Credit Aggregates from the Flow of Funds Accounts

Milton P. Reid, III and Stacey L. Schreft

One reason analysts study financial variables is to determine how activity in financial markets affects the macroeconomy. For example, there is evidence that reduced credit flows contributed to the Great Depression (Bernanke 1983). Likewise, the Federal Reserve's Credit Restraint Program of 1980 magnified the 1980 recession by increasing uncertainty about credit availability (Schreft 1990). More recently, analysts have debated the implications of rapid credit growth for financial stability (Federal Reserve Bank of Kansas City 1986) and argued that debt repayment by consumers and businesses contributed significantly to the 1990–91 recession and the unusually weak recovery that followed (*1992 Economic Report of the President,* p. 27). The link between financial intermediation and economic growth and development is an ongoing area of study (e.g., McKinnon 1973; Greenwood and Smith 1993).

Analysts use both broad and narrow measures of credit in macroeconomic research. Support for using broad measures of credit comes from the ease with which different forms of credit substitute for one another. Because of this substitutability, broad measures reflect more accurately, for example, the extent to which credit availability is reduced during a credit crunch. Moreover, broad measures complement the monetary aggregates. In fact, since 1983, the Federal Open Market Committee, the Federal Reserve System's monetary policymaking arm, has set monitoring ranges for domestic nonfinancial debt.

In contrast, narrow measures focus only on specific types of credit. Some researchers focus on bank credit, for example, because they argue that it plays

The authors thank Dan Bechter, Tom Humphrey, Dawn Spinozza, Roy Webb, and John Weinberg for helpful comments. The views expressed in this article are those of the authors and do not necessarily reflect those of the Federal Reserve Bank of Richmond or the Federal Reserve System.

a crucial role in the mechanism by which monetary policy is transmitted to the real economy (see Morgan [1992] for a summary of this position). These researchers justify the use of the narrow measure by arguing that for some borrowers bank credit is the only form of credit available to finance spending plans; substitutability of bank and nonbank credit is not possible for these borrowers.

The leading source of data on credit aggregates is the Flow of Funds Accounts (FOFA). This article provides an introduction to the accounts. The first section describes the nature, history, and availability of the accounts. Section 2 explains the accounts' organization by sector and transaction. The third section traces the behavior over time of various credit measures from the FOFA. Section 4 highlights features of the accounts that warrant caution, and finally Section 5 provides suggestions for additional readings that provide a more thorough discussion of the accounts.

1. AN INTRODUCTION TO THE FLOW OF FUNDS

Nature of the Accounts

The FOFA are designed to measure the financial and nonfinancial transactions associated with sectoral and aggregate investment activity. By cataloging the financial flows associated with current income and production, the FOFA complement the National Income and Product Accounts (NIPA). While the NIPA measure total saving and investment in a particular sector, the FOFA reveal how a sector finances investment in excess of its saving. That is, according to economist James Tobin (1962, p. 190), the FOFA are an

> ex post record of the processes by which supplies and demands for various financial assets are balanced. . . . The basic behavior behind the flow of funds is the adjustment of the balance sheets, or portfolios, of individuals, business firms, and financial enterprises toward a desired allocation of wealth among holdings of various assets and debts. In this adjustment, the basic decision variables are stocks; and flows will be dominated by attempts to adjust stocks to changes in total wealth, interest rates, and other determinants.

The information in the FOFA is potentially of great use to economists, policymakers, and financial market participants. Surprisingly, however, knowledge and use of these accounts for economic analysis has been limited. This reserved reaction to the FOFA data is similar to that initially given to the NIPA data that were first developed in the early 1930s. Economist James Duesenberry (1962, p. 173) has noted that national income analysis was not embraced until John Maynard Keynes' work in *The General Theory of Employment, Interest, and Money* (1936) created interest in the interaction of macroeconomic aggregates. However, according to Duesenberry, "the Keynes of flow of funds analysis has not yet revealed himself." Perhaps the wait is over. The past decade has

witnessed renewed interest and advances in studying the interaction of the real and financial sectors of the economy. Moreover, the increasingly rapid pace of financial innovation will surely add to this interest.

History

The FOFA are based on research by Morris A. Copeland (1952), who had been studying financial flows when the NIPA became available in the early 1930s. With his training in accounting and with the NIPA in mind, Copeland began to calculate financial flow measures for the banking sector, and then, over a decade later, he compiled aggregate data for all sectors. In 1944, the National Bureau of Economic Research invited Copeland to develop a more complete system to account for financial flows. Copeland accepted the invitation, and in 1952, the Bureau published the results: U.S. financial flows and related balances for 1936 through 1942.

The Board of Governors of the Federal Reserve System continued the project and presented the result of its efforts in late 1955 in *Flow of Funds in the United States, 1939–1953.* The data, however, were on an annual basis and available only with a substantial time lag. In 1959, the Federal Reserve published a revised presentation with quarterly data. Since then the Federal Reserve has published regularly quarterly FOFA data.

Availability

Quarterly estimates are available for most series dating back to 1952, and annual estimates exist as far back as 1946. In general, FOFA data for a given quarter are first released about two months after the quarter ends. These data are only preliminary estimates because some of the source data needed to more accurately represent flows of funds are not yet available. Thus, with each new release of FOFA data, estimates for previous quarters may be revised. Generally, data for only the five most recent quarters are revised. Annually, however, the Federal Reserve revises the entire FOFA to incorporate methodological and definitional changes and new source data. These adjustments are usually released with the second-quarter estimates. While these revisions often are not large, in some instances they can be substantial. The 1992 annual revision, for example, caused the estimate of home mortgage debt for the nonfarm noncorporate business sector to more than triple, from $42.5 billion to $151.1 billion for 1991:1.

2. STRUCTURE OF THE ACCOUNTS

The FOFA are organized along two dimensions: by economic sector and by transaction type. The FOFA partition the economy into financial and nonfinancial

sectors. The nonfinancial sector is then divided further into three categories: Private Domestic Nonfinancial, U.S. Government, and Foreign. Thus, the FOFA split the economy into four broad sectors: Financial, Private Domestic Nonfinancial, U.S. Government, and Foreign. In contrast, the NIPA traditionally break down the economy into four different sectors: Consumer, Business, Government, and Foreign.

The FOFA also are organized by the types of transactions among these sectors. Financial claims, such as demand deposits, bonds, corporate equities, and mortgages, represent different financial transaction categories. Nonfinancial capital transactions, which consist of saving and investment flows, constitute another transaction category. Estimates of the nonfinancial capital flows come directly from the NIPA. Data on income, transfer payments, and expenditures on goods and services, are not included in the FOFA, except to the extent that saving is the balance of current receipts less current outlays.

In addition to being organized along those two dimensions, the FOFA also report data in two different but related ways: for stocks of financial assets and liabilities and for financial and nonfinancial capital flows. For each sector, the reported stocks provide a balance sheet of the financial assets and liabilities of that sector. The reported flows record the change in balance sheet holdings of financial assets and liabilities between the current period and the previous one. The flow data also report nonfinancial capital transactions from the NIPA.

Sectors

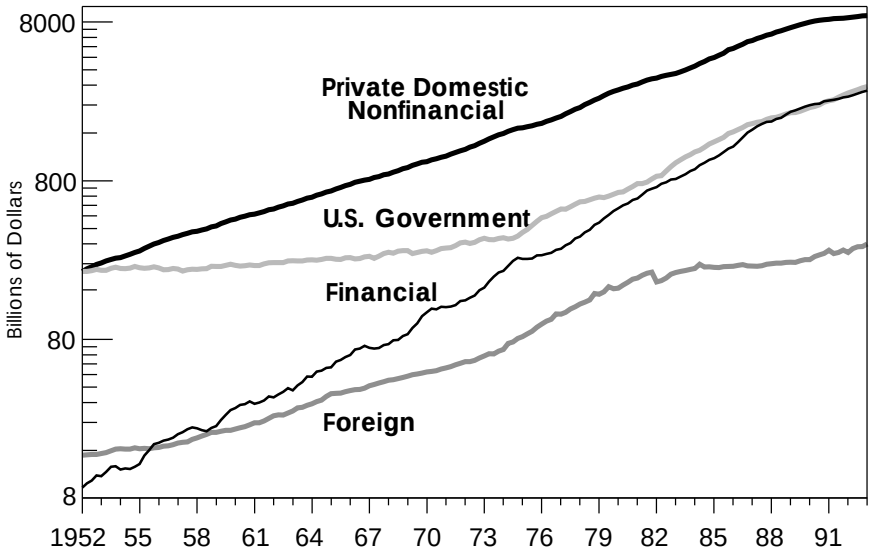
Figure 1 shows the level of credit market debt owed by each sector from 1952:1 to 1993:1. Descriptions of each sector follow.

Private Domestic Nonfinancial Sector

Households. The household sector is composed primarily of individuals, but also includes personal trusts and nonprofit organizations that serve individuals. Unlike its treatment in some other accounts, the household sector does not include directly any data on business activities.

Nonfinancial Business. The nonfinancial business sector includes farm business, nonfarm noncorporate business, and corporate nonfinancial business. Estimates of all farming activity in the United States, including corporate farm activity, are counted in the farm business sector. Unincorporated business enterprises, such as partnerships and proprietorships, engaged in nonfinancial, nonagricultural activities comprise the nonfarm noncorporate business subsector. Finally, the corporate nonfinancial business subsector is the same as the nonfinancial corporate group of the NIPA with the exception that farm corporations are omitted. This subsector, therefore, includes all private corporations not included in the farming or financial sectors. Since the FOFA include a

Figure 1 Credit Market Debt by Sector



Source: Federal Reserve Board, FOFA.

foreign sector, only the domestic activities of these corporations are included in the private domestic nonfinancial business sector.

State and Local Governments. The state and local government sector embodies the governments of all 50 states, their localities, United States territories, and the District of Columbia, as well as the economic institutions (e.g., debt-issuing authorities and trust funds) operated by these governments. Only retirement funds for employees of state and local governments are excluded; they are considered part of the financial sector.

Foreign

Only data on capital transactions between the United States (including its territories) and foreign economic entities are included in the foreign sector. Flows of funds between two foreign economic agents are excluded entirely from the FOFA. In general, the location of an economic entity is the basis for determining whether its activities are foreign or domestic. Thus, the activities of a subsidiary of a U.S. corporation located in a foreign nation are included in the foreign sector. Likewise, the activities of a subsidiary of a foreign corporation located in the United States are considered domestic activities in the FOFA.

U.S. Government

The U.S. government sector includes the activities of all agencies that are part of the budget of the United States and all off-budget activities, with the exception of certain financial activities. The Federal Reserve System is not included in this sector, nor are certain Treasury accounts related to monetary policy. Also, some federally sponsored credit agencies are not considered part of the United States government sector. Specifically, the financial sector includes the activities of the Federal Home Loan Banks, Federal Home Loan Mortgage Corporation, Federal National Mortgage Association, Federal Land Banks, Federal Intermediate Credit Banks, and Banks for Cooperatives.

Financial Sector

Federally Sponsored Credit Agencies and Federally Sponsored Mortgage Pools. Federally sponsored credit agencies are considered private financial institutions despite their close legal association with the federal government. These institutions typically engage in very specific lending activities (e.g., the making of residential mortgages and farm loans). Federally sponsored mortgage pools include the Government National Mortgage Corporation, the Federal Home Loan Mortgage Corporation, and the Farmers Home Administration. These agencies raise funds by issuing securities that are backed by a pool of mortgages.

Monetary Authority. This sector includes the Federal Reserve System and certain Treasury accounts related to the conduct of monetary policy.

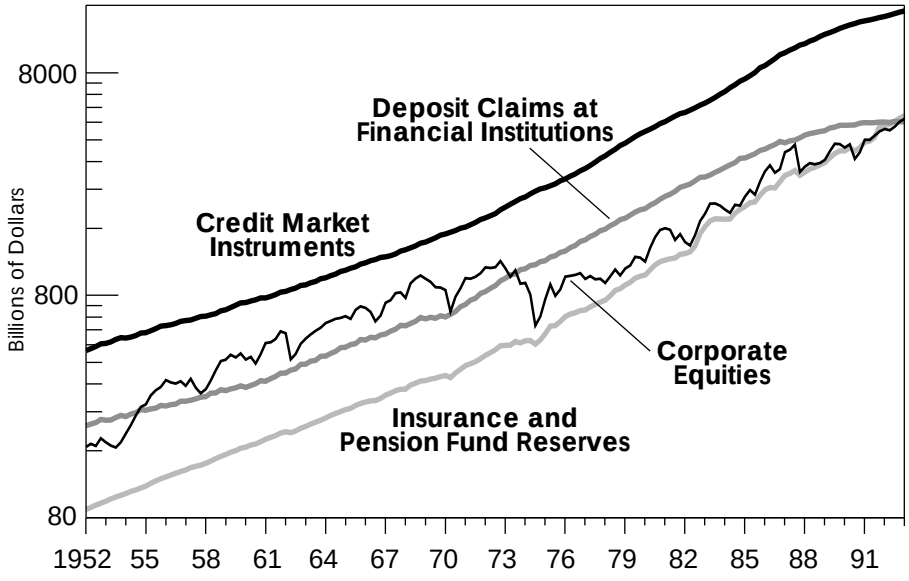
Commercial Banking. The commercial banking sector includes all banks that have head offices in the 50 states, U.S. branches of foreign banks, Edge Act and agreement corporations, U.S. agencies of foreign banks, bank holding companies, and banks in U.S. territories and possessions.

Private Nonbank Finance. Private nonbank finance includes all private financial institutions that are not part of the commercial banking sector. Included in this sector are deposit-taking firms such as savings and loan associations, mutual savings banks, and credit unions. In addition, insurance companies, private pension funds, state and local government employee retirement funds, finance companies, real estate investment trusts, money market and other mutual funds, and securities brokers and dealers are among those counted in this sector.

Transaction Categories

The FOFA are also organized by transaction categories. Transaction categories are broadly divided into two subcategories: nonfinancial and financial. The nonfinancial subcategory includes current transactions and capital transactions.

Figure 2 Financial Liabilities by Transaction Category



Source: Federal Reserve Board, FOFA.

In the FOFA, current transactions are summarized by total saving for each sector as in the NIPA, where saving is defined as the excess of current receipts over current outlays. Saving then enters as a source of funds for each sector in the capital account. Investment expenditures are the other half of the capital account. Financial transactions account for the remainder of the transactions in the FOFA. Figure 2 shows the level of financial liabilities for the major financial transaction categories.

Financial Transaction Categories

Monetary Reserves. Monetary reserves are financial assets that can be used for intervention in foreign exchange markets by monetary authorities and for settlement of international transactions. The primary financial instruments included in this transactions category are gold, foreign currencies, and special drawing rights (SDRs). Transactions in these instruments occur among the U.S. government, monetary authorities, and the foreign sector.

Insurance and Pension Fund Reserves. Financial assets held by insurance companies and pension plans for payment of claims to household beneficiaries are included in this category.

Net Interbank Claims. Interbank claims involve transactions occurring between depository institutions and either the Federal Reserve or the foreign sector. Loans by the Federal Reserve to member banks, as well as depository institution reserves and vault cash held at the Federal Reserve, are included in this category. Federal funds and security repurchase agreements, however, are not included.

Deposit Claims on Financial Institutions. Deposit claims can be held in a number of different forms, including demand deposits, time deposits, federal funds, and money market fund shares. In all instances, the deposit claim is a liability of the financial institution receiving the funds and an asset of the individual or institution that lends or deposits the money.

Credit Market Instruments. Credit market instruments represent the primary source of funds to the nonfinancial sector. Instances of both direct and indirect finance are included in this category. One example of direct finance occurs when corporations issue bonds directly to the nonfinancial sector. The auctioning of U.S. government securities to private firms is another example of direct finance. Home mortgages, on the other hand, are an example of indirect finance where funds flow through the financial sector; mortgages are typically issued by a financial company using money that has been deposited with the institution by the nonfinancial sector.

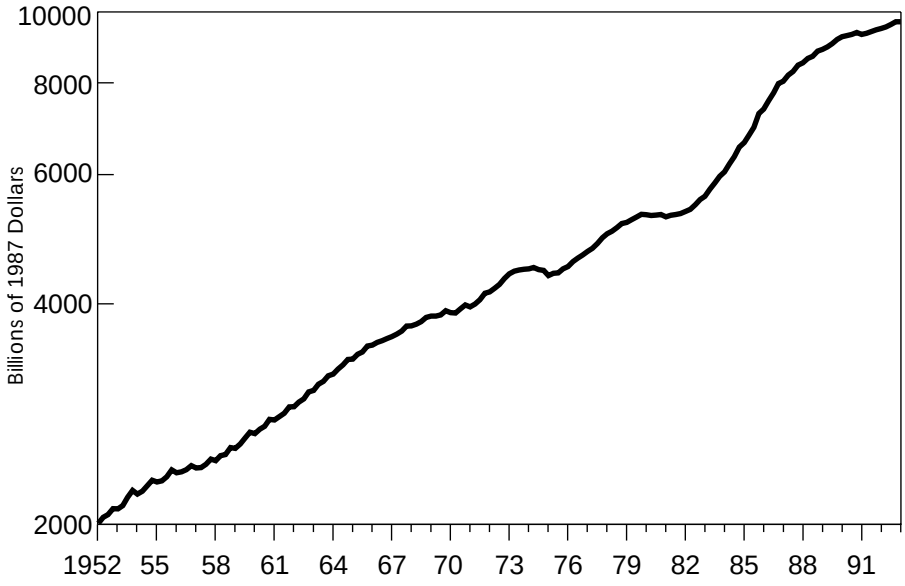
Corporate Equities. Corporate equities are not debt. Instead, equities represent claims of ownership on a corporation. Unlike the treatment of most other financial instruments in the FOFA, equity issues are considered an asset of the holder, but not a liability of the issuer.

Other Claims. Any financial transaction that is not included in any transaction category described above is included in the "other claims" category. Security credit, trade credit, and equity in noncorporate business are among the items included in this category.

3. MOVEMENTS OVER TIME

The FOFA data include narrowly defined measures of credit, such as bank credit or trade credit, and broader aggregations of these more narrow measures. At times the Federal Reserve System has monitored various measures of credit—both narrow and broad—in attending to the financial problems affecting credit markets. The broad credit aggregate most commonly used in policymaking and economic research is domestic nonfinancial debt. As Figure 3 indicates, in real terms this credit aggregate exhibited steady growth of 3.75 percent per

Figure 3 Real Domestic Nonfinancial Debt



Source: Federal Reserve Board, FOFA.

year from 1952:1 through 1993:1. In 1993:1, it made up 78.5 percent of total debt owed by all sectors. Table 1 shows that between 1980:4 and 1993:1 the U.S. government's debt outstanding grew by more than 400 percent, thereby increasing its share of total debt relative to the debt of the private and foreign sectors. As Table 2 indicates, however, the U.S. government's share of the financial assets of the nonfinancial sector actually fell from 2.6 percent to 2.0 percent over the same time period.

4. CAUTIONS

No data source is perfect, and the FOFA are no exception. The following are some potential shortcomings of the FOFA of which the user must be aware.

Double Counting

The FOFA data are supposed to measure borrowing to finance purchases of real goods. Some borrowing, however, may finance purchases of financial assets. This results in a "double counting" of debt. Although this double counting rarely inflates debt above its underlying trend (Wilson et al. 1986, p. 519), caution

Table 1 Credit Market Debt Owed by All Sectors

	1980:4		1993:1	
	Billions of Dollars	Percent of Total	Billions of Dollars	Percent of Total
Total	4,731.0	100.0	15,163.3	100.0
Private Domestic Nonfinancial	3,200.5	67.6	8,756.9	57.8
Household	1,405.8	29.7	4,191.5	27.6
Nonfinancial Business	1,484.3	31.4	3,603.8	23.8
State & Local Governments	310.4	6.6	961.6	6.3
U.S. Government	735.0	15.5	3,140.2	20.7
Foreign	191.7	4.1	319.5	2.1
Financial	603.8	12.8	2,946.6	19.4

Source: Federal Reserve Board, FOFA.

Table 2 Total Financial Assets of Nonfinancial Sectors

	1980:4		1993:1	
	Billions of Dollars	Percent of Total	Billions of Dollars	Percent of Total
Total	8,688.2	100.0	22,308.9	100.0
Private Domestic Nonfinancial	8,000.6	92.1	19,860.3	89.0
Households	6,390.5	73.6	16,147.1	72.4
Business	1,363.2	15.7	2,973.2	13.3
State & Local Governments	246.9	2.8	740.0	3.3
U.S. Government	228.7	2.6	455.8	2.0
Foreign	458.8	5.3	1,992.8	8.9

Source: Federal Reserve Board, FOFA.

should nevertheless be used in interpreting higher debt levels reported in the FOFA data. Such debt levels may appear to reflect an overleveraged financial position, when in reality they only indicate greater financial intermediation in the economy.

Flows, Not Transactions Volumes

The flows reported in the FOFA do not necessarily indicate the total volume of transactions in a period. For instance, a flow of $200 would be recorded in the FOFA in both of the following hypothetical examples, although the total volume of transactions is different. Both cases assume that the commercial banking sector has $1,000 of home mortgages as assets on its balance sheet,

and that this $1,000 is a financial liability of the household sector. An additional assumption is that the household sector is comprised of five individuals each owing $200 to the banking sector. In the first case, one individual repays his mortgage, thereby lowering the assets of the banking sector and the liabilities of the household sector by $200. In the second case, the same individual and two other individuals repay their mortgages. This action decreases the assets of the banking sector and liabilities of the household sector by $600. Meanwhile, the remaining two individuals borrow an additional $200 each in mortgage debt. Because of these actions, the assets of the banking sector and liabilities of the household sector are increased by $400. On net, the second case leads to a decrease of $200 in the assets of the banking sector and in the liabilities of the household sector. In both cases, the reported flows are equal, but the gross volume of transaction activity is much greater in the second example.

Comparisons with Other Data Sources

Estimates in the FOFA can differ significantly from data in other sources. In most instances, these differences can be reconciled. For instance, private domestic nonfinancial debt measures in the FOFA are reported on a quarter-end basis. Furthermore, unlike data on flows, the data on levels are not adjusted to remove discontinuities in the series caused by definitional changes, loss of the underlying data source, valuation adjustments, or other statistical problems. The debt measures reported with the monetary aggregate data, however, have been adjusted to eliminate these problems and are reported as a monthly average obtained by computing the mean of consecutive month-end levels.

In addition, personal saving, as estimated by the FOFA, differs significantly from the corresponding figure reported in the NIPA. One reason for this difference is the treatment of consumer expenditures for durable goods. The FOFA consider consumer durable expenditures to be investment; therefore, these expenditures are included in personal saving. In the NIPA, durable goods purchases are part of the current account. Additionally, saving by farm corporations and government insurance and pension fund reserves are contained in the personal saving measure of the FOFA. The remaining difference between the NIPA and FOFA measures of personal saving equals the statistical discrepancy of the household sector.

Estimates of international capital flows also can differ significantly depending on the source of the data. Hooker and Wilson (1989) document these differences between international transactions estimates in the FOFA and balance of payments statistics.

Zero Government Investment

Another shortcoming, one shared by the NIPA, is the treatment of government expenditures. All government expenditures are considered current consumption, not saving or investment. Some government expenditures, however, such

as spending for the construction of highways and new buildings, are similar to private spending that is included in the capital account. Additionally, treatment of the social security program is not consistent with the treatment of private pension programs. Payments by individuals to private pension programs are a form of saving in the FOFA, but social security payments are not. As a result, many analysts would question the FOFA estimate of saving and investment by the government sector.

Valuation

For corporate equities and mutual fund shares, levels are reported at market values, but flows are not. Instead, flows are net purchases plus reinvested dividends. Debt instruments, however, are not adjusted for fluctuations in their market prices (i.e., "marked to market"). In general, financial instruments are valued at acquisition cost.

Sectoring

When using FOFA data, one should give careful consideration to the exact definition of the sectors of the economy because the sector names can be misleading. Two instances of this deserve special attention. First, the household sector includes nonprofit organizations and trusts. Second, the private sector includes state and local governments.

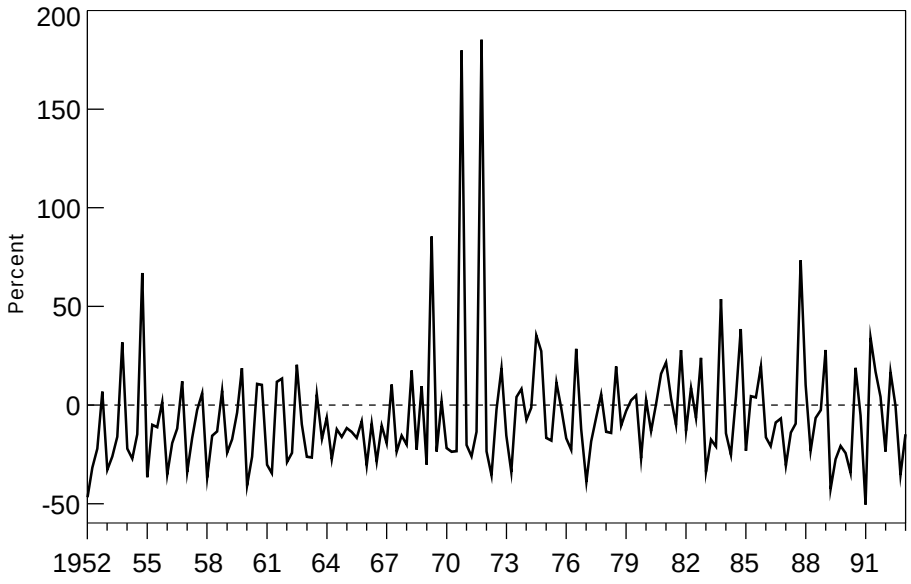
Statistical Discrepancies

The user of FOFA data should be aware of the statistical discrepancies that balance the system. The FOFA contain discrepancies for every sector and every transaction category in the economy. As seen in Figure 4, the magnitude of the FOFA household discrepancy can be quite large relative to personal saving. On average, the household discrepancy was 21.3 percent of personal saving in absolute terms for the 1952:1 to 1993:1 period.

Residual Estimation of the Household Sector

Many transactions categories of the household sector are measured as residuals. That is, estimates for holdings of the household sector are determined by subtracting estimates for all other sectors from the estimate of the total holdings for the entire economy. Therefore, errors in estimates for other sectors of the economy lead to inaccurate calculation of the household sector's holdings. In recent years, several authors have cited this method as the explanation for the widening household discrepancy and consequently for the divergent measures of personal saving by the FOFA and NIPA (see, for example, Wilson et al. 1989).

Figure 4 Ratio of Household Discrepancy to Personal Saving



Note: The figure shows two large spikes in the periods of 1970:4 and 1971:4. These spikes represent periods of low saving, not extremely large discrepancies. The estimated savings for the periods were $31.1 and $34.7 billion, respectively, while the discrepancies were $55.9 and $64.2 billion. In fact, the discrepancy/saving ratio was −50.5 in 1991:1 when the discrepancy reached its largest absolute value of $316.5 billion and personal saving measured $626.3 billion.

Source: Federal Reserve Board, FOFA.

5. SUGGESTIONS FOR FURTHER READING

Much has been written about the FOFA. The following articles and publications provide additional guidance in understanding the FOFA. The Federal Reserve Board's *Guide to the Flow of Funds Accounts* provides a complete overview of the accounts. Particularly important is its discussion of the various sectors and transaction categories. This publication also provides, in line-by-line detail, a description of the source and/or construction of each data series. Additionally, it presents the accounting identities that constrain the FOFA using a matrix representation of the FOFA system. It also analyzes the movement of the data over time. Wilson, Freund, Yohn, and Lederer in "Measuring Household Saving: Recent Experience from the Flow-of-Funds Perspective" furnish an excellent analysis of the gap between the NIPA and FOFA measures of personal saving in their discussion of the growing household sector discrepancy. Hooker and Wilson in "A Reconciliation of Flow of Funds and Commerce Department

Statistics on U.S. International Transactions and Foreign Investment Position" explain the differences between the international transactions statistics reported in the FOFA and the Commerce Department's Balance of Payments Statistics. Finally, Ritter's "The Flow of Funds Accounts: A Framework for Financial Analysis" and Van Horne's "Flow-of-Funds Analysis" detail the theoretical background for the accounts' construction.

REFERENCES

Bernanke, Ben S. "Nonmonetary Effects of the Financial Crisis in the Propagation of the Great Depression," *American Economic Review,* vol. 73 (June 1983), pp. 257–76.

Copeland, Morris A. *A Study of Moneyflows in the United States.* New York: National Bureau of Economic Research, 1952.

Duesenberry, James S. "A Process Approach to Flow-of-Funds Analysis," in National Bureau of Economic Research, ed., *The Flow of Funds Approach to Social Accounting.* Princeton: Princeton University Press, 1962.

Economic Report of the President. Washington: United States Government Printing Office, 1992.

Federal Reserve Bank of Kansas City. *Debt, Financial Stability, and Public Policy,* Proceedings of a Symposium sponsored by the Federal Reserve Bank of Kansas City, 1986.

Greenwood, Jeremy, and Bruce D. Smith. "Financial Markets in Development and the Development of Financial Markets," Working Paper 93–07. Center for Analytic Economics, Cornell University, March 1993.

Hooker, Sarah A., and John F. Wilson. "A Reconciliation of Flow of Funds and Commerce Department Statistics on U.S. International Transactions and Foreign Investment Position," Finance and Economics Discussion Series, no. 84. Washington: Board of Governors of the Federal Reserve System, 1989.

McKinnon, Ronald I. *Money and Capital in Economic Development.* Washington: Brookings Institution, 1973.

Morgan, Donald P. "Are Bank Loans a Force in Monetary Policy?" Federal Reserve Bank of Kansas City *Economic Review,* vol. 77 (1992), pp. 31–41.

Ritter, Lawrence S. "The Flow of Funds Accounts: A Framework for Financial Analysis," *The Bulletin of the C. J. Devine Institute of Finance,* no. 52, August 1968, pp. 4–31.

Schreft, Stacey. "Credit Controls: 1980," Federal Reserve Bank of Richmond *Economic Review,* vol. 76 (November/December 1990), pp. 25–55.

Tobin, James. "Comment" [on "A Process Approach to Flow-of-Funds Analysis"], in National Bureau of Economic Research, ed., *The Flow of Funds Approach to Social Accounting.* Princeton: Princeton University Press, 1962.

Van Horne, James C. "Flow-of-Funds Analysis," in *The Function and Analysis of Capital Market Rates,* 2d ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1984.

Wilson, John F., Elizabeth M. Fogler, James L. Freund, and Guido E. van der Ven. "Major Borrowing and Lending Trends in the U.S. Economy, 1981–85," *Federal Reserve Bulletin,* vol. 72 (August 1986), pp. 511–24.

Wilson, John F., James L. Freund, Frederick O. Yohn, Jr., and Walther Lederer. "Measuring Household Saving: Recent Experience from the Flow-of-Funds Perspective," in Robert E. Lipsey and Helen Stone Tice, eds., *The Measurement of Saving, Investment, and Wealth.* Chicago: The University of Chicago Press, 1989.