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Research Report

US household deficit spending: A rendezvous with reality

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The Levy Economics Institute of Bard College

Public Policy Brief

No. 88, 2006

U.S. HOUSEHOLD DEFICIT SPENDING A Rendezvous with Reality

ROBERT W. PARENTEAU

Public Policy Brief

**U.S. HOUSEHOLD
DEFICIT SPENDING**

A Rendezvous with Reality

ROBERT W. PARENTEAU

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Preface

Over the past decade, deficit spending by U.S. households has supported the U.S. economy. Research Associate Robert W. Parenteau analyzes the financial balance of U.S. households and finds that the pace of deficit spending is likely to stall and, possibly, reverse course. This reversion will jeopardize U.S. profit and economic growth, as well as the growth of countries dependent on export-led development strategies. His research supports the position of other Levy Institute scholars who have urged policymakers to recognize the consequences of current imbalances in the U.S. economy.

Parenteau observes that the U.S. household financial balance has been deteriorating since 1997 and that the rate of decay has accelerated since early 2005. Although persistently increasing private sector deficits can be sustained, the conditions for avoiding debt-trap dynamics no longer exist. What may be happening in the U.S. household sector, says Parenteau, is what the late economist Hyman P. Minsky would recognize as a form of Ponzi finance. Since the primary financial surplus is exhausted, and income growth is below the average interest rate paid on household debt, household borrowing against the value of existing assets is required to sustain rampant deficit spending and to service prior debt commitments. Thus, household deficit spending is predicated on sustaining asset bubbles. However, we may soon enter a period of home price deflation and declining household spending, which would have profound implications for export-led economies.

The gap between personal saving and the acquisition of net financial assets has to do with massive mortgage equity withdrawals. The household gross savings rate has overshot to the downside, irrespective of the elevated ratio of net worth to disposable income. Even under very favorable assumptions for income growth and household net worth appreciation, the implied rate of real consumer spending will drop at a rate that is rarely seen outside of recessions.

Debt-trap equations are rarely applied to private sector deficit spending. When the equations are applied to the U.S. household sector, there is an explosive household debt-to-income trajectory that can only be sustained by an equally explosive appreciation of asset prices that lifts them far from their fundamental values.

Parenteau's review of key lines of credit extended to the U.S. household sector shows a noticeable slowdown, which is a demand-side response to slower home price appreciation. Furthermore, credit restrictions have yet to appear on the scene, so a credit crunch could sharply curtail household credit growth and force a dramatic reversal of household deficit spending. A rendezvous with reality for U.S. household financial imbalances appears to have arrived, he says.

As always, I welcome your comments.

Dimitri B. Papadimitriou, *President*

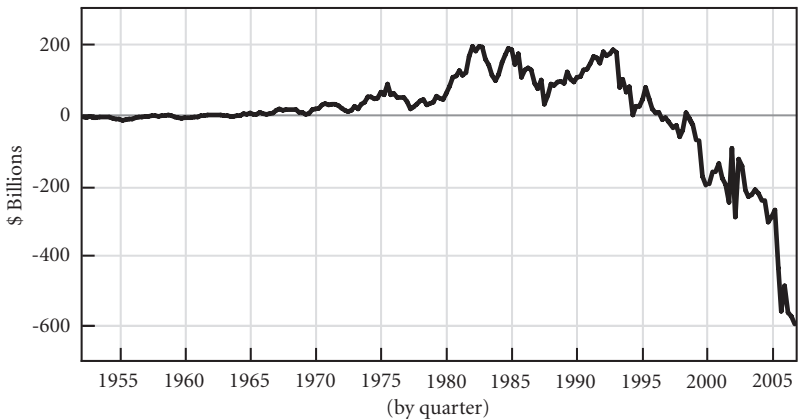
November 2006

U.S. Household Deficit Spending

As of the first quarter of 2006, the gap between household sector expenditure and income in the United States widened to an annualized deficit of approximately \$600 billion.¹ The deterioration in the household financial balance has been going on since 1997, and the rate of decay has accelerated noticeably since early 2005 (Figure 1). The household sector financial balance has been plunging.

While many economists decry government deficit spending, they turn a blind eye toward private sector deficit spending. Contemporary economists are trained to view household spending decisions as the aggregation of millions of individual budgeting decisions based on intertemporal utility calculations; these calculations, by definition, must produce rational consumption paths over time. The dramatic deepening of household deficit spending—the gap between household income and expenditures or,

Figure 1 U.S. Household Financial Balance



Source: Federal Reserve Flow of Funds

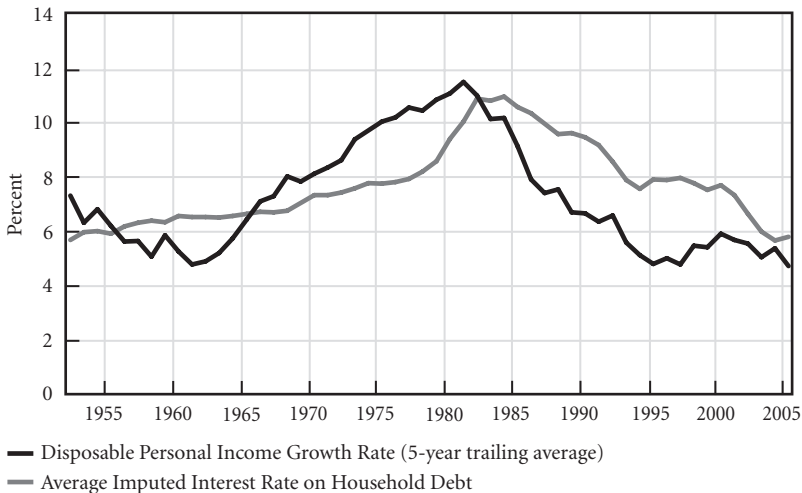
alternatively, household saving minus investment—suggests that this view of household spending decisions may be a bit too complacent.

What Is Sustainable? The Apparent Necessity of Serial Asset Bubbles

A popular view among bearishly predisposed economists, on the other hand, claims that such financial imbalances are clearly unsustainable. After nearly a decade of unprecedented U.S. household deficit spending, this claim has worn a little thin, but the arithmetic of debt-sustainability conditions has been available for more than six decades—at least since the work Evsey Domar did on government-debt dynamics, during the time he was at the Federal Reserve (Fed).²

Borrowing from government sector or third world debt-trap equations, we know it is possible that persistently increasing private sector deficits can be sustained under at least three conditions. First, the long-run growth of private sector income must exceed the average interest rate on the debt owed by the sector. This is a necessary condition for avoiding debt-trap dynamics; otherwise, interest expense commands an ever-increasing

Figure 2 Key Elements in the Household Debt-Trap Equation



Sources: BEA and Federal Reserve Board

share of income. Second, the private sector may be deficit spending, but its primary financial balance—excluding interest expense—must be in sufficient surplus. With a primary financial surplus, income grows more than noninterest expenditures, so there is still a positive cash flow cushion before debt servicing. Less new debt must be issued to service prior liabilities. Third, if assets held by the private sector continue to appreciate in price at a sufficient rate, then it is possible that the growth in collateral values and capital gains will be sufficient to service existing debts and justify further lending, even to a sector that is rampantly deficit-spending.³

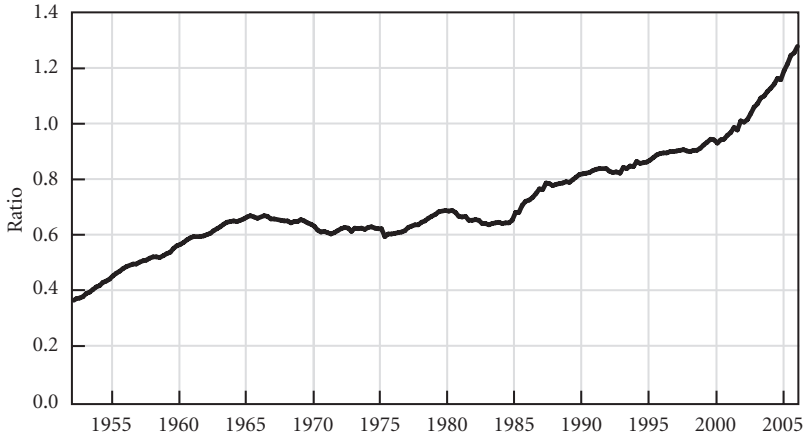
As a check of the first sustainability condition, it is possible to construct an imputed average interest rate for the U.S. household sector by dividing household interest expenditures by outstanding household debt (Figure 2). This can then be compared with the growth of disposable (that is, after-tax) personal income calculated on a five-year trailing average basis. We use a five-year trailing income growth on the assumption that the experience of income growth over the recent past is what borrowers use when they assess their ability to take on more debt, and, similarly, what lenders use when they assess debt-servicing capabilities. This assumption may be too stringent, in light of the proliferation in recent years of no-documentation mortgage loans, or so-called “liar loans,” based on stated income that may bear no relation to actual income.

However, this comparison is not entirely kosher, as we should also be using an after-tax estimate of the average interest rate, which would shift the entire interest rate profile down, given a roughly 20–22 percent average federal tax rate over the period. Nevertheless, as a crude first cut, the comparison is unlikely to be off base.

What we find is that one crucial condition for avoiding debt-trap dynamics—income growth in excess of interest rates—has been consistently violated since the Volcker interest rate shock. Explosive debt-trap dynamics (i.e., an exponential increase in the household debt-to-income ratio) are implied by the gap between interest rates and income growth in the household sector (Figure 3).

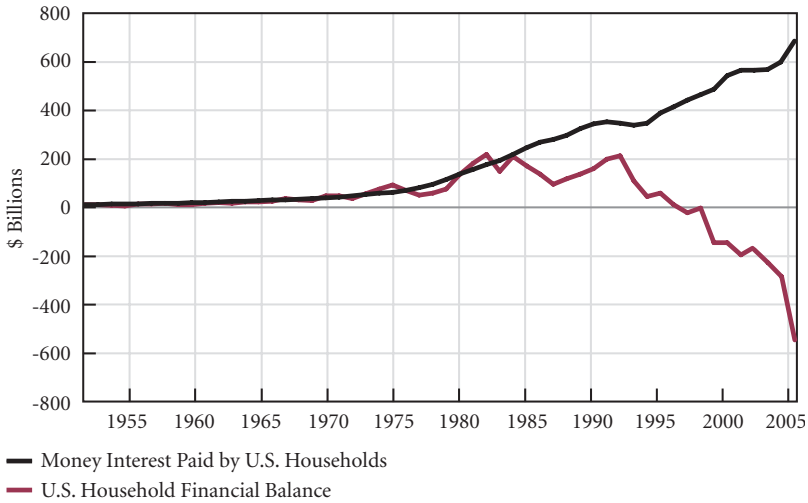
After a period of relative stability from the mid 1960s to the mid 1980s, the household debt-to-income ratio has persistently risen, and it has risen at an accelerating rate over the past half decade. An explosive household debt-to-income trajectory is more than an algebraic possibility.

Figure 3 Household Debt-to-Income Ratio



Source: Federal Reserve Board

Figure 4 Elements of the Primary U.S. Household Financial Balance



Sources: Department of Commerce and Federal Reserve Board

This means that the sustainability of U.S. household deficit spending has been highly dependent upon either the maintenance of a primary financial surplus or the perpetual and rapid appreciation of asset prices, especially in the key asset classes held by U.S. households.

If we add money-interest expense back into our measure of the household sector financial balance, the primary financial balance reflects a surplus for most of the past half century (Figure 4). In fact, the household primary surplus peaked in 1982 at 12 percent of nominal GDP and fell to 3.8 percent at the height of the New Economy bubble in 1999. The primary household financial balance was in a surplus of 1.2 percent of GDP in 2005. If the current Fed flow of funds data for the U.S. household sector is indicative of the likely full-year outcome, the odds are that the primary financial balance is barely in a surplus position. This means that the prior cushion against an explosive household debt-to-income trajectory has recently been exhausted.

These results leave households with one last loophole to escape from the eventual constraints of explosive debt-trap dynamics—namely, sufficient and sustained appreciation in the assets they hold. But given the recent erosion of the primary financial surplus and the lingering gap between average interest rates and long-run income growth of the household sector, the required degree of asset price appreciation has undoubtedly risen in recent years. To achieve a rate of asset price appreciation high enough to sustain (or deepen) household deficit spending, asset prices will have to increasingly depart from fundamentals (like earnings growth or dividend payouts from equities or rental income from real estate) that are unlikely to grow as quickly, given normal macroeconomic or monetary and fiscal policy constraints. When asset prices diverge from fundamentals, asset bubbles emerge. On the analysis presented above, serial asset bubbles will need to be engineered in order to keep household deficit spending on a steep trajectory.

A Rendezvous with Reality: Some Implications

In other words, the U.S. household sector may be engaging in what the late economist Hyman P. Minsky would recognize as a form of Ponzi finance.

Since the primary financial surplus is exhausted, and household income growth is below the average interest rate paid on household debt, household borrowing against the value of existing assets is required to sustain rampant deficit spending and to service prior debt commitments (principal and interest). Without a suitable and swift “euthanasia of the rentier,”⁴ such that interest rates fall below long-run household income growth, sustaining U.S. household deficit spending is predicated on sustaining asset bubbles.

In the New Economy bubble, rapid equity price appreciation supported the onset of U.S. household deficit spending. After the equity bubble burst, household deficit spending was supported by large multiyear tax cuts, which buttressed after-tax income growth, and rapid price appreciation of residential real estate, as the Fed lowered its funds rate to 1 percent and mortgage rates dropped to lifetime lows for most households.

At the moment, house price appreciation has cooled considerably. On a year-to-year basis, we have just entered a period of new and existing house price deflation (falling absolute price levels for residential real estate in the aggregate). The rallies in U.S. equity prices and U.S. bonds are unlikely to produce sufficient wealth effects for U.S. households.⁵

If asset price appreciation remains subdued or erodes, it stands to reason that household spending growth will decline toward household income growth. Real disposable income growth is currently in the range of 2.5 to 3 percent on a year-to-year basis, while personal consumption expenditure growth had previously increased in the range of 3.5 to 4 percent. If the above analysis is correct, that pace of consumer spending is no longer possible unless, of course, sufficiently strong bubble dynamics can be regenerated in assets held by households.

The downshift in U.S. consumer spending has profound implications for export-led economies. Brazil, Russia, India, and China (i.e., BRIC countries) whose markets were expected to grow to the sky, and whose assets were valued accordingly, may confound expectations. The downshift would have substantial consequences for professional investors who have waded into commodity markets over the past two to three years, since U.S. consumer spending is roughly 20 percent of global GDP. In contrast, Japan and Germany, the next two nations with the highest consumer-spending shares

of global GDP, tend to run trade surpluses (i.e., they are net suppliers of goods and services to the rest of the world).

Relevant Counterviews

Two counterviews to the above analysis, popular among some Wall Street economists, are worth examining.

First Counterview

The first counterview is that U.S. households have acquired net financial assets at a pace that well exceeds personal savings out of income flows. The conclusion drawn from this observation is that household saving must be much larger than reported. Otherwise, such a strong pace of financial asset accumulation could not have been maintained. Therefore, any measure of the household financial balance that is based on erroneous personal saving measures must be biased to the downside.

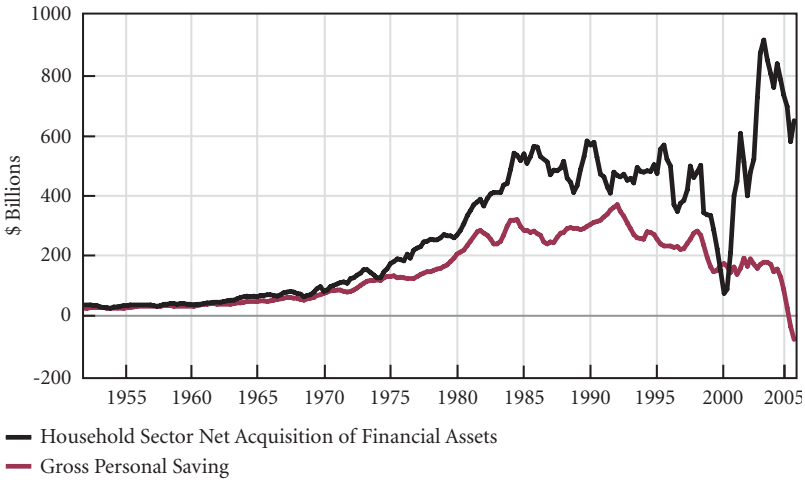
A problem of macroeconomic coherency arises with this view. Financial balances must balance at the aggregate level. If one sector is running a large financial surplus or net saving position, another sector must be running an offsetting financial deficit position. If household savings are as large as this counterview asserts, then the financial balance approach requires that some combination of the following must also be true:

- Corporate free cash flow is much lower than currently reported
- The trade deficit is not nearly as bad as currently reported
- The fiscal deficit is much deeper than currently reported

It is unreasonable simply to assert that one piece of a puzzle is faulty without presenting evidence that the adjoining pieces are also faulty. And remember, we are talking about a distortion on the order of \$1 trillion per year in the three adjoining puzzle pieces bulleted above (i.e., the average net acquisition of financial assets by households over the past three years). Advocates of the view that personal saving is grossly underreported need to remember that sectoral financial balances must balance in the aggregate.

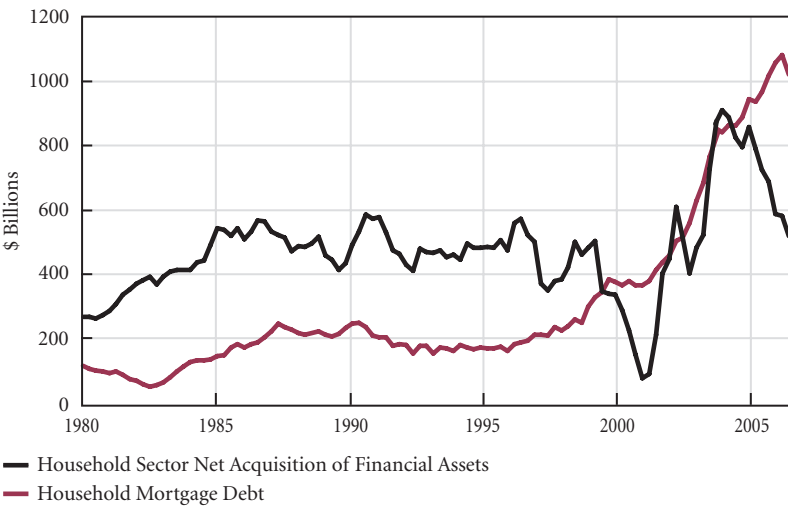
It is true that the pace of net financial asset acquisitions by U.S. households has well exceeded the flow of personal saving. In fact, this divergence has been the case for most of the past half century; but it has become particularly sharp since the bursting of the New Economy bubble (Figure 5).

Figure 5 Household Saving Does Not Constrain the Acquisition of Financial Assets



Source: Federal Reserve Board

Figure 6 The Household Sector Can Borrow to Accumulate Financial Assets



Source: Federal Reserve Board

The personal saving flow is now negative, which would seem to imply that households are in no position to accumulate financial assets.

There are, however, two ways to acquire financial assets: (1) out of household saving flows (i.e., income flows that are not spent on consumer goods and services); and (2) by borrowing in order to “make position,” as Minsky called it. The household sector as a whole has been borrowing and accumulating financial assets with the proceeds. Consequently, it makes perfect sense that the period with the maximum divergence between personal saving flows and net financial asset acquisitions by households is also the period with the most rapid increase in household liabilities, particularly mortgage debt (Figure 6).

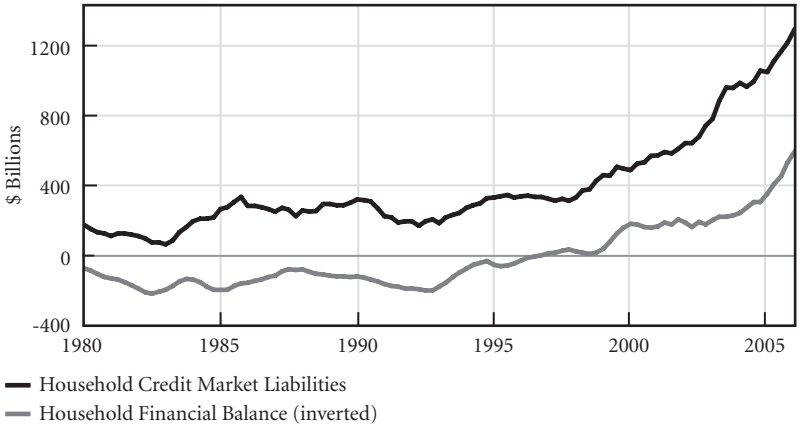
We can triangulate this issue from yet another direction. The change in the level of household debt outstanding can be compared with the average household financial balance over the past four quarters. If household debt is increasing more than the amount required to plug the gap between household income and expenditures—the household financial balance—we can infer that household debt is being used for other purposes; namely, the acquisition of financial assets.

Household debt has increased well in excess of the amount required to plug the gap between household income and expenditures (Figure 7). The household financial balance has averaged \$564 billion over the past four quarters, while the total increase in household sector liabilities has been \$1,204 billion. The household sector has been increasing its acquisition of financial assets by issuing debt, and so the flow of personal saving has not constrained the acquisition of financial assets by the household sector.

In what form might the leveraging of household portfolios have taken place? We know that extracting mortgage equity from real estate holdings became an easy and popular financial practice in U.S. households over the past six years. Also, as previously mentioned, the increase in household liabilities came mostly through rising mortgage debt. On the asset side of the household balance sheet, the majority of financial asset acquisitions occurred via time and savings deposits (Figure 8).

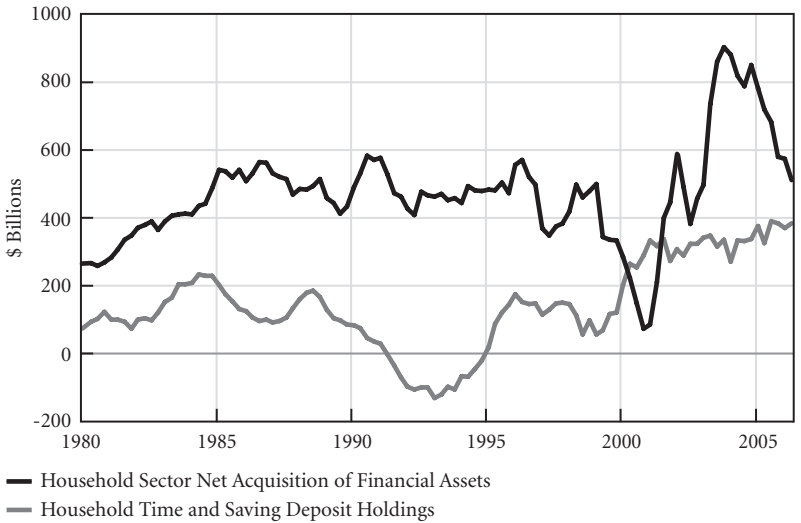
These observations all cohere. When individuals execute an equity cash-out mortgage refinancing, their mortgage liabilities increase and they are credited with an increase in the cash balance of their bank account. Perhaps they subsequently spend the cash, and it ends up in someone else’s bank

Figure 7 Household Debt Accumulates Faster than Implied by the Financial Balance



Source: Federal Reserve Board

Figure 8 Households Built-up Time and Saving Deposit Holdings



Source: Federal Reserve Board

account. Regardless, the surge in net financial assets tells us only that households have acquired financial assets—primarily bank deposits—by issuing liabilities against their nonfinancial (namely, real estate) asset holdings. Households have been “monetizing” their real estate holdings without having to sell or liquidate them, and acquiring time and saving deposits with the proceeds. Bank loans, after all, create bank deposits.

The gap between personal saving and the acquisition of net financial assets by households has everything to do with massive mortgage-equity withdrawals over the past half decade. The gap is not the result of a gross mismeasurement of personal saving, and the acquisition of net financial assets cannot be treated as a better measure of household saving out of income flows.

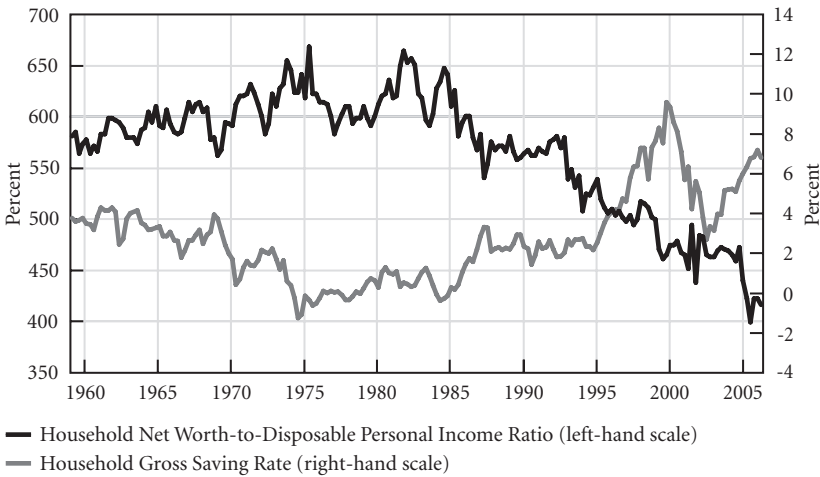
Second Counterview

The second and more valid counterview has to do with the rebuilding of household net worth, since the bursting of the New Economy bubble. The essence of this counterview is that by focusing simply on the liability side of household balance sheets, bearishly inclined economists are bound to come away with a distorted picture. In fact, household net worth, scaled by personal after-tax income, has again approached the New Economy bubble highs. On this basis, it is argued that households have sufficient equity cushions in their portfolios, not only to weather any storm, but to continue deepening the pace of deficit spending, should their intertemporal utility-maximization exercises lead them to conclude that this is the best path to pursue.

Some economists at the Fed and elsewhere have argued that the key signal encouraging households to borrow and deficit spend has been the persistently strong and positive labor productivity shocks that raise consumer expectations of robust, real, personal income growth rates in the future. This argument has been made throughout the past half decade, despite a decline in the trailing five-year real disposable income growth rate (from a 4.2 percent peak in the third quarter of 2000 to 2.6 percent in the second quarter of 2006) that has recently approached the lows of the early 1990s credit-headwind experience, and the lows of the double-dip episode of 1979–82.

Two challenges arise to the view that household net worth provides a reliable cushion for continued deficit spending by U.S. households: the first

Figure 9 The Gross Personal Saving Rate Varies Inversely with the Household Net Worth-to-Disposable Personal Income Ratio



Source: Federal Reserve Board

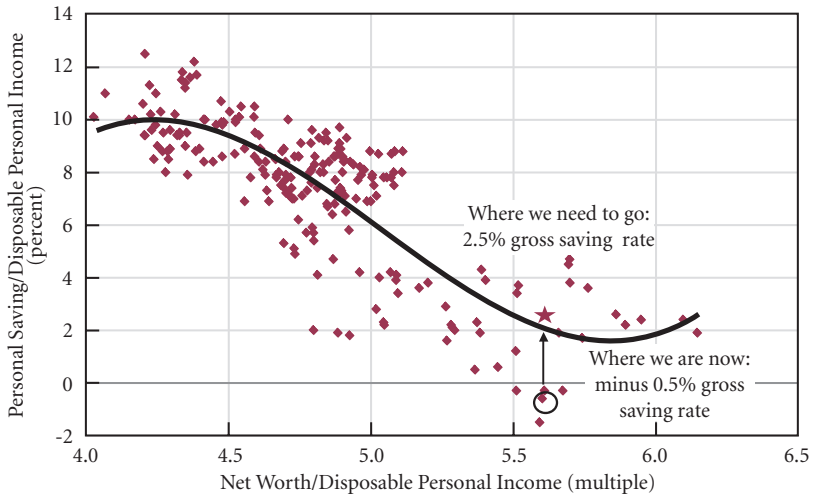
pertains to the relationship between net worth and the gross savings rate (which is already far from the historical norm); the second results from the tendency of lenders to form risk perceptions in a procyclical fashion.

First, households tend to view increases in net worth from asset-price appreciation as a substitute for saving out of income flows. Either way—capital gains or saving out of income flows—household wealth holdings increase. This is, after all, the basis of wealth effects on the propensity to consume out of household income flows. It holds true empirically (Figure 9).

However, even if household net worth is assumed to grow exactly in line with income from now on, so that the U.S. household net worth-to-disposable income ratio stays on a “permanently high plateau,” as described by Irving Fisher’s deadly call on the stock market in 1929, there is a slight problem.

Using historical observations, it is possible to run a line of best fit between the household net worth ratio and the personal saving rate (Figure 10). The regression shows that the household gross saving rate has overshot to the downside, even at the current elevated net worth-to-disposable income ratio. History suggests that the saving rate should be close to 2.5

Figure 10 Is the Personal Saving Rate in Line with the Net Worth/Disposable Personal Income Ratio?



Source: Bureau of Economic Analysis

percent, when the ratio of household net worth to disposable personal income is at 5.6, as was the case in the first quarter of 2006. The latest reading for the saving rate is minus 0.5 percent.

Smooth Transition?

Let's make two very generous assumptions: the ratio of net worth to disposable income stays constant for the next year, and the nominal growth rate of household disposable income remains steady at 4.5 percent. If the gross rate of household saving migrates back to 2.5 percent—where it should be already, as argued above—what is the implied rate of consumer spending in one year?

If we are to get the necessary adjustment in the gross rate of household saving, nominal personal outlays can advance only at a 1.4 percent pace over the year ending in August 2007. This means very low revenue growth over the next year for companies that sell to U.S. consumers. It implies a real consumer spending drop, on the order of 1.0 to 1.5 percent, assuming generous inflation relief over the next year—a pace rarely seen outside of

recession. Keep in mind that this spending response is predicated on very favorable assumptions for income growth and household net worth appreciation—this is not a deck stacked to give a downside-risk result.

Clearly, on this score, the high net worth argument is no panacea for the adjustment of household deficit spending. The gross saving rate has already overshot to the downside and, even under fairly optimistic assumptions, U.S. consumer spending would not grow if the existing overshoot were to be corrected.

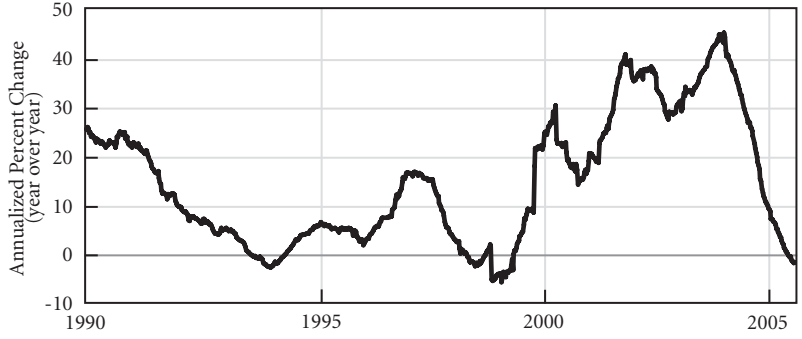
Or Not So Smooth Transition?

Banks and other creditors consistently reveal procyclical risk perceptions and risk preferences. Criteria for creditworthiness have a tendency to loosen over the course of business cycle expansions, as recent favorable credit seasoning experiences are extrapolated indefinitely into the future. Competition between banks for market share with other banks and with nonbank financial institutions also has a way of eroding credit standards cyclically. Furthermore, moral-hazard interventions by central banks (once credit cycles go awry) have tended to lead to secular erosion of credit standards, as credit risk becomes increasingly socialized over time in order to prevent financial instability from spilling over into larger economic dislocations. Nowhere has this process of secular and cyclical credit-standard erosion been more evident than in the innovative home loan financing created during the recent expansion.

However, a quick look at key lines of credit extended to the household sector suggests that household credit growth is already slowing, in spite of the still high ratio of net worth to income. Home equity lending by commercial banks, one of the primary conduits of mortgage equity withdrawal, has come to a full stop (Figure 11).

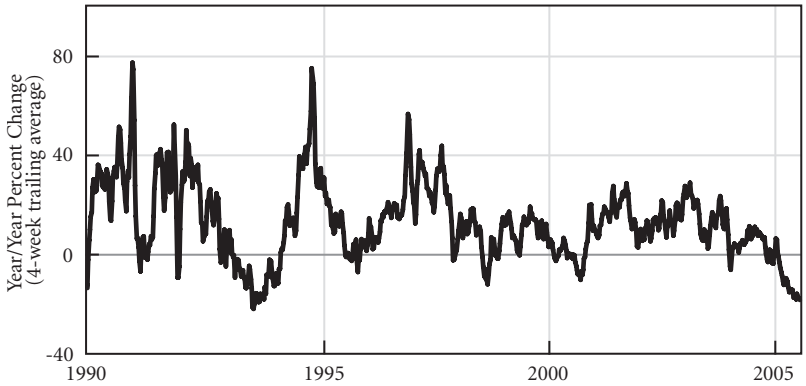
The second major source of mortgage equity withdrawal for U.S. households has been the sales of existing houses. Mortgage applications for loans to purchase houses have dropped considerably (Figure 12). The drop in the unit volume of house sales, as well as company reports of plunging orders for houses, confirms that this source of mortgage equity withdrawal has dried up.

Figure 11 Home Equity Loan Growth



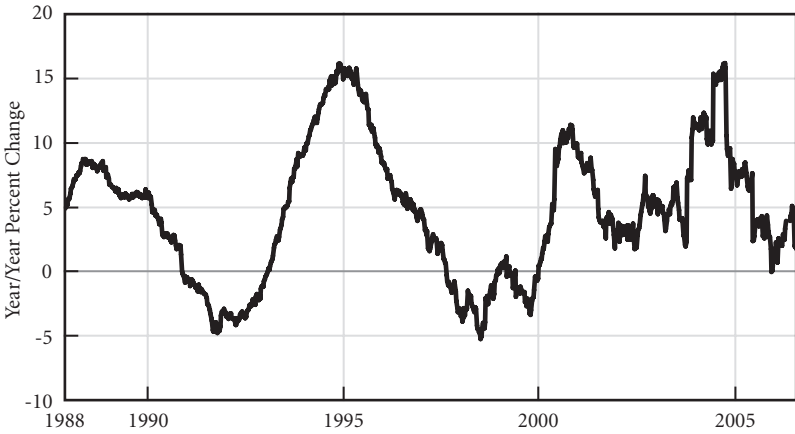
Source: Federal Reserve Board

Figure 12 Mortgage Loan Applications for Purchase Have Declined



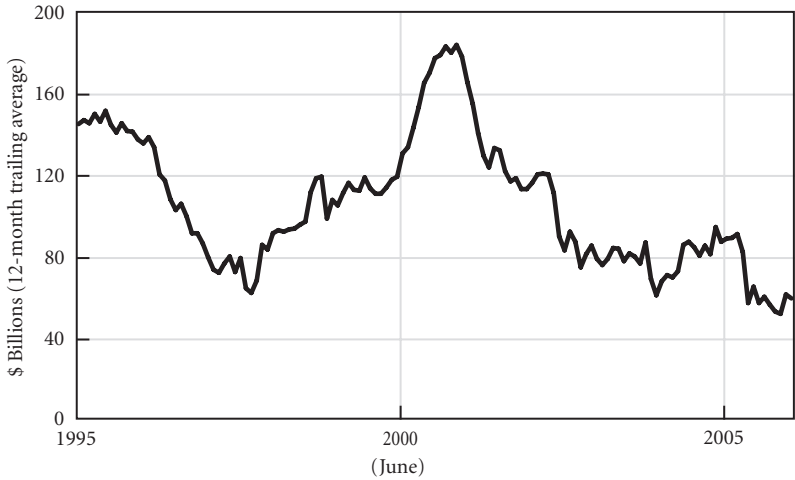
Source: Mortgage Bankers Association

Figure 13 Consumer Loan Growth at All Commercial Banks Has Slowed



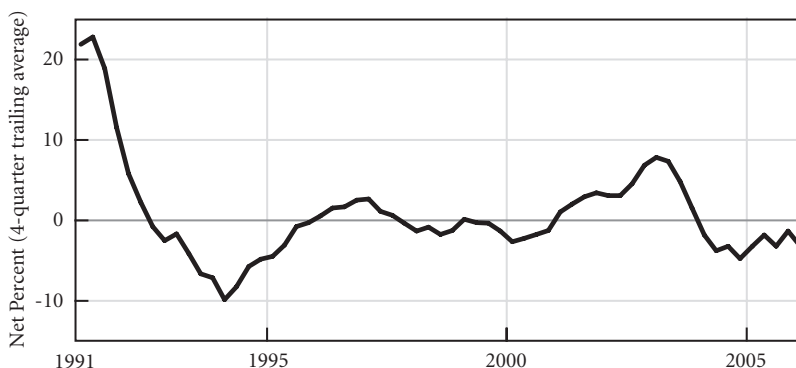
Source: Federal Reserve Board

Figure 14 Net Change in Credit Card Debt Has Slowed



Source: Federal Reserve Board

Figure 15 Banks Reporting Tightening of Loan Standards for Mortgages



Source: Federal Reserve Board

Another credit conduit—consumer bank loans that are not related to real estate—has also all but dried up in the past year (Figure 13). Furthermore, credit card usage has stepped down over the past three quarters as well (Figure 14).

From the preceding facts, we can deduce that well before the pace of U.S. economic growth and the pace of appreciation of U.S. household portfolios were called into question, and well before banks signaled any significant upward shift in risk perceptions and subsequently tightened credit standards for loans to U.S. households (Figure 15), four key credit conduits to the U.S. household sector had begun showing a noticeable slowdown. According to Federal Reserve calculations as of the second quarter of 2006, the pace of net mortgage equity withdrawal was \$374 billion lower (at an annualized rate) than during the peak in the third quarter of 2005. The Fed's flow of funds data shows that the pace of net increase in household liabilities dropped by \$226 billion (at an annualized rate) over the same period. Household credit growth is already slowing on the back of the housing market contraction.

Based on these observations, the proposition that creditors will be eager to finance a \$600 billion or more annual pace of household deficit spending predicated on a strong position of household net worth looks questionable at best. More likely, most of the slower growth in household

credit has been a demand-side response to slower appreciation in house prices, and credit restrictions (which are supply-side driven and tend to be much more abrupt and disruptive) have yet to appear on the scene. Should a credit crunch or credit headwind appear from the supply side, however, the above scenarios for a slowdown of consumer spending will prove overly optimistic.

Summary and Conclusion

U.S. household deficit spending has achieved an alarming trajectory. So, too, has the ratio of household debt to income. The two developments are obviously related—deficit spending tends to lead to rising debt loads. While debt-trap equations are frequently employed to analyze the sustainability of European fiscal deficits or Latin American external deficits, rarely are such analytical tools applied to private sector deficit spending. This bias also persists despite the numerous financial-stability research departments that have been established in various central banks, the International Monetary Fund, and the Bank for International Settlements over the past decade, with the goal of studying and anticipating these episodes.

In the case of household financial balances, the transformation of macroeconomics back into a pre-Keynesian branch of aggregated microeconomics has left economists predisposed to view household spending decisions as intertemporal utility-maximization exercises (or as some heuristic that delivers approximately the same result). From this viewpoint, 100 million or so U.S. consumers cannot be that wrong about their spending, saving, and balance sheet decisions.

Yet when a conventional debt-trap equation is applied to the U.S. household sector, we find the presence of an explosive household debt-to-income trajectory. The primary financial surplus is nearly exhausted, and the long-run household income growth remains below the prevailing interest rate on household debt. Accordingly, continued household deficit spending has become increasingly dependent upon sustained asset price appreciation in a Ponzi-like fashion. Under this dynamic, an explosive household debt-to-income trajectory can be sustained only by an equally explosive asset price appreciation that lifts asset prices far from fundamentals. Central bankers, accordingly, may feel compelled to allow (if not

actively generate or support) serial asset bubbles in order to avoid violating the lower threshold of their inflation target zones.⁶

Even under optimistic assumptions, the trajectory of U.S. household spending growth is likely to slow further. With the end of the housing boom, various major lines of household credit have already slowed dramatically, which suggests that the pace of household deficit spending is likely to reverse course. If, as is typically the fashion, banks become concerned with creditworthiness, as the slowdown unfolds, a credit crunch could sharply curtail household credit growth and force a dramatic reversal of household deficit spending.⁷

A stock-flow coherent macroeconomic model becomes especially useful for tracing the implications of any significant change in the financial balance of the U.S. household sector.⁸ Simply aggregating intertemporal utility-maximizing equations for U.S. households will not do the trick. The Levy Economics Institute of Bard College, building on the work done by Wynne Godley over the past decade, has simulated a number of possible paths for the U.S. economy under different plausible assumptions about sector financial balances.⁹

A stock-flow coherent approach reveals that a deceleration of consumer deficit spending that is not offset by a combined acceleration of capital spending, export growth, or fiscal stimulus will jeopardize U.S. profit and economic growth, as well as the growth of countries dependent upon export-led development strategies. Based on the analysis and evidence presented in this brief, the financial-balance scenarios developed by researchers at the Levy Institute surely deserve serious examination by policymakers, investors, and business leaders. A rendezvous with reality for U.S. household financial imbalances appears to have arrived. It would be best to have an adequate map in hand with which to anticipate and adequately prepare for the possible repercussions.

Notes

1. The definition of the U.S. household financial balance that is used in this analysis is derived from Table F.100 in the Federal Reserve Flow of Funds Accounts of the United States. I take the difference between line 10 (gross saving and net capital transfers) and line 12 (capital expenditures).

Some prefer to use the difference between line 5 (gross personal saving) and line 13 (residential investment) to avoid possible distortions that may arise from relying on government estimates of depreciation of household durable assets. The latter variant yields a first-quarter 2006 financing deficit of \$806 billion. The definition of the household financial balance that I use in the above analysis is the less alarming of the two. I also chose to place the entire value of the statistical discrepancy between the income and expenditure sides of the GDP accounts into the financial-balance calculation for the business sector, rather than split it between the business and household sectors. Since revisions to estimates of profit income frequently swamp those of household sector income, this treatment seems sensible.

2. Most debt-trap equations used by the International Monetary Fund, the European Central Bank, and others to identify the sustainability of deficit spending and debt accumulation derive from E. D. Domar (1944). Ironically, the austerity policies usually recommended by contemporary users of debt-trap equations are at odds with the conclusions that Domar arrived at while he was exploring public finance questions as an economist at the Fed.
3. From a sectoral financial-balance perspective, capital gains can be realized in order to service debt only if the household sector can sell appreciated assets to another sector. Unrealized capital gains can still, however, provide the basis for the collateral needed to borrow more from banks, and these borrowings can in turn be used in a Ponzi-finance fashion to service prior debt obligations. When foreign investor portfolio preferences strongly favor U.S. dollar-denominated assets, or when the U.S. business sector is aggressively repurchasing equities or retiring corporate debt, the realized capital gains loophole from standard debt-trap equations will be available to the U.S. household sector. Notably, both of these conditions have been in place during recent quarters.
4. Keynes (1936) coined this phrase while ruminating on possible long-run outcomes. Keynes's monetary theory of interest rate determination, and his understanding of the monetary policy strategies available to central banks that are not chained to a fixed exchange-rate regime, led him to believe that lower interest rates could be managed over time.

To his credit, during World War II, both the United Kingdom and the United States validated Keynes's view. However, with the surge in household sector debt service obligations as a percent of disposable income (despite historically low nominal interest rates), a renaissance of the rentier, rather than the predicted euthanasia, appears to have played out in subsequent decades.

5. It is not clear that any plausible bond rally would be sufficient to offset home-price weakness, given the relative concentration of bond holdings versus real estate holdings in the household sector. After all, the distribution of wealth in various asset classes also matters when assessing the effects of wealth on spending propensities. Assets that are concentrated primarily in the top 1 percent of the income distribution are likely to generate weaker wealth effects than more widely owned assets (like real estate), if there is a lower marginal propensity to consume at higher income levels.
6. In Epstein (2005), I provide a chapter describing the slippery slope the Fed may have tread in this direction under former chairman Alan Greenspan.
7. Note that none of this requires foreign private investors or foreign central banks to boycott U.S. dollar-denominated assets or otherwise dump existing holdings of U.S. dollar-denominated assets, which is the prevailing scare story circulated in discussions of the resolution of U.S. financial imbalances.
8. For one recent example of what macroeconomics looks like when it is grounded in coherent stock-flow modeling with reasonable behavioral assumptions, see Levy Institute Working Paper no. 421 by C. H. Dos Santos and G. Zezza (2005). Lance Taylor, of New School University, also has a long-standing tradition of working with compact social accounting matrices to develop his structuralist macroeconomics along stock-flow coherent lines.
9. See Papadimitriou et al. (2006) for a recent example of this financial balance-based scenario work.

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