

The Integrated Macroeconomic Accounts of the United States

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Introduction

This paper discusses the integrated macroeconomic accounts (IMA) for the United States that combine data from the national income and product accounts (NIPAs) produced by the Bureau of Economic Analysis (BEA) and the flow of funds accounts (FFA) produced by the Board of Governors of the Federal Reserve System. The format of the IMA tables is based on the international standards for national accounts described in *The System of National Accounts, 1993*. Use of these standards allows for a comprehensive picture of economic activity within an integrated framework with consistent definitions, classifications, and accounting conventions. There are a few occurrences, which we will try to point out, where the accounts deviate from international standards because of data sources and conventions used in producing the NIPAs and the FFA.

Work began on these accounts in 2002 and the first version of the tables was presented at the NBER/ Conference on Research in Income and Wealth, Architecture for the National Accounts in April 2004, with annual data for 1985 to 2002. Much work has taken place since then with annual data now available from 1960 to 2010 and quarterly data from 1992q1 to 2011q1. Data are available on both the BEA website (http://www.bea.gov/national/nipaweb/Ni_FedBeaSna/Index.asp) and through the Federal Reserve Data Download Program (<http://www.federalreserve.gov/datadownload/default.htm>) within about ten weeks after the end of the quarter. The recently released interactive web-based guide to the Flow of Funds Accounts describes the tables and documents the source data and compilation methods (<http://www.federalreserve.gov/apps/fof/>).

Construction of Accounts

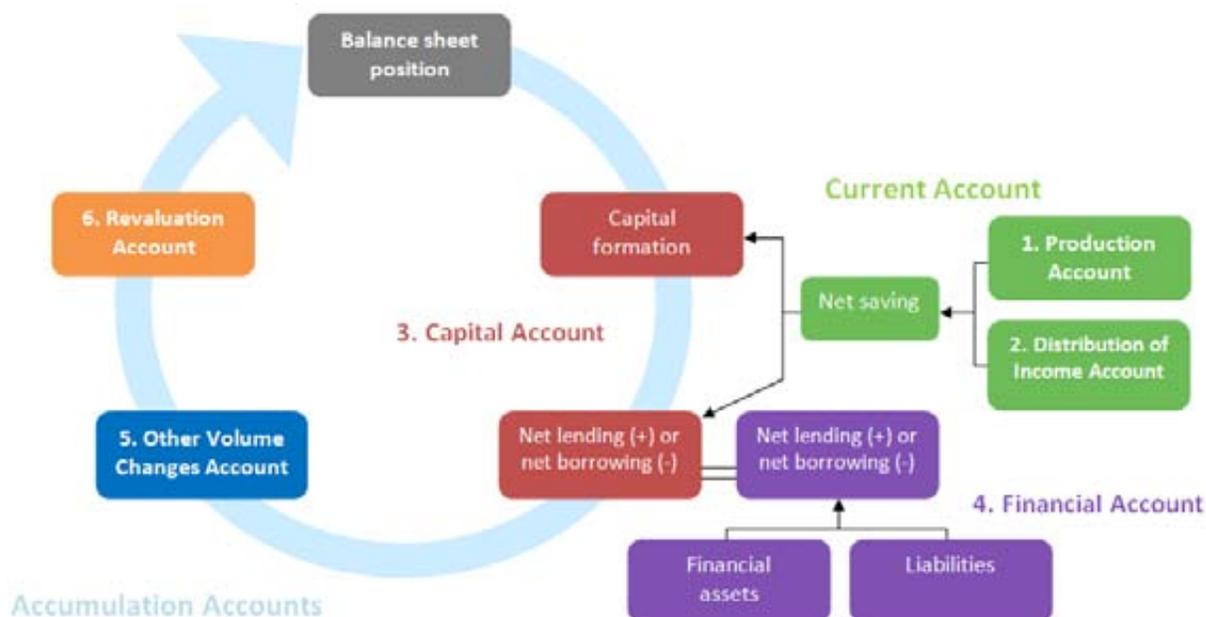
Currently, data in the IMA are broken down into six economic units – households and nonprofit organizations serving households, nonfinancial noncorporate business (sole proprietorships and limited partnerships), nonfinancial corporate business, financial business, federal government, state and local governments, and the rest of the world. Corporate and noncorporate farms, which are shown combined in a farm business sector in the FFA, are included in the nonfinancial corporate and nonfinancial noncorporate

We would like to thank David Wasshausen of BEA for his helpful comments.

business sectors respectively in the IMA. One point to note is that the SNA includes limited liability companies, limited partnerships, and government enterprises in the financial or nonfinancial corporate sectors, while general partnerships and sole proprietorships are included in the household sector. The IMA, however, presents a separate noncorporate business sector which includes most of these types of entities.

Each sector table has a full sequence of accounts: production and distribution of income account (current account), and capital, financial, other changes in volume, and revaluation accounts (accumulation accounts). From these accounts, you are able to trace the factors leading to changes in sector net worth for each sector. An abbreviated version of the household and nonprofit institutions serving households table, appendix table 1, illustrates the structure of the IMAs. Figure 1 below provides a diagram of the sequence of accounts presented in the IMA.

Figure 1



The first component of the current account (shown in green) is the production account, labeled number 1, which shows the contribution that is made by the sector to gross domestic product both in terms of the goods and services that are produced and the costs incurred during production. The second component of the current account, the distribution of income account, labeled number 2, shows how net income that is generated from current production is used to finance consumption and savings. Net saving, measured as the portion of current income that is set aside rather than spent on consumption or related purposes, is carried forward into the capital account, the first in the sequence of accumulation accounts.

The accumulation accounts are those that record flows that explain the change in the balance sheet between its opening and closing position. There are four accumulation accounts: capital account, financial account, other changes in the volume of assets account, and revaluation account. The capital account, shown as red boxes and labeled number 3, records transactions linked to the net acquisition of nonfinancial assets and capital transfers involving the redistribution of wealth used for the purchase of capital with the remainder available for lending to other sectors. This account consists of net capital formation (gross fixed

capital formation less consumption of fixed assets), net capital transfers, acquisition of nonproduced nonfinancial assets and the change in private inventories. Each of these estimates is consistent with estimates in the NIPAs and fixed asset accounts published by BEA. Net capital transfers include transactions such as disaster-related insurance benefits, estate and gift taxes, and financial stabilization payments made by the federal government. Nonproduced nonfinancial assets transactions include purchases of land, payments for drilling rights, electromagnetic spectrum proceeds and miscellaneous international transactions. If capital accumulation is greater than the net saving derived from the current account, the sector borrows and if capital accumulation is less than net saving, the sector lends. This difference is referred to as net lending (+) or net borrowing (-) as calculated from the capital account (red box) in figure 1.

An alternate version of net lending (+) or net borrowing (-) can be calculated from the financial account, shown as purple boxes and labeled number 4, by subtracting the net increase in liabilities from the net acquisition of financial assets. In principle, the capital account and financial account measures of net lending (+) or net borrowing (-) should be the same, because saving that is not spent on purchases of fixed assets results in the acquisition of financial assets and borrowing that is used to finance the purchase of fixed assets results in the incurrence of financial liabilities. However, when compiling net lending (+) or net borrowing (-) from the capital and financial accounts, the values for the two measures are almost never equal because of differences in source data, timing of recorded flows, and other statistical differences between data used to create the measures.

The other volume changes account, shown as blue and labeled number 5, records the effect of exceptional events that cause either the value or volume of assets and liabilities to vary. Included here are adjustments in classification and structure due to changes in data sources or calculations. The losses of fixed assets that are significantly damaged or destroyed in major disasters, such as hurricanes and earthquakes, are shown separately in this account. Disasters are generally defined as catastrophic events with property losses exceeding 0.1 percent of GDP (or about \$15 billion). Nonproduced nonfinancial assets are included in this account since they are not recorded on the balance sheet but are included in the capital account. Finally, the sector's statistical discrepancy, that is the difference between the capital account and financial account measures of net lending (+) and net borrowing (-), is recorded here in order to complete the sequence of accounts.

The last accumulation account is the revaluation account, shown as orange and labeled number 6, which records holding gains and losses stemming from changes in prices since the opening balance sheet position. Holding gains and losses are shown separately for nonfinancial assets and financial assets and can be sizable. Typically, holding gains and losses account for most of the change in net worth on the balance sheet. One major difference between the SNA and the IMA tables is that debt securities are shown at book value rather than market value in the IMA. Thus, holding gains and losses on securities are shown in the revaluation account for only corporate equities and mutual fund shares.

The closing balance sheet position is equal to the opening balance sheet position plus the changes recorded in the accumulation accounts, which are shown on the circle in figure 1, and are equal to the change in net worth for the sector. In the IMA, we have chosen to use net lending (+) or net borrowing (-) as calculated from the capital account rather than the version calculated from the financial account. And, as

mentioned above, the difference between the two measures is recorded in the other volume changes account to complete the circle. The closing balance sheet position then becomes the starting point for the next period's opening balance sheet. Of course, this sequence of accounts in figure 1 is an illustration; actual economic activities occur simultaneously and continuously within a period.

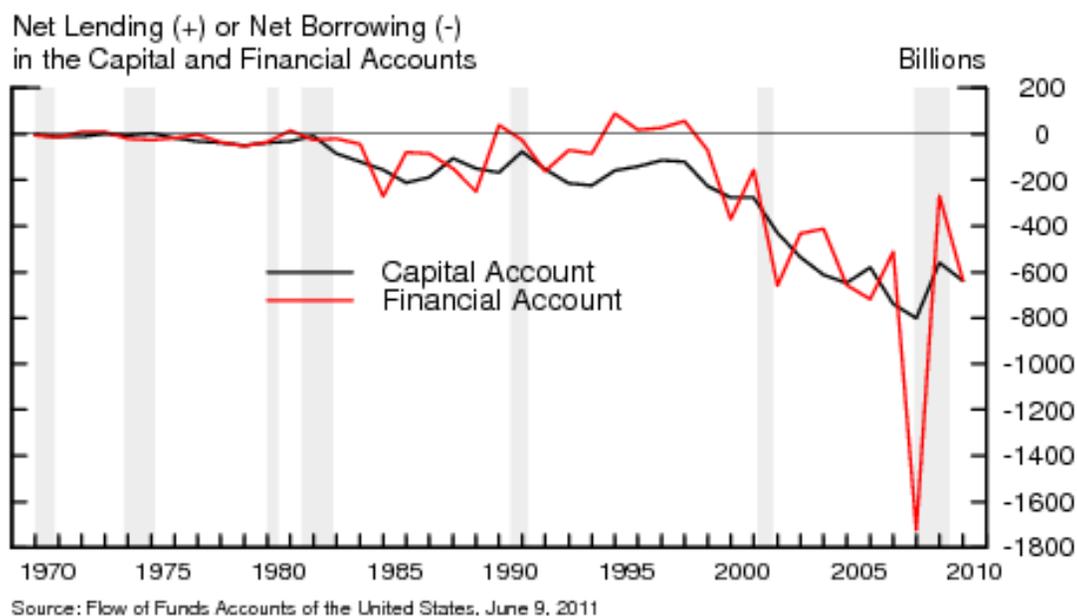
One point of note is that, for the household and nonfinancial business sectors, estimates of the market value of real estate are shown on the balance sheet. These estimates are from the FFA and are calculated using real estate price indices and net investment from BEA. For the financial business and government sectors, only the current-cost net stock of structures is shown because there are no reliable estimates for the market value of real estate. All domestic sectors' balance sheets show the current-cost net stock of equipment and software. For those sectors where total real estate is reported, it may be tempting to impute a value for land as the difference between the value of real estate and current-cost net stock of structures; this practice is not recommended, however, because the two measures are estimated independently and rely on different source data. For example, for the nonfinancial corporate business sector, the difference between real estate and net stock of structures actually turns negative in 2009, suggesting, implausibly, that the value of land is less than zero. Nevertheless, it is useful to analyze and question the relationship between real estate and structures in order to better understand the underlying source data and methods used to construct these statistics.

Why are Integrated Macroeconomic Accounts Useful?

One innovative feature of the integrated accounts is the ability to compare net lending (+) or net borrowing (-) calculated from the capital account with the alternative measure calculated from the financial account. As discussed above, in the capital account measure, a sector's net lending (+) or net borrowing (-) is defined basically as the difference between its net saving (disposable income less current spending) and its net investment (gross purchases of physical capital less depreciation on its existing capital stock). In the financial account measure, a sector's net lending (+) or net borrowing (-) is defined as the difference between its net acquisition of financial assets and its net increase in liabilities. Thus, except for statistical discrepancies, the two measures of a sector's net lending (+) or net borrowing (-) should be the same.

Chart 1, below, compares the capital account total net lending (+) or net borrowing (-) for all domestic sectors (black line) with the financial account measure (red line). The two lines are very close and hover around zero until about 1980. From that point forward, the U.S. becomes an increasingly larger net borrower vis-à-vis the rest of the world. The two measures of net lending (+) or net borrowing (-) remain fairly similar, although the financial account measure is more volatile, until around 2008 when the two lines diverge sharply, corresponding to the beginning of the most recent financial crisis. This divergence is partly due to data sources not yet available, but more likely due to data gaps in the financial accounts. These data gaps could reflect off-balance sheet data that have not been captured completely or transactions taking place at a level of business structure not currently included in any sector in the accounts. However, the two measures moved closer together by 2010 as the economy improved.

Chart 1



Unsurprisingly, when you look at these two measures by sector, as shown in table 1 below, the greatest differences appear to be for the nonfinancial corporate business sector (line 4) and the financial business sector (line 5), and to some degree the household sector (line 2). It is interesting to note that both the capital and financial account measures of net lending (+) or net borrowing (-) show that in the first half of the last decade the household sector shifted from being the major lending sector to a major borrowing sector, rivaled only as a borrower by the federal government sector (line 6). It was at this same time that the rest of the world sector (line 8) became the predominant lending sector.

Not surprising, the household sector debt as a percentage of disposable personal income reached an all time high of around 130 percent in the middle of 2007, after being only around 90 percent at the beginning of the decade. This ratio dropped to around 116 percent by the end of last year as consumers tightened their belts and a significant amount of mortgage debt was written off. Because of these changes, as can be seen in line 2, the household sector shifted back to being a net lender in 2008.

Net borrowing by the federal government (line 6), on the other hand, ballooned to over \$1.3 trillion in both 2009 and 2010. In 2009, the rest of the world sector (line 8) remained a significant lender, along with the financial business sector (line 5). The nonfinancial corporate business sector (line 4), traditionally a net borrower, became a net lender in 2009 by reducing their debt burden.

Data for 2010 are still somewhat preliminary for the financial account net lending (+) or net borrowing (-) measure due to incomplete data sources for some sectors. For the capital account measure, complete data for 2010 will become available in September 2011, following BEA's annual revision in July 2011.

Table 1Net Lending (+) or Net Borrowing (-) in the Capital and Financial Accounts, by Sector¹

Sector		1970s	1980s	1990s	2000-2006	2007	2008	2009	2010
1. All domestic sectors:	C	-16	-110	-160	-480	-738	-802	-559	-640
	F	-16	-95	-19	-487	-513	-1723	-268	-641
2. Households & nonprof:	C	56	135	88	-175	-160	229	556	572
	F	77	204	130	-324	100	435	351	780
3. Nonfin. noncorp. bus.:	C	-22	-38	-26	-49	-74	-53	7	-7
	F	-22	-37	-26	-52	-74	-53	7	-7
4. Nonfin. corp. business:	C	-21	-13	-26	-23	-94	-50	241	-9
	F	-42	-82	7	23	-209	-951	690	193
5. Financial business:	C	5	-20	-2	72	-3	-15	230	365
	F	3	4	29	128	87	-240	84	-176
6. Federal government:	C	-32	-166	-160	-215	-315	-755	-1477	-1512
	F	-33	-181	-169	-236	-343	-778	-1316	-1411
7. State & local govts:	C	-2	-7	-34	-90	-93	-157	-116	-49
	F	1	-4	11	-26	-74	-137	-85	-19
8. Rest of the world:	C	-2	-74	117	559	717	665	380	482
	F	-3	58	112	568	639	584	216	235
9. Statistical discrepancy ²	C	18	36	43	-79	21	137	179	158

1. Data in billions. Rows designated by "C" represent net lending or net borrowing calculated from the capital account; rows designated by "F" represent net lending or borrowing calculated from the financial account.

2. Equals rest of the world capital account net lending (+) or net borrowing (-) (line 8) less all domestic sectors' capital account net lending (+) or net borrowing (-) (line 1).

Source: Flow of Funds Accounts of the United States, June 9, 2011

One current drawback of the IMA, as pointed out in a paper by Palumbo and Parker, is that the accounts did not show the increased exposure of the financial business sector to house price risk because of the aggregation of the sector and of certain asset classes. The sector consolidation masked how leveraged some of the financial subsectors had become. Pension funds, insurance companies and mutual funds employ very little leverage compared to depositories, broker/dealers and government-sponsored enterprises such as Fannie Mae and Freddie Mac. In addition, structured financial products and traditional corporate bonds and commercial paper, which are group together as "securities other than shares" in the IMA, have very different risk characteristics.

Future Developments

In November 2009, the G-20 finance ministers and central bank governors endorsed 20 recommendations to address information gaps. Recommendation 15 was "to develop a strategy to promote the compilation and dissemination of the balance sheet approach (BSA), flow of funds, and sectoral data

more generally.” The IMA provide an excellent framework to address data gaps in the national accounts of a country. One point stressed at the IMF/OECD conference on February 28-March 2, 2011 is the need to have the financial business sector broken down into subsectors. We are currently developing tables for the following financial subsectors: central bank, depository institutions and money market mutual funds, insurance and pension funds, and other financial businesses. These additional tables should help analysts better evaluate the risk characteristics of different types of financial institutions. Work is also underway to convert the IMA from SNA1993 to SNA2008. This conversion should not be too difficult given the richness of data currently in the U.S. flow of funds accounts.

Also, as suggested in a 2009 paper by Palumbo and Parker, we are examining the feasibility of separating the holdings of structured products from traditional debt instruments. This exercise is a first step in a larger project of developing whom-to-whom matrices for different instrument categories. Additionally, we hope to extend our quarterly data in the IMA, which currently begins in 1992, back to 1960, when the annual data begins. We would also like to be able to improve data for real estate values in those sectors where we only show structures, such as for the government sectors. Improving techniques for separating the market value of land and structures would also be a worthy goal, as it would help us better develop the other changes in volume and the revaluation accounts.

The IMA have already proven to be valuable in studying the U.S. economy. We will continue to work closely with BEA to improve the presentation and data availability of these accounts so that in the future policymakers will be better able to see shifts in the financial climate of the U.S. prior to business cycle expansions and contractions.

Appendix: Table 1

Households and Nonprofit Institutions Serving Households - Abbreviated Presentation

Billions of dollars

			2006	2007	2008	2009	2010		
Current account									
1	156902505	Gross value added	1602.8	1685.8	1808.0	1838.1	1841.3	1	
2	156300003	Less: Consumption of fixed capital	268.1	285.5	292.4	290.6	292.5	2	
3	156902605	Equals: Net value added	1334.7	1400.3	1515.6	1547.5	1548.8	3	
4	156025005	Compensation paid by households and NPISHs	603.5	634.6	670.0	685.5	701.9	4	
5	156240101	Taxes on production and imports less subsidies	131.1	133.9	143.2	149.3	153.6	5	
6	156402101	Operating surplus, net	600.2	631.9	702.4	712.7	693.2	6	
7	156140005	Net national income/Balance of primary incomes, net	10366.7	10895.1	11251.2	10809.7	11060.8	7	
8	156402101	Operating surplus, net	600.2	631.9	702.4	712.7	693.2	8	
9	156025105	Compensation of employees (received)	7477.0	7855.9	8060.8	7811.7	7984.5	9	
10	156150105	Property income (received)	3023.4	3219.9	3298.8	3030.9	3128.7	10	
11	156130001	Less: Uses of property income (interest paid)	733.8	812.6	810.7	745.7	745.7	11	
12	156140005	Net national income/Balance of primary incomes, net	10366.7	10895.1	11251.2	10809.7	11060.8	12	
13	156220001	Less: Current taxes on income, wealth, etc. (paid)	1352.4	1488.7	1438.2	1140.0	1166.3	13	
14	156404105	Plus social benefits (received)	1583.6	1687.9	1842.6	2096.8	2259.0	14	
15	156600001	Less: Social contributions (paid)	921.8	959.5	987.2	970.3	1003.5	15	
16	156403101	Plus other current transfers (received)	21.4	30.5	36.7	36.0	37.4	16	
17	156403001	Less: Other current transfers (paid)	138.7	150.6	157.7	170.6	184.3	17	
18	156012095	Equals: Disposable income, net	9558.9	10014.7	10547.4	10661.6	11003.0	18	
19	156901001	Less: Final consumption expenditures	9322.7	9806.3	10104.5	10001.3	10349.0	19	
20	156006005	Equals: Net saving	236.2	208.4	442.9	660.3	654.0	20	
Capital account									
21	156006315	Net saving less capital transfers	219.5	205.4	451.6	666.3	671.1	21	
22	156006005	Net saving	236.2	208.4	442.9	660.3	654.0	22	
23	155440005	Less: Capital transfers paid (net)	16.8	3.0	-8.7	-6.0	-17.1	23	
24	155050905	Capital formation, net	499.3	365.1	222.7	110.8	99.3	24	
25	155019005	Gross fixed capital formation, excluding consumer durables	777.7	661.9	526.6	412.7	403.9	25	
26	155012005	Residential	670.1	541.7	397.2	293.8	283.4	26	
27	165013005	Nonresidential (nonprofit organizations)	107.5	120.2	129.4	118.9	120.4	27	
28	156300003	Less: Consumption of fixed capital	268.1	285.5	292.4	290.6	292.5	28	
29	155420003	Acquisition of nonproduced nonfinancial assets	-10.2	-11.3	-11.5	-11.3	-12.0	29	
30	155000905	Net lending (+) or borrowing (-), capital account (lines 29-32)	-279.9	-159.7	228.9	555.5	571.8	30	
Financial account									
31	155000905	Net lending (+) or borrowing (-), capital account (line 38)	-279.9	-159.7	228.9	555.5	571.8	31	
32	154090005	Net acquisition of financial assets	707.1	1011.5	326.8	162.8	613.3	32	
33	154000005	Currency and deposits	448.0	420.7	406.9	206.1	145.3	33	
34	154022005	Securities other than shares	107.3	523.0	-54.3	-241.9	113.3	34	
35	154035005	Loans	63.5	207.0	-109.6	-88.7	14.9	35	
36	153081015	Shares and other equity	-265.4	-440.4	-151.1	129.4	94.9	36	
37	153052005	Insurance technical reserves	353.7	301.1	234.9	158.0	244.8	37	
38	154190005	Net incurrence of liabilities	1253.2	911.5	-108.7	-188.4	-166.8	38	
39	163162005	Securities other than shares (municipals)	18.9	17.1	8.1	14.9	4.0	39	
40	154135005	Loans	1220.2	878.7	-135.6	-209.3	-191.6	40	
41	543077003	Insurance technical reserves (unpaid premiums)	0.5	1.0	3.2	-4.9	2.7	41	
42	163170003	Other accounts payable (trade debt)	13.6	14.6	15.7	10.9	18.1	42	

Appendix: Table 1 - Continued

Households and Nonprofit Institutions Serving Households - Abbreviated Presentation

Billions of dollars

			2006	2007	2008	2009	2010	
Addendum:								
43	155000005	Net lending (+) or borrowing (-), financial account (lines 40-46)	-546.1	100.0	435.5	351.2	780.1	43
Other changes in volume account								
44	158090185	Total other volume changes	15.5	568.5	230.1	272.3	327.5	44
45	155111005	Net investment in consumer durable goods	227.6	218.9	128.4	62.7	137.7	45
46	155404003	Disaster losses	0	0	8.3	0	0	46
47	158090085	Other volume changes	54.1	90.0	-113.2	413.9	-18.5	47
48	157005045	Less: Statistical discrepancy (lines 38-[40-46]) (2))	266.3	-259.7	-206.6	204.3	-208.3	48
Revaluation account								
49	152010705	Nonfinancial assets	497.2	-2133.7	-3927.0	-897.2	-522.1	49
50	155035725	Real estate	531.6	-2081.4	-3899.7	-861.0	-443.0	50
51	155111005	Consumer durable goods	-36.5	-52.4	-30.0	-35.2	-80.2	51
52	165015205	Equipment and software	2.1	0.1	2.7	-1.0	1.1	52
53	158080005	Financial assets	4478.4	1382.0	-9554.2	2672.9	2553.8	53
54	153081015	Shares and other equity	3423.0	939.0	-6369.5	1242.8	1544.6	54
55	153052005	Insurance technical reserves	1055.4	443.0	-3184.7	1430.2	1009.1	55
56	158200705	Changes in net worth due to nominal holding gains/losses	4975.6	-751.7	-13481.2	1775.7	2031.7	56
Changes in balance sheet account								
57	152090005	Change in net worth (lines 32+38+52+68)	5210.5	22.3	-12799.5	2714.3	3030.2	57
Balance sheet account (end of period)								
58	152000005	Total assets	77605.1	78538.9	65635.7	68161.5	71062.7	58
59	152010005	Nonfinancial assets	29523.2	27972.4	24397.3	23678.6	23379.8	59
60	155035005	Real estate	25031.0	23297.4	19601.3	18844.0	18465.8	60
61	155111005	Consumer durable goods	4268.1	4434.6	4533.1	4560.6	4618.1	61
62	165015205	Equipment and software	224.1	240.4	262.9	274.0	295.8	62
63	154090005	Financial assets	48081.9	50566.5	41238.3	44482.9	47682.9	63
64	154000005	Currency and deposits	5638.7	6059.4	6431.3	6637.4	6782.7	64
65	154022005	Securities other than shares	3331.3	3945.4	3825.3	3992.3	4133.4	65
66	154035005	Loans	786.8	993.8	884.2	795.5	815.6	66
67	153081015	Shares and other equity	23764.7	24263.4	17742.8	19114.9	20754.4	67
68	153052005	Insurance technical reserves	14560.4	15304.5	12354.7	13942.8	15196.8	68
69	152100005	Total liabilities and net worth	77605.1	78538.9	65635.7	68161.5	71062.7	69
70	154190005	Liabilities	13458.1	14369.6	14265.8	14077.4	13948.4	70
71	163162005	Securities other than shares (municipals)	224.1	241.2	249.3	264.1	268.2	71
72	154135005	Loans	13011.3	13890.0	13759.3	13550.0	13396.2	72
73	543077003	Insurance technical reserves (unpaid premiums)	22.8	23.9	27.0	22.1	24.7	73
74	163170003	Other accounts payable (trade debt)	199.9	214.5	230.2	241.2	259.3	74
75	152090005	Net worth	64147.1	64169.3	51369.8	54084.1	57114.3	75

(1) Consists of rental income of tenant-occupied housing and proprietors' income. Quasi-corporations are unincorporated enterprises that function as if they were corporations; they primarily cover their operating costs through sales, and they keep a complete set of financial records.

(2) The statistical discrepancy is the difference between net lending or net borrowing derived in the capital account and the same concept derived in the financial account. The discrepancy reflects differences in source data, timing of recorded flows, and other statistical differences between the capital and financial accounts.

NPISHs Nonprofit institutions serving households

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RÉSUMÉ (ABSTRACT) — optional

Abstract: Using the System of National Accounts format (SNA), this paper presents a set of macroeconomic accounts for the United States that combine data from the national income and product accounts (NIPAs) and the flow of funds accounts (FFA). This format provides a comprehensive picture of economic activity within an integrated framework with consistent definitions, classifications, and accounting conventions. Data are broken down into six economic units – households and nonprofit organizations serving households, nonfinancial noncorporate businesses (sole proprietorships and limited partnerships), nonfinancial corporate businesses, financial businesses, federal government, state and local governments, and the rest of the world. Each sector table has a full complement of accounts: current accounts (production and income accounts), accumulation accounts (capital account, financial, and other changes in volume account), revaluation account, and balance sheet account. Thus, you are able to trace the factors leading to changes in sector net worth for each sector. Data are available annually beginning in 1960 and quarterly beginning in 1992 and are released at the same time as the flow of funds accounts. These integrated accounts allow users to better document trends and developments during business cycles. A novel approach to analyzing the economy that is highlighted in these accounts is sectoral net lending and borrowing, which is presented in both the capital account and the financial account. In this paper I will focus first on the construction of the accounts and then on what we could learn from the data presented in this integrated way.