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Chapter Author: George M. von Furstenberg

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FLOW-OF-FUNDS ANALYSIS AND THE ECONOMIC OUTLOOK

BY GEORGE M. VON FURSTENBERG*

From a national income accounts forecast of the balance between gross saving and private capital expenditures and of the money supply supposedly consistent therewith, this paper lays out the steps leading to a complete flow-of-funds translation of the forecast. This allows a much broader set of financial relationships to be assessed than are usually considered in appraising the outlook. The particular flow-of-funds reconciliation undertaken in this study during the Spring of 1976 suggests that the implied liquidity ratios are so high as to give little substance to fears of financial crisis or crowding-out through Federal deficits in 1976 and 1977.

Before the 1975 tax cut was passed, an intense debate arose over the possible crowding out of private borrowing and credit-financed private expenditures by Federal budget deficits. At the time, the economic decline and added discretionary fiscal stimulus were projected to raise the Federal deficit on the national income accounts (NIA) basis to \$70 billion in fiscal year 1976. With this information grafted onto previous forecasts of gross investment and gross saving,¹ some analysts inferred that *ex ante* gross investment demand and the deficit greatly exceeded *ex ante* gross saving which is the sum of business and personal saving and net foreign investment in the United States. They concluded that private investment plans cannot be realized if the Federal government financing is as large as projected.

Other researchers attempted to use flow of funds analysis to either prove or disprove that there would be a deficit financing problem. Since none of the large published econometric models had a fully developed and integrated flow of funds sector at the time,² consistent forecasts allowing interactions between expenditures, savings and sectoral financial flows were as yet unavailable.³ As a result, different students of the deficit

*Resident Economist, American Enterprise Institute, and Professor of Economics, Indiana University. I am greatly indebted to Stephen P. Taylor, Chief, Flow of Funds Section, Board of Governors of the Federal System for expert advice, but he is in no way responsible for any errors of either fact or judgment that remain.

¹For past quarters, the sources and uses of gross saving are published in the national income accounts section of the *Survey of Current Business*, Table 15 (Table 5.1 in National Income Accounts issues).

²The integration of national-income and flow-of-funds accounts into one complete model has progressed in recent years. For discussions of various stages see Lawrence R. Klein, "Econometrics of Inflation, 1965-74," paper presented at the NBER Conference on Research in Income and Wealth, Nov. 1974; and Gary Fromm and Allen Sinai, "A Policy Simulation Model of Deposit Flows, Mortgage Sector Activity, and Housing," paper presented at Econometric Society Meeting, San Francisco, Dec. 1974.

³A consistent internal forecast is prepared for the Federal Reserve Board of Governors.

financing problem reached very different conclusions.⁴ One analyst expected the Fed to monetize the bulk of a \$70 billion Federal deficit and suggested that the prime rate of commercial banks might be driven up to 20 percent by the end of 1975 or in early 1976 as rates of inflation would then be expected to surge.⁵ Others argued that "the interplay of steep declines in economic activity and easing monetary policy affords latitude for an orderly matching of supply and demand for credit during 1975."⁶

The evidence that has accumulated since the time when these predictions were made has supported the latter view. While real business fixed investment in the first quarter of 1976 had still not quite recovered to its year-earlier level, large reserves of excess capacity rather than crowding out restrained investment, as long-term bond rates were steady and short rates declined throughout 1975. Furthermore, both residential investment and inventory investment were much higher than in the first quarter of 1975. Nevertheless the crowding out debate has not been stilled. Rather, many of those who started the debate now argue that unless the Federal deficit is reduced considerably more rapidly than it would be under a constant full-employment surplus, crowding out will occur in more advanced stages of the present expansion, perhaps as early as 1977.⁷ Others, however, dispute the view that crowding out is imminent or that fiscal policy stimuli would be at the expense of private investment in the near future.⁸

Faced with such divergent judgments, there is a need for factual inquiries to narrow the range of disagreement. Unfortunately such inquiries are hampered by flow-of-funds analysis and its integration with national income accounts analysis being inaccessible to most general economists who would like to form a judgment of their own. As a partial remedy, this paper attempts to explain how economists who are equipped with little more than the usual forecasts of the income and product account components of GNP and with the growth rates of the money supply supposedly consistent therewith can engage in some rudimentary analysis to check whether the financing implications of the forecast are at all consistent with the forecast of NIA expenditures.

⁴See Walter E. Heller, "Deficit: Where is Thy Sting?" *Wall Street Journal*, March 7, 1975.

⁵See the review article, "Crowding Out," *Wall Street Journal*, March 13, 1975, p. 16.

⁶"Can the Government Finance Those Big Deficits?", *Morgan Guaranty Survey*, February, 1975, p. 4.

⁷For a discussion of the concept of crowding out and applications to the present expansion see Keith M. Carlson and Roger W. Spencer, "Crowding Out and Its Critics," *Federal Reserve Bank of St. Louis Review*, December 1975, pp. 2-17; *Economic Report of the President*, January 1976, pp. 46-47; and Keith M. Carlson, "The 1976 Economic Report and the Federal Budget: Towards a Long-run Perspective," *Federal Reserve Bank of St. Louis Review*, April 1976, pp. 2-11.

⁸Congressional Budget Office, *Budget Options for Fiscal Year 1977: A Report to the Senate and House Committees on the Budget*, March 15, 1976, pp. 26-31.

GROSS SAVING BY SECTORS

The first step in the process of deriving a flow-of-funds reconciliation is to translate the NIA table of gross saving, which is routinely supplied in econometric forecasts, into the corresponding flow of funds tables which are generally not provided. As Table 1 shows, for all sectors combined this involves merely the addition of the government NIA budget balances and of expenditures on consumer durables to gross private NIA saving.

Like producers' durables, consumer durables are debt-financed to a significant extent. In the flow of funds accounts, consumer durables are thus added both to the gross saving and to the gross investment of the household sector. Apart from this addition, gross investment is defined in the same way as in the NIA accounts even though its distribution by sectors, and the distribution of the corresponding capital consumption allowances, is more detailed than in published NIA breakdowns as shown in Tables 2 and 3.

Before gross saving by households can be derived on the basis pub-

TABLE 1
RELATION BETWEEN NIA AND FLOW OF FUNDS MEASURES
OF GROSS SAVING, ALL SECTORS, 1973-77
(\$ BILLION)

| | 1973 | 1974 | 1975 | 1976 ^a | 1977 ^a |
|---|--------------|--------------|--------------|-------------------|-------------------|
| Personal Saving | 72.7 | 74.0 | 88.9 | 88.8 | 101.3 |
| Undistributed Corporate Profits | 40.9 | 48.4 | 38.4 | 59.5 | 69.2 |
| Corporate Inventory Valuation Adjustment | -18.4 | -38.5 | -10.8 | -13.0 | -17.7 |
| Capital Consumption Adjustment | 1.6 | -2.3 | -5.7 | -7.5 | -9.3 |
| Corporate Capital Consumption Allowance ^b | 71.9 | 82.1 | 93.5 | 104.4 | 116.5 |
| Noncorporate Capital Consumption Allowance ^b | 45.2 | 52.0 | 58.5 | 65.0 | 71.4 |
| Total: Gross Private Saving, NIA Basis | 213.8 | 215.7 | 262.8 | 297.2 | 331.4 |
| Gross Private Saving, NIA | 213.8 | 215.7 | 262.8 | 297.2 | 331.4 |
| Federal Government Surplus or Deficit (-) | -6.9 | -11.7 | -74.6 | -62.8 | -42.5 |
| State and Local Surplus or Deficit (-) | 12.9 | 8.1 | 9.8 | 16.8 | 15.8 |
| Consumer Durables | 122.9 | 121.9 | 128.1 | 155.8 | 178.5 |
| Total: Gross Saving, Flow of Funds Basis | 342.7 | 334.0 | 326.1 | 407.0 | 483.2 |

Note: Detail may not add to totals because of rounding.

^aForecasts of NIA components are taken from the DRI control solution dated April 26, 1976 with the exception of noncorporate capital consumption allowances which are assumed to grow by 10 percent per annum from 1975 to 1977, assuming a 6 percent rise in replacement costs.

^bSince the capital consumption adjustment is included, replacement-cost depreciation rather than historical-cost depreciation is shown here. For an explanation of the capital consumption adjustment (CCA) see Allan H. Young, "New Estimates of Capital Consumption Allowances in the Benchmark Revision of GNP," *Survey of Current Business*, vol. 55 (October 1975), pp. 14, 16, 35.

TABLE 2
RELATION BETWEEN NIA AND FLOW OF FUNDS MEASURES
OF TOTAL PRIVATE CAPITAL EXPENDITURES, 1973-77
(\$ BILLION)

| | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|-------|-------|-------|-------|-------|
| Nonresidential Structures | 49.0 | 54.4 | 52.7 | 57.4 | 64.1 |
| Producers' Durable Equipment | 87.5 | 93.5 | 95.8 | 107.0 | 125.4 |
| Total Nonresidential | 136.5 | 147.9 | 148.5 | 164.4 | 189.5 |
| Total Residential Structures ^a | 66.5 | 54.6 | 48.7 | 66.0 | 83.2 |
| Total Change in Business Inventories | 17.5 | 9.7 | -14.6 | 17.5 | 23.8 |
| Gross Private Domestic Investment, NIA | 220.5 | 212.2 | 182.6 | 247.9 | 296.5 |
| Plant and Equipment Nonprofit Institutions ^b | 6.3 | 6.3 | 5.7 | 6.0 | 6.0 |
| Plant and Equipment Nonfinancial Businesses | 125.2 | 135.2 | 133.3 | 150.4 | 175.8 |
| Plant and Equipment Commercial Banks ^b | 3.0 | 3.8 | 4.6 | 4.0 | 4.2 |
| Plant and Equipment Private Nonbank Finance ^b | 2.0 | 2.6 | 4.9 | 4.0 | 3.5 |
| Total Plant and Equipment | 136.5 | 147.9 | 148.5 | 164.4 | 189.5 |
| Residential Construction Households | 44.5 | 37.7 | 35.3 | 48.6 | 60.0 |
| Residential Construction Nonfinancial Business ^c | 21.7 | 16.5 | 12.6 | 17.0 | 23.0 |
| Residential Construction Private Nonbank Finance ^b | 0.2 | 0.4 | 0.9 | 0.4 | 0.2 |
| Total Residential Construction | 66.5 | 54.6 | 48.7 | 66.0 | 83.2 |
| Inventory Change | 17.5 | 9.7 | -14.6 | 17.5 | 23.8 |
| Subtotal: | 220.5 | 212.2 | 182.6 | 247.9 | 296.5 |
| Plus: Consumer Durables | 122.9 | 121.9 | 128.1 | 155.8 | 178.5 |
| Total: Private Capital Expenditures, Flow of Funds Basis | 343.4 | 334.1 | 310.7 | 403.7 | 475.0 |

Note: Detail may not add to totals because of rounding.

^aIncludes between \$1 and \$2 billion of residential investment in producers' durable equipment.

^bThe estimates for 1976 and 1977 were prepared independently with some regard to the assumed pattern of undistributed profits of bank and nonbank financial corporations (see Table 5).

^cThis item consists mainly of multi-family construction which is assumed to make a slow recovery.

lished in the flow of funds, three other items must be added, but these adjustments are not of significance to credit market analysis, and they can easily be omitted if convenient. Table 4 indicates that one of these, the capital gains dividends of open-end investment companies, is numerically insignificant.⁹ The other two items derive from the growth of certain government retirement funds which are construed to be funded actuarially

⁹This item is treated as a reduction of the retained earnings of nonbank financial institutions so that its addition to household sector saving has no effect on total gross saving in Table 1.

TABLE 3
RELATION BETWEEN NIA AND FLOW FUNDS MEASURES
OF CAPITAL CONSUMPTION ALLOWANCES, 1973-77
(\$ BILLION)

| | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|-------------------|--------------|--------------|--------------|--------------|
| Corporate Capital Consumption Allowances | 71.9 | 82.1 | 93.5 | 104.4 | 116.5 |
| Noncorporate Capital Consumption Allowances | 45.2 | 52.0 | 58.5 | 65.0 | 71.4 |
| Total: Depreciation, NIA Basis | 117.1 | 134.0 | 152.0 | 169.4 | 187.9 |
| Depreciation on Household Assets Other Than Consumer Durables ^b | 20.2 | 23.0 | 25.9 | 28.5 | 31.3 |
| Depreciation by Private Domestic Nonfinancial Business ^c | 93.7 ^a | 107.3 | 121.7 | 136.1 | 151.3 |
| Depreciation on Commercial Bank Assets ^b | 1.8 | 2.2 | 2.5 | 2.7 | 3.0 |
| Depreciation on Assets of Private Nonbank Financial Institutions ^b | 1.4 | 1.6 | 1.9 | 2.1 | 2.3 |
| Subtotal: | 117.1 | 134.0 | 152.0 | 169.4 | 187.9 |
| Plus: Depreciation on Consumer Durables ^d | 98.6 | 110.8 | 121.7 | 132.2 | 144.2 |
| Total: Depreciation, Flow of Funds Basis | 215.6 | 244.8 | 273.7 | 301.6 | 332.1 |

Note: Detail may not add to totals because of rounding.

^aDetails by type of business are given below:

| | |
|----------------------|-------------|
| Farm Corporate | 0.6 |
| Farm Noncorporate | 7.8 |
| Corporate Nonfarm | 68.1 |
| Noncorporate Nonfarm | 17.2 |
| Total: | 93.7 |

^bDepreciation on the assets of households (including nonprofit institutions) and financial businesses involves mainly structures. It is assumed to grow by 10 percent per annum during the forecast period.

^cGiven the NIA totals and the estimates explained in the preceding note, business depreciation is obtained as a residual.

^dForecast estimates for the years 1976 and 1977 are derived by using the formula $D = 0.84(1 + i)D_{-1} + 0.16I$, where D , I and i are replacement-cost depreciation, gross investment, and the year-to-year change in the implicit deflator, all for consumer durables, respectively. For 1975, depreciation estimated by this formula would differ from the actual depreciation by less than \$1 billion.

at least for State and local governments.¹⁰ Because the "reserves" of Federal retirement funds are entirely "invested" in Treasury accounts or interest-bearing government debt, the Federal insurance adjustment will

¹⁰State and local retirement funds are construed as insurance by the nonbank finance sector with the growth in insurance reserve liabilities financed by "loans" from households instead of the taxes actually paid. Hence household savings are raised by the same amount by which the NIA budget balance of State and local government is reduced. In the flow of funds accounts, the growth in the reserve liabilities of the Federal retirement funds remains in the U.S. Government sector.

TABLE 4
RELATION BETWEEN NIA AND FLOW OF FUNDS MEASURES
OF PERSONAL AND HOUSEHOLD SAVING, 1973-77
(\$ BILLION)

| | 1973 | 1974 | 1975 | 1976 | 1977 |
|--|-------|-------|-------|-------|-------|
| Personal Saving, NIA Basis | 72.7 | 74.0 | 88.9 | 88.8 | 101.3 |
| Surplus of Federal Government Employees and Railroad Retirement Funds ^a | 2.7 | 5.3 | 5.2 | 4.7 | 4.3 |
| Surplus of State and Local Employees Retirement Funds | 8.8 | 9.8 | 11.1 | 10.5 | 10.5 |
| Capital Gains Dividends of Investment Companies ^b | 0.9 | 0.5 | 0.2 | 1.0 | 1.0 |
| Consumer Durables | 122.9 | 121.9 | 128.1 | 155.8 | 178.5 |
| Depreciation on Household Assets Other Than Consumer Durables | 20.2 | 23.0 | 25.9 | 28.5 | 31.3 |
| Total: Gross Saving by Households, Personal Trusts, and Nonprofit Organizations, Flow of Funds Basis | 228.2 | 234.5 | 259.4 | 289.3 | 326.9 |
| Total excluding Surpluses of Federal Government Retirement Funds | 225.5 | 229.2 | 254.2 | 284.6 | 322.6 |

Note: Detail may not add to totals because of rounding.

^aThe estimates for 1976 and 1977 have been informed by the fiscal year changes in trust fund balances shown in the U.S. *Budget*, Special Analysis B.

^bExtrapolation based on the assumption that stock prices remain on a slight uptrend through 1977.

be omitted in setting up household flows.¹¹ However, the net inflows to State and local government retirement systems are recognized as a source of funds to credit markets flowing through the insurance sector and are taken out of State and local government surpluses as they appear in NIA.

The gross saving by private domestic nonfinancial business, on a flow of funds basis, is most difficult to derive from the estimate of undistributed corporate profits including the inventory valuation adjustment (IVA) and the capital consumption adjustment (CCA) provided in the NIA accounts. Undistributed profits of commercial bank and private nonbank financial corporations must be subtracted and depreciation by private domestic nonfinancial business must be added. The net saving of unincorporated businesses is assumed to be zero or very close to zero in the flow of funds accounts since the net income of such businesses is generally assumed to flow through the household sector. Hence the gross saving by private do-

¹¹This treatment is not intended to deny that Federal employee and railroad retirement systems can add to the expected retirement wealth of the participants but then so does social security even though financed on a pay-as-you-go basis. Hence additions to reserves do not provide a correct measure of the increase in the present value of Federal retirement and old-age benefits. See Martin S. Feldstein, "Social Security, Induced Retirement, and Aggregate Capital Formation," *Journal of Political Economy*, September/October 1974, pp. 905-26.

TABLE 5
NIA AND FLOW OF FUNDS COMPONENTS OF GROSS SAVING
OF PRIVATE DOMESTIC NONFINANCIAL BUSINESSES, 1973-77
(\$ BILLION)

| | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|-------------------|--------------|--------------|--------------|--------------|
| Undistributed Corporate Profits with IVA and CCA, NIA Basis | 24.1 ^a | 7.6 | 21.9 | 39.0 | 42.2 |
| Minus: Capital Gains Dividends of Investment Companies ^c | 0.9 | 0.5 | 0.2 | 1.0 | 1.0 |
| Undistributed Profits of Commercial Banking Corporations ^b | 4.5 | 4.9 | 4.6 | 3.7 | 4.5 |
| Undistributed Profits of Private Non-bank Finance Corporations ^c | 5.3 | 4.7 | 5.3 | 5.5 | 5.3 |
| Income Retained by Federally Sponsored Credit Agencies and Monetary Authorities | 0.5 | 0.7 | 0.6 | 0.7 | 0.7 |
| Plus: Depreciation by Private Domestic Nonfinancial Business | 93.7 | 107.3 | 121.7 | 136.1 | 151.3 |
| Total: Gross Saving by Private Domestic Nonfinancial Business, Flow of Funds Basis | 106.6 | 104.1 | 132.9 | 164.2 | 182.0 |

^a\$0.3 billion of net savings by farm corporations are included in this figure.

^bThe estimates for 1976 and 1977 are based on the assumption of above-normal realization of loan losses by commercial banks in 1976, followed by higher short-term interest rates which benefit bank earnings in 1977 but reduce the earnings of nonbank financial institutions.

^cSince the capital gains dividends of open-end investment companies, both cash and retained, are not included in personal income in the NIA accounts, but are included in household income in the flow-of-funds accounts, they are subtracted from the NIA retentions of open-end investment companies. With these retentions thus reduced, the capital gains dividends must be subtracted separately so as to eliminate the entire amount of NIA retentions of nonbank financial institutions.

mestic nonfinancial business (including foreign branch profits) is about equal to the net cash flow of nonfinancial corporations (including IVA and CCA) plus noncorporate replacement-cost depreciation. Undistributed corporate profits of the financial sector vary with changes in interest rates, in capital gains, and in Federal regulations, but no major errors¹² are likely to be introduced if only small changes are assumed for future years as shown in Table 5. The insignificant amounts of income retained by Federally sponsored credit agencies and not paid to the Treasury by the Federal Reserve also vary little.

Given the type of information provided in the first note to Table 3, it would be quite simple to decompose gross business saving into its farm, noncorporate nonfarm, and corporate nonfarm components. Ignoring

¹²Errors in excess of \$1 billion are considered unlikely.

the small amount of positive or negative earnings retained in farm corporations in recent years, gross saving by both the farm and noncorporate nonfarm sectors would be equal to the capital consumption allowances arising in these sectors. However, to keep the presentation manageable, the nonfinancial domestic business sector will remain consolidated in subsequent tables.

The only other item that remains to be considered is the rest of the world sector. Gross saving for the foreign sector is the negative equivalent of net foreign investment as defined in NIA since net foreign investment by the United States represents a use (or negative source) of savings. In the absence of errors and omissions, the net change in lending to foreigners would, of course, have to match net foreign investment which is conceptually equal to the balance on current account with sign reversed in the table of saving with only minor modifications.¹³ Provided most errors and omissions do not arise in the current account but mainly from incomplete reporting of private international capital flows, errors and omissions may be set to zero to identify the net change in lending to foreigners from the current account balance.

As accounting identities, gross saving and gross investment must balance. In Tables 1 and 2, the difference between total gross saving and gross domestic investment (NIA) or private capital expenditures (flow of funds) is due to net foreign investment (subtract -\$0.3 (billion) in 1973, -\$2.8 in 1974, and \$12.8 in 1975 from gross saving), net capital grants received by the United States (add -\$2.0 in 1974) and the statistical discrepancy (add \$0.4 in 1973, -\$0.6 in 1974, and -\$2.6 in 1975). In the DRI income and product forecast which is used in this paper, statistical discrepancies are zero, and no further net capital grants are assumed to be made by the U.S. government. Hence, for 1976 and 1977, net foreign investment (with sign reversed) is equal to the difference between private capital expenditures shown on the last line of Table 2 and the total gross saving shown in Table 1.

NET FINANCIAL INVESTMENT

The next step in the transition from the NIA to the flow-of-funds organization of accounts is to derive net financial investment by sectors from the exogenous stipulations and forecasts of NIA components already explained in the previous tables. In this forecast, the DRI control solution of April 26, 1976 is used which represents the first model solution after release of the preliminary data for the first quarter of 1976. The information supplied in Tables 1 through 5 is sufficient to obtain every component shown in the top half of Tables 6 and 7 for 1976 and 1977, respectively.

¹³See U.S. Department of Commerce, *Survey of Current Business*, March 1976, p. 39, note 3.

Since statistical discrepancies are assumed to be zero, the difference between gross saving and private domestic capital expenditures shown for each sector represents the net financial investment of that sector. Depending on whether this amount is positive or negative, it is then added to or subtracted from private domestic capital expenditures of that sector to obtain gross investment, both financial and real, in the flow-of-funds sense.

While the net financial investment derived from the flow of funds arrangement of the NIA accounts for any sector must be equal to the net acquisition of financial assets less net issuance of debt by that sector, this aggregated information is not enough for credit market analysis. Net asset flows must be distinguished from net borrowings within the overall constraint of net financial investment. Both assets and debt flows depend crucially on the degree of monetary expansion and financial intermediation. If the gross flows are unduly small relative to the net flows, it is unlikely that the forecast of NIA components can be realized unless greater financial stringency has been fully anticipated in arriving at these forecasts. For this reason, the money supply forecasts supposedly consistent with the forecast of national income and product components are crucial to the consistency check based on an analysis of the implied flow of funds.

NET INVESTMENT IN CREDIT MARKET INSTRUMENTS

Given the DRI forecast of the increase in currency, demand deposits, M_1 , M_2 , large CD's, M_3 , and member bank reserves during 1976 and 1977,¹⁴ the growth in the demand and time liabilities of commercial banks and of the savings institutions contained in the nonbank finance sector are predetermined. The growth in life insurance and pension fund reserves is sufficiently smooth to allow exogenous projection although some allowance is made for faster growth in private pension funds during the projected business expansion, growth which may be speeded through new legislation. The sectoral distribution of these deposits and reserves as assets is simplified by the fact that businesses, governments, and nonbank financial institutions generally add only small amounts to their holdings of demand and time and savings deposits so that the lion's share of any increase in the liabilities of financial sectors goes to increase household liquid assets. The only items that can both be sizable and unpredictable are the investment in demand and time deposits by the rest of the world and changes in business demand for certificates of deposits (CD's).

The increase in the interbank liabilities of monetary authorities involves changes in member bank reserves and vault cash held by com-

¹⁴To estimate stocks at yearend from quarterly forecasts, the average of fourth quarter and first quarter figures is used at the turn of 1976 and 1977.

TABLE 6
DERIVATION OF NET FINANCIAL INVESTMENT AND INVESTMENT IN CREDIT MARKET AND RELATED INSTRUMENTS, 1976

| Sector | Private Domestic Nonfinancial Sectors | | | | | | | | | | Financial Sectors | | | | | | | | | |
|---------------------------------|---------------------------------------|---|----------|---|-----------------------------|---|-------------------|---|-----------------|---|-------------------------------------|---|--------------------|---|------------------|---|-------------------------|---|-------------|---|
| | Households | | Business | | State and Local Governments | | Rest of the World | | U.S. Government | | Federally Sponsored Credit Agencies | | Monetary Authority | | Commercial Banks | | Private Nonbank Finance | | All Sectors | |
| Transaction Category | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S |
| 1. Gross saving | 284.6 | | 164.2 | | 6.3 | | -3.3 | | -62.8 | | 0.4 | | 0.3 | | 6.4 | | 7.6 | | 403.7 | |
| 2. Capital consumption | 160.7 | | 136.1 | | | | | | | | | | | | 2.7 | | 2.1 | | 301.6 | |
| 3. Net Saving (1 - 2) | 123.9 | | 28.1 | | 6.3 | | -3.3 | | -62.8 | | 0.4 | | 0.3 | | 3.7 | | 5.5 | | 102.1 | |
| 4. Gross investment (5 + 10) | 284.6 | | 164.2 | | 6.3 | | -3.3 | | -62.8 | | 0.4 | | 0.3 | | 6.4 | | 7.6 | | 403.7 | |
| 5. Private capital expenditures | 210.4 | | 184.9 | | | | | | | | | | | | 4.0 | | 4.4 | | 403.7 | |
| 6. Consumer durables | 155.8 | | | | | | | | | | | | | | | | | | 155.8 | |
| 7. Residential construction | 48.6 | | 17.0 | | | | | | | | | | | | | | 0.4 | | 66.0 | |
| 8. Plant and equipment | 6.0 | | 150.4 | | | | | | | | | | | | 4.0 | | 4.0 | | 164.4 | |

TABLE 7
DERIVATION OF NET FINANCIAL INVESTMENT AND INVESTMENT IN CREDIT MARKET AND RELATED INSTRUMENTS, 1977
(\$ BILLION)

| Sector | Private Domestic Nonfinancial Sectors | | | | | | | | | | Financial Sectors | | | | | | | | | |
|---------------------------------|---------------------------------------|---|----------|---|-----------------------------|---|-------------------|---|-----------------|---|-------------------------------------|---|--------------------|---|------------------|---|-------------------------|---|-------------|---|
| | Households | | Business | | State and Local Governments | | Rest of the World | | U.S. Government | | Federally Sponsored Credit Agencies | | Monetary Authority | | Commercial Banks | | Private Nonbank Finance | | All Sectors | |
| | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S |
| Transaction Category | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S |
| 1. Gross saving | 322.6 | | 182.0 | | 5.3 | | -8.2 | | -42.5 | | 0.4 | | 0.3 | | 7.5 | | 7.5 | | 7.5 | |
| 2. Capital consumption | 175.5 | | 151.3 | | | | | | | | | | | | 3.0 | | 2.3 | | 332.1 | |
| 3. Net Saving (1 - 2) | 147.1 | | 30.7 | | 5.3 | | -8.2 | | -42.5 | | 0.4 | | 0.3 | | 4.5 | | 5.3 | | 142.9 | |
| 4. Gross investment (5 + 10) | 322.6 | | 182.0 | | 5.3 | | -8.2 | | -42.5 | | 0.4 | | 0.3 | | 7.5 | | 7.6 | | 475.0 | |
| 5. Private capital expenditures | 244.5 | | 222.6 | | | | | | | | | | | | 4.2 | | 3.7 | | 475.0 | |
| 6. Consumer durables | 178.5 | | | | | | | | | | | | | | | | | | 178.5 | |
| 7. Residential construction | 60.0 | | 23.0 | | | | | | | | | | | | | | 0.2 | | 83.2 | |
| 8. Plant and equipment | 6.0 | | 175.8 | | | | | | | | | | | | 4.2 | | 3.5 | | 189.5 | |

U
mercial banks netted against changes in Federal Reserve float and in loans to member banks. Changes in demand deposits due to the U.S. Government and to the rest of the world and in currency outside banks effect changes in the monetary authorities' sources of funds in the row for demand deposits and currency. Referring to Table 6, \$22.6 billion growth in M_1 forecasted for 1976 is thus composed of the net rise in demand deposits at commercial banks (\$17.7 billion) minus the increase in demand deposits held by the U.S. Government at such banks (\$1.1 billion) and plus the rise in currency outside banks (\$6.0 billion). The difference between the growth of M_4 (M_2 plus large CD's) and of M_1 yields the rise in time and savings deposits at commercial banks, and the difference between the growth of M_3 and of M_2 yields the rise in time and savings deposits at savings institutions. With the additional information that large CD's outstanding at commercial banks are forecast to decline by \$3.6 billion in 1976 and to rise by \$12.6 billion in 1977, the growth of the various monetary aggregates can readily be extracted from the flow of funds translations in the bottom half of Tables 6 and 7.

Adding the growth in currency and demand, time and savings, and insurance and pension fund assets or liabilities yields the net investment in liquid or insurance claims shown in row 18 of Tables 6 and 7. Subtracting these amounts from the net financial investment of each sector yields the net direct investment (lending less borrowing) in credit market and related instruments by each sector as a residual.

Before such instruments are distributed as assets and debts by sectors and before the adequacy of credit for the forecast of GNP components is analyzed in the next section, the dramatic shift in financing is highlighted in Table 8 that has occurred since full employment was last approached in 1973. Compared to 1973, households reduced their net borrowing in the credit markets in 1974 by more than the increase in borrowing by business. The decline in the growth of home mortgage and consumer credit as well as reduced acquisition of currency and demand deposits contributed to the over \$20 billion decrease in the net credit market borrowing by households. This decline reflected falling sales of homes and consumer durables, particularly automobiles, in the course of 1974.

Consumer borrowing began to revive gradually in 1975 while net borrowing by nonfinancial business in the credit markets plummeted. In fact, business became a net lender in the credit markets as the sharp reduction in business inventory investment coupled with non-growing expenditures on plant and equipment on the one hand and the continuing rise in capital consumption allowances on the other lowered external financing requirements. Though business borrowing is expected to increase in 1976 and 1977, its net borrowing will still be well below the 1973 level. Households, however, will be borrowing about two-thirds more in 1976 and

TABLE 8
NET INVESTMENT IN CREDIT MARKET AND RELATED INSTRUMENTS, 1973-77
(\$ BILLION)

| | Households ^b | Business | State and Local Governments | Rest of the World | U.S. ^b Government | Federally Sponsored Credit Agencies | Monetary Authority | Commercial Banks | Private Nonbank Finance |
|-------------------|-------------------------|----------|-----------------------------------|-------------------------|---------------------------------|--|-----------------------|---------------------|-------------------------------|
| 1973 ^a | -55.8 | -56.1 | -3.4 | -5.1 | -7.1 | 0.6 | 9.1 | 58.4 | 56.9 |
| 1974 ^a | -35.5 | -61.1 | -9.9 | -8.2 | -10.1 | 0.9 | 8.2 | 59.0 | 57.0 |
| 1975 ^a | -48.9 | 4.6 | -0.3 | -13.6 | -81.4 | 0.4 | 5.5 | 34.9 | 96.8 |
| 1976 | -93.8 | -21.2 | 4.3 | -6.3 | -63.9 | 0.4 | 7.8 | 67.6 | 105.1 |
| 1977 | -91.1 | -49.1 | 2.3 | -13.2 | -43.3 | 0.4 | 7.7 | 81.7 | 104.6 |

Note: Since 1976 and 1977 are estimated without statistical discrepancies, the statistical discrepancies are added to net financial investment for each sector in 1973 and 1974 to achieve comparability. Net investment in liquid and insurance claims is then subtracted to obtain net investment in credit market and related instruments for each sector.

^aDerived from Board of Governors of the Federal Reserve System, *Flow of Funds 1-76*, May 1976. The remaining discrepancies for all sectors combined are a -\$2.5 billion excess of net financial lending over borrowing in 1973, \$0.3 billion in 1974, and -\$2.0 billion in 1975.

^bThe increase in the U.S. government's life insurance and retirement program reserves is not treated as a use of funds by the household sector.

1977 through credit market and related instruments than they did in 1973 to finance purchases of homes and consumer durables.

Net issuance of credit market instruments by the Federal Government was about \$70 billion higher in 1975 than in 1974 and it will still be about \$50 billion higher in 1976. From 1975 to 1977 the increase in net borrowing by business is expected to just match the decline in net borrowing by all levels of government combined. Financial investment in credit market instruments by the rest of the world will remain approximately unchanged. Hence faster growth in the liabilities of the financial sectors, particularly the commercial banks, than in 1975 is expected to satisfy the additional credit market borrowing by households. It will be interesting to see whether the projected changes in both the volume of intermediation and in the composition of assets held by various lenders are in fact likely to be accomplished as projected. However, before the behavioral compatibility of the various NIA and financial components can be appraised within a complete system, the gross credit flows must be identified.

THE DISTRIBUTION OF NET INVESTMENT IN CREDIT MARKET INSTRUMENTS

Having derived the net funds raised or advanced in the credit market or through related instruments, the balance of the lending or borrowing of each sector is determined. In addition to these sector balance equations, there are equations requiring that borrowing and lending must match for each instrument. If there are m sectors and n instruments, satisfying m sector equations and $n-1$ instrument equations automatically implies that the equation for the n th instrument is also met. In this distribution of credit market lending and borrowing by sectors, U.S. Government securities are treated as the residual instrument n . The net investment in that instrument is used to establish balance in each of the m sectors after the $n-1$ other instrument equations have been specified.

Referring to the bottom panels of Tables 9 and 10, the first step in peeling out the credit market is to stipulate transactions by means of those "related" instruments which are substitutes for transactions effected in the credit market proper. Corporate shares, equity in noncorporate business, miscellaneous claims, and trade credit are the most important items in this group. Since both miscellaneous assets and liabilities and trade credit and trade debt tend to be advanced and issued by the same sector, particularly in the case of business, the net funds raised or advanced by any sector are far less than the gross funds.

While the gross funds projections are indispensable for a study of changes in sectoral balance sheets, the "related" instruments can be combined and netted within each sector if the focus is on the distribution of

TABLE 9
THE DISTRIBUTION OF BORROWING AND LENDING THROUGH CREDIT MARKET AND RELATED INSTRUMENTS, 1976: INITIAL APPROXIMATION
 (\$ BILLION)

| Sector | Private Domestic Nonfinancial Sectors | | | | | | | | | | Financial Sectors | | | | | | | | | |
|--|---------------------------------------|------|----------|------|-----------------------------|------|-------------------|------|-----------------|------|-------------------------------------|------|--------------------|------|------------------|------|-------------------------|-------|-------------|------|
| | Households | | Business | | State and Local Governments | | Rest of the World | | U.S. Government | | Federally Sponsored Credit Agencies | | Monetary Authority | | Commercial Banks | | Private Nonbank Finance | | All Sectors | |
| | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S |
| 20. Accounting offset for net investment in credit market and related instruments ^a | -93.8 | | -21.2 | | 4.3 | | -6.3 | | -63.9 | | 0.4 | | 7.8 | | 67.6 | | 105.1 | | 0 | |
| 21. Credit Market instruments | 3.7 | 94.0 | 28.8 | 45.0 | 8.0 | 3.2 | 8.8 | 14.0 | 10.0 | 78.6 | 12.0 | 10.6 | 8.1 | 71.8 | 3.5 | 99.7 | 2.0 | 250.9 | 250.9 | |
| 22. U.S. government securities | 1.7 | | 18.8 | | 8.0 | | 8.8 | | 78.6 | | -1.0 | | 10.6 | 8.1 | 26.3 | | 18.5 | | 89.2 | 89.2 |
| 23. State and local obligations | 1.0 | | 4.0 | | 3.2 | | | | 1.0 | | | | | | -0.8 | | -2.0 | | 3.2 | 3.2 |
| 24. Corporate and foreign bonds | 1.0 | | 22.0 | | | | 4.0 | | | | | | | 5.0 | 20.0 | | 20.0 | | 26.0 | 26.0 |
| 25. Home mortgages | | 56.0 | | 2.0 | | | | | 4.0 | | 9.0 | | | 12.8 | | 32.2 | | 58.0 | 58.0 | |
| 26. Other mortgages | | 2.0 | | 20.0 | | | | | 2.0 | | 3.0 | | | 7.5 | | 9.5 | | 22.0 | 22.0 | |
| 27. Consumer credit | | 32.0 | | 2.0 | | | | | | | | | 14.0 | | 16.0 | | 32.0 | | 32.0 | 32.0 |
| 28. Bank loans n.e.c. | | 2.0 | | 1.0 | | | | 5.0 | | | | | 7.0 | | 1.0 | | 8.0 | | 8.0 | 8.0 |
| 29. Other loans | | 2.0 | | 4.0 | | | | 5.0 | | 3.0 | | 1.0 | | 3.5 | | 4.5 | | 12.5 | 12.5 | |
| 30. Related instruments | -1.5 | 2.0 | 39.0 | 44.0 | 0.5 | 1.0 | 11.0 | 12.1 | 4.7 | 1.0 | 2.0 | 0.3 | 8.0 | 8.7 | 17.6 | 10.2 | 80.3 | 80.3 | | |
| 31. Corporate shares | 0.5 | | 16.5 | | | | 4.5 | | | | | | | | 11.5 | | 16.5 | | 16.5 | 16.5 |
| 32. Security credit | | 1.5 | | | | | | 0.1 | | | | | | 1.0 | | 0.6 | | 1.6 | 1.6 | |
| 33. Taxes payable | | | | 3.0 | | 0.5 | | | 3.7 | | | | | 0.7 | | 0.2 | | 4.2 | 4.2 | |
| 34. Trade credit | | 0.5 | | 29.0 | | 27.5 | | 1.0 | | 1.5 | | 2.0 | | | | 0.5 | | 31.0 | 31.0 | |
| 35. Equity in non-corporate business | | -4.5 | | | | | | | | | | | | | | | | -4.5 | -4.5 | |
| 36. Miscellaneous claims | 2.5 | | 10.0 | 1.5 | | | 5.0 | 16.0 | 1.0 | 1.0 | 2.0 | | 7.0 | 8.0 | 5.0 | 10.0 | 31.5 | 31.5 | | |

^aSee Table 6, row 19. Entries also equal the sum of sources minus uses in lines 21 and 30 with sign reversed.

TABLE 10
THE DISTRIBUTION OF BORROWING AND LENDING THROUGH CREDIT MARKET AND RELATED INSTRUMENTS, 1977: INITIAL APPROXIMATION
(\$ BILLION)

| Sector | Private Domestic Nonfinancial Sectors | | | | | | | | | | Financial Sectors | | | | | | | | | |
|--|---------------------------------------|-------|----------|------|-----------------------------|-----|-------------------|------|-----------------|------|-------------------------------------|------|--------------------|------|------------------|------|-------------------------|-------|-------------|-----|
| | Households | | Business | | State and Local Governments | | Rest of the World | | U.S. Government | | Federally Sponsored Credit Agencies | | Monetary Authority | | Commercial Banks | | Private Nonbank Finance | | All Sectors | |
| | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S | U | S |
| 20. Accounting offset for net investment in credit market and related instruments ^a | -91.1 | | -49.1 | | 2.3 | | -13.2 | | -43.3 | | 0.4 | | 7.7 | | 81.7 | | 104.6 | | 0 | |
| 21. Credit Market instruments | 15.9 | 103.0 | 31.8 | 79.4 | 7.5 | 4.8 | 7.3 | 16.0 | 11.0 | 56.2 | 16.0 | 13.6 | 8.0 | 83.4 | 4.0 | 98.1 | 2.0 | 279.0 | 279.0 | |
| 22. U.S. government securities | 11.9 | | 25.3 | | 7.5 | | 7.3 | | 56.2 | 1.0 | 13.6 | | 8.0 | 3.8 | | 5.0 | | 69.8 | 69.8 | |
| 23. State and local obligations | 3.0 | | 3.5 | | 4.8 | | | | 1.0 | | | | | -0.2 | | -2.5 | | 4.8 | 4.8 | |
| 24. Corporate and foreign bonds | 1.0 | | 24.0 | | | | 3.0 | | | | | | | 8.4 | | 17.6 | | 27.0 | 27.0 | |
| 25. Home mortgages | | 60.0 | | 2.0 | | | | | 4.0 | | 9.0 | | | 18.0 | | 31.0 | | 62.0 | 62.0 | |
| 26. Other mortgages | | 2.0 | | 24.0 | | | | | 2.0 | | 3.0 | | | 8.0 | | 13.0 | | 26.0 | 26.0 | |
| 27. Consumer credit | | 36.0 | | 3.0 | | | | | | | | | | 15.0 | | 18.0 | | 36.0 | 36.0 | |
| 28. Bank loans n.e.c. | | 2.0 | | 23.4 | | | 6.0 | | | | | | | 30.4 | | 1.0 | | 31.4 | 31.4 | |
| 29. Other loans | | 3.0 | | 6.0 | | | 7.0 | | 4.0 | | 3.0 | | | 4.0 | | 15.0 | 2.0 | 22.0 | 22.0 | |
| 30. Related instruments | 0.0 | 4.0 | 54.0 | 55.5 | 0.6 | 1.0 | 10.0 | 14.5 | 1.9 | | 2.0 | | 0.3 | 11.3 | 9.0 | 17.7 | 9.2 | 95.5 | 95.5 | |
| 31. Corporate shares | 1.0 | | 16.0 | | | | 3.0 | | | | | | | | | 12.0 | | 16.0 | 16.0 | |
| 32. Security credit | | 2.0 | | | | | | | | | | | | | | | | | | |
| 33. Taxes payable | | | | 1.0 | | 0.6 | | | 1.9 | | | | | 1.3 | | 0.7 | | 2.0 | 2.0 | |
| 34. Trade credit | | 0.5 | | 44.0 | | 1.0 | | | | | | | | 0.3 | | 1.0 | | 0.2 | 2.5 | 2.5 |
| 35. Equity in non-corporate business | -5.0 | | -5.0 | | | | | | | | | | | | | | | 45.5 | 45.5 | |
| 36. Miscellaneous claims | 4.0 | 1.5 | 10.0 | 2.5 | | | 5.5 | 11.5 | | | 2.0 | | | 10.0 | 8.0 | 5.0 | 9.0 | 34.5 | 34.5 | |

^aSee Table 7, row 19. Entries also equal the sum of sources minus uses in lines 21 and 30 with sign reversed.

credit market instruments alone. On a net basis, households invest only a few billion dollars annually in related instruments, while business raises a roughly similar amount which varies with the balance of net equity issues over net trade credit extended and miscellaneous assets acquired. The rest of the world generally is a net borrower, mainly through miscellaneous liabilities, while the increase in taxes payable by business makes the U.S. Government a net lender in related instruments. The private nonbank finance sectors, primarily pension and insurance funds, have tended to absorb most of the net stock issues of businesses. Even though stipulation of the net balance of the investments in related instruments by each sector would probably be sufficient to prepare for an investigation of the consistency of credit market financing with the income and product accounts and with the money supply forecasts of econometric models, the gross flows are tentatively laid out in Tables 9 and 10.¹⁵

The next step is to prepare independent estimates of the investment in credit market instruments other than U.S. Government securities which may be consistent with the DRI forecast of NIA components such as consumer durables and residential construction.¹⁶ Investment in U.S. government securities is then derived as the balancing residual in the credit market. If the sectoral allocation of this residual violates the portfolio preferences and financial investment practices of any sector in an obvious way, an alternative distribution of credit market instruments will have to be tried to achieve greater realism.

APPRAISAL

Table 11 shows the implications of the flows specified previously for the balance sheets of the private domestic sectors. Except for an unusually large and continuing accumulation of government securities by the business sector, particularly from 1976 to 1977, and a correspondingly small increase in the holdings of commercial banks, the distribution of government debt appears quite reasonable. Given that the Federal deficit is projected to decline only gradually from the recent high levels, the per-

¹⁵The components of the miscellaneous and some other categories are so diverse that projections are entered only to indicate the rough orders of magnitude expected in the present expansion on the basis of past movements in the aggregates. For all historical data see Board of Governors of the Federal Reserve System, *Flow of Funds Accounts 1945-1972*, August 1973 and subsequent publications. Data content and sources are explained in Board of Governors of the Federal Reserve System, *Introduction to Flow of Funds*, February 1975, pp. 34-48; and *Flow of Funds Accounts-Data Sources and Derivations*, October 1971.

¹⁶DRI's own forecast provides flow-of-funds components for the nonfinancial sectors but these estimates are not used because they cannot be reconciled with the net investment in credit market and related instruments previously derived in this paper. See Allen Sinai, "Flow-of-Funds, A Solid Financial Recovery for Business," *The Data Resources Review*, May 1976, pp. 74-83.

TABLE 11
 YEAR-END LIQUID ASSETS AND TOTAL FINANCIAL ASSETS OUTSTANDING BY SECTORS,
 ANNUAL RATES OF GROWTH AND RELATED DATA, 1972-77

| | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|-------------------------------------|--------|--------|--------|--------|--------|--------|
| <i>Households</i> | | | | | | |
| Total Liquid Assets (\$ billion) | 811.1 | 911.1 | 994.3 | 1093.5 | 1222.6 | 1358.9 |
| Growth Rate (Percent) | 12.14 | 12.33 | 9.13 | 9.98 | 11.81 | 11.15 |
| Total Cash Assets | 725.2 | 805.8 | 873.9 | 973.9 | 1101.3 | 1225.7 |
| Growth Rate (Percent) | 13.67 | 11.13 | 8.45 | 11.44 | 13.08 | 11.30 |
| Demand Deposits and Currency | 157.3 | 170.2 | 178.9 | 187.1 | 204.3 | 222.4 |
| Time and Savings Deposits | 567.9 | 635.6 | 695.0 | 786.8 | 897.0 | 1003.3 |
| U. S. Government Securities | 85.9 | 105.3 | 120.4 | 119.6 | 121.3 | 133.2 |
| Total Financial Assets ^a | 1446.7 | 1557.9 | 1667.0 | 1846.2 | 2015.9 | 2200.0 |
| Liquid Asset Ratio (Percent) | 56.97 | 58.48 | 59.65 | 59.23 | 60.65 | 61.77 |
| Growth Rate of PCE | 11.09 | 8.50 | 9.28 | 10.62 | 10.93 | 10.31 |
| <i>Business</i> | | | | | | |
| Total Liquid Assets | 83.0 | 82.3 | 92.8 | 107.5 | 126.8 | 160.6 |
| Demand Deposits and Currency | 55.6 | 55.4 | 55.8 | 57.9 | 58.9 | 60.4 |
| Time and Savings Deposits | 20.2 | 21.5 | 28.1 | 24.5 | 24.0 | 31.0 |
| U. S. Government Securities | 7.2 | 5.4 | 8.9 | 25.1 | 43.9 | 69.2 |
| Total Financial Assets | 476.1 | 528.0 | 580.1 | 621.5 | 689.8 | 784.1 |
| Liquid Asset Ratio (Percent) | 17.43 | 15.59 | 16.00 | 17.30 | 18.38 | 20.48 |

| | | | | | | |
|-------------------------------------|-------|-------|-------|--------|--------|--------|
| <i>Commercial Banks</i> | | | | | | |
| U.S. Government Securities | 90.0 | 88.8 | 89.8 | 120.1 | 146.4 | 150.2 |
| Total Financial Assets | 655.0 | 755.2 | 839.6 | 872.5 | 953.8 | 1051.4 |
| Ratio (Percent) | 13.74 | 11.76 | 10.70 | 13.77 | 15.35 | 14.29 |
| <i>Nonbank Finance</i> | | | | | | |
| U.S. Government Securities | 50.4 | 52.4 | 58.2 | 84.9 | 103.4 | 108.4 |
| Total Financial Assets ^a | 829.7 | 904.0 | 975.2 | 1075.9 | 1183.1 | 1287.5 |
| Ratio (Percent) | 6.07 | 5.80 | 5.97 | 7.89 | 8.74 | 8.42 |
| <i>Growth Rates^b</i> | | | | | | |
| GNP | 12.00 | 9.63 | 5.56 | 10.93 | 12.12 | 10.87 |
| M ₁ | 9.20 | 5.95 | 4.66 | 4.20 | 7.66 | 6.99 |
| M ₂ | 11.36 | 8.78 | 7.18 | 8.59 | 11.31 | 9.78 |
| M ₃ | 13.39 | 8.83 | 6.75 | 11.45 | 12.61 | 10.46 |
| M ₄ | 12.65 | 11.60 | 10.60 | 6.52 | 9.57 | 10.37 |
| M ₅ | 14.14 | 10.64 | 8.99 | 9.86 | 11.41 | 10.80 |

Source: Board of Governors of the Federal Reserve System for the years 1972-75, Tables 6 (liquid and insurance assets) and 9 (credit market assets and related assets excluding corporate shares) for 1976, and Tables 7 and 10 for 1977.

^aCorporate equities are excluded.

^bGrowth rates during calendar years are calculated from the DRI forecast of flows or stocks at successive yearends which are estimated as the average of the values for the two quarters surrounding the turn of each year. Growth rates of the monetary aggregates from 1971 through 1974 are from December to December but the following values were used for the yearend money stock at the end of 1975 for M₁ through M₅, respectively (in billions): \$295, \$665, \$1094, \$748, and \$1177.

centage of financial assets invested in government securities must rise but the business sector appears to absorb an inordinately large portion of the rise. This together with the unusually large liquid asset ratio shown in Table 11 casts doubt on whether business will borrow as much as projected through the issuance of corporate bonds.

Households also increase their liquid asset ratios persistently from 1975 to 1977, with total cash assets growing very much faster than personal consumption expenditures (PCE) for three successive years. Given the net financial investment of the household sector, that sector must finance the acquisition of unusually large additions to liquid and insurance claims through much greater borrowing in the credit markets than in 1975. Even though the projected strong rise in the purchases of consumer durables and homes will require increased consumer and mortgage credit, the additions shown in Tables 9 and 10 appear quite high.¹⁷ Having used only DRI's NIA forecast and specified money growth rates to derive an independent flow of funds translation, it appears therefore that the estimated liquidity of households and businesses may be higher than would be consistent with the forecast.

Assuming this observation is well-founded from a Spring 1976 perspective, we can now proceed to illustrate how elements of either the NIA forecast or the flow of funds translation can be changed to make the two more consistent. There are basically two ways to proceed. One can either accept DRI's money supply assumptions and raise the projected growth rates of private expenditure components such as PCE and BFI. This would reduce the estimated liquidity ratios and justify the high loan demand through additional inflation or real growth. Alternatively, one can argue that the DRI income and product forecast for 1976 and 1977 can be realized with considerably lower money growth rates than DRI assumed. Since liquidity is high and DRI's growth rates for M_1 and M_2 are above the 7 percent and 10 percent limits of the respective target ranges announced by the Federal Reserve Board Chairman in April of 1976, this latter course will be followed here.

Reducing the growth rates of M_1 , M_2 and M_3 by roughly one percentage point in 1976 lowers the investment in credit market and related instruments by about \$6 billion by banks and \$6 billion by nonbank financial institutions in 1976. Correspondingly, households are assumed to

¹⁷The DRI forecast suggests an 18 percent rise in purchases of consumer durables during 1976, and the \$32 billion net increase in consumer credit shown in Table 9 would produce almost the same percentage increase in consumer credit outstanding. However, since the replacement value of the stock of consumer durables will rise by considerably less than 18 percent, the assumed expansion of consumer credit may well be high. About \$445 billion home mortgage credit to households was outstanding at the end of 1975, so that the \$56 billion rise in home mortgage credit appears less excessive in view of the over 10 percent rise in the median selling price of homes expected in 1976 and the increase in the number of sales of both new and existing homes.

TABLE 12
FLOW OF FUNDS MODIFICATIONS WITH SLOWER GROWTH OF THE MONETARY AGGREGATES
AND THE FINAL APPROXIMATION
 (\$ billion)

| Sector | 1976 | | | | | | | | | | | | 1977 | | | | | | | | | | | | | | |
|---|------------|-----|---|----------|----|----|------------------|----|----|-------------------------|----|----|------------|----|----|----------|----|----|------------------|----|----|-------------------------|----|----|------|----|----|
| | Households | | | Business | | | Commercial Banks | | | Private Nonbank Finance | | | Households | | | Business | | | Commercial Banks | | | Private Nonbank Finance | | | | | |
| | U | S | U | U | S | U | U | S | U | U | S | U | U | S | U | U | S | U | U | S | U | U | S | U | | | |
| 20. Accounting Offset for net investment in credit market and related instruments | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21. Credit market instruments | | +12 | | | -2 | -2 | | -6 | -6 | | -6 | -6 | | -6 | -6 | | +6 | +6 | | -4 | -4 | | -3 | -3 | | -3 | -3 |
| 22. U.S. government securities | | -12 | | | -2 | | | +2 | | | | | | | | | -6 | | | -4 | | | -3 | | | +4 | |
| 24. Corporate and foreign bonds | | | | | | -2 | | -1 | | | -1 | | | -1 | | | | | | -4 | | | -3 | | | -4 | |
| 25. Home mortgages | | -6 | | | | | | -3 | | | -3 | | | -3 | | | -3 | | | -3 | | | -3 | | | -4 | |
| 27. Consumer credit | | -6 | | | | | | -4 | | | -2 | | | -2 | | | -3 | | | -4 | | | -4 | | | +1 | |
| (Liquid) Asset Ratio (Percent) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Initial Approximation ^a | 60.65 | | | 18.38 | | | 15.35 | | | 8.74 | | | 61.77 | | | 20.48 | | | 14.29 | | | 8.42 | | | 8.42 | | |
| Final Approximation ^b | 60.41 | | | 18.14 | | | 15.66 | | | 8.78 | | | 61.45 | | | 19.87 | | | 14.98 | | | 8.48 | | | 8.48 | | |

^aFrom Table 11.

^bCalculated with flow of funds modifications shown above.

acquire \$3 billion less demand deposits and \$9 billion less time and savings deposits. The resulting \$12 billion reduction in household borrowing via credit market and related instruments is assumed to be equally divided between home mortgages and consumer credit, as shown in Table 12, leading to matching reductions in assets acquired by the private financial sectors. The nonfinancial business sector is assumed to issue fewer corporate bonds and to acquire a smaller amount of U.S. government securities, while commercial banks increase their acquisition of government securities compared to the initial approximation in Table 9. Similar adjustments are made in 1977, except that money growth is reduced by only about one-half percent for the first three aggregates shown in Table 11.¹⁸

Table 12 also shows the liquid asset ratios or U.S. government security ratios that result from these adjustments in the final approximation. While the liquid asset ratios for households and business are lower in 1976 and 1977 than in the initial approximation, these liquidity ratios are still considerably higher than in 1972-73. Thus, they appear to be quite sufficient to support a GNP forecast similar to that of DRI even though both M_1 and M_2 velocity grow faster than at comparable stages of previous recoveries.¹⁹

It must be emphasized however that this exercise in judgment is intended only to illustrate the possible usefulness of attempting flow-of-funds reconciliations and not to criticize the DRI forecast. The general economist will gain additional insights by not restricting himself to the study of the implied velocity of money as the only financial check on the plausibility of a forecast. Using the specified growth in the liabilities of the financial sectors in conjunction with the net financial investment derived from an NIA forecast as starting points for a flow of funds reconciliation allows researchers to assess a much broader range of relationships under the discipline of an accounting framework.

To this analyst the exercise has suggested that there is nothing in the DRI forecast to give substance to fears of financial crisis in either 1976 or 1977. In fact, liquidity is growing so rapidly in the private sector that considerably lower rates of monetary expansion than assumed by DRI could be entirely consistent with their GNP forecast. Thus, there may be no visible signs of crowding-out from government deficits, at least until 1978.

¹⁸The increase in the amount of large certificates of deposit outstanding is the same as implied by Table 11: -\$3.6 in 1976 and +\$12.6 in 1977. In 1977, the increase of M_1 is reduced by \$1.5 billion and of M_2 by \$3 billion, yielding money stocks of \$335.3 and \$803.6 billion respectively, at the end of 1977.

¹⁹Using December to December growth rates for monetary aggregates and averages of quarterly values around yearends for calculating GNP growth, the rise in M_1 velocity was 2.62% and 2.57% during 1971 and 1972, respectively, compared to an estimated 5.13% and 4.02% in 1976 and 1977. Similarly, the M_2 velocity growth rates of -1.91% and 0.57% in the earlier period are well below the later rates of 1.55% and 1.29%.

CONCLUSION

At the present time, forecasts of credit and of financial flows that are integrated with the forecasts of income and product flows are as yet rare. Unfettered by the need for consistency, disagreements have been substantial about the likely impact of large Federal deficit financing on the money and credit markets in 1975 and beyond. A more orderly discussion of credit market prospects could begin if alternative judgments were presented in a systematic framework allowing a more complete appraisal.

This paper shows that, as a minimum, the sources and uses of gross savings and the growth in the deposit and insurance liabilities of financial institutions and of the corresponding assets which are held mainly by non-financial agents must be specified by sector. The balance of net investment in credit market and related instruments that results for each sector must then be met in estimating the gross flows of funds in the credit market.

The sequence of simple tables laid out in this paper is designed to illustrate the derivation process and to show how hypotheses about alleged financing problems or forecast inconsistencies can be tested systematically. While this is done with the April 1976 control solution of DRI, the procedure is quite general and can be followed in the flow of funds translation of any other forecast that details the required NIA components and the money supply.

American Enterprise Institute

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