they change substantially from year to year. In particular, if the effects

14. Fixed capital includes plant, equipment, software, residential structures, and improvements to land.

15. For the purposes of the NIPAs, the imputation of CFC for residences is appropriate. Residences do deteriorate and become less suited to current tastes and lifestyles. Furthermore, because residences are eventually torn down, renovated, or remodeled, some residential investment represents replacement of retired capital stock.

in 2001 are compared with those in 1989, the decline in pension plan saving is 1.6 percent of DPI, and the combined adjustment to the decline in personal saving for capital gains taxes and for investment in consumer durable goods is nil.

Regardless of how personal saving is defined, concerns about the personal saving rate must be informed by broader measures of the accumulation of personal wealth, of national saving, and of the distribution of net saving and of financial resources across households. Measures of saving and wealth at the household level are beyond the scope of this article, but they are important for addressing concerns about retirement readiness and vulnerability to financial setbacks. Measures of wealth accumulation from the Federal Reserve Board's flow of funds accounts show that from 1995 to 1999, personal wealth grew rapidly because of holding gains, but a large fraction of these gains were reversed by holding losses in 2000–2002. Finally, measures of national saving in 2000–2003 suggest the need for additional saving from persons and from other sectors of the domestic economy to fund domestic investment needs.

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Table 1. Alternative Measures of the Personal Saving Rate

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Households .....	.....	.....	.....	.....	.....	.....	.....	7.5	5.6	4.7	4.4	3.7	3.0	3.8	1.7	1.6	1.2	1.6	.....
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	1.5	1.7	1.7	2.1	.....
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	2.7	.....
Consumer durable goods as investment	11.9	11.4	9.8	10.0	9.5	8.8	8.1	8.8	7.2	6.6	6.4	6.0	5.8	6.8	5.3	5.2	4.4	4.6	3.9
<b>Addenda:</b>																			
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	2.0	1.4
Change in net worth rate <sup>1</sup> .....	47.1	44.3	29.8	41.0	43.6	8.1	35.5	19.9	25.4	12.3	52.9	44.9	63.1	54.8	74.0	-3.8	-10.3	-21.1	59.5
NPISH saving rate <sup>2</sup> .....	.....	.....	.....	.....	.....	.....	.....	3.0	2.7	2.2	3.0	3.9	7.0	5.8	6.7	7.2	5.3	4.3	.....

1. As a percent of disposable personal income.

2. As a percent of income of nonprofit institutions serving households (NPISHs) plus receipts from sales; estimates for 2001 and 2002 are projections.  
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
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	1.7	1.1
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	3.3	4.0
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	5.0	5.2
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	-3.0	-3.8
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	2.0	1.4
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	14.1	14.0
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	15.4
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	1.8	1.6
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	6.7	6.9
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
Equals: Net lending <sup>1</sup> .....	-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	-5.3

1. Net lending is the negative of net borrowing.