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How Worrisome Is a Negative Saving Rate?

Charles Steindel

The U.S. personal saving rate's negative turn in 2005 has raised concerns that Americans may have to curtail their spending and accept a lower standard of living as they pay off rising debts. However, a closer look at saving trends suggests that the risks to household well-being are overstated. The surge in energy costs may have temporarily dampened saving, while the accounting of household income from stock holdings may be skewing saving estimates. Moreover, broad measures of saving have remained positive, and household wealth is on the rise.

Personal saving has been negative since the second quarter of 2005. For 2005 as a whole, current data from the Bureau of Economic Analysis (BEA) show a personal saving rate of -0.4 percent—a figure that dropped to -1.1 percent in 2006 (Chart 1). These readings are well below the 1999-2004 average of 2.2 percent, a good deal below the 1993-98 average of 4.6 percent, and considerably below the 1950-92 norms of 8.6 percent.

Negative saving would seem to point to growing indebtedness and, ultimately, a decline in living standards, as Americans tighten their belts to pay off debts. As Mr. Micawber noted in *David Copperfield*, “Annual income twenty pounds, annual expenditure nineteen nineteen and six, result happiness. Annual income twenty pounds, annual expenditure twenty pounds ought and six, result misery.”

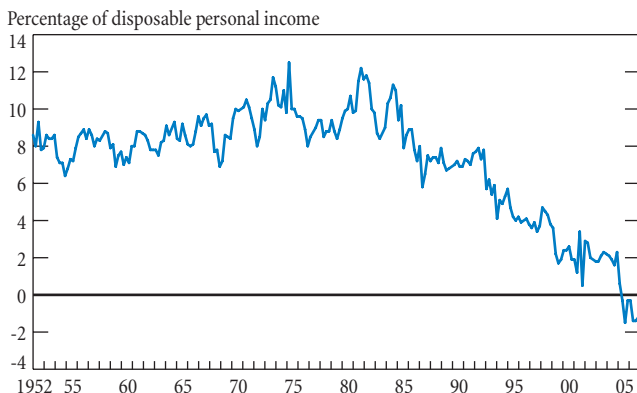
Concerns that negative saving could jeopardize U.S. household well-being suggest that a closer look at the recent saving trends and their sources is warranted. In this edition of *Current Issues*, we identify some of the forces depressing measured personal saving, examine how broader saving measures have fared, and assess the likeli-

hood that low saving rates will constrain consumer spending and impede growth in the nation's living standards in the near term.

We find that overall, many of the concerns about the negative saving rate may be unfounded. Rather than signaling a change in underlying household behavior, the rate's recent slide into negative territory may reflect the BEA's reliance on preliminary data or the peculiarities of the rate's calculation. The negative value could also stem in part from the strain that the 2005-06 surge in energy prices has placed on household budgets. Further contributing to the uncertainty around the negative rate is the fact that some alternative saving measures show less of a decline recently.

The risks to future spending and household well-being may also be overstated. Despite the decrease in reported levels of personal saving, aggregate household wealth has exhibited a strong uptrend since the end of 2002. Moreover, statistical evidence presented here suggests that past periods of low personal saving rates have not been followed by a retrenchment in spending or slower growth in living standards.¹

Chart 1
Personal Saving Rate



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Still, we suggest that the persistence of the negative saving rate should not be regarded lightly. Low levels of household, private, and especially national saving may take a toll over the long run and thus bear watching now.

Our analysis begins with a brief review of the basic economics of consumption and saving. An understanding of the factors that influence household spending and saving behavior is helpful in assessing the decline in personal saving.

Consumer Behavior and the Link to Personal Saving

Economists generally agree that consumer spending decisions are largely explained by the life cycle–permanent income model. According to the model, households estimate the constant-dollar, or real, resources likely to be available to them over a long planning horizon, including in these resources anticipated after-tax income, current wealth, and expected movements in asset prices. Given the estimated stream of resources, households plan on maintaining steady growth in real spending over their lifetimes.

The typical summary of this model is that real consumer spending is a constant fraction of “permanent income.” Permanent income is a smoothly growing measure whose present value is equal to the present value of the real resources available to consumers. The fraction of permanent income that is spent may depend on a host of factors, such as demographics, but ones that could be of particular interest are uncertainty and the ability to borrow. It is likely that the more uncertain future income is seen to be, and the more

difficult it is to borrow in an emergency, the lower spending will be relative to permanent income.

By definition, personal saving is the difference between actual current-dollar after-tax (disposable) income and current-dollar spending. Many have observed that increases in wealth (assets such as stocks and homes, less debt) relative to disposable income, both over the last generation and during the more recent rise, could have worked to boost spending relative to income and reduced the personal saving rate. This is especially true to the extent that these rises in wealth are linked to increases in expected future income, thus elevating permanent income relative to disposable income.

Putting the wealth issue aside for now, we note that if disposable income is a plausible approximation of permanent income, then a decline in the personal saving rate can be consistent with the life cycle–permanent income model if, say, greater certainty about future income and enhanced ability to borrow have induced households to increase spending relative to permanent income. Such forces could well have been at work in the United States over the last generation. In addition, the continuing decline in personal saving during the past few years could suggest that households are still raising their estimates of the future stability of income and their ability to borrow, and the negative values for the saving rate could imply that households now see permanent income as higher than disposable income.

Such perceptions may be worrisome: Income may turn out to be less stable than households think, and changes in credit conditions could reduce the ability of households to borrow. Moreover, a perception that permanent income is substantially higher than disposable income might be especially questionable at this point in the business cycle, when generally high levels of resource utilization tend to push up disposable income relative to permanent income. Hence, the negative saving rate could be a sign that households are misreading their true financial condition—an error that could raise downward risks to the outlook for spending.

Recent Forces Depressing Measured Personal Saving

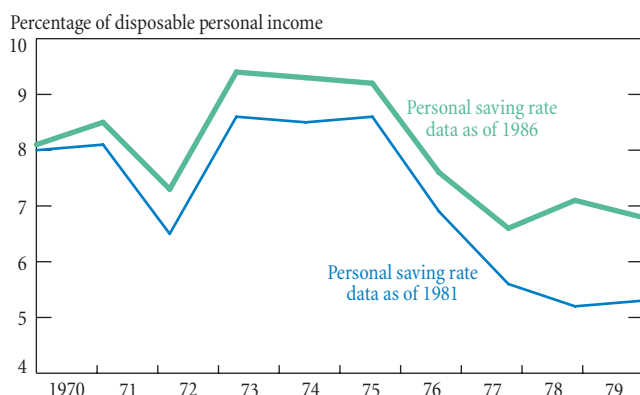
Our analysis thus far assumes that it is fairly straightforward to draw connections between observed disposable income and household perceptions of permanent income. In reality, however, the link between disposable and permanent income is complicated. There are reasons to believe that reported disposable income has been *depressed* relative to permanent income in the past few years, a development that in turn could lower the observed personal saving rate.

Preliminary Data

One simple reason why measures of disposable income may be low is that they are based on preliminary data. These

¹These conclusions echo the findings of Peach and Steindel (2000), who discounted similar concerns raised by the drop in saving in the late 1990s. Certainly, well-maintained consumer spending growth in this decade has borne out the earlier paper’s contention that concerns about low saving were likely exaggerated.

Chart 2
Revisions of 1970s Saving Data



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

measures may eventually be revised upward, boosting estimates of the saving rate. In a notable episode, early readings showing a low personal saving rate for the mid- and late 1970s were later overturned by revisions that revealed the 1970s to be a period with a fairly high personal saving rate (Chart 2).² Although subsequent years have not seen such dramatic upward revisions, this experience suggests a need to be cautious in drawing inferences about consumer behavior and risks from the currently reported saving rates.

Higher Energy Prices

A key factor that may have depressed real disposable income relative to permanent income recently—and thus reduced personal saving—has been the run-up in energy prices. Households may have regarded the increase in energy costs as transitory and assumed that prices would soon drop back—as prices did to some extent in the second half of 2006. Even if households saw the energy price increase as long-lasting, they may have thought that it would have only a limited impact on real income over the long run, in part because they expected to offset some of the depressing effect of higher energy costs by shifting their spending to energy-efficient products. In either event, the higher energy prices would have had little effect on overall real consumer spending. Current-dollar consumer spending, however, would have risen with these higher costs, and personal saving would have fallen.

Higher energy bills can account for a substantial fraction of the recent decline in personal saving. BEA data show that household expenditures on energy use increased from 4.6 percent of after-tax income in 2003 to 5.6 percent in 2005 and 5.8 percent in 2006. While the 1.2 percentage point rise

²Garner (2006) also discusses details of the personal saving measure and the potential for revisions.

in energy expense from 2003 to 2006 is less than half the drop in the personal saving rate during that period, one can plausibly argue that higher energy costs depressed saving without affecting fundamental consumer behavior.

Stock Repurchases

The accounting of income related to corporate stock ownership may also have reduced disposable income relative to permanent income.³ Certain features of the treatment of this type of income can affect the reported personal saving rate. For example, taxes paid on capital gains realizations are viewed as reducing disposable income, even though the gains themselves are not counted in the pretax income data (see Peach and Steindel [2000], Perozek and Reinsdorf [2002], and Reinsdorf [2007]).

More germane to an understanding of the move to a negative personal saving rate are recent changes in the form in which corporate payments are made to shareholders. Most notably, there has been a substantial rise in corporate payments in the form of share repurchases as opposed to dividends. As reported in the Federal Reserve's fourth-quarter 2006 *Flow of Funds Accounts of the United States*, the amount of net share repurchases (repurchases less issuance) by nonfinancial corporations jumped from \$42 billion in 2003 to \$364 billion in 2005 and \$602 billion in 2006.

Although many investors might see little practical difference, aside from tax implications, between a dividend and a share repurchase,⁴ the sharp increase in household receipts in the form of share repurchases has considerable bearing on the construction of disposable income and saving figures. Dividend payments are included in disposable income, while share repurchases are not. If share repurchases were counted in disposable income, the saving rate would be decidedly higher.

One objection to viewing share repurchases as equivalent to dividends is that a repurchase can be interpreted as a return of capital and thus have nothing to do with perceptions of permanent income, while a dividend can be considered a payment out of ongoing corporate income and thus intrinsically part of permanent income. This distinction, however, can be arbitrary. For example, shareholders could easily have regarded the \$35 billion special dividend paid by Microsoft in late 2004 as a return of capital.

³Surveys suggest that less than half of U.S. households have an ownership interest in corporate stock (even an indirect interest stemming from a claim on a pension plan); within that share, stock ownership is highly concentrated. Still, because this portion of the population accounts for the bulk of saving, their actions would be critical to understanding shifts in aggregate saving.

⁴In particular, investors who own stock indirectly through mutual funds or have an interest stemming from ownership by a fiduciary would likely take little notice of whether a corporation is returning cash to shareholders as dividends or as share repurchases.

Other objections arise from the differing ways in which share repurchases may be processed. Some portion of equity retirement occurs in the course of restructuring corporate balance sheets, which may result in shareholders' exchanging a portion of their holdings for bonds or other forms of debt. With transactions of this type, shareholders do not directly obtain cash from corporations, as they would with dividends or straight cash repurchases. Moreover, share repurchases by a corporation in the open market involving a voluntary, arm's-length transaction may have different implications for household behavior than repurchases resulting from tender offers made to shareholders. Unfortunately, there is no easy way to differentiate the types of share repurchases in the aggregate data.

On balance, it may be plausible to think that increases in corporate payments in the form of repurchases account for some of the recent drop in saving. Households have received substantial sums from corporations that have not been included in disposable income, even though they may have reasonably taken these receipts into account when computing permanent income. To the extent that household spending has been elevated by these receipts and households have paid taxes on a portion of them, personal saving has been reduced. For instance, share repurchases rose by \$322 billion from 2003 to 2005. If, hypothetically, household tax payments were boosted by an amount equal to 5 percent of this rise and households increased their spending by an amount equal to 15 percent of the rise, personal saving would have been cut by more than \$60 billion between 2003 and 2005. This figure equals almost a third of the actual decline. Moreover, the further increase in repurchases in 2006 could have reduced saving by an additional appreciable amount.⁵

In sum, the personal saving rate's recent fall into negative territory—if it holds after possible revision of the numbers—does not necessarily mean that consumers' perceptions of their financial prospects are now more sanguine than they should be. The jump in energy prices may have played a large role in depressing personal saving for a while. Saving may also have been held down by the rise in household receipts from corporations in the form of share repurchases.

Broader Saving Trends

If indeed some portion of the recent drop in personal saving reflects the accounting treatment of share repurchases, a saving measure that includes share repurchases in income may be more informative about household behavior than the standard figure. As we observed, however, it is hard to iden-

tify the portion of share repurchases that may be comparable to dividends. One way to circumvent this difficulty is to take the view that shareholders are indifferent to the division of corporate earnings between dividends and undistributed profits (a portion of the latter is actually "distributed" to shareholders in the form of share repurchases). In other words, a sensible approach to determining household behavior is to examine saving in the private sector as a whole by consolidating households and corporations.⁶

Chart 3 adds undistributed profits back to both personal saving and disposable personal income and plots the recalculated saving rate. The recent drop in the recalculated rate starts in early 2004, slightly before the decline in the ordinary personal saving measure. The magnitude of the decline in the revised measure is akin to that of the regular saving rate. Nonetheless, the *level* of the broader household saving rate has not been as strikingly low as the level of the personal saving rate. Recent rates are comparable to those in 2001 and 2002. Thus, although the decline in the broader household saving rate suggests that the recent drop in personal saving is something more than an accounting artifact, the level of the broader rate is not unprecedented—implying that a major change in household behavior has not occurred recently.

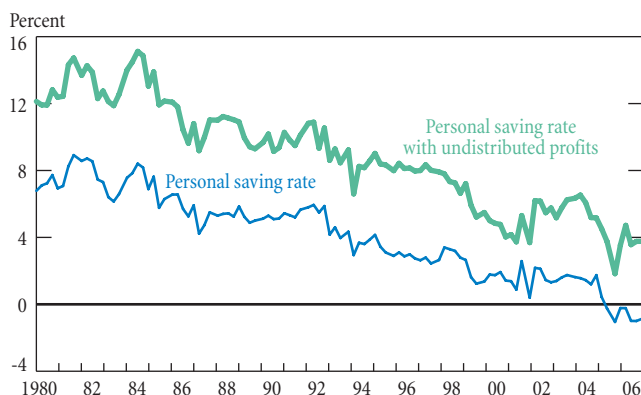
Saving is not only an indicator of thrift, it also plays a major role in the accumulation of capital and thus helps to determine future economic growth. When one looks at saving in the form of the supply of capital, it may be desirable not only to combine personal saving and undistributed profits, but also to include at least a portion of *aggregate depreciation*: the estimate of the loss of value of the capital stock attributable to aging. Such an adjustment may be informative because savings can be used to purchase new capital. New capital could well be more productive than the capital it replaces, even if the dollar amount invested in new capital is no greater than computed depreciation. Thus, the standard figures on reported saving should be adjusted upward somewhat to account for the fact that a fraction of the resources used to replace aging capital, and thus included in the depreciation data, is part of the supply of capital. The proper adjustment, though, is complex. An extreme adjustment adds all depreciation to saving to derive a *gross private saving* measure. Such a measure likely overstates the true supply of capital. However, the measure could be useful for other purposes, because it is an estimate of the full amount of funds that U.S. households and corporations are injecting into the capital market.

In addition to households and corporations, governments may be a source of saving. Adding government saving—the sum of the federal and state budget balances plus depreciation

⁵The tax bill from share repurchases depends on the fraction of repurchases that is long-term capital gains, the fraction that is short-term gains or ordinary income, and the fraction that is received by tax-exempt shareholders. The 15 percent figure used for the portion of repurchases that is spent is much lower than estimates of the propensity to consume from permanent income.

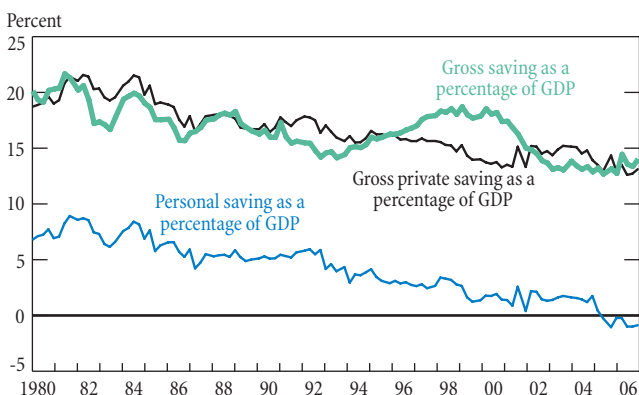
⁶Earlier works in the consumption literature redefined personal income to include undistributed profits (see Feldstein [1973] and Steindel [1981]).

Chart 3
Personal Saving Rate with and without Undistributed Profits



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Chart 4
Gross, Private, and Personal Saving as a Percentage of GDP



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

on government capital—to gross private saving produces *gross saving*: the amount that all U.S. enterprises, households, and governments put aside to acquire new assets.

Chart 4 allows us to see how these broader measures of saving have fared in recent decades and to compare their performance with that of the personal saving rate. All the measures in the chart are expressed as a percentage of gross domestic product.⁷

Most recently, the gross private saving rate (black line) was about 13 percent of GDP, down from the 14 to 15 percent range in 2002-04, but comparable to its value in 2000-01. From the early 1980s through the mid-1990s, gross saving (green line) usually fell short of gross private saving: the government sector was typically dissaving, reflecting the federal deficits of the period. In the second half of the 1990s, as the federal budget went into surplus, gross saving surpassed gross private saving. At the start of this decade, gross saving fell sharply, owing to the widening of the federal deficit and deterioration in state and local balances during the recession. However, gross saving has stabilized in the expansion, as the federal deficit has shrunk and state and local fiscal positions have improved. Indeed, the most recent preliminary figures show modest increases in gross saving. In other words, despite the pronounced drop in personal saving, aggregate saving from all domestic sectors has been stable or rising in the past few years.

Low Saving, Household Wealth, and Risks to Spending

Despite the recent uptick in gross saving, all levels of saving rates remain very low by historical standards. Could these low rates present a near-term risk for consumer spending?

Macroeconomic data that reflect household financial conditions and are germane to spending reveal, most strikingly, the remarkable recovery in aggregate household wealth recently. According to the Federal Reserve's estimate in the fourth-quarter 2006 *Flow of Funds Accounts of the United States*, household sector net worth was more than \$55 trillion at the end of 2006. Not only is that amount an all-time high, it also indicates that much of the drop in the ratio of wealth to disposable income in the early years of this decade has been reversed (Chart 5).

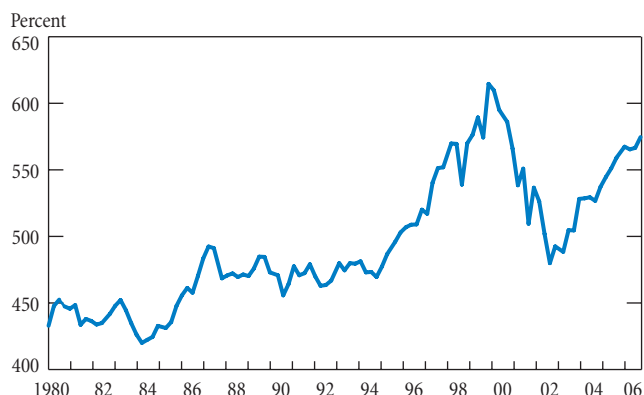
A controversial issue arises when relating the changes in wealth to saving. If one included in income and saving all wealth increases, the recalculated saving rate would have been very high recently.⁸ Many analysts would further contend that the recent rise in wealth has directly fueled spending, and they would suggest that any future declines in wealth will hold down consumer spending. However, some studies have argued that the precise contribution of wealth changes to aggregate spending in a given period is highly variable and indeed may at times be very small (Ludvigson and Steindel 1999; Lettau and Ludvigson 2004).

This issue raises the question, How much better off would households be today if they had saved more in recent years? Presumably, past higher saving would have led to higher levels of wealth, leaving households better equipped to maintain spending in the face of possible losses in wealth. However, higher saving may have made little qualitative difference to today's aggregate amount of wealth. If, say, household saving had been a full 5 percent of GDP higher since 2000 than it actually has been (suggesting personal saving rates averaging about 10 percent) with no other change of

⁷This personal saving rate is slightly different from the standard measure because GDP is not equal to disposable personal income.

⁸Peach and Steindel (2000) show that the inclusion of realized capital gains in personal income resulted in a saving rate in the 1990s that was substantially higher than the published numbers.

Chart 5
Ratio of Household Wealth to Disposable Income



Source: Board of Governors of the Federal Reserve System.

consequence in the economy, aggregate household wealth today would be roughly \$3.5 trillion higher. That amount is only about 6 percent higher than the actual value of wealth at the end of 2006.⁹

Moreover, the actual increase in aggregate wealth since the end of 2000 totaled about \$14 trillion, or a gain of one-third. It is certainly true that greater saving in recent years could have put many households in a stronger financial position today, but it is hard to make the case that aggregate household wealth formation of late has been seriously held down by low saving, or that higher saving would have left the household sector as a whole dramatically better off.

The weak connection between saving and wealth formation in recent years has not been unusual. In general, changes in aggregate household wealth, even over periods of a decade or more, have little to do with saving flows. Swings in household wealth tend to be driven by movements in the prices of assets such as stock and real estate.¹⁰

A final point is whether, statistically, there is reason to believe that the current very low personal saving rate portends a future curtailment in spending growth. Spending growth might simply falter in the wake of low personal saving. This proposition can be tested in a very straightforward way by considering the saving rate's ability to predict consumer spending growth (in the context of other factors). If consumer spending growth can be predicted by anything, surely one predictor is its recent history.¹¹ If we include recent personal saving rates as additional factors, can we make a better prediction?

⁹The calculation assumes that this enormously higher volume of personal saving would have had no effect on the actual path of income and asset prices.

¹⁰See Steindel (2007). Perozek and Reinsdorf (2002) also discuss the link between saving and wealth accumulation.

The answer appears to be no, according to our basic statistical test of this proposition (see box). The R^2 —the fraction of the variation in consumer spending growth explainable by the factors used—barely moves when the saving rate terms are added, as one can see from the box table. Moreover, the sum of the coefficients on the saving rate is very low. The estimate suggests that a 1 percentage point drop in the saving rate would ultimately be associated with a reduction in the annual growth rate of real consumer spending of little more than two one-hundredths of 1 percent.¹² This finding suggests that the recent drop in the personal saving rate is too small to have an important influence on the consumption outlook.

Real Spending Growth and the Saving Rate

To test the personal saving rate's ability to predict consumer spending growth, we estimate regressions relating the annualized rate of real consumer spending growth in a quarter to 1) a constant and the last eight quarterly values of real consumer spending growth and 2) the same variables, with the addition of the last eight quarterly readings for the personal saving rate. If low values of the personal saving rate were associated with a retrenchment in spending, we might expect to find an increase in the explanatory power of the regression with the addition of the saving rate, and positive values associated with the saving rate terms.

The low values of the adjusted R^2 , shown in the table, are consistent with the proposition that variations in consumer spending growth are very hard to predict. Examination of the saving rate coefficients shows that virtually all of their limited explanatory power comes in the first two lags; the first lag coefficient is positive, while the second is negative and of essentially the same magnitude as the first. These estimates suggest that a quarter experiencing an unusually large upward movement (decline) in the saving rate is followed by a quarter undergoing unusually rapid (slow) growth in real consumer spending. It is often the case that quarters seeing large increases in the saving rate have also seen very large increases in income associated with events such as tax cuts. It is not surprising that consumer spending responds with some lag to such large increases in income.

Adjusted R^2 of Each Regression and Sum of Estimated Coefficients on Saving Rate

	Regression 1	Regression 2
Adjusted R^2	.113	.120
Sum of coefficients on saving rate	—	.024

Notes: The adjusted R^2 of each regression is an estimate of the fraction of the variation in consumption growth explained by the variables. The sample period is 1962:1-2006:2.

Conclusion

Many of the obvious concerns about the negative personal saving rate may be unfounded. The negative value could be attributable to preliminary data, which the BEA could very well revise upward; a temporary depressing effect brought on by higher energy costs; and a dampening effect owing to the surge in corporate share repurchases. Looking at the private sector on a consolidated basis, we find that saving, while quite low, is certainly neither negative nor remarkably lower than it was in the late 1990s. National saving as a whole has also been low, but it has not fallen recently—indeed, the broadest measure has edged up.

Despite the low personal saving rate, aggregate household wealth has risen sharply in the past few years. U.S. households would not be a lot wealthier today—and thus better able to cope with a decline in asset values—if they had been saving at a substantially higher pace over the past few years. Furthermore, we uncover no strong evidence to suggest that low personal saving today would be associated with lower spending growth tomorrow.

Nevertheless, there are reasons to be concerned about the modest levels of household, private, and especially national saving. National saving flows provide the basic wherewithal to finance U.S. ownership of productive assets. Unless the nation's investments are unusually productive, low saving levels will ultimately imply a slowdown in the growth of income from capital, and thus work to reduce the quality of U.S. living standards over the long run.¹³ Households might then be faced with a painful choice: Respond to slower

income growth by accepting slower consumption growth than has been the historical norm—or continue normal consumption growth, which could put additional downward pressure on saving and thus jeopardize income and spending even further into the future.

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Chart data and regression results for this article are available at <http://www.newyorkfed.org/research/current_issues/ci13-4.html>.

¹¹The "random-walk" formulation of basic consumer theory is that the best forecast of consumer spending growth is what is currently observed. A vast literature has arisen out of the 1978 paper by Robert Hall setting forth this hypothesis; a general reading is that the random-walk view may not be literally true, but it is a good first approximation of the facts.

¹²Needless to say, this is a very rough test. Some simple elaborations would involve addressing the issue of revisions in the saving rate (perhaps first estimates of the saving rate have more explanatory power than the revised versions used in the test) and examining out-of-sample forecast performance.

¹³Harris and Steindel (1991) outline the working of this mechanism.

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