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2 Measuring Household Saving: Recent Experience from the Flow-of-Funds Perspective

John F. Wilson, James L. Freund, Frederick O. Yohn, Jr., and Walther Lederer

2.1 Introduction

The sharp decline in the personal saving rate as measured by the national income and product accounts (NIPAs) during the past several years, to post–World War II lows, has kindled renewed interest in alternative measures of saving and their relative merits. In particular, saving as measured in the capital accounts prepared by the Flow of Funds Section of the Board of Governors of the Federal Reserve System often has been cited as an alternative to the income/expenditure-based NIPA measure. The measurement of personal saving in the flow-of-funds accounts (FFAs) is not, however, as well understood by many users of these statistics as the income-less-expenditure framework employed in the NIPAs.

The numerical difference between the NIPA and the FFA measures is definitionally the imbalance between estimated sources and uses of funds in the household sector of the FFAs (the so-called household discrepancy—saving plus changes in liabilities less changes in assets). That is, personal saving measured via the capital account route starts with NIPA saving as a source of funds to the sector. Credit market

borrowing and other increases in liabilities are added as additional sources of funds, and the total is compared with households' estimated net purchases of physical and financial assets. Resulting imbalances typically show higher increases in assets than can be accounted for by measured sources of funds. This usually gives rise to an estimate of personal saving, definitionally the same as in the NIPAs, that is higher than the NIPA measure. Examining possible sources of the household discrepancy thus is important to understanding why these two sets of social accounts produce different results; that is the main objective of this paper.

The remainder of this introduction reviews recent movements in saving measures and provides some detail on sector discrepancies. Section 2.2 describes the discrepancy system in the FFAs, putting the household discrepancy in the context of other balances in the system. The next six sections explore possible explanations for the household discrepancy. Section 2.3 discusses the role of data revisions, especially in the NIPAs. Section 2.4 discusses the role of asset write-offs in commercial banking, nonfinancial business, and the federal government. Section 2.5 discusses the possibilities for direct measurement of household financial positions. Section 2.6 discusses the effect on household accounts of measurement errors in estimates for nonfinancial business sectors. Section 2.7 examines possible links between international transactions and other sector imbalances. Section 2.8 looks at several issues for which the evidence is less complete: transactions in land and tangible assets, new institutions, brokers and dealers, and the underground economy. Section 2.9 summarizes the findings and draws a few conclusions.

It seems worthwhile to underscore at the outset that exactly what constitutes "personal saving" is a matter of definition and therefore open to discussion (cf. Boskin 1986). The FFAs, indeed, have long presented alternatives to the NIPA measure, and there is a considerable literature about other approaches (see, e.g., Holloway chap. 1, in this vol.; and Hendershott and Peek, chap. 4, in this vol.). The present essay, we hope, avoids any tone of advocacy in this matter; its intent is to explore measurement differences between two sets of accounts strictly on the NIPA definition of personal saving.

2.1.1 Recent Movement in Saving Measures

As may be seen in the upper panel of figure 2.1, the dollar value of personal saving as measured by the FFAs (i.e., from capital accounts) has exceeded that measured by the NIPAs (from the income/expenditure perspective) by a considerable margin in recent years, and this has received occasional attention in the financial press (cf. Arenson 1981 and Berry 1985). The gap also can be presented, as in the lower

Amounts, NIPA Definition

Billions of dollars

Saving Rate

Percent of DPI
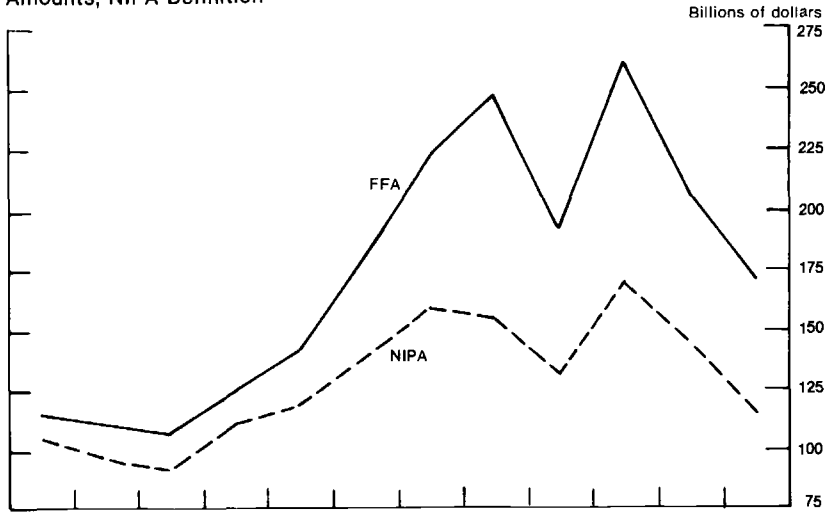
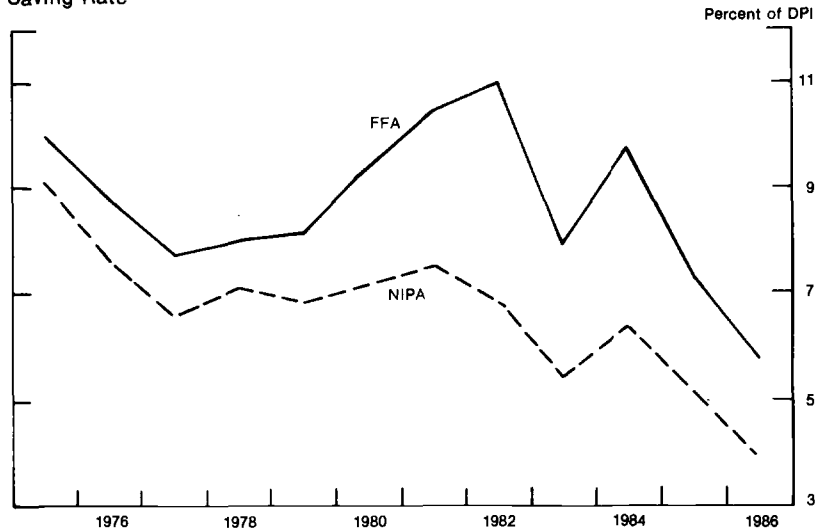**Fig. 2.1**   Personal saving in the NIPAs and FFAs

panel, relative to income in the form of the personal saving rate. Both measures indicate that saving by households has weakened considerably relative to income during the current economic expansion. The NIPA saving rate fell to its lowest level since 1947, averaging just 3.8 percent in 1986. The FFA measure also was quite low in historical

perspective in 1986, at 5.9 percent, having fallen more than 4 percentage points from a recent peak of 10.9 percent reached in 1982.[1]

The low and falling NIPA saving rate, of course, reflects strong estimated expenditures relative to income. However, additional information can be garnered on household behavior from financial asset and liability changes estimated from the capital account perspective, as described above. In the FFAs, the declining saving rate in recent years reflects in part a surge in household borrowing—presumably to finance consumption spending—relative to estimated acquisition of assets. Lines 1–4 of table 2.1 summarize the elements of capital account saving calculated from the FFAs; figure 2.2 shows these same elements relative to income.

The increased pace of asset acquisition relative to sources of funds (i.e., NIPA saving and borrowing) has augmented measured gross saving in the FFAs in recent years. Household purchases of tangible assets have grown noticeably throughout the current economic expansion—both absolutely and relative to income. Likewise, acquisitions of financial assets have picked up smartly. On the average during the 1984–86 period, households acquired about $460 billion net of financial assets—up on the average by $100 billion from three years earlier. In fact, when measured relative to income, households during this interval acquired financial assets at the most rapid pace in postwar history.

Increases in household assets, however, have been accompanied by rapid growth in credit market borrowing and other financial liabilities. As may be seen in line 3 of table 2.1, during the current economic expansion borrowing climbed from a $95.3 billion rate in 1982 (the recession trough) to around $300 billion in both 1985 and 1986. This represented an increase of more than 200 percent, compared with 44 percent growth in purchases of financial and tangible assets over this four-year period. This disparity held down the growth of gross personal saving as measured by the capital accounts, but saving nonetheless rose by more than $100 billion in dollar terms (table 2.1, line 4).

To make personal saving derived from the FFAs conceptually comparable to the NIPA measure, some accounting adjustments are necessary. These are indicated in lines 5–8 of table 2.1. Capital consumption allowances for all types of tangible goods (housing and consumer durables) must be subtracted to obtain saving on a net basis (line 6). Further, since net consumer durable outlays are not treated as saving in the NIPAs, they must be subtracted (line 7). And because some income components in the FFAs are not included in NIPA personal income, these also must be subtracted (line 7). After these adjustments, line 8 shows the FFA estimate of saving on the same conceptual basis as the NIPA measurement, while line 9 shows the direct NIPA estimate.

Table 2.1   **Decomposition of Household Saving from the Flow-of-Funds Perspective (billions of dollars)**

		1980	1981	1982	1983	1984	1985	1986
	1. Capital expenditures[a]	342.7	352.0	355.0	427.8	500.2	535.3	581.4
+	2. Acquisition of financial assets	278.9	327.1	351.0	377.0	469.0	490.2	439.0
−	3. Change in liabilities	130.0	124.2	95.3	198.7	237.2	312.7	297.6
=	4. Gross personal saving, FFAs	491.6	564.9	610.7	606.1	732.0	712.8	722.9
−	5. Capital consumption allowances	243.1	263.7	280.3	294.7	310.4	332.8	355.0
=	6. Net personal saving, FFAs	248.5	301.2	330.3	311.4	421.6	380.0	367.9
−	7. Net consumer durables spending	31.9	37.4	37.2	62.7	92.7	102.9	113.6
−	8. Income adjustments[b]	37.1	42.4	46.3	57.9	69.9	71.4	80.3
=	9. Personal saving, NIPA basis; FFA measurement	179.5	221.4	247.0	190.8	259.0	205.7	174.0
	Memo:							
	10. Personal saving, NIPAs	136.9	159.4	154.0	130.6	168.7	143.3	114.0
	11. FFA saving less NIPA	42.6	62.0	93.0	60.2	90.3	62.4	60.0

[a]Residential construction, expenditures on consumer durable goods, and nonprofit plant and equipment.
[b]Credits from government insurance plus capital gains distributions from mutual funds.
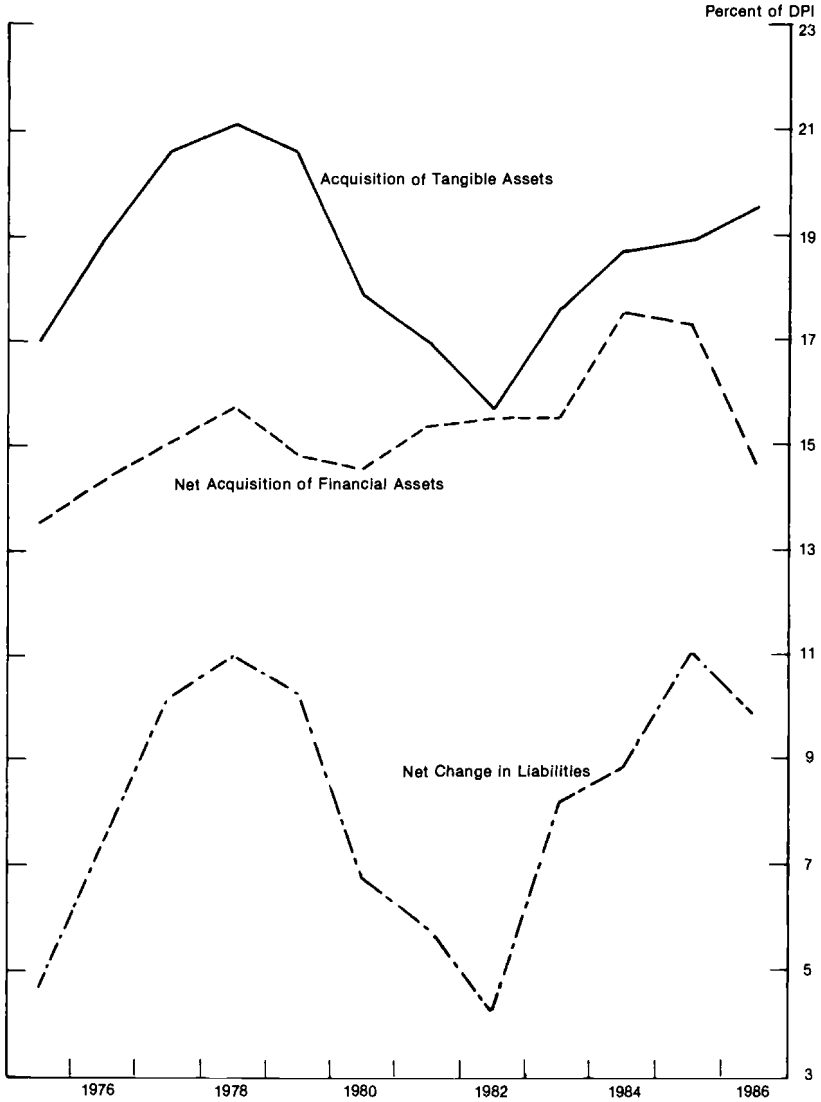
Fig. 2.2   Household capital accounts

For some years the FFA measure of this quantity has been higher than the estimate made by the Commerce Department. This has been especially true since 1980, when the dollar value of the difference about doubled to $40 billion. Commerce analysts, among others, have studied these disparate results (Mann 1987).

2.1.2 Some Detail on Sector Discrepancies

The much-publicized widening of the gap between the NIPA and the FFA measures of personal saving, when stated on the same basis, is entirely equivalent to the much-less-discussed growth of the household sector discrepancy calculated in the FFAs. The (negative) $68 billion average annual rate of this discrepancy over the 1980–85 period represents a four-fold increase from its average during the last half of the 1970s (table 2.2).

The marked negative swing in the household discrepancy has been accompanied by a substantial positive rise in the discrepancy of the nonfinancial corporate sector. Over the past five years, this discrepancy averaged almost $31 billion—some three-and-a-half times its average during the preceding five years. The coincident swelling of these two imbalances, together with their opposite arithmetic signs, has led some observers to attribute much of the growing personal saving gap to a sustained intersectoral misallocation of financial assets, and possibly liabilities, in the FFAs. This hypothesis is, of course, strengthened by the fact—discussed in more detail below—that some asset and liability items for the household sector are, by necessity, measured as residuals between system totals and amounts attributed to other sectors, so that mismeasurement of financial items for other sectors can result in offsetting errors in the household financial accounts.

Looking at the dollar discrepancy figures in the context of the overall scale of the U.S. economy, however, gives a somewhat different impression. Measuring in relation to trend gross national product (GNP) confirms the pronounced expansion of the household sector's discrepancy since 1980 (fig. 2.3, top panel), but on this "deflated basis" the nonfinancial corporate discrepancy has shown only very modest growth on balance during the past fifteen years. Moreover, the pronounced year-to-year fluctuations in the household discrepancy since 1980 have been very poorly correlated with movements in the corporate discrepancy, despite somewhat closer correlation during the 1970s.

As close inspection of table 2.2 makes clear, nominal dollar growth in the nonfinancial corporate discrepancy, even if entirely allocable to movement in the household discrepancy, accounts for less than half the $50 billion rise in the latter. Moreover, the growth of other nonfinancial sectors' discrepancies, although of the correct sign, together amounts to less than 20 percent of the expansion in the household discrepancy. Statistical discrepancies in financial sectors in the FFAs, in contrast, have grown only modestly during the past fifteen years, in large part owing to the more accurate and complete financial data available for most financial entities.

Table 2.2   **Sector Discrepancies: Historical Movements (annual averages in billions of dollars)**

	Household	Nonfinancial Corporate	Foreign	Other Nonfinancial	Financial Sectors	Total System
1970–74	− 1.2	5.3	− 4.2	3.3	2.7	5.8
1975–79	− 15.1	8.4	6.0	7.1	− .6	5.9
1980–85	− 68.4	30.7	17.1	12.4	− 1.9	− 10.1
Memo:						
1980–85						
less 1975–79	− 53.3	22.3	11.1	5.3	− 1.3	− 15.9
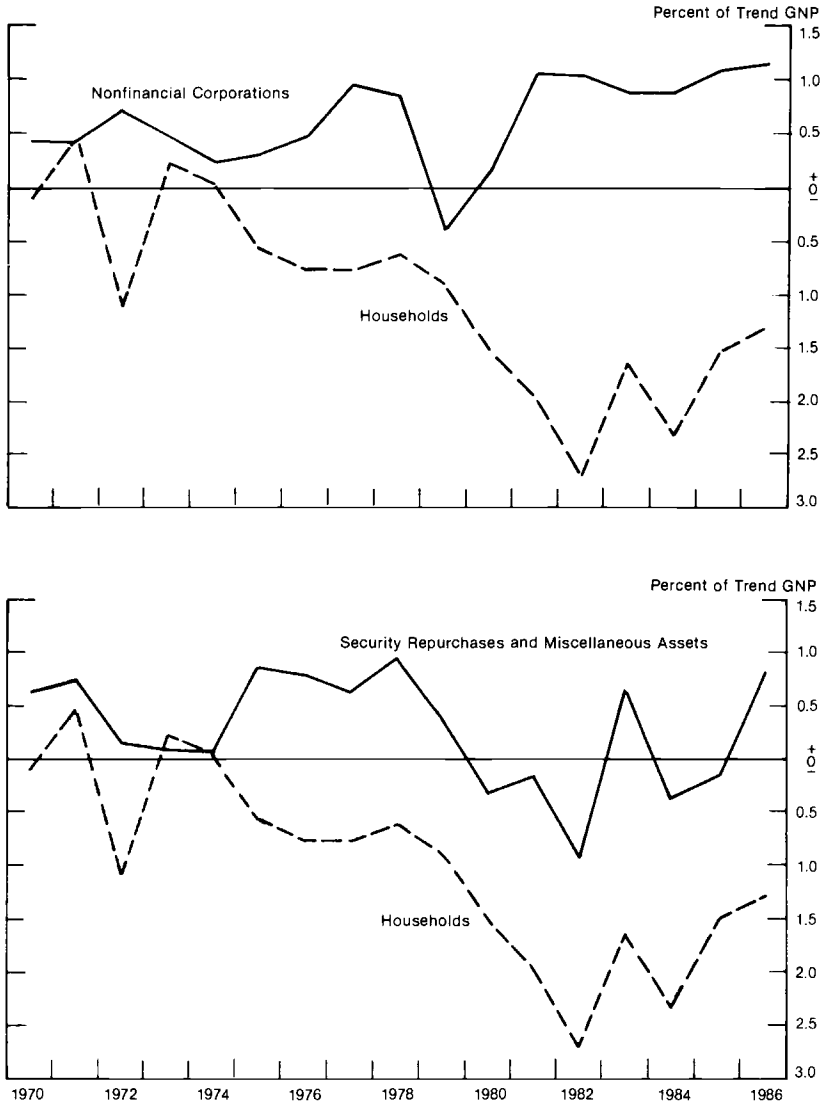
Fig. 2.3   Sector discrepancies relative to GNP

The total system discrepancy in the FFAs also has grown somewhat in absolute terms over the past several years. From a positive average in the 1970s, this discrepancy—which is the sum of all transactions discrepancies, including the NIPA discrepancy—declined rapidly in the 1980s to a negative $10 billion average level. As seen in table 2.3, the $16 billion change in the system discrepancy amounts to a slightly

Table 2.3   **Transaction Discrepancies (annual averages in billions of dollars)**

	Treasury Currency	Interbank Claims	Security Repos	Demand Deposit Float	Trade Credit	Taxes Payable	Miscellaneous Assets	National Income	Total System
1970–74	− .1	− .8	2.4	1.4	− .8	− .0	1.1	2.5	5.8
1975–79	− .1	− 2.5	7.7	.9	− 6.1	.2	6.7	− .9	5.9
1980–85	− .2	− .3	− 4.8	4.0	− 3.9	− .5	− 2.8	− 1.5	− 10.1
Memo:									
1980–85 less 1975–79	.1	2.2	− 12.5	3.1	2.2	− .7	− 9.5	− .6	− 15.9

greater share of the corresponding change in the household discrepancy than does the nonfinancial corporate discrepancy.

On balance, changes in the transaction discrepancies for security repurchase agreements (RPs) and miscellaneous assets have accounted for the bulk of the marked growth in the total system discrepancy (table 2.3). From positive average positions in the 1970s, each of these two discrepancies has swung to sharply negative averages in the 1980s. While their combined (negative) $22 billion change from one period average to the next was partially offset by smaller positive changes in net interbank, trade credit discrepancies and floats, the total system discrepancy underwent a large negative change.

As shown in table 2.4, year-to-year fluctuations in the dollar value of the RP and miscellaneous asset discrepancies have been quite closely correlated with the pronounced movements in the household sector discrepancy; when measured relative to trend GNP (fig. 2.3, bottom panel) this correlation also is visible. Between 1978 and 1981, the RP and miscellaneous assets discrepancies fell, on balance, almost $59 billion, or about three-fourths of the corresponding widening in the household sector discrepancy. As is evident, sectoral and transaction discrepancies are interconnected in the FFAs, so the following section looks at this subject in greater detail as background to how financial measures throughout the accounts may affect household saving measurement.

2.2   Discrepancy System in FFAs

Economic measurements—financial and nonfinancial—are generally imprecise and subject to error from many sources, including conflicting and inconsistent data, sampling and estimation problems, timing differences, and outright misreporting of key information. Thus both the NIPA and the FFA statistics present estimates of key aggregates, such as saving, that are at best approximations of reality, even when definitional differences are eliminated.

The only statistical imbalance presented explicitly in the NIPAs is that between estimates of gross investment and saving (table 5.1 in *Survey of Current Business*), which is carried into the FFAs as the "nonfinancial discrepancy." As a difference between gross sources and uses of funds, this discrepancy is needed in the financial accounts, but in addition there are many others derived from the financial calculations. For illustration, table 2.4, which is published as part of the quarterly FFAs, shows detailed sectoral and transactions imbalances in various parts of the system.

Discrepancies arise (and are acknowledged) in numerous places in the FFA system because of the diffuse and incomplete data sources

Table 2.4   **Discrepancies—Summary for Sectors and Transactions: Annual Flows, 1975–86 (billions of dollars)**

		Sector Discrepancies											
		1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
1	Total, all sectors	11.9	4.9	− 1.5	18.5	− 4.2	− 27.4	− .7	− 18.9	− 13.2	− 15.3	15.2	28.4
2	Households	− 9.6	− 14.2	− 15.6	− 13.7	− 22.2	− 42.6	− 62.0	− 93.0	− 60.2	− 90.3	− 62.5	− 55.5
3	Nonfinancial corporate business	5.0	8.7	19.3	19.2	− 10.1	4.4	33.3	35.6	32.2	34.3	44.6	49.6
4	State and local governments	.6	.7	− 4.8	5.9	10.9	8.9	4.7	2.9	5.4	4.6	5.1	1.8
5	U.S. government	2.6	4.3	5.6	4.0	5.7	− .6	10.2	3.2	10.2	11.8	8.2	6.1
6	Foreign	2.4	5.8	− 7.8	7.6	22.2	17.1	15.5	29.2	4.7	20.0	16.3	20.2
7	Financial sectors	11.0	− .6	1.8	− 4.5	− 10.7	− 14.6	− 2.4	3.2	− 5.4	4.3	3.5	6.2
8	Sponsored credit agencies	*	*	*	.1	.2	.5	.7	.3	.1	.1	1.8	.3
9	Monetary authority	−	−	−	−	−	−	−	−	−	−	−	−
10	Commercial banks	8.6	3.8	.1	− 2.8	− 5.0	− 4.1	7.4	6.3	6.3	2.7	− 11.9	− 11.0
11	Private nonbank finance	2.4	− 4.3	1.7	− 1.8	− 5.9	− 11.0	− 10.4	− 3.4	− 11.7	1.5	13.5	16.9
12	Savings and loan associations	*	− .2	− .5	− .2	− .3	.8	− .3	− .8	1.8	1.9	2.5	.9
13	Mutual savings banks	− .1	− .2	− .3	*	*	− .2	− .4	− 1.2	− 1.7	− .4	− 1.7	− 4.6
14	Life insurance	− .3	.5	1.3	1.5	− .5	− .1	1.1	− 1.3	− .7	1.0	.4	.8
15	Other insurance	− .9	− 2.9	− 1.6	− .8	1.1	1.9	.7	*	− 1.8	1.5	− .5	*
16	Finance, not elsewhere classified	3.6	− 1.6	2.7	− 2.3	− 6.3	− 13.3	− 11.6	− .2	− 9.3	− 2.6	12.8	19.8

		Transaction Discrepancies											
1	Total, all types	11.9	4.7	−1.5	18.5	−4.2	−27.4	−.7	−18.9	−13.2	−15.3	15.2	28.4
2	Treasury currency	−.1	−.1	−.3	*	−.2	−.2	−.2	−.2	−.2	−.1	−.2	*
3	Interbank claims	−3.2	−.9	−7.1	−.5	−1.0	−3.6	−.5	−1.0	−11.6	7.4	7.7	2.3
4	Security RPs	2.6	8.5	6.4	15.9	4.8	10.0	−7.5	−15.9	.4	−19.4	3.3	11.0
	Demand deposit mail floats:												
5	U.S. government	.1	−.8	1.5	*	.3	−.6	−1.1	−.4	2.0	1.1	1.2	−.6
6	Other	1.6	.6	1.8	−.5	−.1	2.3	4.1	3.2	.1	8.1	3.8	1.6
7	Trade credit	2.8	−5.0	−8.9	−4.8	−14.4	−10.5	6.9	14.0	−20.3	−13.8	.6	−4.1
8	Profit taxes payable	−1.0	.2	−1.0	1.5	1.5	.6	.7	−2.5	−1.4	−4.5	3.9	−2.6
9	Miscellaneous	11.6	5.9	6.1	4.9	4.9	−19.4	2.1	−16.2	23.2	3.9	−10.6	23.9
10	Nonfinancial	−2.5	−3.6	*	1.9	−.2	−6.1	−5.2	.1	−5.3	1.9	5.6	−3.1
	Nonfinancial components:												
11	NIPA discrepancy	2.5	3.6	*	−1.9	.2	6.1	5.2	−.1	5.3	−1.9	−5.6	3.1
12	Private wage accruals less disbursements	−	−	−	−	−	−	−	−	−	−	−	−

Note: * = less than $50 million; − = 0.

that contribute to sector and transactions estimates. In the typical case for economic sectors, the NIPAs provide estimates of nonfinancial sources (saving) and uses (capital investment) of funds, but estimates of financial sources and uses must be pieced together from a variety of other data sources that were not designed to produce a coherent picture of financing activity and in which enumeration of transactions types is highly inconsistent. FFA discrepancies thus make explicit provision for the ensuing uncertainties. For a few sectors for which complete balance sheets are available and for which these balance sheets constitute the sole source of sectoral data, there is no discrepancy. An example is the Federal Reserve System, shown as "monetary authority" in the accounts. For other, mostly financial, entities such as thrift institutions, estimates are largely, but not completely, taken from sectoral balance sheets, so that small discrepancies may still arise in reconciliations of asset/liability flows with control totals. Households and nonfinancial corporations typically show substantial discrepancies. Since sectoral discrepancies in the system are the imbalance between estimated sources of funds and their uses, these results suggest that the accounts typically produce too much corporate saving/borrowing relative to capital expenditures and financial uses of funds, whereas for households the opposite is the case.

Transactions discrepancies, on the other hand, display uncertainty about the size of several kinds of financial markets. Typically, it is not possible to reconcile information drawn from one set of sources about the net issuance of a particular type of financial liability with that from others on the acquisition of the corresponding claims. Often there is better information on the issuance of claims than on their purchase. However, not all forms of transactions show discrepancies in the accounts (cf. table 2.4)). For instance, estimated net issuance of corporate bonds and equities in the system are "exhausted" in each period by explicit allocations of the total to various sectors. That is, given an estimate of the net issuance of bonds as liabilities, net purchase estimates for all but one holding sectors are derived from one or more data sources, and the estimate for the last sector is made as a residual. In such a case, the accounts will not show an explicit "bonds" discrepancy, but that should not be construed as a lack of uncertainty, either about the net amount of bond issuance or its distribution in holdings. The FFAs simply "assign" residual uncertainty to changes in one sector's asset holdings, frequently to households. This assignment reflects an analytic judgment about the kinds of markets in which each economic sector tends to operate, and thus is not a simple arithmetic convenience.

Other transaction accounts make provision for an explicit discrepancy, usually when there is a statistical basis for measuring both asset

and liability changes or when the residual cannot be allocated with confidence to one of the named holding sectors. A good example of this, mentioned earlier, is security repurchase transactions. Liabilities of this form originate in a limited range of financial institutions, and the total therefore can be measured fairly well. The range of asset holders is broader and cannot be measured at all well from existing sources, except for commercial banks. Even for other financial institutions, RP assets often are merged together in regulatory reports with some "cash assets" composite, where they cannot be disentangled from deposits or other short-term assets. In such a case, rather than assume that residual RP holdings are by households or another sector in the system, the FFAs make provision for an explicit imbalance, giving rise to a transactions discrepancy.

In the purely arithmetic sense, obviously, either of these two routes could be followed for any kind of transaction; the decision about which should be used has been based on familiarity with individual data sources, analysis, and judgment. Again, as an arithmetic matter, most transactions discrepancies could be mechanically eliminated from the system, or more could be added. Since the system totals of transactions and sector discrepancies are the same, eliminating the former perforce would reduce the latter, but this would not really solve the underlying problems of imprecision in data sources. The resulting uncertainties merely would be buried in ways that would obscure the amounts by which both sectoral and transactions estimates seem questionable.

In a few cases, balance sheet information from several sectors conflicts, leading to a certain "overdetermination" that occasions a transaction discrepancy. An example is the two versions of federal government cash balances at depository institutions. Typically, the federal data (e.g., *Monthly Treasury Statement*) show different balances than banking source data, so the accounts record a transactions "float."

It is well known that the household sector of the accounts is the principal "residual" in the overall set of calculations, in the sense that households do not report directly any element of their assets and liabilities. All information on this sector is derived from statements of other transactors. The Flow of Funds Section staff has relatively more control over household asset than liability estimates because the bulk of the data on saving and other sources of funds are generated elsewhere, inside or outside the Federal Reserve.[2] If, for whatever reason, total liability or asset changes of other sectors are misestimated, household balance sheets become the "dumping ground" for the errors. The typically negative numerical values of the household discrepancy are at least consistent with the notion of persistent underestimates of household saving/borrowing, underestimates of asset acquisitions by other

sectors (e.g., corporations), or both. Errors in any or all of the non-financial and financial figures contribute equally to this discrepancy, and, in the highly interdependent context of the accounts, it is hardly ever clear which of these components may be the underlying source of a problem.

The fact that the FFAs "assign" certain residual asset holdings to households largely is a matter of arithmetic convenience, but the calculation process should not be interpreted too mechanically. The problem, again, is that, even if there were exact information on the issuance of most financial claims, information on purchases by other sectors than households often is imprecise. Sometimes the problem is more severe. With corporate bonds, for instance, there remains some slack both in the estimates of total issuance and in those of purchases by sectors other than households.[3] Data sources simply are not coherent enough to establish either in such a way that changes in household assets are cleanly derivable from a known total and complete data on all other purchasers.

Against this background, it may be tempting to conclude that the negative household discrepancy results from systematic overstatement of certain asset purchases, but, even if this were the case, it would be difficult to establish where the problems originate in the capital account estimates.[4] In addition, errors can be introduced through problems with the NIPAs and, perhaps, with the balance of payments data, which also are used in the accounts. (We will take up this topic shortly.)

2.2.1   The Household Discrepancy in Relation to System Imbalances

System totals of sectoral and transactions discrepancies are equal in the FFAs, but that total is not the same as the nonfinancial discrepancy from the NIPA accounts: calculation of the FFAs introduces into the national accounts an additional imbalance that is spread across various sectors and transactions forms. From a capital account perspective, this means that a national saving total derived from the FFAs would be slightly different from the NIPA income/expenditure total. The difference between the sector/transactions total and (the negative of) the nonfinancial discrepancy is the sum of the transactions discrepancies that have been defined in the accounts.[5]

It is implied, therefore, that, if the accounts were restructured to eliminate transactions discrepancies completely (toward the form in which corporate and government bonds are handled, e.g.), differences between the "total" FFA discrepancy and the NIPA residual would be wiped out, the balance being absorbed somewhere in the sectoral discrepancies. Clearly, such a solution is more akin to burying the problem than to solving it.

The question thus arises, How sensitive is the household discrepancy to adjustments to the accounts as they are prepared each quarter? Alternatively, as sector and transactions discrepancies are adjusted, what kinds of changes are offset in other sectors or transactions without affecting the system total, and what kinds simply contribute to changes in the system total without effects elsewhere?

The answer to these questions will be put with reference to the household sector as a participant in certain asset/liability markets and as a "residual" purchaser of most assets. The effect in each case depends on the array of named assets and liabilities in which sectors are assumed to transact.[6] Many changes in estimates of major forms of sectoral sources and uses of funds that alter discrepancies in those sectors are simply offset in others, most frequently households, without changing imbalances in the system total. Within the categories of transactions discrepancies, this one-for-one substitutability does not exist because forms of transactions do not "overlap" with each other as do elements of sectoral balance sheets. Given a liability total, however, the essence of a transactions discrepancy is some difference between identified holders of that instrument and the total itself. Thus, a change to transactions accounts that moves part or all of that difference into (or out of) a named holder's accounts likewise will produce a sectoral offset that will not affect the system total.

While many kinds of changes to sectoral estimates will affect the household discrepancy, only two transactions types (cf. table 2.4) will potentially have a direct effect on that quantity: demand deposits mail float and trade credit. The former occurs because, as noted, floats represent timing differences between deposit records of different sectors; as there are bank records on deposits (albeit without good distinctions between business and households) but none directly from households, some provision is needed for this item. Float is an unallocated asset, so raising/lowering it serves to lower/raise estimates of household deposits and thus changes the sectoral imbalance. Trade credit can have a similar mechanical effect because the nonprofit subsector of households has some trade debt (although true households are not holders of trade credit). Thus, there is a potential trade-off between this discrepancy and that in households. Both these items are, however, minor influences. Most of the scope for "adjusting" the household discrepancy and apparent differences with the NIPA saving estimates comes in through efforts to balance out sectoral patterns of discrepancies.

Two points arising from this discussion may perhaps be underscored. First, while household sector financial aggregates are often described as "residuals," this is true only in a narrow arithmetic perspective. Account calculation involves asset/liability estimates in many places;

published results are best conceived as simultaneous solutions for all sectors/transactions in the system taken together. This process involves reference to past history, knowledge of strengths and weaknesses in available data sources, and a certain amount of judgment applied to data that are extraordinarily diffuse and not at all coordinated with each other. Second, sources and uses of funds estimates for most non-financial sectors are largely independent of each other, giving rise to the potential for household and other differences with NIPA saving statistics. Both financial and nonfinancial data are potential digging ground in the effort to reduce sectoral discrepancies. The balance of this paper will provide more detail about possible areas of weakness in both the nonfinancial and the financial calculations that, if overcome, might bring the figures somewhat closer together.

2.3   The Role of Data Revisions

The comparison given in section 2.1 of recent household discrep-ancies with those of earlier years has overlooked the probably signif-icant effect of future data revisions on current estimates of near-term discrepancies. For example, initial estimates of household-sector dis-crepancies for the 1975–79 period (table 2.2) were revised down in absolute magnitude by about 25 percent on the average during the four years following the first publication of annual totals.

Revisions to the household—or, for that matter, another sector's—discrepancy reflect the sum of revisions to both income and balance sheet data for the sector. In analyzing such revisions, it is useful to differentiate between revisions to NIPA data incorporated in the FFAs and revisions to financial data. Since federal income tax return data—a principal source of benchmark data for the NIPAs—are available only with a three-year lag, a useful perspective on data revisions is provided by the total or cumulative revision to a data estimate that occurs in the four years following the initial estimate.[7]

As shown in the first column of table 2.5, the $13.5 billion annual average upward revision to the NIPA personal saving estimates for the 1975–79 interval—amounting to about 50 percent of the gap between the two personal saving measures—was due almost entirely to upward revisions to disposable personal income (DPI) estimates for this period. These income revisions, which amount to about 1 percent of the period-average (DPI), reflect unemployment insurance data introduced one year after the original estimate as well as benchmark *Statistics of In-come* data introduced three years after the initial estimate. This revision history suggests greater near-term accuracy of the NIPA product-expenditure estimates than in the income estimates.

Relative to the substantial upward revision in the NIPA income state-ment–based personal saving estimates for the 1975–79 period, balance

Table 2.5   Revisions to Household Sector's Sources and Uses of Funds (annual averages in billions of dollars)ᵃ

	1975–79			1980–82		
	4-Year	Bench-mark	Total	4-Year	Bench-mark	Total
Disposable personal income	13.4	67.2	80.6	8.0	85.2	93.2
Less personal outlays	−.2	49.4	49.2	−1.0	63.1	62.1
Equals NIPA personal saving	13.6	17.8	31.4	9.0	22.2	31.1
Net capital expenditures	8.8	12.9	21.7	3.3	11.0	14.3
Plus net financial investment	.0	−2.2	−2.2	. . .	. . .	−3.1
Equals FFA personal saving	5.5	8.3	13.8	. . .	. . .	12.6
Household-sector discrepancyᵇ	8.1	9.5	17.6	14.2	4.3	18.5
Average revisions as percent of average initial estimates:						
Disposable personal income	1.0	5.1	6.1	.4	4.2	4.6
Personal outlays	0	3.9	3.9	−.1	3.3	3.3
NIPA personal savings	18.8	24.5	43.3	7.6	18.7	26.1
Household-sector discrepancy	24.7	29.0	53.8	16.8	5.1	21.9
Personal saving rateᶜ	1.0	1.3	2.4	.4	1.1	1.5

ᵃAverage of total revision to annual estimate between initial estimate and estimate four years later. The "four-year" effect reflects new data sources; the benchmark effect reflects definitional and other changes made during 1985.

ᵇHousehold discrepancy equals income statement–based estimate of personal saving less balance sheet–based estimate.

ᶜRevision to personal saving as a percentage of initial disposable personal income estimates.

sheet–based personal saving estimates from the FFAs were revised by lesser amounts. As shown in the first column of table 2.5, upward revisions to NIPA data on net physical capital acquisitions by households—averaging over $5 billion—caused an increase in the balance sheet–based measure of personal saving, while net financial investment on the average was unchanged. On balance, the NIPA data revisions alone resulted in an almost 25 percent narrowing of the gap between the two alternative saving estimates for this period.[8]

Abstracting from the steady-state differences between the two estimates, the appreciably smaller revision to the FFA-derived personal saving estimates for the 1975–79 period has suggested to some observers that the indirect or balance sheet–based approach provides more accurate near-term estimates of movements in the personal saving rate.[9] Unfortunately, the financial press often has confused this point with the more difficult to interpret issue of the steady-state differences in the levels of the two estimates. Moreover, differences in accounting for consumer durables between NIPA personal saving and the most visible FFA personal saving figure—which, by including net consumer

durables, is different from the NIPA measure—have further confused discussions in the financial press (see Murray 1983).

The 1980–82 period, as discussed above, witnessed a rapid expansion of the household sector's discrepancy. This three-year period, the most recent for which *Statistics of Income* benchmark data are now fully incorporated in the NIPAs, also is characterized by a very different data revision experience. However, comparison of this recent period with the 1975–79 four-year revision experience is complicated by the far-reaching benchmark revision to the NIPAs introduced in late 1985 (see Parker and Fox 1985). The effect of these revisions—which included important definitional changes, particularly the capitalization of expenditures on repairs and improvements to owner-occupied housing—are shown for the 1975–79 period in the second column of table 2.5. The upward revisions to both disposable personal income and personal outlays were quite sizable, amounting to almost 5 percent of the respective earlier estimates. On balance, NIPA personal saving also was revised up considerably, somewhat exceeding the data source-related revision.

While these definitional benchmark revisions considerably altered the level of NIPA personal saving, they had only a moderate effect on the gap between the NIPA and the FFA saving measures since the upward revision to the NIPA's net capital expenditure data also is incorporated in the balance sheet-based estimates of personal saving. On balance, the benchmark revisions, together with relatively minor further revisions to net financial investment estimates for households, resulted in an average further reduction in the saving gap of about $8 billion, only slightly more than the effect of the four-year data revision.

For the 1980–82 period, therefore, benchmark definitional revisions are overlaid on revisions attributable solely to incorporation of additional *Statistics of Income* data. This confluence prevents a direct comparison between the observed, or total, four-year revisions for this recent period—shown in column 6 of table 2.5—with the four-year revision experience for the 1975–79 period shown in column 1. The benchmark revision effect for this recent period is readily computed, however, enabling the approximate decomposition of the two revision effects shown in columns 4 and 5.

As in the earlier period, benchmark-related revisions to disposable income for 1980–82 are quite large relative to the corresponding initial estimates. However, the additional data-related revisions inferred for this three-year period are considerably smaller than those for the 1975–79 period, when these revisions averaged about 1 percent of DPI.

As in the 1975–79 period, new data-related revisions to personal outlays were quite small on the average over 1980–82, amounting to about one-tenth of 1 percent of the initial estimate. On balance, these

revisions to NIPA personal income and outlays resulted in upward revisions to the income expenditure-based measure of personal saving that averaged less than 8 percent of initial estimates. These moderate data-related revisions to NIPA personal saving data for 1980–82 contrast with the pronounced upward revision experience of the 1975–79 period.

Benchmark-related revisions to personal income and outlays for 1980–82, as estimated in column 5, produced a large upward revision to personal saving estimates, amounting to almost 20 percent of initial saving estimates. Although the overall average revision to NIPA personal saving estimates for 1980–82 in nominal dollars is only slightly smaller than the corresponding 1975–79 figure, as a percent of initial personal saving estimates the recent average revision is less than two-thirds the earlier total revision.

The effect of the benchmark revision also carries over to NIPA net capital expenditure estimates for the 1980–82 period. The effect of this revision on the balance sheet–based measure of personal saving is only partially offset by a modest downward revision to net financial investment estimates. On balance, the average dollar gap between the two personal saving estimates for 1980–82 was narrowed by only about as much as for the 1975–79 period, despite the much larger initial average discrepancy. Indeed, as a percentage of initial discrepancy estimates, the 1980–82 average revision was only about half the 1975–79 average.

In summary, comparison of recent revision experience with the second half of the 1970s suggests an appreciable downward bias to the NIPA's pre-1985 benchmark estimates of both disposable income and personal saving. Based on this earlier experience, introduction of *Statistics of Income* benchmarks and unemployment insurance data for the 1983–86 period might be expected to raise the current very low personal saving rate estimates by up to 1 percentage point on the average while at the same time lowering the household sector's discrepancy in the FFAs by 20–50 percent. It should be clear, in any case, that a substantial fraction of the household discrepancy can in principle be associated with provisional national accounts data and that in some circumstances revisions to nonfinancial elements of the accounts can markedly change the apparent differences between saving estimates.

2.4   The Role of Asset Write-offs

The possible role of asset write-offs in generating sectoral imbalances in the FFAs is a subject that has received little attention. In this area, certain problems may exist in both the NIPA and the FFA statistics. As this section will show, reliable quantifications of the extent to which

write-offs affect financial and nonfinancial statistics are not yet pos-
sible, but certain directions are indicated, and the problem suggests
that further exploration is warranted.

In social accounting, a transfer of purchasing power from one eco-
nomic sector to another through lending (e.g., loans by banks to busi-
ness or households) is considered a capital account transaction, not an
element of income to the recipient. If such loans go bad and are written
off by the lending sector, however, income of the borrowers is raised,
in the sense of defaulter's gain. Gross additions to bad debt reserves
are charged against operating income for tax purposes by lenders, but
for national accounts purposes the actual or estimated amounts of write-
offs are used to estimate lenders' income. Likewise, tax rules require
defaulters, except in cases of bankruptcy, to add the amount of their
defaults to their taxable income. The initial lending-borrowing relation
is converted into a current transfer in which the capital account asset-
liability balance is converted into offsetting income flows.

The possibility that net asset write-offs play some role in the FFA
household discrepancy is suggested both by the negative sign of the
discrepancy and by its rising amount since evidence from lending sec-
tors shows increasing amounts of write-offs in the past few years.
Because of the way data are assimilated into the FFAs, the source of
a problem, if any, would appear to reside in the income/saving relations
estimated in the NIPAs.

2.4.1 Commercial Banking

Taking banking as an example, the FFAs employ asset data from
bank reports as their primary source of information about claims on
sectors of the economy. Borrowing flows are derived by first-differencing
claims reported on the loan schedule of successive quarterly Reports
of Condition ("call" reports). Assets reported on this schedule are
gross of bad debt provisions, but they are net of actual write-offs, so
the calculated flows also are net of write-downs. When net write-offs
(gross write-offs less recoveries) are positive, as is usually the case,
such a procedure somewhat understates the true flow of capital to
borrowers. However, if write-off amounts are reported in defaulters'
tax statements or attributed by BEA staff using recent regulatory re-
ports, then these amounts should also be reflected in defaulters' in-
come/saving balances. All sources of funds to borrowers that are
understated in FFAs because levels data were relied on to derive flows
should be compensated by the extra income in the NIPAs for the de-
faulting sectors from the current account transfers represented by the
defaults themselves.[10]

Experience of the past few years indicates that net write-offs of many
kinds of loan balances have been rising fairly rapidly. Table 2.6 (drawn
from call reports) shows the annual experience of domestically char-

Table 2.6   **Net Write-offs at Domestically Chartered Commerical Banks**
                        (billions of dollars)

Loan Type	1982[a]	1983[a]	1984	1985	1986
Real estate	.2	.3	.9	1.2	2.1
Domestic depository institutions	.04	.1	−.01	.03	.09
Agricultural loans	N.A.	N.A.	.9	1.4	1.2
Domestic commercial and industrial loans	2.1	2.5	5.7	5.4	6.4
Foreign loans	.5	.9	1.3	1.9	1.8
Individuals	1.1	1.0	1.7	3.1	4.6
Other	N.A.	N.A.	.3	.2	.1
Total	6.6	8.4	10.8	13.2	16.2

Source: Reports of Condition for domestically chartered commercial banks.
[a]Loan-type detail is only for banks with assets greater than $500 million. Detail not available for smaller banks.
N.A. = not available.

tered commercial banks from 1982 through 1986. The amounts are now sizable—over $16 billion in 1986, almost twice the 1983 value. The massive reserve provisions taken by major banks in mid-1987 likely portend further large write-offs. Discussions with BEA staff indicate that, in principle, write-offs by banking organizations are captured in the income/saving statistics, although there seems a possibility that, owing to the lag in financial corporate tax return data or extrapolation of write-off data from earlier experience, the acceleration of recent years may have been missed. This would lead to some understatement of sectoral income and saving. Because of lack of sectoral detail in banks' write-off figures, some uncertainty always attaches to allocation of these defaulters' gains. Write-downs of loans to individuals (consumer loans) clearly are benefits to households, but the sectoral allocation of commercial and industrial loans and real estate loans is not clear. Some part of both go to unincorporated business—ownership of which is attributed to households in the FFAs—but the amounts cannot be determined from the banking data.

Loan problems at U.S. branches and agencies of foreign banks pose an even more intractable problem because the basic report filed by these entities with federal regulators does not include write-off information from which estimates can be derived. At mid-year 1986, "foreign-related" banking in the FFAs had assets of approximately one-sixth those of domestically chartered banks. If the bad debt experience of foreign banks were comparable to that of domestically chartered banks, one might expect annual write-downs in the vicinity of $2.5 billion currently.

2.4.2   Nonfinancial Business

Write-offs of household debts to nonfinancial business is another potential problem area. At mid-1986, consumer credit extended by

business to households totaled around $81 billion, about 12 percent of the total of installment plus noninstallment credit owed by households. Fragmentary evidence indicates that write-offs by such businesses, like those by financial institutions, have risen noticeably in the past few years, to around the 3–4 percent range annually, relative to outstanding assets. Again, BEA estimates take account of these (net) charge-offs in putting together the income/saving statistics, but the Internal Revenue Service (IRS)–based statistics on which estimates depend are usually three years old. It is possible that extrapolations of these data fail to capture all the apparent discrepancy.[11]

2.4.3 Federal Government

Finally, charge-offs of loans made or purchased by the U.S. government appear to be a factor contributing to discrepancies in the FFAs, in households and elsewhere. The federal government (excluding sponsored agencies) had a loan portfolio of almost $260 billion, about 12 percent of credit extended by all commercial banking, at the end of 1986. About one-fifth of this was direct mortgage holdings, with the balance in loans to domestic sectors and the rest of the world. Most of this portfolio originated with loans extended directly by the government; the remainder was largely acquired under numerous guarantee programs, sometimes to indemnify private sector institutions when loans they had issued became delinquent. As with banking data, the FFAs use first-differences in government loan-balance data to generate net flows to other sectors of the economy, and the same problems may ensue.

In federal budget accounting, the government's loan extensions or purchases are treated as outlays that, naturally, require financing and contribute to common measures of the federal deficit. This differs from treatment in the NIPAs, under which financial transactions are excluded from the deficit measure. Loan repayments are treated in the budget as negative expenditures that reduce financing needs, while charge-offs of existing loan balances contribute positively to the government's borrowing needs for any given level of assets kept on the books. Repayments and asset write-offs, therefore, reconcile "expenditures" for acquisitions of financial assets to changes in outstandings. Annual Office of Management and Budget budget materials afford at least some insight into the government's bad debt experience on a fiscal year basis.

Table 2.7 illustrates the substantial increase in government write-downs over the past several fiscal years. In fiscal year 1986 alone, the amount of such terminations rose by more than 50 percent, to more than $10 billion. As indicated by the table, available data on federal write-offs are organized by budget function, so exact sectoral allocations are uncertain. The budget data suggest, however, that a substan-

Table 2.7   **Federal Government Loan Write-offs (fiscal years, billions of dollars)**

Budget Category	1980	1981	1982	1983	1984	1985	1986
Student loans	. . .	. . .	.3	.7	.8	1.0	1.5
Veterans Administration	. . .	. . .	.7	1.1	1.1	1.4	1.5
Federal Housing Administration	.1	. . .	1.0	2.1	1.9	2.3	3.0
Farmers Home Administration	. . .	. . .	. . .	. . .	. . .	.1	.3
Commodity Credit Corporation	. . .	. . .	. . .	. . .	. . .	.2	.3
Small Business Administration	.2	. . .	1.2	1.2	1.0	1.0	1.0
Economic Development Revolving Fund	. . .	. . .	. . .	. . .	. . .	.1	.0
Maritime Administration	. . .	. . .	. . .	. . .	. . .	.3	1.2
Exim Bank	. . .	. . .	. . .	. . .	.5	.3	. . .
Other foreign loans[a]	. . .	. . .	.2	.4	.9	. . .	. . .
Other	.5	. . .	.2	.6	1.4[b]	.2	. . .
Total[c]	.9	. . .	3.7	6.1	7.8	6.8	10.3

Source: Office of Management and Budget, *Special Analyses: Budget of the United States Government,* Special Analysis F: Federal Credit Programs, various.

[a]Mostly military sales and the Agency for International Development.

[b]Includes grants to AMTRAK of $0.9 billion.

[c]Total may not equal sum of detail owing to rounding.

tial part of the recent bad debt experience has been with households and noncorporate business.

It appears that the present statistical treatment of federal write-offs contributes to the household discrepancy in the FFAs since the NIPAs currently do not include defaulters' gains on such loans. In the absence of parallel treatment in the NIPAs, accounting for such write-offs in the FFA statistics would require a "capital transfer account" to capture the income transfers from the government to defaulting sectors. Either this approach or the recognition of defaulters' gain on government loans in the NIPAs likely would shave some billions of dollars off the household discrepancy.

2.4.4 Summary

The volume of loan write-offs has been on the rise during the past few years. Since such amounts are deducted from income of lenders, conceptually they should be included as income to borrowers, whether to households or elsewhere in the economy. If they are not, or if the amount of such "extra" income is understated, saving estimates derived from nonfinancial accounts will tend to run low relative to estimates based on capital accounts, as seems to be the case with households. While the data summarized in table 2.8 are only suggestive of the beneficiary sectors, they show that bad debt experience of some major lenders has more than doubled in dollar volume in the last five

Table 2.8   Loan-Loss Reserves (A) or Write-offs (B): Selected Lenders
                   (billions of dollars)

	1982	1983	1984	1985	1986
Federal government (A)[a]	3.7	6.1	7.8	6.8	10.3
Commercial banks (B):	6.6	8.4	10.8	13.2	16.2
Domestically chartered					
Foreign related[b]	N.A.	N.A.	N.A.	N.A.	N.A.
Savings and loans (A)[c]	.8	1.1	2.4	4.0	N.A.
Farm Credit System (A)	.2	.2	.3	3.0	1.8

[a]Fiscal years.
[b]U.S. branches and agencies of foreign banks.
[c]Federal Savings and Loan Insurance Corporation–insured institutions.
N.A. = not available.

years. However, estimates of "business transfer payments" (to con-
sumers—see NIPA table 1.9) rise only about 50 percent between 1982
and 1986. It seems possible, therefore, that the incorporation of tax
return–based benchmark data in the periodic NIPA revisions eventually
will capture this sharp upturn in private defaults, raising income/saving
estimates in the NIPA statistics and reducing discrepancies between
the capital and current account estimates in the FFA statistics. Not all
this will accrue to households, of course, but the portion that does
should cut the differences somewhat. The likely future recognition in
the NIPAs of defaulters' gains on government loans also could reduce
this discrepancy.

2.5 Direct Measurement of Households' Financial Position

The Federal Reserve Board's recently published Survey of Consumer
Finances (SCF) (see Avery, Elliehausen, and Canner 1984a, 1984b;
Avery and Elliehausen 1986; Avery et al. 1986) for 1983 represents the
first attempt, since the board's 1963 Survey of Financial Characteristics
of Consumers, to measure the complete balance sheet position of
households directly. In contrast with earlier consumer finance surveys,
the 1983 effort utilized substantial oversampling of wealthy households
to compensate for the disproportionate share of many assets held by
these households, in an effort to increase the statistical precision of
the resulting estimates of total assets.

Although SCF data, as well as estate tax–based estimates of house-
hold wealth, have been available for certain points in time, the recent
estimation of a separate balance sheet for nonprofit organizations has
enabled the first direct comparison of the Flow of Funds Section balance
sheet data for individuals—that is, the household sector published in the
FFAs less the assets and liabilities of nonprofit organizations and private

foundations. While a detailed comparison of these two sets of data is not yet complete, several important findings have emerged (table 2.9).

Even after the special sampling of high-income households, the 1983 survey-based estimates of households' financial asset holdings are substantially below the indirect estimates published in the FFAs. In particular, the SCF estimates confirm that the FFA procedure of "allocating" all mutual fund shares and money-market mutual fund (MMMF) deposits to households overstates their actual holdings of these instruments. For 1983, the difference between the two estimates of MMMF ownership amounted to about $80 billion, somewhat above the Investment Company Institute's estimate of institutional holdings of these assets.

The SCF estimates of individuals' holdings of other deposit assets are also substantially below the FFA indirect estimates for the survey period. Since the total amounts of such deposits can be measured accurately, this survey result tends to support the view that underallocation of financial assets to other sectors has induced overestimates of households' financial assets through the process discussed earlier. In addition, this apparent overestimate of individuals' demand deposits may reflect at least partly an increase in the float associated with consumers' demand deposits that is not captured in the FFAs. It should be noted, however, that the amount of bias in household deposit holdings is not well established. The SCF results are hardly definitive, and reports filed by depository institutions tend to lump business and personal accounts together, so that obligor data are not much use as a cross-check on the survey.

The SCF-based estimates of individuals' equity in unincorporated business also are substantially below the indirect estimates found in the FFAs. For 1983, the $540 billion difference between these two estimates amounts to more than 20 percent of the FFA total equity estimate for unincorporated businesses. This sizable difference may in

Table 2.9   **Comparison of Survey-based and FFA Estimates of Households' Financial Assets (billions of dollars)**

	1963		1983	
	Survey	FFA	Survey	FFA
Checkable and savings deposits	128	276	1,051	1,832[a]
Bonds and mortgages	75	123	566	498
Mutual funds	25	16	125	76
Corporate stock	197	350	970	968[a]
Unincorporated business equity	289	410	1,810	2,365

[a]Excludes estimates of holdings by nonprofit organizations.

part reflect corporate ownership claims on unincorporated business—
a type of corporate asset not currently recognized in the FFAs. This
omission, too, likely has contributed something to overestimates of
households' financial assets in the FFAs.

Some of the asset misallocation problems suggested by comparison
of SCF and FFA estimates of household asset holdings are potentially
soluble through exploitation of other data sources, such as *Statistics
of Income* special tabulations of partnership returns and Investment
Company Institute data on ownership of mutual funds. However, in
concept the direct incorporation of a complete survey-based household
balance sheet in estimating household sources and uses of funds data
published in the FFAs has certain advantages. By eliminating the need
to determine many household asset acquisitions as residuals, this ap-
proach could expand the measurement of transactions discrepancies
described above to include most financial instrument accounts. Given
the improved accuracy of survey-based estimates resulting from the
oversampling of high-income households and the potential availability
of regular data on nonprofit organizations, the exploitation of survey-
based household data in the FFAs nonetheless would be dependent on
assurance of continued, regular availability of consumer finance sur-
veys. This appears unlikely in the foreseeable future; thus, the main
contribution of such surveys to improvements in the FFAs may be to
provide occasional reference points that draw attention to problem
areas and provide guidance for further research.

2.6   Estimates for Nonfinancial Business Sectors

As previously discussed, the size of the nonfinancial corporate dis-
crepancy—together with its apparent inverse correlation with the
household discrepancy—has led some observers to conclude that in-
accuracies in the FFAs' nonfinancial business sectors may be respon-
sible for much of the divergence between NIPA- and FFA-based
measures of personal saving. Although the relation between these two
discrepancies is not nearly as close as some observers have suggested,
it is important to take into account the sources and potential effects
of nonfinancial business sector inaccuracies in evaluating the relative
merits of the FFA indirect measure of personal saving.

In contrast with the relatively complete figures on financial enter-
prises, consistent sets of balance sheet data for nonfinancial busi-
nesses—both incorporated and unincorporated—are not available. While
Statistics of Income balance sheet data for corporations and partner-
ships are of some help, sources and uses of funds data for the business

sector are, of necessity, pieced together from a variety of disparate— and potentially inconsistent—financial data.

Within the corporate sector, data on the current portion of the balance sheet—that is, short-term assets and liabilities—are based on the Working Capital data maintained by the Flow of Funds Section. While data for manufacturing, mining, and trade industries drawn directly from the Census Bureau's *Quarterly Financial Reports* are relatively accurate, quarterly estimates for transportation and utilities likely are less accurate since they are based on small sample tabulations benchmarked to annual universe balance sheet data from trade associations and regulatory agencies. Moreover, the rapidly growing "other industries" portion of the Working Capital data—primarily construction and services, for which quarterly data currently do not exist—is benchmarked to *Statistics of Income* data that are available only with a three-year delay.

To the extent that industries covered by the *Quarterly Financial Reports* dominate the Working Capital data, the consistent financial accounting and consolidation standards mandated by the Census Bureau make these data suitable for use in the FFAs. In recent years, however, the share of current financial assets of all nonfinancial corporations accounted for by industries covered by the *Quarterly Financial Reports* has declined appreciably as the services sector of the U.S. economy has grown in importance. By year-end 1985, industries covered by the *Quarterly Financial Reports* accounted for only about two-thirds of the current financial assets of the nonfinancial corporate sector, a considerable decline from the three-fourths share that prevailed in 1975, when the current Working Capital series was established.

Recent work by Flow of Funds Section staff has determined that the rapid growth of the services and construction industries, as well as their quite different balance sheet structure, has been captured quite accurately in the Working Capital data on a year-to-year basis. Given the very different balance sheet structure of this "other" sector, however, quarter-to-quarter estimates likely have been subject to increasing distortion as the "other" sector has gained importance. Indeed, quarterly inaccuracies may be responsible for much of the recent increase and volatility in the trade credit discrepancy, discussed earlier.

In the course of retabulating balance sheet data used to benchmark the Working Capital "other" sector, *Statistics of Income* current asset and liability data for industries covered by the *Quarterly Financial Reports* was compared with the corresponding *Quarterly Financial Reports* data themselves. The magnitude of data differences between these two basic corporate sources—which is unlikely to be attributable solely to consolidation differences—underscores the inherent inconsistencies

in assimilating corporate financial data from multiple, loosely related sources.

Because of a lack of detail on specific financial instruments, most components of the Working Capital data do not appear directly in the FFAs. Instead, Working Capital results are used as control totals in allocating independent data on a particular financial instrument between corporate and noncorporate business. For example, the Working Capital category "cash" (and equivalents) covers a range of financial instruments that includes cash, demand deposits, time deposits, and other liquid financial instruments such as commercial paper holdings. This Working Capital cash category thus is used in conjunction with other data, such as the Federal Reserve's Demand Deposit Ownership Survey, to allocate specific assets between corporate and noncorporate holdings.

To the extent that Working Capital control totals are correct, therefore, an underestimate of one component asset hold by business results in an offsetting overestimate of another asset, leaving this sector's and the household discrepancies unchanged. One example of a known misestimation that is not expected to alter the discrepancy is corporate holdings of MMMFs, a liquid asset covered by the Working Capital cash and equivalents control total. In contrast, the omission in the FFAs of corporate holdings of shares in open-ended mutual funds may well affect sector discrepancies since these assets likely are not reported as current assets in the *Quarterly Financial Reports,* just as one corporation's holdings of another's bonds are not included in current assets. This treatment has tended to lead to underestimates of corporate financial asset totals and, thus, to overstate household asset acquisitions, which is consistent with the tendency for account calculations to show rising negative household discrepancies and rising positive corporate discrepancies.

Work is still in progress on corporate financial issues, using additional sources of information that it is hoped will lead to a more accurate, detailed view in the near future. Thus, no judgment can yet be made about the relevance of mutual fund (or bond) holdings in discrepancies of household- and business-sector discrepancies. It should be mentioned, however, that Investment Company Institute data also show mutual fund holdings by other kinds of institutions. The bulk of these are nonprofit institutions that, since they currently are embedded in the FFA household sector, are properly accounted for by the attribution of all mutual funds to "households." Small amounts also appear to be held by other kinds of financial organizations.

In contrast with the corporate sector, measurement errors in financial assets of unincorporated business—while distorting the measurement of households' direct financial asset holdings—will not affect the house-

hold discrepancy. Since investment in unincorporated business—calculated as the difference between these businesses' uses and other sources of funds—is entirely attributed to households, an underestimate of unincorporated business assets produces an equal underestimate of investment in such firms, which in the household sources and uses statement exactly offsets the resulting overestimate in households' financial asset acquisitions.

In point of fact, not all equity in unincorporated businesses is held by households. Recent work by the BEA, using special tabulations of partnership tax returns, has shown that an increasing and nonnegligible proportion of partnership income—and hence equity—actually accrues to corporations. While corporate profits data in the NIPAs reflect this corporate participation in partnership ventures, the FFAs' asset data do not, resulting in a potentially sizable overestimate of households' net investment in unincorporated business that also contributes to the household discrepancy. A major revision of the unincorporated business sector, exploiting these tax return data, currently is in process.[12]

In summary, there appear to be several connections between business and household financial calculations in the FFAs that may account for the "complementarity" of their sectoral discrepancies. Errors in the nonfinancial corporate part of the calculation are more likely to contribute to the household discrepancy than are those in the noncorporate portion, but the issues are heavily intertwined. As noted, corporate financial data are themselves not well suited to use in the established FFA system, and, while the staff currently is at work on the problem, results are some distance off and, as yet, difficult to predict. It does seem likely, however, that better assimilation of business financial data will lower sources/uses discrepancies in both the business and the household sectors.

2.7 International Transactions: Possible Links to Sectoral Imbalances

Discrepancies in international accounts are, by their nature, unexplained differences between recorded current (nonfinancial) and capital account transactions. Except for translating the U.S. balance of payments discrepancy—as computed by the BEA—into "national accounts" terms, the FFAs take this discrepancy as given and outside staff control. In an integrated system such as the FFAs, therefore, it must be expected that any imbalance in international sources/uses statistics will have repercussions elsewhere in the system, contributing to counterpart discrepancies in one or more domestic sectors. The possible connection between the balance of payments and household discrepancies is at least suggested by the former's tendency to become

more positive in recent years, while the latter has become more neg-
ative. While the exact connections are conjectural, this section of our
paper will review certain features of recent U.S. international trans-
actions in an effort to explain how they might be related to the house-
hold discrepancy and, thus, to differences between NIPA and FFA
measures of personal saving.

International capital transactions can be conducted by domestic
households and business enterprises as well as by the government and
thus can—in principle—involve purchases of assets as well as liqui-
dation of liabilities by each of these sectors. Certain categories of
international capital transactions are reported by those engaged in the
transactions and thus can be attributed to specific sectors of the econ-
omy. Such transactions include those related to direct investments or
borrowing and lending by nonfinancial and financial domestic enter-
prises. Some clearly can be attributed to the U.S. government. The
statistical data used in the compilations of U.S. international trans-
actions by the BEA are based on compulsory reports collected in part
by the U.S. Treasury Department and, in part, by the BEA itself.

In contrast, international capital transactions by individuals generally
are not subject to compulsory reporting by the parties involved. How-
ever, when households purchase or sell foreign securities through U.S.
agents (brokers, dealers, etc.), the latter have the obligation to report
such transactions. Likewise, if U.S. households invest in short-term
foreign obligations, a U.S. financial institution that has custody of these
assets would be required to report such custody holdings. But neither
U.S. agents who purchase and sell foreign securities nor U.S. financial
institutions that hold in custody foreign deposits or other assets report
the domestic sectors that are associated with the reported transactions.
The allocation of such transactions by sectors, therefore, cannot be
done on the basis of the available statistical information. The following
comments, based on measured capital flows in 1985, will illustrate how
some of these transactions might be related to the household discrepancy.

2.7.1 Reported Transactions in Securities with Foreign Residents

In 1985, net U.S. purchases of foreign securities (stocks and bonds)
are reported to have been close to $8 billion. Any allocation of these
transactions between the household sector, including nonprofit orga-
nizations, and businesses cannot be made on some sort of fixed per-
centage basis since the shares of households and businesses in the total
may vary in different statistical periods. Moreover, the $8 billion net
purchases of foreign securities in 1985 could be the balance of net sales
by households and much larger net purchases by financial businesses,
or vice versa.

   The statistical method used in the FFA compilations dispenses with the requirement explicitly to allocate foreign security transactions to particular domestic sectors. Net sales of foreign securities to U.S. residents simply are added to net new issues of domestic securities, and the disposition of this total change in supply among the different categories of purchasers is indicated. Purchasers include households, banks, and other economic sectors, including foreign residents.[13] In this calculation, information about net purchases by the financial organizations as well as about net sales of domestic securities to foreign residents is available. Clearly, as indicated in section 2.6, the estimate for net purchases of households can be distorted by the absence of data on or provision for net purchases by nonfinancial businesses.

   Net purchases of $4 billion of foreign stocks in 1985 may have involved transactions by U.S. households as well as transactions by business enterprises. The latter certainly included investments by mutual funds and also acquisitions by U.S. corporations of foreign stocks as preliminary steps toward direct investments. But it would be difficult to judge what the share of households in the total may have been. The increase in acquisitions of foreign securities by mutual funds would suggest, however, that, compared with earlier years, the significance of direct purchases of stocks by households may have been declining and that by 1985 it was relatively small. Net purchases of foreign bonds in 1985 likely also reflected the balance of many cross-currents of transactions. Purchasers in the United States could, of course, include households. It is probable, however, that they were mainly financial organizations, such as insurance companies, pension funds, or mutual funds.

   There is a similar allocation problem with inward flows in the international accounts, in which net foreign purchases of U.S. stocks were about $5 billion in 1985. The U.S. sellers could have belonged to either the household sector or the financial or nonfinancial business sector. In view of the large share of financial businesses in the holding and trading of stocks, it may be a fair assumption that businesses were the principal net sellers of stocks to foreign residents. Net foreign purchases of U.S. private bonds were about $40 billion (almost wholly newly issued bonds), which again strongly suggests that the U.S. transactors were predominantly in the business sector.

   Combining all statistically reported transactions with foreigners involving long-term private securities, it seems likely, therefore, that the largest part of such transactions in 1985 affected the assets or liabilities of domestic business enterprises, and that the direct effect of these transactions on estimated assets of households was relatively small. But this was not necessarily the case in earlier years. The preference

of households to invest in securities through mutual funds rather than directly has strengthened considerably in recent years. Thus, while households may have accounted for a larger share of net investments in foreign securities some years ago, the statistically reported total of such net investments, at least in the early 1980s, was considerably smaller than in 1985. However, there also may have been a considerable amount of transactions in foreign securities that have not been statistically recorded, as will be outlined in the following section dealing with the statistical discrepancy. It will be suggested that past balance of payments discrepancies have some relation to current ones and may also affect the household discrepancy in the FFAs.

2.7.2 Statistical Discrepancy in the International Transactions Account

From 1960 through 1974, with the exceptions of 1966 and 1968, the statistical discrepancy in the U.S. international transactions accounts was negative, indicating that recorded or estimated credits exceeded recorded or estimated debits. The total for the fifteen years was net debits of $22 billion, of which $16 billion was accounted for by the four years 1971–74.

By contrast, for most years from 1975 through 1985 the discrepancy was positive, and the cumulative discrepancy during these eleven years was nearly $196 billion. In the first four years of that period, 1975–78, the discrepancy averaged a little under $7 billion per year. In the last seven years, 1979–85, it averaged $24 billion per year, totaling $168 billion.

The statistical discrepancy in the international accounts can, in principle, arise from deficiences in the estimates of both current and capital account transactions, provided that the counterpart transactions are properly recorded. For instance, if certain services transactions, such as expenditures in the United States by foreign residents on legal fees, are not estimated while at the same time the decline in foreign deposits in U.S. banks reflecting the payments of these fees is statistically recorded, a discrepancy would arise. The credit part of the transactions would be missing, while the debit portion, the decline in foreign balances in U.S. banks, would be recorded. Or, if foreign residents make unrecorded investments in real estate in the United States while at the same time the associated decline in U.S. bank balances held by foreign residents is recorded, a discrepancy likewise would arise because credit transactions are missing.

Small (or, in the extreme, zero) discrepancies in the international accounts do not prove, however, that transactions estimates are free of error. Some transactions may escape recording of both their credit and their debit sides. For instance, earnings on foreign investments by

U.S. residents may be reinvested abroad, and both the earnings and the reinvestments may escape the statistical reporting system. Transactions of this type would, however, result in understatements of the saving estimates in the NIPAs and the FFAs by the same amount. Of course, any given discrepancy in the international accounts may represent a balance between larger missing transactions of households and larger missing transactions of the business sectors.

It is widely thought that missing current account transactions are subject to smaller quarter-to-quarter or year-to-year fluctuations than missing capital account transactions. Missing current account transactions may include some merchandise exports, but most are likely to consist of services transactions, such as legal and consulting fees, or expenditures by foreigners for education, medical purposes, and financial services. They also include income receipts on U.S. investments abroad that have not been statistically captured, particularly assets that had been purchased abroad directly without U.S. intermediaries, foreign purchases of real property in the United States for personal use, and unilateral transfers of funds such as those by immigrants to the United States and taxes paid to the United States by foreign residents. In general, there appears to be a basic upward trend in net credits on missing transactions. In the early part of the 1979–85 period, when the (positive) discrepancy in the international accounts was relatively high, U.S. earnings from financial services may have risen relatively rapidly. In the latter part of that period, however, large borrowings abroad by U.S. corporations may have involved the payment of fees to foreign underwriters, payments that are missing from the international accounts and probably reduced the net receipts on unrecorded current account transactions.[14]

There are estimates—some as high as $10 billion—of the balance of missing services transactions in recent years. Presumably, large amounts of net receipts of income on investments also are missing, particularly in view of the fact that liabilities of foreign banks to U.S. nonbank residents, as reported in IMF and BIS statistics, are about $100 billion larger than assets reported by U.S. sources. If the foreign figures are correct, the U.S. income earned in 1985 that is not reflected in the balance of payments compilations could have been somewhere in the vicinity of $5 or $6 billion. On balance, it is possible to conclude that the positive balance on underestimated and unrecorded current account transactions may have reached somewhere between $7 and $10 billion in 1985. It may also be assumed that nearly all the unrecorded net income from current transactions accrued to business enterprises.

These considerations suggest higher U.S. income/saving figures than shown in the usual statistics. A higher income on investments would have raised incomes as well as saving and net foreign investment and

thus increased the saving ratio for the business sector and for the economy as a whole. Larger net incomes from the sale of goods or services to foreign residents would have raised net foreign investments and GNP and thus raised the ratio between investment and GNP. It may have affected the statistical discrepancy within the NIPA calculations and also the statistical discrepancy in the FFA calculations. But it would not have affected the differences between the saving ratios. Thus, it appears unlikely that flaws in current account data are closely associated with the household discrepancy.

Deducting the assumed current account contribution to the total discrepancy in the international accounts leaves the presumed contribution of unreported capital transactions. In the 1980s, these "missing" capital transactions would have averaged net inflows of roughly $16 billion per year. Several types of transactions could be included in these net inflows. As indicated earlier, in the early 1970s large unrecorded net outflows of funds occurred. It is conceivable that some of these funds were repatriated starting around 1980, when interest rates in the United States were high relative to those in other industrialized countries and the exchange rate of the dollar was on the rise. The roughly $15 billion or more of unrecorded funds that may have been invested abroad from 1971 to 1974 could have risen in value by 1980 to more than $50 billion.[15]

Thus, the repatriation of earlier outflows alone would have been sufficient to account for the balance of payments discrepancy for more than three years in the early 1980s. It is unlikely that all these funds were actually repatriated, but a large part of repatriations that did occur may have involved assets of households and affected the household discrepancy. In the FFAs, the acquisition of domestic assets with such funds would have been captured, but the liquidation of foreign assets would not have been recorded, just as the earlier purchase of foreign assets would have been missed. Consequently, the global net acquisition of assets by households would have been overstated for the recent period, which is consistent with a household discrepancy showing larger asset increases than could be explained by measured saving on the NIPA basis.

Borrowing in foreign capital markets by U.S. corporations through syndicated loans or issues of short-term obligations may have been a major development contributing to the international discrepancy in the latter part of the 1980–85 period. These transactions should, according to reporting requirements, have been included in the statistical data, but the coverage of such liabilities on the required forms submitted by nonbank corporations is not very satisfactory. The absence of data on such net borrowings would tend to result in an overstatement of the net acquisition of assets and thus of net saving by (mostly) nonfinancial

business. It would not affect, however, the estimates of the acquisition of assets and liabilities and of net saving by households.

Many other types of transactions could have contributed to the large shortfall of credits in the international capital accounts in the latter half of the 1980–85 period. Among these may have been net foreign purchases of U.S. securities through intermediaries that did not report these transactions. In the FFA compilations, any underestimate of net purchases of securities by foreigners leads to an overestimate of net purchases by households.

Other types of transactions that are, in principle, reportable, but may not always be reported, are foreign investments in U.S. commercial real estate, mortgages, and partnership interests. Underreporting by foreigners of such investments may have raised the FFA estimates for net purchases of assets by business enterprises or by households higher than they should have been, and that also applies to estimates of their net saving.

It appears, in summary, that the large rise in the excess of missing credit over missing debit transactions in the international accounts in the 1980–85 period initially may have contributed more to an overstatement of the net increase in assets by households than by business enterprises and that this relation may have been reversed during the later years of that period. The large increase in the statistical discrepancy during that period has contributed, however, to considerable efforts in the last two years to improve the collection of data on international capital transactions. Considerable efforts also have been made to improve the collection of data on international services transactions and thus to reduce that part of the statistical discrepancy that reflects lack of such data or inadequate estimates. So, while the channels between the balance of payments discrepancy and differing measures of household saving are elusive and may change through time, it seems clear from the above hypotheses that such connections exist and do contribute to the measurement problems addressed in this paper. Other factors being equal, progress in reducing discrepancies in international accounts should be accompanied by greater concordance between nonfinancial and financial measures of saving for households and other sectors of the domestic economy.

2.8   Miscellaneous Issues

A variety of miscellaneous influences also may be contributing to the enlarged imbalances between current and capital account approaches to the household sector in recent years. A few of these will be mentioned as examples of, if nothing else, the difficulty of the underlying statistical material.

2.8.1 Transactions in Tangible Assets

The FFAs take account of gross physical investment in the economy, making certain allocations across sectors for which NIPA data do not provide complete information. It is possible that such allocations introduce some element of error to the household accounts, but these are not likely to be a major influence through time. Most transactions in existing tangible assets, however, are not well accounted for, and this may be a source of greater problems. This issue has been addressed as follows (Board of Governors of the Federal Reserve System 1980, 31):

> Like existing-house transactions, purchases and sales of all types of land and existing plant and equipment are omitted from the sector distribution of capital outlays, as are transactions in intangibles such as leaseholds and patents. This omission produces statistical imbalances in the accounts insofar as there are net transfers among sectors in tangible assets, and the basis for omitting such transactions is only the lack of substantial information on the quantities. In general there is probably a net sale of land and intangibles by households and noncorporate business and a net purchase of these assets by corporate business and finance, causing imbalances of opposite sign in the two sets of sector statements. There may have been several billion dollars of such transfers in recent years that are not in the accounts.[16]

An increasing volume of transactions such as these, which would "generate" rising amounts of household financial assets relative to measured sources of funds, would be consistent with the evolution of the household discrepancy in the past several years. Unfortunately, as there are still no statistics on which to base firm estimates, the role of sales of tangibles in household imbalances remains conjectural. [17]

2.8.2 New Institutions

Financial innovation during the past decade has given rise to a host of new, usually specialized, institutions, often set up as subsidiaries of established financial or nonfinancial businesses. Some are caught in existing reporting systems, such as "nonbank banks," but others fall into statistical gaps, and their activities may contribute to imbalances elsewhere in the accounts. As an example, the proliferation of "service corporations" as subsidiaries of savings and loan associations has created an economic subsector for which balance sheet information is still deficient. Such organizations may hold appreciable amounts of some kinds of assets, which are currently residually attributed to households for lack of this information; this data gap adds something to the household imbalance. The emergence of such entities is to some extent reflected in miscellaneous assets of established institutions, like savings and loans, through amounts provided in capitalization of subsidiaries.

As the counterpart subsidiary sector is missing, such financial flows show up in the FFA structure as "miscellaneous unallocated" assets of the parents, contributing to the total system discrepancy as discussed in an earlier section. In contrast, within the commercial banking sector, holding company investments in subsidiary banks (which can be read from both holding company reports and bank call reports) can be included in statements for both parent and subsidiary organizations.

The potential importance of missing subsectors is illustrated by the rapid growth of the service corporations mentioned above. According to annual reports filed with the Federal Home Loan Bank Board, at year-end 1985 balance sheets of these corporations had grown to almost $47 billion, almost three-and-a-half times the size of their 1983 position. Their assets included appreciable holdings of real estate, mortgage loans, and marketable securities, and their liabilities—in addition to capital—included both current notes and long-term debt. While the exact effect of including such organizations in the FFA structure on the household and other imbalances cannot be stated with precision at this time, it seems clear that their omission is a potentially material factor in the accounts. A closer examination is scheduled for the near future.

2.8.3   Brokers and Dealers

The rapid expansion of broker/dealer activities, combined with deterioration of older sources of information, makes this another area for potential research in reducing system discrepancies. It is known, for instance, that brokers/dealers (a category that includes major investment banks) have become quite active in collateralized mortgage obligation issuance, supporting portfolios of mortgages or pass-through securities. For some time, this segment of the accounts has suffered from fragmentary information, and it is also ripe for more detailed exploration, based initially on Securities and Exchange Commission *Annual Reports* and the FOCUS reporting system. Again, the eventual effect of "rebuilding" this sector on other areas of the accounts cannot be foreseen exactly, but the effort must be undertaken in the near future to keep pace with the rapidly changing financial structure of the economy.

2.8.4   Underground Economy

It sometimes has been argued that the capital account approach to saving is more likely to reflect the net accumulation of assets by those engaged in underground activities than is the NIPA approach, which is based on the deduction of consumer expenditures from incomes. A potential underestimate of income from underground activity has been

considered to be one factor "explaining" the higher personal saving estimates in the FFAs relative to those shown in the NIPAs.

The main line of this argument is that personal saving from the proceeds of underground activity is likely to be stored in financial and tangible assets recorded in the FFAs and that the NIPAs do not fully account for the income from such activities. On the basis of national accounting principles, however, this argument is of doubtful validity (cf. Parker and Fox 1985). While many scenarios of underground activity can be devised, it is sometimes forgotten that income to one party in such transactions simultaneously is "consumption" expenditure by the other party. Thus, only when NIPA expenditures are estimated on the basis of methods that already implicitly include payments to "underground" sellers of services—for instance, payments for repair and maintenance of residential houses—would the addition of the "underground" income of the seller of such services add to saving. Otherwise, the omission of underground activities from the statistical sources used in the preparation of the NIPAs likely reduces the estimates for income and expenditures by the same amounts, leaving the estimate for personal saving unchanged. From the FFA perspective, there is a similar balancing of sources and uses of funds. Consequently, the omission of underground activities in the NIPAs may not affect the difference between saving estimates in these accounts and those in the FFAs.

There are, of course, numerous facets to the social accounting treatment of underground economy issues; most were covered in a recent, thorough review by BEA staff (Carson 1984; see also de Leeuw 1985). Two main types can be named. First, there are activities such as drug dealing and prostitution that are (usually) illegal and therefore not included in national accounts measures of income and output by definition. That is, neither the income nor the expenditure should be measured in the NIPAs. While capital account measures of sources and uses of funds do not suffer from such scruples, illegal income (and saving) to one party nonetheless is illegal expenditure (reduced saving) to the other, so the NIPA and FFA treatments appear to lead to the same results.

The second type of underground activity is that which is not illegal per se but which tends to involve misreporting by transactors—usually underreporting of income for tax purposes. To compensate for distortions of this sort, the BEA already uses alternative sources and estimating procedures to adjust income for national accounts purposes. To the extent it is successful, the potential bias in the income/saving balance is removed, and NIPA saving figures are adjusted toward values that might be obtained from a purely capital accounts approach. Of course, some potential problems remain. The BEA recognizes that its

adjustments are based on "information that is incomplete and, in some cases, of questionable quality" (Carson 1984, 110). It is felt that there is no obvious bias in the procedure, but it is nonetheless worth nothing that NIPA adjustments are based on IRS taxpayer compliance survey information that is generated only irregularly. A judgment—which we do not make here—that NIPA saving measures are downward biased is the same as concluding that upward adjustments to income are insufficient relative to those for expenditures.

More generally, of course, since estimates of personal incomes in the NIPAs are derived separately from estimates of expenditures, such a bias arises only when either or both are flawed, whether or not underground activities are a significant factor in the economy. The direction of such a bias, if any, is uncertain. Consequently, further improvement in NIPA estimating procedures for effects of both above-ground and underground activities could either raise or lower the statistical gap between the NIPA and the FFA personal saving estimates.

2.9 Summary and Conclusion

This paper has documented the sharp increase in the divergence between personal saving as measured in the NIPAs and in the FFAs. The amount of this divergence is shown in the FFAs as the household discrepancy. This particular discrepancy can be understood only in the context of the overall discrepancy system in the FFAs, in which imbalances between assets and liabilities in one sector affect other sectors. As a residual calculation, the household discrepancy is an indirect result of errors in estimating changes in assets and liabilities in a number of other key sectors. But it must be recalled that errors in nonfinancial inputs into the accounts also will contribute to the household discrepancy indirectly. Moreover, the exact magnitude of the household discrepancy is subject to "judgmental" adjustments made in the estimation process.

Looking at empirical developments within the FFA discrepancy system, almost half the recent growth of the household discrepancy can be "attributed" to offsetting growth in the nonfinancial corporate sector. Discrepancy changes in other nonfinancial sectors also help explain some of this growth. However, the growth of the overall system discrepancy—which is the sum of all transaction discrepancies, including the NIPA discrepancy—also is a key element in the growth of the household discrepancy.

The historical record suggests that at least some of the initial differences between personal saving estimates in the NIPAs and the FFAs will be revised away, through periodic revisions in the NIPAs. Still,

recent accounting changes in the NIPAs with regard to personal outlays and capital expenditures may affect historical revision relations between the two saving measures in as yet unpredictable ways.

Various areas were explored in some detail in this paper to identify specific problem areas that might be affecting the household discrepancy. In addition to periodic national accounts revisions, other areas of the accounts were also reviewed. Structural and data-related problems in the nonfinancial corporate sector were examined. In addition, possible effects of loan write-off accounting problems were reviewed. While, in general, adjustments to the capital accounts for write-offs are fairly accurate, the compensating income adjustments in the NIPAs appear to be subject to some timing and coverage problems. Any such problems would understate the income-based NIPA saving measures relative to the capital account–based FFA measure. Deficiencies in flow-of-funds data sources—affecting many sectors—were mentioned frequently in this paper, and the possible effect on the household sector was elucidated. Since almost all these sources are beyond the staff's control, prospects for better coordination are uncertain, but directions were indicated for better use of corporate business material, and there is some hope of deeper exploitation of periodic microsurveys of household finances.

Problems in the measurement of U.S. international transactions also were reviewed to see what potential connection they might have to the saving/discrepancy issue. In contrast to earlier experience, it is not felt that unrecorded international capital transactions have been a major problem in recent years. The repatriation of large unrecorded capital outflows of the early 1970s may have been a problem in the early 1980s, but it has not been deemed important recently.

Finally, an assortment of other issues that may be potential contributors to the household discrepancy was mentioned. On the most publicized of these—the role of the "underground economy"—we reach the general conclusion that perhaps too much has been made of this activity as a contributing factor, but it cannot be discounted altogether. With regard to new institutions, structural change, and existing but poorly captured sectors in the FFAs, these are matters of continuing research endeavors by the staff.

Notes

1. Both the NIPAs and the FFAs are revised periodically, so both nonfinancial and financial estimates change from time to time. Data in this paper reflect the status of both sets of accounts as of April 1987 and should be regarded as

illustrative only. The July 1987 NIPA and September 1987 FFA revisions do not greatly change the observations made in the text.

2. The personal saving figure, for instance, is taken over from the NIPAs. Certain additions are made for surpluses of government retirement funds and capital gain dividends of mutual funds, but these are entirely offset in estimates of increased financial assets. The bulk of household liability changes come from estimates of home mortgage and consumer credit borrowing, generated elsewhere at the Federal Reserve Board from lender sources. Other amounts—usually small—are accounted for by estimates of tax-exempt debt, bank loans, etc., which are made by the Flow of Funds Section.

3. One of the persistent problems in account calculation, for instance, is working up net corporate bond issuance figures. Data on gross issuance are more readily obtainable than are estimates for retirements.

4. Some observers appear to have the impression that the FFAs have exact data on household assets (see, e.g., O'Leary 1986). Only a few asset estimates are robust: certain forms of bank deposits, mutual and money-market fund shares, and insurance and pension reserves.

5. The nonfinancial discrepancy enters negatively because, in the NIPAs, it is defined as the difference between uses (gross investment) and sources (gross saving). In the FFAs, discrepancies are defined as sources less uses.

6. These assumptions are under continual review, and the accounts are changed from time to time when necessary. As a later section of the paper notes, provision is being made to expand identified asset holdings in the corporate sector.

7. Since these NIPA historical revisions generally are incorporated in the second-quarter flow-of-funds publication, the four-year revisions discussed below are measured as changes between annual data estimates as contained in respective second-quarter flow-of-funds releases.

8. Of course, the lack of revision to financial figures reflects in part a shortage of benchmarks on which to base retrospective adjustments to early estimates.

9. It should be noted that results of revision studies are sensitive to the choice of both data frequency and revision interval. A recent study (de Leeuw 1984) uses quarterly data to focus on short-term revisions from initial quarterly estimates. From the short-run perspective, de Leeuw found that the NIPA's income, expenditure-based approach provides much more stable estimates of personal saving. Rather than reflecting a fundamental flaw in the Flow of Funds Section estimates, however, this finding underscores the point—stressed in considerable detail in flow-of-funds quarterly publications—that initial FFA estimates of the most recent quarter are highly tentative because of the substantial amount of data available only with a one-quarter lag.

10. The procedure can be shown as follows. Expressing bank assets as A, net new borrowing as B, and net write-offs as W, the growth in bank assets is

$$A_t = A_{t-1} + B_t - W_t.$$

Net loan flows in the FFAs are $\Delta A_t = B_t - W_t$. This understates total sources to borrowing sectors only insofar as write-off amounts are missing from the income statistics. Charges against taxable current income are taken by lending institutions when funds are added to bad debt reserves, not when write-offs themselves are taken. But assuming these two magnitudes move roughly together, only temporary aberrations should result. Transfers to bad debt reserves afford less insight into the proper sectoral allocations of the extra source of

funds than do write-offs themselves, which appear in disaggregated form in banking reports.

11. Consumer credit statistics used in the FFAs are prepared by the Mortgage and Consumer Finance Section at the Federal Reserve Board. Like the banking statistics, period flows are derived as first-differences in outstandings reported by surveyed institutions.

12. It bears repeating that the account structure and data illustrations given are as of early 1987, after the preparation of the fourth-quarter 1986 accounts. In the course of the 1987 annual revision, Flow of Funds Section staff made adjustments in structure to address some of the problems mentioned in this section.

13. Household purchases of foreign securities cannot even be inferred residually since information from most other sectors does not distinguish purchases of domestic stocks and bonds from purchases of those of foreign origin but rather gives only a "global" total.

14. Fees related to security issues abroad by U.S. corporations recently have been estimated and included in compilations of U.S. international transactions published in the June 1987 *Survey of Current Business*.

15. This figure is based on the assumption that the outflow of U.S. funds in the early 1970s was equal to the negative statistical discrepancy in the years 1971–74. Actually, the net outflow may have been larger since the statistical discrepancy for these years presumably also reflects some inflows on account of unrecorded services transactions. For simplicity, it was also assumed that these funds were invested and reinvested in assets that yielded between 6 and 8 percent per year and that the funds were invested either in Germany or in another country whose currency moved more or less parallel to the deutsche mark. For the date of presumed repatriation of these investments, two calculations were made—1980 and 1981—leading to the following results. A net outflow of U.S. dollars from 1971 through 1974 of about $15 billion that was repatriated in 1980 would have yielded between $46 billion and $54 billion. The same funds repatriated in 1981 would have yielded between $40 billion and $47 billion, a smaller amount because of the rise of the exchange rate of the dollar.

16. Transactions between the government and business in used assets, however, are captured in the NIPAs.

17. Recent, still unpublished, research at the BEA on asset purchases by businesses may provide a way to quantify this long-standing problem in the accounts.

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Comment   George M. von Furstenberg

Does the United States save too little? Martin Feldstein (1977) posed this question over ten years ago, but his affirmative answer did not put the issue to rest. One of the lingering concerns has been whether the data describe the facts adequately enough for reaching a judgment in the first place. A quadrumvirate of authors address this issue with the authority of collectively vast experience in the leading U.S. government agencies for financial statistics and economic data analysis. Specifically, they investigate the suspicion, nourished by the excess of household-sector flow-of-funds accounts (FFA) over national income and product

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accounts (NIPA) personal saving, that households save more than meets NIPA's eye.

Before recapitulating and commenting on some aspects of the authors' work, it may be helpful to point out that they do not intend to evaluate the usefulness of the official data on saving for economic analysis. They do not aim to bridge the conceptual and statistical gaps between saving out of current income and a current-dollar measure of the change in real net worth. Rather, they accept the official definitions and measurement conventions as their frame of reference for pinpointing data gaps and exploring uncertainties of attribution that are encountered within the statistical networks used by the data gathering and reporting agencies. As a result, tricks played by inflation of the kind exposed by Feldstein (1983) and Eisner (1986) are not discussed. What the authors are concerned with exclusively is reconciling nominal flows viewed as sources and uses of funds of various sectors. In particular, their main objective is to elucidate possible factors contributing to the shortfall of reported household sources from uses of funds. This statistical discrepancy, calculated as the difference between sources and uses, averaged − $70 billion annually over the period 1980–85, four times what it was during the last half of the 1970s.

Recapitulation of Some of the Main Points

Under the FFA approach, household-sector saving funds come from NIPA personal saving plus credit market borrowing and other increases in liabilities. These total sources are then compared with total uses, which is the sum of the sector's net increase in physical and financial assets. Since no data reports are taken directly from the household sector, some assets and liabilities are measured through a residual process. Because any net mismeasurement of financial items in other sectors then results in corresponding offsets being entered in the financial account of the household sector, that sector has been called a dumping ground of errors.

The authors sift through the possible errors in the household sector and examine a number of ways of spotting and eventually reducing them.

1. The unexplained rubble on the dumping ground cannot all have arrived from the nonfinancial corporate sector or be due to its overstating the sources of funds from, relative to their uses on, households. Comparing the first six years of the present decade with those of the previous decade, the discrepancy in the nonfinancial corporate sector, while positive to indicate an excess of recorded sources over uses of funds to corporations, has risen less than half as much—$22 billion as against − $53 billion on the annual average—as the negative household

discrepancy it might offset. Furthermore, the authors emphasize that matching a statistical discrepancy in one sector against that of another is arbitrary in a multisector framework unless there are strong prior indications of bilateral relation.

Little insight can thus be gained by pointing to partial offsets between growing sector discrepancies of opposite sign that still left a −$23 billion average annual swing in the overall system discrepancy from $6 billion for 1970–75 to −$17 billion in 1980–85. Changes in the NIPA discrepancy contributed less than −$2 billion to the −$23 billion swing. This could be determined after changing sign on the NIPA discrepancy, which is defined, reversing the FFA discrepancy, as recorded uses (total investment) minus sources (total saving).

2. The small contribution from the NIPA "nonfinancial" discrepancy apart, the entire swing in the system discrepancy toward a global excess of uses over sources is mechanically due to transaction discrepancies. Flow of funds accounting conventions force sources and uses of all credit market instruments to balance—if necessary by assigning un-allocated amounts to the household sector. Hence, transaction dis-crepancies are allowed to surface in only a few selected items for which recourse to assignment has been rejected. Security repurchase agree-ments, trade credit, and "miscellaneous" are the main swing items. It is unclear why recorded net uses of funds to acquire those items as assets should increasingly have tended to exceed the net sources of funds obtained from issuing these same items as liabilities. The authors only add to the question when they explain that while liabilities for security repurchase agreements and federal funds transactions are mea-sured fairly well because they originate in a limited range of financial institutions, the corresponding asset holdings are more dispersed and less well documented.

Perhaps all the recent discrepancies are still so much in flux that little should be made of them. In the past, revisions have been dramatic. For instance, the estimate of the trade credit discrepancy for 1978, which had been −$12.3 billion (Board of Governors of the Federal Reserve System 1980, S.1) in June 1980, had shrunk to only −$4.8 billion by March 1987 (Wilson et al., chap. 2, in this vol., table 2.4). With trade credit, unlike security repurchase agreements, a negative discrepancy has remained common for good reason. Those who grant trade credit are more likely to be subject to reporting requirements than are those who receive it, and sectoral allocation of the difference is sufficiently uncertain to have convinced the statisticians to let some of it stand.

This example shows that the excess of recorded uses over sources in the FFA financial transactions tables should not be taken to indicate

that the missing source component is saving. It could at least as well be borrowing or, more generally, incomplete reporting of financial intermediation.

3. The second major part of the paper, starting with section 2.3, returns to the attempt to analyze and, if possible, reduce the gap between the NIPA and FFA measures of saving by households. This gap is due to recorded acquisition of physical and financial assets minus borrowing exceeding the NIPA measure of personal saving after saving and investment measures have been adjusted for consistency with the FFA concepts. The major adjustments involve recognizing the growth in government insurance and pension reserves as an addition to public liabilities and private assets and recognizing purchases of consumer durables as gross investment. Given these adjustments, revisions raising the estimates of physical and financial assets acquired increase the gap, while upward revisions of household borrowing or NIPA saving reduce it.

In the past, revisions associated with the incorporation of (Internal Revenue Service) *Statistics of Income* data, available with roughly three-year lag, have tended to raise estimates of personal saving by about 1 percent of disposable income. However, upward revisions in the NIPA estimates of net physical capital acquisitions by households have kept the net effect on reducing the gap between the different estimates of saving small.

Another possibility is that the rapid rise in asset write-offs during the last few years has not yet been reflected in the statistics. To recognize defaulters' gain and lenders' loss only when write-offs occur, corporate profits, business transfer payments to households, and factor incomes from the rest of world may be adjusted as necessary to shift the recorded effect away from the time loan loss reserves (bad debt reserves) are credited to the time they are debited and assets are written off. The quality of the adjustment depends on the accuracy and speed with which write-offs are taken into account. Write-offs are treated in the NIPAs as if they were income transfers from lender to borrower that the latter uses to repay debt. Because of this, the sum total of household sources is not distorted when changes in virtually all household liabilities are derived indirectly by differencing intertemporal positions in lenders' balance sheets. Assume, for instance, that the household sector defaults to the corporate sector, say through a declaration of personal bankruptcy. Then the defaulters' gain that is added to personal saving plus the net increase in household liabilities left after any write-offs equals the increase in household borrowing before write-offs. Only to the extent that defaulters' gain is underestimated will there be an underestimate of saving and borrowing combined on the

sources side of the household sector that could contribute to the re-
corded excess of uses over sources.

Adding to that sector's FFA discrepancy from the other side is the
practice of allocating all money-market mutual fund shares to house-
holds. This substantially overestimates their actual holdings of these
instruments and understates the asset acquisitions of corporations. By
the same token, any unrecorded net sale of land and intangibles by
households and unincorporated businesses to corporate businesses and
financial institutions overstates the net acquisition of assets by the
former sectors and understates the net uses of funds by the latter.

4. The booking of international transactions creates much further
uncertainty in FFAs. Net sales of securities by foreign to domestic
residents are allocated to the purchasing sectors along with new do-
mestic issues. The list of purchasers does not include nonfinancial
businesses, and households are treated as the residual buyer. To the
extent that net U.S. purchases of foreign stocks and bonds are under-
taken by households primarily through investments in mutual or closed-
end funds, financial corporations appear as the buyer. Households also
do not generally issue bonds to foreigners. For these reasons, the effect
of international financial transactions on the U.S. household balance
sheets has been rated as still small. Nevertheless, household ownership
of foreign deposits and securities is likely to have increased dramatically
in recent years in ways that may not have been reported fully to the
Internal Revenue Service.

Extending the Search for Reconciliation Items Internationally

The swing in the statistical discrepancy in U.S. international trans-
actions from negative values in 1971–74 to increasingly large positive
numbers of over $20 billion per annum in most recent years (since 1979)
also poses many problems of interpretation. The authors speculate that,
if the 1971–74 discrepancies, which indicated an excess of recorded
credits (+) over debits (−) in the balance of payments, were due to
unrecorded capital exports (−) that came back with interest in the
1980s (+), the changing sign and size of these discrepancies would
point to overestimation of uses of funds (and hence of FFA-deduced
saving) in the first years of the 1980s and underestimation in 1971–74.
Sales of domestic assets by households to other sectors, but not the
purchase of foreign assets, would have been recorded in the earlier
period, understating household uses of funds and capital exports. More
recently, the reverse of this pattern of discrepancies would have been
observed, with purchases of domestic assets by households from other
sectors recorded, but not their sales of foreign assets, at least not in
the United States.

Conjectures of this kind invite some remarks on possible asymmetries elsewhere. It is curious to suggest that acquisitions and subsequent liquidations of claims by U.S. households on other countries with highly developed capital markets and reporting systems—the study mentions Germany or another country whose currency moves more or less parallel to the German currency—would escape detection in the statistical reports of the United States. If these claims have a high probability of not being identified abroad, actual or required reporting systems there would be less revealing than those of the United States, where foreign claims on the home country are assumed to be identified correctly. On the other hand, if the U.S. claims on foreign countries have been identified correctly in those countries, why was the authors' conjecture not hardened by recourse to foreign data? Even if such countries as Germany and Switzerland did not share details of individual transactions with the United States, more might then be found out than the authors let on. Until some such confirming evidence is provided, I cannot find their particular story of capital flight, engineered by U.S. households and then allegedly reversed, altogether persuasive just because it happens to fit the pattern of discrepancies. Rather, I would surmise that the trend toward international diversification of household portfolios has seen no such massive interruptions.

Other stories that relate to the growing excess of household uses over reported sources of funds could have more statistical support. For instance, the liberalization of financial markets in a number of Latin American countries in the 1970s created occasional waves of repatriation of funds from abroad to those countries, primarily from the United States. Funds that originally had arrived through capital flight may not have been identified as claims against the United States, being credited instead to U.S. residents—perhaps friends, relatives, or their proprietorships. On repatriation to foreign countries and transfer to the financial sector above ground, recorded foreign claims on the United States, often in the form of official reserves, thus would rise. With the onset of the international debt crisis after 1981, capital fled from Latin America once again. Assuming the foreign private capital arriving in the United States would, in good part, be (mis)represented as being owned by U.S. residents once again, there would be an overstatement of household uses of funds in the United States that is coupled with an understatement of capital imports. The official claims of Latin American countries on the United States would fall, or their foreign indebtedness to the United States would rise, without a corresponding increase being recorded in foreign private claims on this country.

Thus, it would appear to me that the unrecorded side of international capital flows, "motivated by a flight from economic or political crises *abroad*, by exchange rate expectations or by relatively attractive rates

of return in the United States''—a judgment cited approvingly by de
Leeuw (1984, 18; emphasis added)—is a stronger suspect than the one
suggested by the authors. An overview of different estimates of capital
flight in major Latin American countries by Watson et al. (1986, 142)
provides some measure of support for this view. In work subsequently
published, Lessard and Williamson (1987) have shed more light on the
matter.

Looking abroad and not just at home may also be useful in another
respect, that of spotting the traces left by the underground economy
in FFA discrepancies. Although I commend the kind of caution ex-
pressed in several studies of the problem published by Tanzi (1982),
imports of misrepresented or concealed goods into the United States
are likely to exceed U.S. exports of such goods by a large amount.
Furthermore, this hidden import balance, which may have amounted
to billions of dollars already years ago in the United States, could have
continued to grow rapidly since. Unrecorded net imports may be used
to acquire recorded claims on the United States eventually. This can
happen, for instance, when Colombian drug smugglers find it useful to
convert U.S. dollars into Colombian pesos in the "parallel" capital
market. From there, the dollars may surface, being legalized through
redeposit in the officially recognized sector. As a result, recorded claims
against the United States suddenly appear when it suits Colombian
drug lords to convert some of their previously invisible hoards of dol-
lars. At first glance this would seem to be an example of an international
timing and coverage discrepancy that does not have any immediate
implication for the growing excess of household uses over sources of
funds recorded in the United States. In reality, however, the undetected
leeching of currency from the United States into foreign hands leads
to an overstatement of monetary assets owned by U.S. households.
Financial uses are then overstated also because they are determined
by differencing estimates of stocks at different points in time.

These examples may be enough to show that there are a few addi-
tional leads abroad that could have been explored in the main paper.
However, there is no denying that its achievements are already sub-
stantial, with a number of problem areas in the NIPAs and FFAs eval-
uated with impressive clarity and care.

The authors also have pointed to some areas in which the FFA sta-
tistics can and soon may be improved in matching up financial assets
and liabilities by sector. This would reduce the problem of unallocated
balances and the use of the household sector as the dumping ground
for many of them. Nevertheless, a very large degree of uncertainty
will continue to attach to measures of saving no matter how derived.
As the authors have been careful to point out, in double-entry book-
keeping, offsetting errors on one side of the accounts or matching

omissions on both sides can be quite consistent with approximate balance. Hence, even a negligible statistical discrepancy would not prove the absence of major errors and uncertainties about the data. There is no alternative to improving the data patiently item by item while trying to keep up with innovations in financial instruments. The authors have proved very good and experienced at doing just that.

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