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HOUSEHOLD AND ENTERPRISE SAVING AND CAPITAL FORMATION IN THE UNITED STATES: A MARKET TRANSACTIONS VIEW

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Contrary to conventional macro theory, it is not the consumption function in terms of either the permanent income or the life-cycle theory of saving that has furnished the saving for enterprise capital formation in the United States. Household sector accounts indicate that household gross saving, correctly measured, did not exceed household gross capital formation in the United States over the period since 1947. Furthermore, historical data on enterprise saving and capital formation in the United States, and cross-section tax return data of U.S. corporations indicate that the gross saving for many enterprise sectors has been equal to or greater than their gross capital formation. There are exceptions, however: these same sources indicate that public utilities have borrowed substantially to finance their capital formation. Finally, it is argued that employer pension and insurance reserves held by financial institutions for future benefit payments represent retained income of a nature similar to undistributed profits, and that these constitute a source of saving in the economy.

INTRODUCTION

This paper is concerned with investigating the empirical evidence on the saving and capital formation of the household sector and various enterprise sectors in the United States. In brief, where does saving arise, and where is it used? Do some sectors save more than they spend for capital formation, and other sectors less? Have the patterns differed over time? Finally, are the empirical findings consistent with macro saving and investment theory?

The evidence presented indicates that in the United States the household sector has not been a net provider of saving for enterprise gross capital formation. The gross saving of households, correctly measured, has been just sufficient to cover their own gross capital formation. Among the enterprise sectors, the gross saving of the manufacturing sector has been equal to its gross capital formation. The gross saving of public utilities, however, has fallen considerably short of their capital formation. Among financial institutions, employers' pension funds have accumulated substantial reserves against future benefit payments.

The paper is organized as follows. Part I examines the available historical evidence. Initially, there is a brief critique and re-examination of the empirical evidence on household saving, capital formation and net lending since 1947. A review is then presented of the evidence on the saving and capital formation of various enterprise sectors available in a series of National Bureau of Economic

Note: This paper was originally presented at a Conference on Income and Wealth, Baltimore, Maryland, March 29, 1987, several days before Nancy Ruggles met with a fatal accident. Nancy D. Ruggles was Senior Research Associate at the Institution for Social and Policy Studies, Yale University. Richard Ruggles is Professor Emeritus of Economics, Yale University. The research on this topic was carried out under a grant from the Sloan Foundation.

Research studies on capital financing, and in the Federal Reserve Board data on the flow of funds. In Part II evidence is presented on saving and capital formation of enterprises in major industry groups based on tax return data of U.S. corporations for the year 1983. Part III is a summary and conclusion. Readers not interested in the detailed presentation may wish to read Part III first.

Part I. Sectoral Saving and Capital Formation: The Historical Evidence

A. The Theory and Measurement of Saving

1. *Theoretical Approaches*

Saving and investment occupy center stage in most analyses of the behavior of economic systems. Neo-classical theory focuses on how the real resources made available by saving increase the stock of capital goods required for economic growth. In the Keynesian theory of income and employment, it is the propensity to consume and the marginal efficiency of capital that drive the system. For monetarists it is how changes in the money supply affect the saving and investment behavior of consumers and producers. Despite their differences in emphasis, most saving and investment theories view the process of saving and investment in functional terms. They deal with consumers, who decide how much to consume and save, and producers, who decide how much to produce and invest. Consumers do not engage in either production or capital formation, and producers do not consume or save. Financial intermediaries provide the markets in which the saving of consumers is made available to producers for their capital formation.

In this framework, theories of consumer saving behavior play a central role. The permanent income hypothesis and the life-cycle hypothesis, which are often advanced in this context, illustrate this functional approach. The permanent income hypothesis attempts to exaplain the fluctuations in consumer saving. It postulates that consumers will choose a level of consumption that is consistent with their expected permanent incomes (i.e. long-run) and their desired equilibrium levels of saving. As a consequence, it is argued that transitory changes in income will cause saving to fluctuate rather than consumption.

The life-cycle hypothesis focuses on the distribution of saving over an individual's life cycle. It postulates that an individual will save for old age during the productive years, and will draw down accumulated savings after retirement. The national saving rate would thus be strongly influenced by the age distribution of the population. In an economy where the number of individuals in the working cohorts greatly exceeds the number in retirement, substantial net saving would be available to permit growth. Conversely, a population in which the retired cohorts were dominant would yield little or no net saving. By focusing on the behavior of consumers, both of these hypotheses generalize about the nature of saving in the economy as a whole.

The emphasis of theorists on the role of consumer saving has been matched by the concern of economic policy with the level of personal saving. Personal saving is considered vital so that enterprises can undertake the capital formation required for increased productivity, international competitiveness and economic

growth. As an example, one of the major objectives of the 1982 tax reform in the United States was to stimulate personal saving—which was expected to result in increased investment expenditures.

2. *Measurement Problems*

National accountants in their turn have devoted much attention to the measurement of saving. Despite their efforts the empirical measurement of personal saving is quite unsatisfactory either for testing the various hypotheses about saving or for describing what is taking place in the economy. To a major degree, the problems can be traced to the fact that the functional approach to the analysis of saving and investment deliberately abstracts from the institutional realities that shape both the saving and investment process and its measurement. The institutional units that exist in the economy and for which statistics can be collected are not consumers and producers, but households and enterprises. The institutional units differ from the functional ones in important ways. Households not only consume and save; they also invest, in houses and durable goods. Enterprises not only invest; they also save, in the form of capital consumption allowances and retained earnings. It is not surprising that functional theories of saving and investment that omit both household investment and enterprise saving fail to explain reality, and lead to serious misjudgments in economic policy.

In the national income accounts of the United States, the item labeled "personal saving" does not correspond either to household gross saving, or the net saving or the net lending of households for four reasons. (1) The income and outlays of non-profit institutions are consolidated with households in the personal income sector. (2) Home ownership is treated as a fictional enterprise providing housing services to consumer-occupants; this fiction seriously distorts and obscures the actual transactions and saving of households. (3) Employer contributions paid to pension funds and the earnings of pension funds are treated as being paid out to individuals, whereas the actual pension payments made to retired persons are omitted. Finally, (4) purchases by households of new owner-occupied housing and consumer durables are not recognized as household capital formation.

The consolidation of non-profit institutions with households is clearly inappropriate for a statistical analysis of the behavior of households. Private educational institutions, hospitals, churches and other non-profit institutions are, in fact, enterprises not unlike government enterprises, and their income, current outlays and expenditures for capital formation should be analyzed separately from those of households. Furthermore, consolidation of non-profit institutions with households means that households contributions to non-profit institutions do not appear as outlays by households.

With respect to the imputation for the services of owner-occupied housing, the U.S. estimate of consumer expenditures of home owners include an imputed expenditure for space rental to a fictional enterprise. The actual costs associated with home ownership such as maintenance, property taxes and mortgage interest together with imputed depreciation are excluded from the personal outlays in the U.S. personal income account and are considered to be expenses of the

fictional enterprise. Any residual income, over housing expenses and depreciation, is imputed back to the personal income account as net rental income. Therefore, in effect, the depreciation of owner-occupied houses is excluded from personal saving and considered to be gross saving by the fictional housing enterprise. In terms of institutional and behavioral reality, however, it is households, and not fictional enterprises that are doing this gross saving.

The national income accounting treatment of employers' pension contributions and benefits alters both the timing and the magnitude of household income receipts. Employers' pension contributions are viewed as if they were paid directly to employees, and therefore they are included in personal income. Ownership of employers' pension fund reserves is attributed to households and their earnings are treated as being paid to households even though no such payments are made. Furthermore, because employers' pension contributions are included as personal income, the national accounting treatment, in order to avoid double counting, excludes from personal income employee pensions actually paid to individuals. Where the retired population receives substantial pension benefits, this treatment makes analysis of the distribution of personal income somewhat meaningless. It is in direct contrast to the household survey approach, which excludes employers' contributions to pension reserves from household income but includes the payment of pension benefits. It is also in direct conflict with the United States national accounting treatment of social security contributions and benefit payments. Social security contributions (both employer and employee) are excluded from personal income, and social security benefit payments are included as income received by individuals. (Ruggles and Ruggles, 1983).

Finally, denying the possibility of household capital formation leads to some awkward problems of definitional inconsistency. Household appliances purchased as part of owner-occupied houses are included as part of the gross capital formation of the fictional enterprises set up to own owner-occupied houses. However, the same appliances purchased separately are treated as current consumption expenditures by households. Again, automobiles purchased by businesses are included in gross capital formation, whereas those purchased by households are considered to be current expenditures. Unless, of course, an individual is reimbursed for the use of an automobile by the employer, then, as in the case of owner-occupied housing, a fictional enterprise is set up to which the depreciation charges are credited.

B. The Evidence on Household Gross Saving and Capital Formation

It is, of course, possible to modify the United States personal income and outlay account in such a way that it becomes a true household sector account. Such an account would (1) exclude non-profit institutions, (2) include the actual expenditures for owner occupied housing, (3) treat pension benefit payments rather than employers' contributions to pension funds as income received by households, and (4) recognize the purchases of owner-occupied housing and consumer durables as gross capital formation by households. The details of these four adjustments are shown in Table 1 for the year 1989.

TABLE 1

DERIVATION OF HOUSEHOLD INCOME, OUTLAYS, GROSS SAVING AND GROSS CAPITAL FORMATION, 1989

(Billions of dollars)

Line	Item	Income 1	Outlays 2	Saving 3
1	U.S. Personal Income and Outlay Account	4,384.3	4,212.5	171.8
	Adjustments			
2	Non-profit institutions	−53.7	−53.7	0.0
3	Less: Investment and imputed rental income	−43.2		
4	Less: Business and Government transfers	−10.5		
5	Less: Current outlays of non-profits		−168.4	
6	Plus: Household contributions to non-profits		114.7	
7	Owner-occupied housing	89.2	−0.0	89.2
8	Less: Imputed net rental income	23.4		
9	Less: inputed space rental		−371.1	
10	Plus: Owner-occupied expenses		305.3	
11	Plus: Imputed housing services (gross)	65.8	65.8	
12	Employer pension funds	−56.1		−56.1
13	Less: Employers' pension contributions	−58.6		
14	Less: Pension fund earnings	−161.9		
15	Plus: Pension benefit payments	164.4		
16	Household capital formation	340.7	−133.9	474.6
17	Less: Consumer durable outlays		−474.6	
18	Plus: Imputed durable services (gross)	340.7	340.7	
19	Household gross income, current outlays and gross saving	4,704.4	4,024.9	679.5
20	Household gross capital formation		662.6	
21	Purchases of owner-occupied housing		188.0	
22	Purchases of consumer durables		474.6	
23	Household net lending			16.9
24	Enterprise gross capital formation		583.2	
25	Household net lending as percent of enterprise gross capital formation			2.9

Sources: Business and household contributions to nonprofits: *Statistical Abstract of the U.S. 1991*, Table 627.

Capital consumption of consumer durables: Board of Governors of the Federal Reserve System, *Flow of Funds Accounts, Second Quarter 1991*, Z1.

Owner-occupied housing, employer pension funds, consumer durables and enterprise capital formation: Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business*, Vol. 70, No. 7, July 1990.

1. *Non-profit Institutions*

Excluding non-profit institutions from personal income means that the income they receive from their investments and buildings ($43.7 billion), and the contributions they receive from enterprises and government ($10.5 billion) should be deducted from personal income. In terms of outlays, it is necessary to add to household outlays those current gifts and contributions actually made by households ($114.7), and deduct the current outlays made by non-profits. Unfortunately

in the United States national accounts data, there is no separate accounting for the current outlays of non-profit institutions. Therefore, in Table 1, it has been assumed that the current outlays of non-profits are equal to their current income ($168.4). This would mean that their current saving was zero, and their removal from the personal income account would not affect household saving.

2. *Owner-occupied Housing*

In order to include owner-occupied housing in the household sector, the first step should be to exclude from household income the imputed net rental paid to households by the fictional housing enterprises ($−23.4 billion). It should be noted that the official United States estimate of net imputed rental of owner occupied housing is negative for 1989—i.e. owner-occupied housing costs (including depreciation) exceeded the imputed space rental value of such housing. Therefore, excluding it from household income will actually increase household income. Secondly, the payment of imputed space rental value ($371.1 billion) should be excluded from household outlays and in its place the actual housing expenses ($305.3 billion) must be substituted. Finally, to impute the services of owner occupied housing, the difference between the actual expenses and the space rental value should be treated as both income received and outlays by households. The results of all these adjustments (a) leaves household total outlays unchanged but (b) increases household income and household gross saving by the amount equal to what had been the capital consumption allowances of the fictional owner-occupied enterprise ($89.2 billion).

3. *Employers' Pension Funds*

In the case of employers' pension funds, employers contributions to pension reserves ($58.6 billion), and the income earned on pension reserves ($161.9 billion) should be eliminated from household income. The actual payment of pension benefits to households ($164.4 billion) should be added. The consequence of these changes is a reduction in household saving ($−56.1 billion).

4. *Household Capital Formation*

Finally, in order to treat household expenditures for durable goods as household capital formation, it is necessary to deduct them ($474.6 billion) from household current expenditures. In their place an imputed value for the services provided by durables owned by households can be added as both household income and consumption. This would be comparable to what was done above for the imputed services of owner-occupied housing. However, in the case of durable goods no attempt was made in Table 1 to impute the market value of the services of consumer durables. Instead, the imputed value was taken to be equal to the capital consumption of consumer durables ($340.7 billion) as given by the Federal Reserve Board data on flow of funds. Since the imputation of durable services affects both income and outlays equally, it does not alter household saving. The removal of consumer durables as current outlays, however, does increase household gross saving by $474.6 billion.

The consequence of all these adjustments demonstrates that when an actual household current income and outlay account is constructed for the year 1989, the gross saving of household was $679.5 billion. However, as is also shown in Table 1, the household expenditures for their own capital formation of housing and consumer durables amounted to $662.6 billion. Thus, households excess of gross saving over their capital formation (i.e. household net lending) amounted to only $16.9 billion—an amount equal to less than 3 percent of enterprise capital formation.

Household gross saving, gross capital formation and net lending or net borrowing are given in Table 2 for the years 1947–89. It becomes apparent that the year to year changes in household gross saving, gross capital formation, and net lending as shown in Table 2 are strongly influenced by economic conditions. In periods of prosperity the gross capital formation of the household sector has often exceeded its gross saving. In these periods, the household sector has become a net borrower rather than a supplier of funds. In effect this means that the current and capital outlays that households actually make during periods of prosperity tend to exceed the income they receive. Conversely, in periods of recession household gross capital formation has often grown more slowly or has declined more than gross saving. In these periods, the household sector has become a net provider of funds.

This behavior of household net borrowing and net lending is precisely the opposite of that implied by the permanent income hypothesis. The permanent income hypotheses overlooks two very important institutional aspects of household behavior. First, for many households, saving is contractual and cannot be changed easily in the short run; the prime examples are repayment of home mortgages and consumer debt. Second, the omission of household capital formation neglects the point that in the short run the outlays for owner-occupied houses and durables can be reduced without commensurately disturbing the household's basic standard of living. Therefore, household gross saving often tends to be relatively stable, and it is the capital outlays of households that reflect the fluctuations in income.

Aggregate household savings data cannot be used directly to test the life-cycle hypothesis. Nevertheless, the importance of houses and consumer durables as elements of household spending and accumulation suggests a quite different scenario from that posited by the life-cycle hypothesis. During the early years of the life cycle, households purchase houses and consumer durables and acquire mortgages and consumer debt. Gradually, with advancing age, mortgages and consumer debt are paid off. At the time of retirement households have considerable equity in houses and durables. Although there is a life-cycle pattern, it is not the one suggested by the life cycle hypothesis. It is not the accumulation of saving for old age that drives the system. Rather the dominant pattern relates to the acquisition of housing and durables by households in their formative years; in their middle and later years they repay mortgages and consumer debt thus increasing their saving and accumulating equity.

Thus, the effect of this life-cycle saving pattern on the supply of household saving available for non-household capital formation is the reverse of that predicted by the life-cycle hypothesis. A growing (and therefore young) popula-

TABLE 2

HOUSEHOLD SAVING, CAPITAL FORMATION AND NET LENDING 1947-89

(Billions of dollars)

Line	Year	Household Sector			Enterprise Sector	Household Net Lending (+) or Net Borrowing (−) as % of Enterprise Gross Capital Formation
		Household Gross Saving	Household Gross Capital Formation	Household Net Lending (+) or Net Borrowing (−)	Gross Capital Formation	
		1	2	3	4	5
1	1947	26.4	29.9	−3.5	25.5	−13.7
2	1948	34.4	35.3	−0.9	34.7	−2.6
3	1949	32.7	36.6	−3.9	24.9	−15.7
4	1950	43.3	47.6	−4.3	38.3	−11.2
5	1951	46.3	45.0	1.3	45.4	2.9
6	1952	46.6	44.5	2.1	38.3	5.5
7	1953	50.9	48.4	2.5	39.2	6.4
8	1954	49.6	49.4	0.2	36.8	0.5
9	1955	54.5	59.2	−4.7	48.9	−9.6
10	1956	58.6	54.0	4.6	56.9	8.1
11	1957	59.3	57.1	2.2	53.7	4.1
12	1958	64.0	55.4	8.6	45.4	18.9
13	1959	62.1	65.6	−3.5	57.4	−6.1
14	1960	60.9	64.8	−3.9	56·9	−6.9
15	1961	64.6	62.3	2.3	56.7	4.1
16	1962	67.7	68.5	−0.8	66.1	−1.2
17	1963	70.3	75.3	−5.0	69.6	−7.2
18	1964	82.1	70.5	11.6	75.9	15.3
19	1965	93.1	87.5	5.6	92.2	6.1
20	1966	98.2	90.8	7.4	106.3	7.0
21	1967	115.0	93.5	21.5	102.8	20.9
22	1968	122.8	106.0	16.8	112.0	15.0
23	1969	119.4	113.9	5.5	125.5	4.4
24	1970	134.6	113.2	21.4	113.3	18.9
25	1971	154.5	136.5	18.0	133.6	13.5
26	1972	159.3	159.2	0.1	154.0	0.1
27	1973	194.5	178.0	16.5	185.5	8.9
28	1974	190.0	172.4	17.6	191.6	9.2
29	1975	222.4	185.1	37.3	169.9	22.0
30	1976	228.4	228.9	−0.5	216.3	−0.2
31	1977	243.3	274.2	−30.9	254.4	−12.1
32	1978	264.3	309.8	−45.5	312.6	−14.6
33	1979	279.4	314.4	−35.0	359.4	−9.7
34	1980	304.9	300.7	4.2	355.6	1.2
35	1981	355.3	323.9	31.4	431.9	7.3
36	1982	360.1	325.1	35.0	374.9	9.3
37	1983	388.5	415.8	−27.3	375.6	−7.3
38	1984	469.8	470.7	−0.9	529.6	−0.2
39	1985	475.8	533.6	−57.8	481.7	−12.0
40	1986	528.7	580.3	−51.6	485.1	−10.6
41	1987	521.2	603.4	−82.2	519.2	−15.8
42	1988	622.6	651.4	−28.8	553.2	−5.2
43	1989	679.5	662.6	16.9	583.2	2.9
44	Total	8,299.9	8,400.3	−100.4	8,190.0	−1.2

Sources: For 1980-89: see sources for Table 1.

For 1947-79: Ruggles, Richard and Nancy D. Ruggles, "The Integration of Macro and Micro Data for the Household Sector," *Review of Income and Wealth*, Series 32, No. 3, September 1986.

tion would not be a source of net lending, but rather would borrow from the other sectors to finance their purchases of houses and durables. Conversely, a declining population would include a large segment of households in the phase of their life cycle when they were paying off previously incurred debt, so households as a group would be suppliers of funds to other sectors. With the prospect of an aging population in the next few decades, therefore, the household sector may be expected to contribute more rather than less to the financing of other sectors.

In any event the data on household gross saving and gross capital formation shown in Table 2 demonstrate that over the period from 1947–89 the household sector did not, on balance, provide the financing for enterprise capital formation. To obtain more insight into the saving and investment process, therefore, it is necessary to analyze the capital formation and saving of different enterprise sectors more directly. In the next section we examine some of the historical evidence developed by the National Bureau of Economic Research on enterprise saving and capital formation.

C. The National Bureau of Economic Research Studies

1. *Kuznets' Summary of Findings*

In 1950 the National Bureau of Economic Research (NBER) undertook a major project supported by the Life Insurance Association of America on capital formation and its financing. In its initial phase nine monographs were published, eight of which were concerned with the major capital using sectors of the economy—nonfarm residential real estate (Grebler, Blank and Winnick, 1956, and Klaman, 1961), —agriculture (Tostleby, 1957), —financial intermediaries (Goldsmith, 1958), —the regulated industries (Ulmer, 1960), —manufacturing and mining (Creamer, Dobrovolsky and Borenstein, 1960), —and government (Robinson, 1960 and Copeland, 1961). The ninth monograph, by Simon Kuznets, summarized the results of all the previous monographs. (Kuznets, 1961).

Much of the effort of the NBER project went into the estimation of the major trends in capital formation from 1870. However, considerable attention was also directed to analyzing the share of internal funds and the structure of external financing in the different enterprise sectors. The methodology and form of presentation adopted in these studies varied from sector to sector, and some of them are more informative for the present purpose than others.

For residential housing, the point of view adopted was that of the individual house purchaser. External financing was defined as a measure of the extent to which the individual buyer borrowed or paid cash; the gross saving provided by the capital consumption of existing housing was not taken into account. Thus, this treatment of residential housing did not shed much light on the saving patterns for the housing sector as a whole i.e. the relation of the gross savings that were being generated by the existing stock of residential housing to the capital formation taking place in new housing construction. Nor did it reflect the important difference between owner-occupied and non-owner-occupied housing. As suggested in the discussion of the household sector above, a more illuminating

view would have been to treat new owner-occupied housing as capital formation undertaken by households, and owner-occupied capital consumption allowances as part of household gross saving. Non-owner-occupied and multi-unit residential housing, on the other hand, are true business activities which like other businesses require the investment of funds, generate capital consumption allowances and yield profits.

For other sectors, the point of view adopted was that of the gross saving and capital formation of the sector as a whole. In Table 3 we summarize the

TABLE 3

NATIONAL BUREAU OF ECONOMIC RESEARCH DATA ON SAVING AND CAPITAL FORMATION, 1880-1955

(Billions of dollars)

Line	Item	Net Retained Income 1	Capital Consumption Allowances 2	Total Gross Retention 3	Gross Capital Formation 4	Gross Retention as % of Gross Capital Formation 5
Agriculture						
1	1900-1909	1.90	5.20	7.10	8.90	79.8
2	1910-1919	1.40	9.00	10.40	14.80	70.3
3	1920-1929	−6.70	13.20	6.50	11.60	56.0
4	1930-1939	−0.30	9.70	9.40	9.10	103.3
5	1940-1944	15.40	7.30	22.70	9.90	229.3
6	1945-1949	6.60	13.30	19.90	17.20	115.7
7	1950-1955	5.80	20.10	25.90	29.80	86.9
8	Total 1900-1955	24.10	77.80	101.90	101.30	100.6
Nonfarm unincorporated						
9	1897-1914			6.22	6.68	93.1
10	1915-1919			5.00	4.67	107.1
11	1920-1929			12.59	16.20	77.7
12	1930-1934			−0.90	0.96	−93.8
13	1935-1939			6.12	4.63	132.2
14	1940-1944			20.41	6.32	322.9
15	1945-1949			12.74	14.50	87.9
16	Total 1897-1949			62.18	53.96	115.2
Mining & manufacturing (Average annual rates)						
17	1900-1914	0.46	0.43	0.89	1.01	88.1
18	1914-1919	1.97	1.17	3.14	2.04	153.9
19	1920-1929	0.50	2.07	2.57	2.46	104.5
20	1929-1937	−1.26	2.02	0.76	1.74	43.7
21	1938-1946	2.00	2.76	4.76	3.17	150.2
22	1946-1953	5.09	5.33	10.42	9.35	111.4
23	Average 1900-1953	1.27	2.15	3.41	3.00	113.7
Steam railroads						
24	1880-1890			0.07	2.69	2.6
25	1893-1907			0.37	2.98	12.4
26	1907-1916			2.04	5.28	38.6
27	1919-1920			1.70	3.02	56.3
28	1921-1930			6.65	8.09	82.2
29	1931-1940			2.38	2.87	82.9
30	1940-1949			8.40	7.02	119.7
31	Total 1880-1949			21.61	31.95	67.6

TABLE 3—continued

Line	Item	Net Retained Income 1	Capital Consumption Allowances 2	Total Gross Retention 3	Gross Capital Formation 4	Gross Retention as % of Gross Capital Formation 5
Telephones						
32	1891-1902			0.03	0.38	7.9
33	1903-1912			0.21	0.91	23.1
34	1913-1920			0.57	0.95	60.0
35	1921-1930			1.80	3.71	48.5
36	1931-1940			1.88	2.09	90.0
37	1941-1950			3.07	7.08	43.4
38	Total 1891-1950			7.56	15.12	50.0
Electric power						
39	1881-1912			0.15	1.77	8.5
40	1913-1922			0.41	2.07	19.8
41	1928-1937			1.09	4.03	27.0
42	1938-1950			5.53	10.75	51.4
43	Total 1881-1950			7.18	18.62	38.6
Electric railways						
44	1890-1902			0.02	1.41	1.4
45	1902-1912			0.08	1.09	7.3
46	1913-1922			0.26	0.00	
47	Total 1890-1922			0.36	2.50	14.4

Source: Kuznets, Simon, *Capital in the American Economy, Its Formation and Financing*, Princeton University Press for the National Bureau of Economic Research, 1961.

relevant NBER data on gross retentions and gross capital formation for some of the more important sectors of the United States economy over the period from 1880 and 1955.

The estimates of gross retentions for both farm and nonfarm proprietorships were derived from financial data on the sources and uses of funds for such proprietors. There are two problems with this approach. First, the data do not distinguish between borrowing for new capital formation and changes in the value of assets and indebtedness arising from revaluations and/or the entrance and exit of proprietors. Secondly, from a national accounting perspective the estimates for retained income of proprietorships over and above capital consumption allowances in reality represents household saving of proprietors rather than income retained by unincorporated enterprises.

Despite these conceptual and statistical problems, the NBER data do show that for the period as a whole agricultural capital consumption allowances were equal to about 75 percent of gross capital formation; during World War II capital consumption allowances were double the gross capital formation taking place.

For nonfarm proprietors, separate estimates were not made for capital consumption allowances, but the data indicate that this sector did not rely on external borrowing for the period from 1897 to 1949 as a whole. During the depression from 1930–34 the estimates show that the proprietors of unincorporated enterprises withdrew funds exceeding their capital consumption allowances

to that their gross retained income was negative. In contrast, the estimates of gross retained income by unincorporated business during World War II was more than three times their gross capital formation.

The data for mining and manufacturing corporations, as shown in Table 3, are more straightforward. Both capital consumption allowances and retained profits were estimated directly, and related to plant and equipment expenditures. However, no data were available on inventory changes, so that it was not possible to obtain estimates for total gross capital formation. Nevertheless, it is rather striking that, for the mining and manufacturing sector, gross retained earnings generally exceeded capital formation in plant and equipment. Only in the period prior to World War I and again in the depression of the 1930s was this not true. During World War II gross retained earnings of manufacturing corporations exceeded their expenditures on plant and equipment by 50 percent. It should be noted, however, that during these years, most of the plant and equipment required for war production was purchased directly by the federal government and loaned to private industry.

Finally, the NBER studies provided data on gross saving and gross capital formation for a number of regulated industries. For the most part these estimates were derived from financial data on the changes in assets and liabilities. Although this approach to measuring gross saving suffers from some of the problems mentioned above with respect to agriculture and nonfarm unincorporated business, the regulated industry enterprises consist almost entirely of corporations rather than proprietorships. Therefore, the central problem of attributing household saving to these sectors does not exist.

Before World War I, capital formation of these regulated industries was largely externally financed. With the slowing of the growth of these industries during the interwar period, the percentage of external financing declined. In the latest period shown (1941–50), gross retained earnings of steam railroads actually exceeded gross capital formation, although the other regulated sectors continued to rely heavily on external financing.

In summarizing, Kuznets questions the cause of the decline in the long term rate of capital formation as a percentage of total output. He rejects the notion that it is due to the limitation of capital investment opportunities, and argues rather that it results from an insufficient supply of saving, (Kuznets 1961, page 398):

> "The alternative approach which emphasizes the supply of saving seems more plausible and more fruitful as an analytical lead. Given the limited relative contributions to nationwide savings that, under our institutional conditions, could be made by corporations (in the form of undistributed profits) and by governments, the main question suggested by this approach is why the ultimate consumers in our rapidly growing economy managed to save only a small proportion of their income (at best slightly over 10 percent), and a proportion which on a net basis, declined rather than rose, despite rising real income per capita."

This statement echoes the traditional view that consumers are the primary source of savings in the economy. However, it is in marked contrast and incon-

sistent with what Kuznets actually found for the mining and manufacturing sector, where the gross saving of mining and manufacturing corporations fully financed their capital formation in most periods, and for agriculture, where net borrowing appears to be small except in periods when it was used primarily for the financing of farm resales. The use of external financing by the regulated industries can be explained in institutional terms; in such industries regulation limits the level of profit which can be earned and makes the use of external financing both more necessary and more attractive than the use of internal funds. The question of whether opportunities for profitable capital formation or the supply of savings limited the capital formation actually carried out is one that cannot be tested with the type of information developed in this NBER study. What is clear, however, is that for the sectors for which applicable data are presented, capital formation, except in the regulated industries, was mainly self-financed throughout most of the first half of this century. There is no indication whatsoever that if households had increased their saving by reducing their expenditures, enterprises would have responded by increasing their capital formation.

2. *Later NBER studies of corporate sources and uses of funds*

The NBER project on capital markets continued even after Kuznets had published his summary volume, and in 1963 a technical paper by David Meiselman and Eli Shapiro on corporate sources and uses of funds was published, (Meiselman and Shapiro, 1963). This report presented sources and uses of funds statements for all nonfinancial corporations reporting to the Internal Revenue Service in (a) manufacturing, (b) mining, (c) gas and electric utilities, (d) railroads, (e) communications, and (f) the residual group composed of trade, services, and credit agencies other than banks. Annual data were provided for the years 1950-55 and quarterly data for 1953 through 1955. In addition, the authors incorporated in an appendix a valuable and informative set of data developed by Professor John C. Dawson of Grinnell College on corporate sources and uses of funds for the period 1931 through 1950.

Although the authors of this technical paper were not concerned with the problem of measuring sectoral gross saving and gross capital formation, the data they provided make it possible to develop such measures. Using their sources and uses of funds statements, retained corporate profits were obtained by subtracting corporate profit taxes and dividends from corporate profits. Capital consumption allowances were obtained as the sum of depreciation and amortization. Data were also provided on both the expenditures on plant and equipment and inventory change. The resulting estimates for five enterprise sectors are shown in Table 4.

When the differences between the concepts of saving and capital formation and the time periods covered by the Kuznets data and the Meiselman—Shapiro data are taken into account, the findings of the two studies are broadly consistent.

For mining and manufacturing, including inventory change as a part of gross capital formation results in lowering the percentage that gross saving is of gross capital formation from about 109 percent to 95 percent for the period from

TABLE 4

MEISELMAN AND SHAPIRO DATA ON CORPORATE SAVING AND CAPITAL FORMATION, 1931-55

(Billions of dollars)

Line	Item	Gross Saving: Retained Corporate Profits 1	Gross Saving: Capital Consumption Allowances 2	Gross Saving: Total Gross Saving 3	Gross Capital Formation: Plant & Equipment Expenditures 4	Gross Capital Formation: Inventory Change 5	Gross Capital Formation: Total Gross Capital Formation 6	Gross Saving as % Of Gross Capital Formation 7
Mining & manufacturing								
1	1931-1940	−2.65	16.13	13.51	17.50	1.20	18.70	72.2
2	1941-1945	20.20	12.66	32.86	16.14	1.46	17.60	186.7
3	1946-1950	26.77	15.04	41.81	40.16	5.93	46.09	90.7
4	1951-1955	15.86	35.42	51.27	54.72	10.00	64.73	79.2
5	Total Period 1931-1955	60.18	79.25	139.45	128.52	18.59	147.12	94.8
Railroads								
6	1931-1940	−1.35	2.09	0.74	2.80	−0.12	2.68	27.6
7	1941-1945	2.96	2.75	5.71	2.69	0.21	2.90	196.9
8	1946-1950	1.13	2.04	3.17	5.25	−0.28	4.97	63.8
9	1951-1955	0.38	4.09	4.49	6.01	−0.21	5.75	78.1
10	Total Period 1931-1955	3.12	10.97	14.11	16.75	−0.40	16.30	86.6
Gas and electric								
11	1931-1940	−0.75	3.83	3.08	4.19	−0.02	4.17	73.9
12	1941-1945	0.91	2.09	3.00	2.50	0.03	2.53	118.6
13	1946-1950	0.89	2.58	3.47	11.81	0.18	11.99	28.9
14	1951-1955	−0.01	5.60	5.59	20.14	0.29	20.25	27.6
15	Total Period 1931-1955	1.04	14.10	15.14	38.64	0.48	38.94	38.9
Communication								
16	1931-1940	−0.33	2.09	1.76	2.14	−0.05	2.09	84.2
17	1941-1945	0.24	1.14	1.38	1.29	−0.01	1.28	107.8
18	1946-1950	0.06	1.60	1.66	5.74	0.01	5.75	28.9
19	1951-1955	0.96	2.64	3.60	7.18	0.10	7.27	49.5
20	Total Period 1931-1955	0.18	5.51	5.69	10.04	0.11	10.19	55.8
Trade, services & other								
21	1931-1940	−9.30	10.90	1.60	10.89	0.16	11.05	14.5
22	1941-1945	4.69	5.11	9.80	5.65	−0.46	5.19	188.8
23	1946-1950	8.73	9.23	17.96	16.20	6.70	22.90	78.4
24	1951-1955	4.20	17.42	21.62	20.09	1.71	23.80	90.8
25	Total Period 1931-1955	7.75	41.59	49.34	51.13	7.51	60.64	81.4

Source: Meiselman, David, and Eli Shapiro, *The Measurement of Corporate Sources and Uses of Funds*, Technical Paper 18, National Bureau of Economic Research, 1964.

1931-55. In both the Kuznets and the Meiselman studies net retained corporate profits were negative during the depression of the 1930s and gross saving greatly exceeded gross capital formation during World War II.

In the regulated industries gross saving fell considerably short of gross capital formation in all periods except during World War II. The gas and electric industries showed the greatest gap; for the period as a whole gross saving was only 39 percent of gross capital formation. For communications gross saving amounted to 56 percent, and for railroad it was percent. These findings are consistent with the data summarized by Kuznets.

Finally, the data for "Trade, Services and Other" covers a very diverse group of industries. During the depression of the 1930s, the negative retained profits of these industries were almost as large as their capital consumption allowances, so that retained earnings were negligible. Inventory fluctuation also played an important role. Inventories declined during World War II and increased sharply in the postwar period. During the most recent period from 1951-55, however, gross saving was about 90 percent of gross capital formation.

These studies do not go beyond 1955, and more than 35 years have passed since then. It is reasonable to ask what has been happening in the interval. Unfortunately, the United States national accounts do not show gross saving and gross capital formation for the enterprise sector or subsectors. However, some evidence is provided by the flow of funds data published by the Federal Reserve Board. This is discussed in the next section.

D. Sectoral Evidence from the Flow of Funds Data

The Federal Reserve Board flow of funds accounts are designed to track financial activities and show their relation to nonfinancial activities. They contain detailed sectoring of financial enterprises but only very rudimentary sectoring of nonfinancial enterprises, into (1) farm business, (2) noncorporate nonfarm business, and (3) nonfinancial corporate business. A summary of the data for these sectors is provided in Table 5.

1. *Farm business* The flow of funds data for farm business for the years 1946 to 1990 differ somewhat from the data Kuznets provided for 1900 to 1955. First, the gross saving consists solely of retained corporate profits and capital consumption allowances; i.e. the contribution of household saving by farm proprietors is excluded. Second, gross capital formation is shown as being composed of (a) plant and equipment (b) farm residential construction and (c) change in inventories. However, just as it was inappropriate to attribute the household saving of farm proprietors to farm gross saving, it also inappropriate to attribute the construction of farm residences to farm gross capital formation. To the extent that farm residences are owner-occupied, they should be treated as part of farm household capital formation.

The relation between capital consumption and gross capital formation for farm business has fluctuated widely since the end of World War II. From 1946 to 1951 farm expenditures on plant and equipment greatly exceeded capital consumption. Much of this capital expenditure resulted from a lack of such expenditure during World War II, and farmers could draw on funds they had

TABLE 5

FLOW OF FUNDS DATA ON SAVING AND CAPITAL FORMATION, 1946-90

(Billions of dollars)

Line	Item	Gross Saving			Gross Capital Formation				Gross Saving as % of Gross Capital Formation
		Retained Corporate Profits	Capital Consumption Allowances	Total Gross Saving	Plant & Equipment Expenditures	Residential Construction	Inventory Change	Total Gross Capital Formation	
		1	2	3	4	5	6	7	8
Farm Business									
1	1946-1950	0.2	8.9	9.1	15.0	3.9	−0.1	18.8	48.4
2	1951-1955	−0.1	15.2	15.0	9.5	3.9	2.2	15.6	96.2
3	1956-1960	−0.2	18.2	18.0	12.2	3.6	1.4	17.2	104.7
4	1961-1965	−0.1	19.2	19.1	16.1	3.7	1.8	21.6	88.4
5	1966-1970	0.2	24.6	24.8	26.1	4.1	0.8	31.0	80.0
6	1971-1975	1.6	37.9	39.4	47.2	6.0	7.5	60.6	65.0
7	1976-1980	3.0	69.4	72.4	83.2	9.9	0.8	93.9	77.1
8	1981-1985	2.9	86.9	89.8	58.9	9.9	0.7	69.5	129.2
9	1986-1990	6.9	104.9	111.8	31.5	8.3	−2.1	37.7	296.6
10	Total Period 1946-1990	14.4	385.2	399.4	299.7	53.3	13.0	365.9	109.2
Non-farm non-corporate									
11	1946-1950	0.0	21.2	21.2	18.0	9.7	2.1	29.7	71.4
12	1951-1955	0.0	31.2	31.2	30.3	6.2	1.0	37.5	83.2
13	1956-1960	0.0	39.8	39.8	34.4	9.9	1.2	45.5	87.5
14	1961-1965	0.0	46.3	46.3	42.4	29.9	2.5	74.8	61.9
15	1966-1970	0.0	63.8	63.8	59.5	37.8	3.7	101.0	63.2
16	1971-1975	0.0	103.2	103.2	86.8	76.8	6.7	170.3	60.6
17	1976-1980	0.0	189.8	189.8	157.0	46.5	5.2	208.7	90.9
18	1981-1985	0.0	323.2	323.2	266.4	83.4	21.7	371.4	87.0
19	1986-1990	0.0	431.4	431.4	284.5	44.2	21.6	350.3	123.2
20	Total Period 1946-1990	0.0	1,249.9	1,249.9	979.3	344.4	65.7	1,389.2	90.0
Non-financial Corporate									
21	1946-1950	58.9	36.1	95.0	81.0	3.2	28.8	112.9	84.1
22	1951-1955	51.2	68.3	119.8	120.8	2.6	17.8	141.3	84.6
23	1956-1960	54.9	110.0	164.8	163.8	2.1	15.5	181.4	90.8
24	1961-1965	75.5	158.3	233.8	205.7	5.5	26.7	238.0	98.2
25	1966-1970	94.0	235.6	329.6	335.6	6.4	60.5	402.6	81.9
26	1971-1975	161.3	357.7	519.0	504.1	1.7	115.1	620.9	83.6
27	1976-1980	359.6	606.0	965.6	942.0	7.0	211.5	1,160.5	83.2
28	1981-1985	205.2	1,216.3	1,421.6	1,437.7	5.3	83.7	1,526.7	93.1
29	1986-1990	171.4	1,637.6	1,809.0	1,725.3	−1.3	64.8	1,788.8	101.1
30	Total Period 1946-1990	1,232.0	4,425.9	5,657.9	5,516.0	32.5	624.4	6,173.1	91.7

Sources: Board of Governors of the Federal Reserve System, *Flow of Funds Accounts, 1946-1969*, December 1986; 1970-1982, December 1988; 1983-1990, September 1991.

accumulated. From 1951 to 1970 capital consumption and capital expenditures were approximately equal. During the 1970s, however, farm capital expenditures exceeded capital consumption. Finally, since 1980 farm capital expenditures declined sharply whereas capital consumption allowances remained relatively stable. As a consequence, for the whole period from 1946 to 1990, farm business gross saving exceeded its capital expenditures on plant and equipment and inventory change by more than 25 percent.

2. *Nonfarm noncorporate business.* The flow of funds data for nonfarm noncorporate sector, as shown in Table 5, also provide considerably more information than was presented in the NBER study of this same sector. Gross saving is shown as being equal to capital consumption, and gross capital formation is specified in terms of plant and equipment expenditures, residential construction and inventory change. Residential construction, however, does not refer to owner-occupied housing—rather it consists of multi-unit housing and single family houses in the process of construction.

As in the case of the NBER study the non-farm non-corporate sector is quite diverse. It consists of proprietors in trade, services and real estate. The capital formation and capital consumption are heavily influenced by the activities of the real estate industry. In addition to multi-unit residential real estate a substantial portion of the plant and equipment expenditures of this sector consists of commercial buildings such as office buildings, stores and shopping centers undertaken by limited partnerships. Both for tax shelter reasons and because of the project nature of such activities, the customary form of financing for such construction is by mortgages, which in 1990 accounted for 60 percent of all the debt owed by this sector, (Board of Governors of the Federal Reserve System, C9 1991, page 30).

The gross saving of non-corporate business is equal to its capital consumption, since by definition, any net income is transferred to households. Due to the importance of real estate, the relation of capital consumption to capital formation is highly volatile. In periods of high construction activity, capital consumption covers only half to three-quarters of capital expenditures. However, when building activity declines, the capital consumption of the existing real estate continues as before. In every major recession since 1949, capital consumption allowances in this sector exceeded its capital formation. (see annual data on diskette, TAB05B) For the periods as a whole from 1946 to 1990 capital consumption allowances were equal to 90 percent of the gross capital formation in this sector. In the most recent period from 1986 to 1990, capital consumption allowances exceeded gross capital formation by 23 percent due to the relative decline in new construction activity.

3. *Non-financial corporate business.* The non-financial corporate business sector, shown in Table 5, covers a broad and diverse spectrum; it consists of corporations in mining, manufacturing, transportation, public utilities, wholesale and retail trade and services. Over the long term gross saving in this sector was equal to slightly more than 90 percent of gross capital formation. Capital consumption rose continually throughout the period. Although the level of retained earnings fluctuated, plant and equipment expenditures fluctuated even more widely, so that in recession periods such as 1949, 1954, 1958, 1975 and 1983 gross

saving of this sector exceeded its gross capital formation. (see annual data on diskette TAB05C).

In summary, the Kuznets findings on capital formation and its financing, the later NBER studies of corporate sources and uses of funds, and the FRB flow of funds data for the more recent period provide a broadly consistent picture of enterprise gross saving and capital formation over the last century. Although the studies differ somewhat in their sectoring of enterprises and in the kind of data provided, they are in general agreement about the differences in behavior of the different sectors, and about the responsiveness of gross saving and capital formation to fluctuations in economic activity. These studies are deficient, however, especially since 1955, in showing gross saving and gross capital formation for more detailed and homogeneous enterprise sectors. Although it is beyond the scope of this paper to undertake a study for recent years comparable to the NBER sources and uses of funds study, or to attempt further subsectoring of the FRB flow of funds data, it is possible to make use of IRS Statistics of Income data to develop a more recent cross-sectional view of gross saving and gross capital formation by enterprise sectors classified by kind of economic activity. In Part II we present these results.

Part II. Analysis of Internal Revenue Tax Returns for Business Enterprises

The Statistics of Income Division of the United States Internal Revenue Service makes available tabulations of the tax return data of business enterprises. For the purpose of administering taxes, standard types of information are collected on the operating statements and balance sheets of all business enterprises. Tax audits are conducted on a sample basis to determine the accuracy of the reported information. Although these data are drawn on for the national income accounts, they are used to estimate specific components within the national accounts and are blended with information from other sources. In the following analysis, however, the tax return data of business enterprises will be viewed as a coherent set of data independent of the national accounts.

A. The Composition of the Enterprise Sector

The enterprise sector is composed of business enterprises, government enterprises and nonprofit institutions. Internal Revenue tax returns are only available for business enterprises, and no attempt will be made in this paper to analyze the saving and capital formation of either government enterprises or nonprofit institutions. For business enterprises, the Internal Revenue Service (IRS) provides tax return data by both the legal form of the enterprise and the major activity in which is engaged. Therefore it is possible to determine the relative importance of corporations, partnerships and sole proprietors in different industries. This tabulation is given in Table 6 for the year 1982.

The industry classification used in Table 6 is the division level of the IRS classification. In Table 6, however, both farm and real estate enterprises are separately listed in order to show the relative importance of partnerships and sole proprietors in these activities. For the economy as a whole, partnerships and

TABLE 6

TOTAL RECEIPTS OF BUSINESS ENTERPRISES BY LEGAL FORM OF ORGANIZATION AND KIND OF ACTIVITY, 1982

(Billions of dollars)

Line	Item	Corporations 1	Partnerships 2	Sole Proprietorships 3	Total Business Enterprises 4	Corporations as % of Total 5
1	Agriculture, forestry and fisheries	64.6	7.7	117.4	189.7	34.1
2	Farm	45.2	5.1	108.7	159.0	28.4
3	Non-farm	19.4	2.6	8.7	30.7	63.2
4	Mining, oil and gas	201.2	19.8	11.8	232.8	86.4
5	Construction	280.4	18.5	49.1	348.0	80.6
6	Manufacturing	2,472.7	15.1	10.0	2,497.8	99.0
7	Transportation and public utilities	628.8	6.8	22.7	656.3	95.8
8	Wholesale and retail trade	2,009.8	70.0	196.2	2,276.0	88.3
9	Finance, insurance, and real estate	929.4	85.5	24.3	1,039.2	89.4
10	Finance and insurance	872.8	51.8	12.6	937.2	93.1
11	Real estate	56.6	33.7	11.7	102.0	55.5
12	Services	378.2	72.1	108.2	558.5	67.7
13	TOTAL	6,968.2	296.1	539.7	7,804.0	89.3
14	Percent of total	89.3	3.8	6.9	100.0	

Sources: Column 1: Internal Revenue Service, *Source Book, 1982 Corporation Income Tax Returns.*
Columns 2 and 3: Internal Revenue Service, *Statistics of Income Bulletin*, Vol. 4, No. 1.
Total farm receipts: Department of Commerce, *Survey of Current Business*, Table 1.21, July 1986

sole proprietors account for about 11 percent of total enterprise receipts. In farming they constitute 66 percent of the total, in real estate 45 percent, and in the service industries about 33 percent. In the other divisions of economic activity, corporations represent the dominant form of enterprise. The corporate tax return data will be the major focus of the following analysis.

B. The Concept of Market Transactions Accounts and Their Use

Many of the estimates of gross saving and gross capital formation developed in the NBER study of capital formation and its financing and those published in the *flow of funds accounts* have their roots in the sources and uses of funds approach advocated by Morris Copeland (Copeland, 1952). Copeland restricted the content of his sources and uses of funds accounts to market transactions primarily because his objective was to measure the total volume of transactions taking place in the economy; he was interested in measuring "T" in the monetary equation $MV = PT$.

In the subsequent development of national income accounting, national accountants introduced a variety of imputations and attributions into the accounts in order to make the economic constructs conform more closely with macro economic theory. A number of these imputations and attributions have already been noted in the discussion of the household sector. In recent years, however, the analytic usefulness of such imputations and attributions has been questioned. (Van Bochove and Van Tuinen, 1986; Postner, 1988; Reich, 1991). It is argued that if a set of sector accounts based on market transactions were developed as the core of the national accounts, it would make it easier to integrate the resulting macro economic aggregates with microdata. This integration is important so that economic aggregates can be decomposed and their behavior related to the change in structure and behavior of micro units.

The tabulations of Internal Revenue tax return data do provide, in essence, aggregate enterprise data that are directly based on the market transactions of individual enterprises. In addition to market transactions, however, the tax returns of enterprises contain bookkeeping entries that are important for the administration of taxes. Thus, internal bookkeeping entries relating to depreciation, amortization, and depletion are necessary elements in the computation of profits upon which a business unit pays taxes. If tax legislation allows accelerated depreciation, or if business units can effectively use other internal bookkeeping entries to reduce their taxes such bookkeeping entries need to be taken into account. Similarly if one is concerned with the ability of an enterprise to finance its gross capital formation, such concepts as gross retained income are meaningful and useful at both the macro and micro levels.

The form of income and outlay accounts and balance sheets into which the IRS corporate tax return data have been recast for this paper was created specifically for analyzing (1) the gross income retained by enterprises relative to the cost of depreciable property purchased, and (2) the relationships among the financial assets, non-financial assets, liabilities and equities of enterprises. In Table 7 we show the formats of these accounts and record the combined data as reported by approximately 3 million United States corporations for the year 1983.

TABLE 7

1983 CORPORATE INCOME STATEMENTS AND BALANCE SHEETS
TOTAL ATL INDUSTRIES

(Billions of dollars)

Line	Item		Line	Item	
1	Number of Returns	2,977,040			
	Income Statements			Balance Sheets	
2	Total Receipts (3..8)	7,092.0	37	Total Assets (38+47)	10,199.3
3	Business receipts	6,330.6	38	Financial Assets (39..46)	7,637.3
4	Interest receipts	513.1	39	Cash	590.1
5	Dividend receipts	33.4	40	Notes and accounts receivable	2,676.9
6	Rents and royalties received	83.3	41	Less: Allowance for bad debts	51.0
7	Net gain on non-capital assets	26.1	42	Other current assets	433.6
8	Other receipts	105.5	43	Mortgage and real estate loans	982.4
9	Total Outlays And Retained Earnings	7,092.0	44	Government obligations	685.1
10	Total operating costs (11..22)	6,684.2	45	Other investments	1,798.1
11	Costs of sales and operations	4,305.7	46	Other financial assets	522.1
12	Compensation of officers	141.0	47	Non-financial Assets (48..55)	2,562.0
13	Repairs	74.5	48	Intangible assets	87.6
14	Bad debts	30.6	49	Less: Accumulated amortization	25.0
15	Rent paid	104.8	50	Inventories	599.3
16	Interest paid	475.2	51	Depreciable assets	2,729.7
17	Taxes paid (exc.Fed.Corp.tax)	173.4	52	Less: Accumulated depreciation	1,024.3
18	Advertising	72.2	53	Depletable assets	107.8
19	Pension, profit sh. stock, annuity	54.3	54	Less: Accumulated depletion	32.3
20	Employee benefit programs	58.9	55	Land	119.2
21	Net loss, non-capital assets	7.5	56	Total Liabilities And Net Worth	10,199.3
22	Other deductions	1,186.1	57	Total Liabilities (58..62)	7,554.7
23	Gross operating surplus (2-10)	407.8	58	Accounts payable	671.3
24	Depreciation	241.5	59	Bills & bonds under 1 year	759.4
25	Amortization	4.1	60	Other current liabilities	3,513.3
26	Depletion	7.5	61	Mtgs., notes & bonds over 1 year	1,323.0
27	Net income (23-24-25-26)	154.7	62	Other liabilities	1,287.7
28	Dividends paid	128.1	63	Total Equities (37-57)	2,644.6
29	Fed. corp. profit taxes paid	52.2	64	Capital stock & paid in surplus	1,370.8
30	Contributions and gifts paid	3.3	65	Accumulated surplus (63-64)	1,273.8
31	Net income retained (27-28-29-30)	-28.9			
32	Net s-t capital gains less loss	4.9			
33	Net l-t capital gains less loss	33.9			
34	Net addition to surplus (31+32+33)	9.9			
35	Gross retained income (24+25+26+31)	224.2			
36	Investment credit: cost of property	238.9			

Source: Internal Revenue Service, Statistics of Income Division, *Source Book, 1983 Corporation Income Tax Returns*, Washington, D.C.

The economic constructs shown in Table 7 differ from those which appear in the national accounts. First, they are based on the accounting entries which corporations use in filing their tax returns, and do not contain imputations for the services of financial intermediaries, or adjustments to the data reported for capital consumption or inventory valuation. Second, interest and dividends appear in the income and outlay account both as receipts of corporations and payments by them. In this connection, interest paid is treated as an expense, whereas dividends are considered to represent the distribution of net income. Finally, no adjustments have been made for post-tabulation revisions, or for corporations not filing income gax returns. Apart from this last consideration, most of these differences bring the resulting constructs closer to the objective of a market transactions statement.

Some of the conceptual differences between the IRS tax return data and the national accounts data do not alter the measurement of gross retained income, since they affect only the residual net income. This is the case, for example, with depreciation, amortization, and depletion allowances. Similarly, gross retained income is independent of whether interest and dividends are treated on a gross basis as in Table 7 or on a net basis as in the national accounts, since the difference affects both income and outlays equally. With respect to short-term and long-term capital gains, however, the national accounting treatment rather than the IRS tax return treatment has been adopted—i.e. these gains and losses have been excluded from the income and outlay account and are shown as separate items in Table 7.

Despite the conceptual differences, furthermore, some of the data in Table 7 correspond quite closely to the U.S. national income accounting aggregates as published by the Bureau of Economic Analysis (BEA) of the Department of Commerce. Many of the adjustments that are made by BEA are either quite small or offsetting. Thus, for example, BEA corporate capital consumption was reported at $259.7 billion in 1983 compared with the $245.8 billion shown in Table 7 for corporate depreciation plus amortization. (BEA diskette 1989, Table 8.13). In this case, the largest adjustment made by BEA was $10.6 billion for the depreciation of mining exploration, shafts, and wells which were expensed in the IRS data. With respect to depreciable property, one would ideally like to have, for present purposes, total purchases of plant and equipment (whether on current or capital account) for each enterprise. The cost of depreciable property purchased by corporations as shown in Table 7 is $239 billion compared with a fixed capital formation of $262 billion reported by the Federal Reserve Board flow of funds data for non-financial corporations in the same year. The IRS cost of depreciable property is that reported for the computation of the investment credit. Although the investment tax credit provided a strong incentive for corporations to report investment expenditures as fully as possible, it was also true that it was even more advantageous for corporations to charge off as current costs, major repairs or capital outlays (such as the mining shafts and oil wells mentioned above) that are included in the national accounts as structures or producer durables. To the extent that such capital have been charged off as current costs in the IRS tax returns, gross retained income and gross capital formation would both be understated by the same amount.

From a national income accounting point of view, the change in inventories is considered to be part of total gross capital formation, and an inventory valuation adjustment is introduced into the accounts to remove from the measurement of net income the gain or loss attributable to changes in prices. For the year 1983 the national accounts estimate of the book value of inventory change was $12.2 billion and the inventory valuation adjustment was—$11.8 billion—making the net inventory change only $0.4 billion. Some economists have questioned the analytic validity of such adjustments. (Haig, 1973, 1982). However, because of the relatively minor importance of inventory change in 1983 and the lack of adequate data, no attempt wilt be made to take it into account. It is also not feasible to adjust the IRS net income figures for inventory revaluation.

The balance sheet data shown in Table 7 are based on book values that reflect historical cost. Thus the stocks of assets and liabilities reflect previous transaction flows. For some analytical purposes it is useful to revalue balance sheets in terms of either (1) constant prices and/or purchasing power or (2) current market prices. Such revaluations are similar to the deflation of national income and product in current prices to obtain measures in constant prices. For the examination of market transactions relating to the process of saving and capital formation, however, it is assets and liabilities in terms of their book values that are most relevant.

In some instances, balance sheet data relating to the financial assets and the liabilities owed by corporations can be used to determine their retention of past earnings, and/or how much they have depended on borrowed funds to finance their capital formation. However, the relationship between financial assets and liabilities also reflects changes in the balance sheet resulting from capital gains and losses, mergers and acquisitions. If a corporation sells financial assets at a gain this will increase the balance sheet valuation of financial assets relative to liabilities and increase the book value of net worth even though there has been no increase in retained earnings. Coversely, an acquisition or merger may be accomplished by issuing bonds to provide funds for purchasing stock of the firm to be acquired. Thus there will be an increase in borrowing by the acquiring corporation despite the fact that no new capital formation has taken place.

On balance, however, the IRS data are quite close to the market transaction concepts we are seeking, even though some data items that would have been desirable are missing. Except for the statistical questions (such as post-tabulation revisions) the conceptual differences from the national accounts are appropriate for the purpose at hand.

C. Sectoral Evidence from IRS Data

The summary income and outlay accounts and balance sheets for all U.S. corporations shown in Table 7 indicate that their gross retained earnings in 1983 and $224 billion and their cost of depreciable property purchased was $239 billion. Accordingly their gross saving came to about 94 percent of their gross capital formation. Similarly, the value of the financial assets held by corporations was approximately equal to their liabilities—in other words their net worth was equal to the value of their non-financial assets. Although none of the historical

series given in Part I covered all corporations (including financial corporations), the data shown in Table 7 are quite consistent with the historical evidence that was presented.

One of the advantages of the Internal Revenue Service corporate tax return data is that it can be classified by major and even minor industry groups. It should be noted, however, that the classification of enterprises by their activity will result in a different industrial distribution from the classification of establishments. The corporate tax returns are usually on a consolidated basis for all the establishments owned by a corporation. Therefore, a large conglomerate corporation will be classified in the industry of its principal activity even though many of its establishments would be more appropriately classified in other industries. The divergence between the enterprise and establishment classification systems will increase with the level of detail in the classifications. For this reason, the present analysis will be restricted to the presentation of summary corporate tax data for major industry groups. The diskettes accompanying this article present accounts in the form of Table 7 for these same industry groups.

1. *Agriculture, Mining and Construction*

As is indicated in Table 8, the contributions of these three industries are relatively small in terms of their saving and capital formation; they account for 4.8 percent of total corporate gross saving and 6.4 percent of total corporate gross capital formation.

In agriculture and mining, corporate losses for 1983 exceeded corporate profits. Although the construction industries reported positive net income, only the special trades had positive net income retained after profit taxes and dividends. As a consequence the gross saving for most of the major industry groups fell short of their capital formation even where such expenditures were minimal. The only exceptions were in coal and minerals mining and in the special trades of the construction industry. As already noted, the Internal Revenue Service permits the expensing of mine shafts and oil and gas exploration as current operating costs. This results in equal understatement of gross retained earnings and gross capital formation in the mining industries relative to what would be recorded for the national accounts.

With respect to balance sheets, in the case of agriculture, liabilities were more than double financial assets. As pointed out in Part I, this reflects the turnover of farm property where the new farm owner finances his acquisition by a new mortgage which is larger than the old and partially paid off mortgage of the previous owner. For coal and non-metallic mineral mining, however, the fact that liabilities exceed financial assets may be due to past losses and the relative decline of these industries in the economy. Conversely, the greater importance of financial assets in metal mining and in the oil and gas industries may reflect previous accumulations of retained earnings or capital gains realized in previous periods.

2. *Manufacturing*

According to Table 9A, corporations classified in the manufacturing industries had gross retained income of $112 billion and purchased $90 billion of

TABLE 8

SUMMARY 1983 INCOME STATEMENTS AND BALANCE SHEETS FOR MAJOR INDUSTRY GROUPS IN AGRICULTURE, MINING AND CONSTRUCTION

		Agriculture			Mining					Construction			
Line	Item	10 Total Agric. 1	400 Agric. Product 2	600 Agric. Service 3	20 Total Mining 4	02 Metal Mining 5	03 Coal Mining 6	04 Oil & Gas 7	05 Nonmet. Mineral 8	30 Total Constr. 9	06 General Build. 10	07 Heavy Constr. 11	08 Trades 12
1	Number of tax returns	92,125	66,865	25,260	37,066	1,428	3,447	28,984	3,207	283,519	113,039	17,207	153,273
2	Total receipts	58.7	42.4	16.0	131.2	4.9	15.4	102.8	7.9	290.0	133.0	47.0	109.9
3	Total operating costs	56.2	40.3	15.7	124.4	4.8	14.2	98.0	7.2	282.1	130.8	44.8	106.6
4	Gross operating surplus (2-3)	2.5	2.1	0.3	6.8	0.1	1.2	4.8	0.7	7.9	2.2	2.2	3.3
5	Depreciation	3.3	2.6	0.6	7.8	0.4	1.0	5.8	0.6	6.3	2.0	1.8	2.5
6	Amortization & depletion	0.0	0.0	0.0	2.1	0.2	0.4	1.2	0.2	0.1	0.0	0.0	0.0
7	Net income (4-5-6)	−0.8	−0.5	−0.3	−3.1	−0.5	−0.2	−2.2	−0.1	1.5	0.2	0.4	0.8
8	Dividends & other payments	0.2	0.1	0.0	2.8	0.1	0.2	2.2	0.1	0.9	0.5	0.2	0.1
9	Fed. corp. profit taxes	0.3	0.2	0.1	0.7	0.0	0.1	0.5	0.1	1.5	0.6	0.3	0.5
10	Net income retained (7-8-9)	−1.3	−0.8	−0.4	−6.6	−0.6	−0.5	−4.9	−0.3	−0.9	−0.9	−0.1	0.2
11	Net capital gains realized	0.6	0.5	0.1	1.2	0.0	0.1	0.9	0.0	0.9	0.6	0.1	0.1
12	Addition to surplus (10+11)	−0.7	−0.3	−0.3	−5.4	−0.6	−0.4	−4.0	−0.3	0.0	−0.3	0.0	0.3
13	Gross saving (5+6+10)	2.0	1.8	0.2	3.3	0.0	0.9	2.1	0.5	5.5	1.1	1.7	2.7
14	Capital goods purchased	2.8	2.2	0.6	5.8	0.1	0.6	4.5	0.5	6.8	2.1	2.0	2.7
15	Gross saving as % of capital goods purchased (13/14)*100	71.4	81.8	33.3	56.9	0.0	150.0	46.7	100.0	80.9	52.4	85.0	100.0
16	Total assets	50.3	41.8	8.5	194.4	11.7	16.5	157.6	8.7	161.4	90.6	27.0	43.7
17	Financial assets	18.2	14.3	3.8	113.9	6.4	7.8	97.0	2.9	104.5	57.6	17.2	29.4
18	Non-financial assets	32.1	27.6	4.6	80.5	5.4	8.7	60.6	5.9	56.9	32.9	9.7	14.2
19	Liabilities	36.8	30.4	6.3	108.7	5.6	10.0	88.8	4.5	119.9	72.7	16.8	30.2
20	Net worth	13.5	11.4	2.2	85.7	6.1	6.5	68.8	4.2	41.5	17.9	10.2	13.5
21	Financial assets as % of Liabilities (17/19)*100	49.5	47.0	60.3	104.8	114.3	78.0	109.2	64.4	87.2	79.2	102.4	97.4

Source: Internal Revenue Service, Statistics of Income Division, *Source Book, 1983 Corporation Income Tax Returns.*

capital goods, and their financial assets were approximately equal to their liabilities. They accounted for 55 percent of gross corporate saving and 38 percent of corporate gross capital formation. As noted in the NBER and flow of funds data, however, the relation between gross saving and gross capital formation fluctuates from year to year. In 1982, for example, the situation in manufacturing was reversed; gross saving was $84 billion and gross capital formation $111 billion (see diskette appendix TAB15A). For the two-year period, however, gross saving and gross capital formation were approximately equal.

The Internal Revenue Service subdivides manufacturing industries into 20 major groups; summary accounts for these are shown in Tables 9A and 9B. For the most part, these major industry groups reflect the same pattern as the total for the sector as a whole. The major exception to this was the primary metals industry which in 1983 had a $6.1 billion loss. The depreciation, amortization and depletion in this industry also amounted to $6.1 billion. As a consequence after paying dividends of $1.1 billion and profit taxes of $0.3 billion, gross saving in the primary metals industry was negative ($−1.4 billion). The only other major industry groups where gross saving fell substantially short of gross capital formation were paper, electrical equipment and instruments. In these industries gross saving was 75 percent, 86 percent and 89 percent of gross capital formation respectively.

The balance sheet data for manufacturing are consistent with the data on gross saving and capital formation. Financial assets exceeded liabilities for approximately half of the major industries. To some extent this may be due to capital gains which have resulted in increases in financial assets. In 1983 capital gains realized by manufacturing corporations were $8.7 billion and this was larger than the net income retained of $6.4 billion. On the other hand, as already noted, mergers and acquisitions can result in increasing the liabilities of corporations relative to their financial assets. However, in only two industry groups—lumber and paper, were financial assets as low as 75 percent of liabilities.

3. *Transportation and Public Utilities*

The summary income statements and balance sheets for the major industry groups of transportation, communication, and electric, gas and sanitation are given in Table 10. The transportation industry is quite diverse; it includes railroads, local passenger transit, trucking, water and air transport, and pipelines other than natural gas. In 1983 this industry had negative net retained income of $3.4 billion, but its capital formation was also depressed so that its gross saving equaled 96 percent of its gross capital formation.

The data for the both the communication industry and electric, gas and sanitary utilities are quite consistent with previous findings. Gross saving in communication was 82 percent of gross capital formation and in electric, gas and sanitary utilities it was only 40 percent. Neither of these industries retained any of their net income, and their financial assets came to only 46 percent and 38 percent of their liabilities. It is apparent that these industries depend on borrowing to finance much of their capital formation.

TABLE 9A

SUMMARY 1983 INCOME STATEMENTS AND BALANCE SHEETS FOR MAJOR INDUSTRY GROUPS 09–18 IN MANUFACTURING

Line	Item	Total Manufacturing 1	09 Food 2	10 Tobacco 3	11 Textile 4	12 Apparel 5	13 Lumber 6	14 Furniture 7	15 Paper 8	16 Printing 9	17 Chemicals 10	18 Petroleum 11
1	Number of tax returns	261,927	16,224	114	4,460	16,614	15,237	7,782	2,998	37,637	10,226	2,475
2	Total receipts	2,544.0	304.8	37.1	41.8	52.6	59.6	23.6	68.8	93.4	235.0	510.7
3	Total operating costs	2,362.0	288.3	33.0	38.8	49.5	56.1	22.0	63.3	83.9	214.5	465.3
4	*Gross operating surplus* (2-3)	182.0	16.5	4.1	3.0	3.1	3.5	1.6	5.3	9.5	20.5	45.4
5	Depreciation	99.4	8.5	1.2	1.4	0.6	2.5	0.5	3.3	4.1	10.5	18.6
6	Amortization & depletion	6.0	0.1	0.0	0.0	0.0	0.7	0.0	0.4	0.2	0.6	2.4
7	Net income (4-5-6)	76.6	7.9	2.9	1.6	2.5	0.3	1.1	1.6	5.2	9.4	24.4
8	Dividends & other payments	45.1	3.9	1.5	0.3	0.3	0.6	0.1	1.5	1.7	7.2	10.9
9	Fed. corp. profit tax	25.1	2.6	1.0	0.6	0.9	0.4	0.5	0.8	2.0	2.5	3.8
10	Net income retained (7-8-9)	6.4	1.4	0.4	0.7	1.3	−0.7	0.5	−0.7	1.5	−0.3	9.7
11	Net capital gains realized	8.7	0.6	0.1	0.1	0.0	1.0	0.0	0.9	0.4	1.4	0.5
12	Addition to surplus (10+11)	15.1	2.0	0.5	0.8	1.3	0.3	0.5	0.2	1.9	1.1	10.2
13	Gross saving (5+6+10)	111.8	10.0	1.6	2.1	1.9	2.5	1.0	3.0	5.8	10.8	30.7
14	Capital goods purchased	89.9	7.2	1.4	1.4	0.7	1.7	0.5	4.0	4.3	8.5	15.7
15	Gross saving as % of capital goods purchased (13/14)*100	124.4	138.9	114.3	150.0	271.4	147.1	200.0	75.0	134.9	127.1	195.5
16	Total assets	2,233.0	169.1	53.1	25.3	24.4	47.0	12.3	57.3	66.2	227.9	490.7
17	Financial assets	1,269.4	95.1	35.8	12.3	12.6	20.2	5.7	21.1	38.7	126.0	273.2
18	Non-financial assets	963.5	73.9	17.2	13.2	11.8	26.8	6.6	36.1	27.8	101.8	217.6
19	Liabilities	1,279.9	91.2	29.5	12.8	13.5	26.7	6.6	28.4	37.6	110.1	266.0
20	Net worth (16-19)	953.1	77.9	23.6	12.5	10.9	20.3	5.7	28.9	28.6	117.8	224.7
21	Financial assets as % of liabilities (17/19)*100	99.2	104.3	121.4	96.1	93.3	75.7	86.4	74.3	102.9	114.4	102.7

Source: Internal Revenue Service, Statistics of Income Division, *Source Book, 1983 Corporation Income Tax Returns.*

TABLE 9B

SUMMARY 1983 INCOME STATEMENTS AND BALANCE SHEETS FOR MAJOR INDUSTRY GROUPS 19-29 IN MANUFACTURING

Line	Item	19 Rubber Plastic 1	20 Leather 2	21 Stone Glass 3	22 Primary Metas 4	23 Fabric. Metals 5	24 Machin-ery 6	25 Elect. Equip. 7	26 Motor Vehicle 8	27 Transp. Equip 9	28 Instru-ments 10	29 Unallo-cated 11
1	Number of tax returns	10,381	2,113	9,485	4,799	43,206	24,922	18,248	2,972	4,659	7,065	20,312
2	Total receipts	49.4	12.7	50.3	134.2	124.5	179.2	206.8	171.1	98.4	50.5	40.0
3	Total operating costs	46.1	12.0	46.8	134.2	117.4	164.7	191.1	158.1	91.9	45.8	38.6
4	Gross operating surplus (2-3)	3.3	0.7	3.5	0.0	7.1	14.5	15.7	13.0	6.5	4.7	1.4
5	Depreciation	1.6	0.2	2.6	5.5	4.5	9.3	9.3	7.9	3.6	2.5	1.2
6	Amortization & depletion	0.0	0.0	0.1	0.6	0.1	0.1	0.3	0.0	0.1	0.0	0.1
7	Net income (4-5-6)	1.7	0.5	0.8	−6.1	2.5	5.1	6.1	5.1	2.8	2.2	0.1
8	Dividends & other payments	0.4	0.2	0.6	1.1	1.4	4.4	4.1	1.5	1.2	1.6	0.4
9	Fed. corp. profit taxes	0.6	0.2	0.6	0.3	1.6	2.2	2.1	1.2	0.7	0.6	0.5
10	Net income retained (7-8-9)	0.7	0.1	−0.4	−7.5	−0.5	−1.5	−0.1	2.4	0.9	0.0	−0.8
11	Net capital gains realized	0.1	0.0	0.4	0.8	0.4	0.3	1.0	0.1	0.2	0.2	0.1
12	Net addition to surplus (10+11)	0.8	0.1	0.0	−6.7	−0.1	−1.2	0.9	2.5	1.1	0.2	−0.7
13	Gross saving (5+6+10)	2.3	0.3	2.3	−1.4	4.1	7.9	9.5	10.3	4.6	2.5	0.5
14	Capital goods purchased	1.6	0.2	2.0	2.8	3.6	8.0	11.1	7.4	3.7	2.8	1.1
15	Gross saving as % of capital Goods purchased (13/14)*100	143.8	150.0	115.0	−50.0	113.9	98.8	85.6	139.2	124.3	89.3	45.5
16	Total assets	31.4	7.1	44.3	157.4	99.8	191.6	211.4	170.5	73.0	42.2	30.9
17	Financial assets	15.6	3.8	20.4	87.6	55.7	111.8	133.2	127.2	33.7	21.5	17.8
18	Non-financial assets	15.8	3.3	24.0	69.8	44.0	79.8	78.3	43.2	39.3	20.6	12.9
19	Total liabilities	16.7	3.8	22.7	104.2	57.2	110.5	132.8	124.8	47.6	19.2	18.5
20	Net worth (16-19)	14.7	3.3	21.6	53.2	42.6	81.1	78.6	45.7	25.4	23.0	12.4
21	Financial assets as % of liabilities (17/19)*100	93.4	100.0	89.9	84.1	97.4	101.2	100.3	101.9	70.8	112.0	96.2

Source: Internal Revenue Service, Statistics of Income Division, *Source Book, 1983 Corporation Income Tax Returns.*

TABLE 10

SUMMARY 1983 INCOME STATEMENTS AND BALANCE SHEETS FOR MAJOR INDUSTRY GROUPS IN TRANSPORTATION PUBLIC UTILITIES AND WHOLESALE TRADE

(Billions of dollars)

		Transportation & Public Utilities				Wholesale Trade			
		50	30	31	32	61	33	34	35
		Total	Transport	Communication	Electric Gas, Sant	Total	Grocery	Machinery	Miscellaneous
Line	Item	1	2	3	4	5	6	7	8
1	Number of Returns	122,567	96,014	13,549	13,004	283,602	23,089	51,180	209,332
2	Total Receipts	654.2	234.0	140.0	280.1	1077.2	154.6	103.2	819.3
3	Total operating costs	580.4	218.3	112.6	249.5	1048.0	152.0	97.9	798.0
4	Gross operating surplus (2-3)	73.8	15.7	27.4	30.6	29.2	2.6	5.3	21.3
5	Depreciation	56.2	14.7	21.7	19.7	10.8	1.2	2.1	7.5
6	Amortization & depletion	1.2	0.3	0.2	0.6	0.3	0.0	0.0	0.2
7	Net income (4-5-6)	16.4	0.7	5.5	10.3	18.1	1.4	3.2	13.6
8	Dividends & other payments	24.9	2.5	7.7	14.7	8.2	1.8	2.1	5.9
9	Fed. corp. profit taxes	5.3	1.6	1.0	2.9	4.7	0.4	0.6	3.8
10	Net income retained (7-8-9)	−13.8	−3.4	−3.2	−7.3	5.2	0.8	0.5	3.9
11	Net capital gains realized	3.0	1.7	0.6	0.9	1.2	0.1	0.2	1.0
12	Net addition to surplus (10+11)	−10.8	−1.7	−2.6	−6.4	6.4	0.9	0.7	4.9
13	Gross saving (5+6+10)	43.6	11.6	18.7	13.0	16.3	2.0	2.6	11.6
14	Capital goods purchased	67.5	12.1	22.8	32.6	10.6	1.3	2.4	6.9
15	Gross saving as % of capital goods purchased (13/14)*100	64.6	95.9	82.0	39.9	153.8	153.8	108.3	168.1
16	Total assets	998.9	227.6	268.9	502.4	405.3	29.5	64.3	311.5
17	Financial assets	287.5	100.9	71.2	115.3	228.9	14.9	36.1	177.9
18	Non-financial assets	711.5	126.8	197.6	387.1	176.3	14.6	28.1	133.6
19	Liabilities	604.6	142.2	155.3	307.0	268.1	19.5	38.5	209.8
20	Net worth (176-19)	394.3	85.4	113.6	195.4	137.2	10.0	25.8	101.7
21	Financial assets as % of liabilities (17/19)*100	47.6	71.0	45.8	37.6	85.4	76.4	93.8	84.8

Source: Internal Revenue Service, Statistics of Income Division, *Source Book, 1983 Corporation Income Tax Returns.*

4. *Wholesale and Retail Trade*

In wholesale and retail trade inventories and their valuation play a central role. Inventories account for about 60 percent of non-financial assets, and their accumulation represent an important part of the total gross capital formation. The methods used to value inventories (i.e. the mix of first-in, first-out and last-in, first out) has a major effect on the measurement of net income and gross saving.

A further complicating factor is the substantial fluctuation in the change in inventories on a year-to-year basis. With the liquidation of inventories, there is a contraction in the amount of working capital required by wholesalers and retailers. Conversely, a large increase in the stock of goods held means that wholesalers must find additional financing. Unfortunately, the IRS tax return data do not provide information on either the valuation of inventories or the change in volume of inventories held. Consequently, neither gross saving or gross capital formation in these industries is correctly measured. The balance sheet data shown in Table 11, however, do indicate that in most wholesale and retail industries liabilities owed greatly exceeded financial assets held—indicating that on balance the corporations in these industries are net borrowers. Considerable differences do exist between different major industry groups. In the case of wholesale machinery trade, for example, financial assets were 94 percent of liabilities whereas in the retail automotive trade, financial assets were only 41 percent of liabilities. Presumably, the relation between liabilities and financial assets would also vary significantly from year to year depending on the fluctuation in the stock of inventories held.

5. *Finance, Insurance and Real Estate*

Corporations, in finance, insurance and real estate as a group (Table 12) had slightly negative gross saving in 1983 ($-0.7 billion}, but they were quite diverse in terms of their behavior. Credit agencies, for example, had a negative net income of $-5.4 billion and consequently negative gross saving of $-4.1 billion. Holding companies, on the other hand, had a positive net income of $22.4 billion, but they paid out dividends of $28.8 billion so that they also exhibited negative gross saving ($-5.6 billion). Real estate had negative net income of $-0.9, but in this case the depreciation and amortization charged were equal to the taxes and dividends paid ($4.7 billion) so that gross saving was zero.

The data showing negative gross saving for insurance companies are very misleading. A considerable amount of what is listed as operating costs on the income statement and as liabilities on the balance sheet should be classified as retention of technical reserves of employers' pension and insurance funds. As was pointed out in the discussion of household saving in Part I of this paper, employers' pension and insurance fund reserves against future entitlements are similar in nature to undistributed profits. Undistributed profits technically belong to the stockholders, but they are considered to be part of the income retained by corporations. So also funds that represent technical reserves against future pension and insurance entitlements should be treated as undistributed funds held in escrow by pension and insurance companies.

TABLE 11

SUMMARY 1983 INCOME STATEMENTS AND BALANCE SHEETS FOR MAJOR INDUSTRY GROUPS IN RETAIL TRADE

Line	Item	62 Total Retail 1	36 Building Material 2	37 General Merchand. 3	38 Food 4	39 Automotive 5	40 Apparel 6	41 Furniture 7	42 Eating, Drinking 8	43 Miscell-aneous 9	63 Not Allocated 10
1	Number of Returns	565,674.0	43,139	11,353	49,468	84,369	43,429	35,281	115,996	182,639	2,510
2	Total Receipts	1,035.4	58.4	149.8	227.3	275.0	50.1	33.9	80.9	160.0	3.5
3	Total operating costs	1,003.6	56.4	143.0	222.3	269.8	47.6	32.4	76.8	155.3	3.5
4	Gross operating surplus (2-3)	31.8	2.0	6.8	5.0	5.2	2.5	1.5	4.1	4.7	0.0
5	Depreciation	16.8	0.9	3.3	3.1	2.8	0.7	0.4	3.1	2.5	0.0
6	Amortization & depletion	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
7	Net income (4-5-6)	14.8	1.1	3.5	1.9	2.4	1.8	1.1	0.9	2.1	0.0
8	Dividends & other payments	4.7	0.1	2.1	0.7	0.6	0.4	0.0	0.4	0.4	0.0
9	Fed. corp. profit taxes	6.2	0.5	1.3	0.9	0.7	0.7	0.4	0.6	1.1	0.0
10	Net income retained (7-8-9)	3.9	0.5	0.1	0.3	1.1	0.7	0.7	−0.1	0.6	0.0
11	Net capital gains realized	1.4	0.1	0.4	0.3	0.1	0.0	1.0	0.2	0.2	0.0
12	Net addition to surplus (10+11)	5.3	0.6	0.5	0.6	1.2	0.7	0.8	0.1	0.8	0.0
13	Gross saving (5+6+10)	20.9	1.4	3.4	3.4	3.9	1.4	1.1	3.1	3.2	0.0
14	Capital goods purchased	17.1	0.8	3.5	3.2	3.3	0.6	0.4	2.8	2.5	0.0
15	Gross saving as % capital Goods purchased (13/14)*100	122.2	175.0	97.1	106.3	118.2	233.3	275.0	110.7	128.0	
16	Total assets	397.6	25.1	122.1	48.7	62.4	23.6	16.2	40.6	58.9	1.4
17	Financial assets	175.2	10.2	73.7	15.3	19.3	10.4	7.5	16.8	22.0	0.7
18	Non-financial assets	222.2	15.0	48.4	33.5	43.0	13.1	8.9	23.6	36.7	0.5
19	Liabilities	270.2	15.9	85.4	31.6	47.3	12.9	10.3	28.1	38.7	1.0
20	Net worth	127.4	9.2	36.7	17.1	15.1	10.7	5.9	12.5	20.2	0.4
21	Financial assets as % of liabilities (17/19)*100	64.8	64.2	86.3	48.4	40.8	80.6	72.8	59.8	56.8	70.0

Source: Internal Revenue Service, Statistics of Income Division, *Source Book, 1983 Corporation Income Tax Returns.*

TABLE 12

SUMMARY 1983 INCOME STATEMENTS AND BALANCE SHEETS FOR MAJOR INDUSTRY GROUPS IN FINANCE, INSURANCE AND REAL ESTATE

(Billions of dollars)

Line	Item	70 Total 1	45 Banking 2	46 Credit Agencies 3	47 Brokers 4	48 Insurance Companies 5	49 Insurance Agents 6	50 Real Estate 7	51 Holding Companies 8
1	Number of Returns	479,656	13,408	30,871	11,889	9,138	54,450	312,972	46,927
2	Total receipts	882.7	312.5	107.5	34.6	283.3	21.0	63.8	59.8
3	Total operating costs	835.7	294.8	110.6	31.9	281.5	20.2	60.1	35.9
4	Gross operating surplus (2-3)	47.0	17.7	−3.1	2.7	1.8	0.8	3.7	23.9
5	Depreciation	19.7	7.5	1.8	1.0	3.0	0.6	4.4	1.3
6	Amortization & depletion	1.0	0.2	0.1	0.0	0.2	0.1	0.2	0.2
7	Net income (4-5-6)	26.3	10.0	−5.0	1.7	−1.4	0.1	−0.9	22.4
8	Dividends & other payments	42.0	6.3	0.6	0.3	3.4	0.3	2.4	28.8
9	Fed. corp. profit taxes	5.7	1.5	0.6	0.7	1.2	0.2	1.3	0.7
10	Net income retained (7-8-9)	−21.4	2.2	−6.2	0.7	−6.0	−0.4	−4.6	−7.1
11	Net capital gains realized	20.3	1.9	0.8	0.5	4.4	0.1	2.8	9.7
12	Net addition to surplus (10+11)	−1.1	4.1	−5.4	1.2	−1.6	−0.3	−1.8	2.6
13	Gross saving (5+6+10)	−0.7	9.9	−4.3	1.7	−2.8	0.3	0.0	−5.6
14	Capital goods purchased	18.0	7.3	1.8	1.7	3.6	0.6	1.9	1.1
15	Gross saving as % of capital goods purchased (13/14)*100	−3.9	135.6	−238.9	100.0	−77.8	50.0	0.0	−509.1
16	Total assets	5,487.2	2,752.8	977.3	194.7	936.7	24.5	182.8	418.3
17	Financial assets	5,290.7	2,707.0	956.6	191.8	917.3	21.5	97.3	399.0
18	Non-financial assets	197.0	36.9	20.7	2.6	10.7	2.9	85.4	19.0
19	Liabilities	4,670.4	2,543.3	937.4	182.1	774.6	18.8	139.2	74.8
20	Net worth	816.8	209.5	39.9	12.6	162.1	5.7	43.6	343.5
21	Financial assets as % of liabilities (17/19)*100	113.3	106.4	102.0	105.3	118.4	114.4	69.9	533.4

Source: Internal Revenue Service, Statistics of Income Division, *Source Book, 1983 Corporation Income Tax Returns.*

Although employers' pension and insurance reserves are not separately identified in the IRS tax returns, in terms of estimates given for Table 1 in Part I that were based on national accounting data, the magnitude of the gross saving from this source would be about $50 billion for the year 1983. This would mean that the finance, insurance and real estate sector instead of being a net borrower of funds in the economy was, in fact, a net provider of funds.

6. *Services*

Finally in the service industries in 1983 gross saving, on balance, exceeded the gross capital formation taking place (Table 13). Hotels and personal services generated considerably more saving than was required for their capital formation. For business services and auto repair, however, gross saving fell short of gross capital formation.

7. *Gross Saving and Gross Capital Formation by Size of Corporation*

The Internal Revenue *Source Book of Corporate Tax Returns* tabulates the returns by size of corporation. Such tabulations make it possible to examine whether the relation between gross saving and gross capital formation and the relation between financial assets and liabilities for small corporations differ from what is observed for large corporations. In Table 14, corporations are classified in four size classes ranging from those with assets less than $1 million to those with assets more than $100 million. More than 90 percent of the approximately 3 million corporations filing income tax returns had assets under $1 million, and only about 7,000 had assets over 100 million. The smallest size class of corporations accounted for about 16 percent of total business receipts whereas corporations in the largest size class received more than 56 percent.

In terms of the relation between gross saving and gross capital formation no distinct pattern emerges that is common to all industrial divisions. In manufacturing the gross saving of corporations in the smallest size class falls considerably short of their capital formation whereas the gross saving of larger corporations substantially exceeds their capital formation. In the service industries, however, the gross saving of corporations that are between $1 million and $100 million in size is less than their capital formation whereas both smaller and larger corporations in the service industry have gross saving that exceeds their capital formation. In both mining and finance, insurance and real estate, gross saving for the smallest size category is negative. For the most part, this probably reflects the use of small corporations as tax shelters in the mining and real estate industries.

With respect to the relation between financial assets and liabilities the situation is more clear cut. For agriculture, mining, construction, manufacturing, and finance, insurance and real estate, the ratio of financial assets to liabilities increases with the size of corporation. For the largest corporations financial assets exceed their liabilities. For transport and utilities, wholesale and retail trade, and services, on the other hand, the relation of financial assets to liabilities is less

TABLE 13

SUMMARY 1983 INCOME STATEMENTS AND BALANCE SHEETS FOR MAJOR INDUSTRY GROUPS IN SERVICES

(Billions of dollars)

Line	Item	80 Total 1	52 Hotels 2	53 Personal Services 3	54 Business Services 4	55 Auto Repair 5	56 Amusement 6	57 Other 7
1	Number of Returns	848,394	18,577	53,778	242,950	80,033	62,546	390,511
2	Total receipts	415.1	26.0	16.9	128.4	37.2	40.2	165.8
3	Total operating costs	388.3	24.1	15.5	120.6	33.4	37.1	157.6
4	Gross operating surplus (2-3)	26.8	1.9	1.4	7.8	3.8	3.1	8.2
5	Depreciation	21.2	1.5	0.9	6.8	3.7	3.1	5.2
6	Amortization & depletion	0.7	0.0	0.0	0.2	0.0	0.2	0.2
7	Net income (4-5-6)	4.9	0.4	0.5	0.8	0.1	−0.2	2.8
8	Dividends & other payments	2.6	0.4	0.1	0.8	0.3	0.3	0.8
9	Fed. corp. profit taxes	2.7	0.4	0.2	1.0	0.1	0.3	0.9
10	Net income retained (7-8-9)	−0.4	−0.4	0.2	−1.0	−0.2	−0.8	1.1
11	Net capital gains realized	1.5	0.3	0.0	0.5	0.0	0.3	0.3
12	Net addition to surplus (10+11)	1.1	−0.1	0.2	−0.5	−0.2	−0.5	1.4
13	Gross saving (5+6+10)	21.5	1.1	1.1	6.0	3.5	2.5	6.5
14	Capital goods purchased	20.4	0.9	0.8	6.5	4.3	2.4	5.6
15	Gross saving as % of capital goods purchased (13/14)*100	105.4	122.2	137.5	92.3	81.4	104.2	116.1
16	Total assets	269.8	27.1	9.9	91.6	24.6	41.8	74.8
17	Financial assets	148.3	10.8	5.0	58.8	8.6	22.3	42.4
18	Non-financial assets	121.5	16.2	4.9	33.1	15.9	19.3	32.5
19	Liabilities	195.1	19.9	5.7	68.5	18.4	31.5	51.0
20	Net worth (16-19)	74.7	7.2	4.2	23.1	6.2	10.3	23.8
21	Financial assets as % of liabilities	76.0	54.3	87.7	85.8	46.7	70.8	83.1

Source: Internal Revenue Service, Statistics of Income Division, *Source Book, 1983 Corporation Income Tax Returns.*

clearly related to the size of the corporation, and for all size classes liabilities exceed financial assets.

8. *Partnerships and Sole Proprietors*

The IRS data available for partnerships are much more limited than for corporations. The information on partnerships can be used to construct both income and outlay accounts and balance sheets, but there is, of course, no information on net income retained, and no data are provided on gross capital formation. The depreciation charges are understated, due to the reporting characteristics of the partnership tax form #1065. For all partnerships engaged in real estate activities, a more accurate deduction for depreciation has been obtained from the depreciation tax form #4562, and this has been substituted. For other industry divisions, however, no corrected figure is available.

For sole proprietors all that can be constructed are partial income and outlay accounts. No balance sheet information is reported. On the other hand, the sole proprietor returns do contain information on depreciation charged on business property and interest paid on business indebtedness.

Appendix tables give the income and outlay accounts for both partnerships and sole proprietors and the balance sheets of partnerships for the year 1982 classified into mining, real estate, services and other activities. These data are summarized in Table 15.

What becomes evident from Table 15 is that tax considerations are very important in both mining and real estate. In both industries, for example, the losses of those reporting losses exceeded the income of those reporting income. Some of the losses of these enterprises may legitimately be due to their inability to make a profit. However, in other cases, where large depletion or depreciation charges and a substantial cash flow is involved, it seems more reasonable that they are being used to shelter income. Furthermore, for real estate partnerships net liabilities amounted to more than 90 percent of non-financial assets. This is, of course, a much higher ratio of debt to nonfinancial assets than was found to exist for any corporate activity, and reflects the degree to which these partnerships used borrowed funds to acquire property to shelter income. The ratio of net liabilities to nonfinancial assets for partnerships in services and other activities is also somewhat higher than for corporations in the same categories.

Although it not possible to say as much about sole proprietorships since balance sheet data are unavailable, it would appear from the magnitude of interest paid by sole proprietors in relation to their total receipts that, in general, they rely on external financing to a somewhat lesser extent than do partnerships. (See diskette TAB15C.)

TABLE 14

SUMMARY 1983 SAVING AND CAPITAL FORMATION DATA FOR MAJOR INDUSTRY DIVISIONS TABULATED BY ASSET SIZE CLASSES

(Billions of dollars)

Line	Industry Divisions and Asset Size Classes	Income and Outlay Accounts						Balance Sheet Accounts				
		Number of Tax Returns	Total Current Receipts	Gross Saving	Capital Goods Purchased	Column 3 as % Of Column 4	Total Assets	Financial Assets	Non-financial Assets	Liabilities	Net Worth	Column 7 as % of Column 9
		1	2	3	4	5	6	7	8	9	10	11
1	TOTAL—ALL INDUSTRIES	2,977,039	7,092.6	224.1	239.0	93.8	10,199.2	7,637.6	2,561.5	7,554.3	2,644.8	101.1
2	Under $1 million	2,718,474	1,116.3	23.2	27.4	84.7	399.0	202.1	196.7	283.6	115.4	71.3
3	$1 to $10 million	218,060	1,130.8	28.4	24.5	115.9	567.4	295.7	271.9	386.6	180.8	76.5
4	$10 to $100 million	33,443	836.7	24.6	21.8	112.8	1,016.3	761.3	254.9	758.5	257.9	100.4
5	$100 million and over	7,045	4,008.7	148.2	165.3	89.7	8,217.0	6,378.4	1,838.5	6,125.9	2,091.0	104.1
6	10. Agriculture, total	92,125	58.6	1.9	2.8	67.9	50.3	18.1	32.2	36.7	13.6	49.3
7	Less than $1 million	82,387	23.7	1.1	1.5	73.3	20.0	6.3	13.6	14.4	5.5	43.8
8	$1 to $10 million	9,382	22.6	0.5	0.8	62.5	19.7	6.8	13.0	14.9	4.8	45.6
9	$10 to $100 million	344	10.0	0.2	0.3	66.7	7.9	3.5	4.4	6.0	1.9	58.3
10	$100 million and more	12	2.3	0.1	0.1	100.0	2.8	1.5	1.3	1.4	1.3	107.1
11	20. Mining, total	37,066	131.3	3.3	5.8	56.9	194.4	113.9	80.5	108.8	85.6	104.7
12	Less than $1 million	31,096	11.0	−0.2	0.7	−28.6	5.9	3.1	2.8	6.2	−0.2	50.0
13	$1 to $10 million	4,847	11.8	0.4	0.8	50.0	14.0	7.0	7.0	9.6	4.4	72.9
14	$10 to $100 million	963	15.7	0.3	1.1	27.3	26.1	12.1	14.0	17.4	8.7	69.5
15	$100 million and more	158	92.7	2.8	3.2	87.5	148.4	91.7	56.7	75.6	72.8	121.3
16	30. Construction, total	283,519	289.9	5.5	6.8	80.9	161.4	104.5	56.9	119.8	41.5	87.2
17	Less than $1 million	261,257	115.5	2.4	3.1	77.4	40.3	23.8	16.5	30.0	10.3	79.3
18	$1 to $10 million	20,788	94.9	1.9	2.0	95.0	51.5	32.4	19.1	38.4	13.1	84.4
19	$10 to $100 million	1,396	43.5	0.7	0.9	77.8	32.2	21.2	10.9	24.6	7.6	86.2
20	$100 million and more	77	36.0	0.5	0.8	62.5	37.5	27.0	10.5	26.9	10.6	100.4

21	40. Manufacturing, total	261,927	2,544.1	112.0	89.9	124.6	2,233.0	1,269.5	963.5	1,279.9	953.1	99.2
22	Less than $1 million	212,016	128.2	2.4	3.8	63.2	43.9	22.3	21.6	30.2	13.7	73.8
23	$1 to $10 million	42,235	248.8	8.4	6.4	131.3	119.9	57.1	62.8	71.1	48.8	80.3
24	$10 to $100 million	6,435	269.3	10.5	7.2	145.8	171.9	82.1	89.8	92.3	79.7	88.9
25	$100 million and more	1,230	1,897.6	90.6	72.5	125.0	1,897.3	1,108.0	789.3	1,086.3	811.0	102.0
26	50. Transport, communication, public utilities	122,567	654.4	43.5	67.5	64.4	998.9	287.5	711.3	604.6	394.3	47.6
27	Less than $1 million	112,432	52.6	1.8	2.5	72.0	16.0	7.7	8.2	12.5	3.5	61.6
28	$1 to $10 million	8,680	36.3	2.0	2.4	83.3	22.4	10.4	12.0	16.3	6.1	63.8
29	$10 to $100 million	1,054	31.4	1.8	2.2	81.8	27.8	11.5	16.3	19.7	8.1	58.4
30	$100 million and more	401	534.1	37.9	60.4	62.7	932.7	257.9	674.8	556.1	376.6	46.4
31	60. Wholesale and retail trade, total	851,785	2,116.7	37.3	27.8	134.2	804.2	405.3	398.9	539.0	265.2	75.2
32	Less than $1 million	771,002	496.8	7.0	6.6	106.1	136.0	59.3	76.7	95.9	40.1	61.8
33	$1 to $10 million	75,331	610.4	11.2	6.9	162.3	185.0	83.9	101.2	121.9	63.1	68.8
34	$10 to $100 million	4,938	319.4	7.4	4.3	172.1	121.0	61.8	59.2	75.9	45.1	81.4
35	$100 million and more	514	690.2	11.9	10.0	119.0	362.3	200.3	161.9	245.3	117.0	81.7
36	70. Finance, insurance, and real estate, total	479,656	882.6	−0.7	18.0	−3.9	5,487.2	5,290.6	196.6	4,670.4	816.8	113.3
37	Less than $1 million	422,545	66.6	−0.3	1.5	−20.0	62.6	37.3	25.3	41.6	21.0	89.7
38	$1 to $10 million	36,129	34.5	0.3	1.0	30.0	103.4	71.4	32.0	75.6	27.8	94.4
39	$10 to $100 million	16,528	96.6	0.5	2.0	25.0	582.5	544.0	38.5	489.1	93.4	111.2
40	$100 million and more	4,450	684.9	−1.1	13.5	−8.1	4,738.8	4,637.9	100.9	4,064.2	674.6	114.1
41	80. Services, total	848,394	415.0	21.3	20.4	104.4	269.8	148.2	121.6	195.1	74.7	76.0
42	Less than $1 million	825,739	221.9	9.0	7.7	116.9	74.3	42.3	32.0	52.8	21.5	80.1
43	$1 to $10 million	20,668	71.5	3.7	4.2	88.1	51.5	26.7	24.8	38.8	12.7	68.8
44	$10 to $100 million	1,785	50.8	3.2	3.8	84.2	46.9	25.1	21.8	33.5	13.4	74.9
45	$100 million and more	203	70.9	5.5	4.8	114.6	97.2	54.1	43.1	70.1	27.1	77.2

Source: Internal Revenue Service, Statistics of Income Division, *Source Book, 1983 Corporation Income Tax Returns.*

TABLE 15

SUMMARY 1983 INCOME STATEMENTS AND BALANCE SHEETS FOR MAJOR INDUSTRY GROUPS IN SERVICES

(Billions of dollars)

Line	Partnerships	Total 1	Mining 2	Real Estate 3	Services 4	Other 5
1	Total receipts	296.14	19.75	33.85	71.38	171.14
2	Total operating costs	271.05	25.81	28.75	53.09	163.92
3	Gross operating surplus	25.08	−6.05	5.10	18.30	7.22
4	Capital consumption Allowances.	32.87	2.78	16.21	6.40	6.51
5	Net income	−7.32	−8.83	−11.10	11.90	0.71
6	Net capital gains realized	8.31	0.09	2.46	0.31	5.72
7	Total Assets	845.28	45.55	394.97	64.80	339.97
8	Financial assets	323.28	17.27	98.69	21.61	185.71
9	Non-financial assets	522.01	28.28	285.03	43.19	165.51
10	Liabilities	701.63	20.77	363.61	55.73	261.52
11	Net worth	143.65	24.79	31.35	9.07	78.44
12	Financial assets as percent of liabilities	46.1	83.1	27.1	38.8	71.0
	Sole Proprietorships					
13	Total receipts	433.12	11.77	11.69	108.14	301.52
14	Total operating costs	361.66	10.02	8.20	72.91	270.52
15	Gross operating surplus	71.46	1.75	3.49	35.23	31.00
16	Capital consumption allowances	2.36	1.17	0.02	0.47	0.69
17	Net income	50.57	−0.35	2.57	28.20	20.15

Sources: Internal Revenue Service, *Statistics of Income 1978-1982, Partnership Returns.* Internal Revenue Service, *Statistics of Income Bulletin*, Vol. 4, No. 1, Summer 1984.

PART III. SUMMARY AND CONCLUSIONS

A. THE EVIDENCE ON INSTITUTIONALLY DEFINED SAVING AND CAPITAL FORMATION

1. *The Household Sector*

Part I of this paper reexamined the income, outlay and saving of households in terms of their actual market transactions. The U.S. Personal Income Account was redefined to (1) exclude non-profit institutions, (2) include the actual housing expenses of owner occupied houses, (3) include pension benefits received by households rather than employers' contributions, (4) recognize household capital formation in housing and consumer durables (Table 1). With these modifications it was found that the gross saving of the household sector since 1947 has been somewhat less that its gross capital formation, (Table 2). Furthermore, the data show that the household sector often becomes a net lender in periods of recession, when expenditures on owner-occupied houses and consumer durable goods decline more than household gross saving; the reduction of household saving in

recessions is constrained by contractual debt repayment such as home mortgages, car payments and other consumer debt. During periods of prosperity, however, household purchases of houses and consumer durables often exceeds household gross saving so that they become net borrowers from the other sectors of the economy. From the cumulative evidence for the period 1947–89, it is evident that during this period the household sector did not provide the saving for the capital formation in the enterprise sectors of the economy.

2. *Historical Evidence on Enterprise Saving and Capital Formation*

The National Bureau of Economic Research project on capital formation and its financing, as reported by Simon Kuznets (Table 3), provided evidence that for most of the period from 1900 to 1953 the gross retained income of enterprises in mining and manufacturing substantially exceeded their expenditures on plant and equipment. The only exception to this was the period prior to 1914 and the depression of the 1930s when net retained income was negative. In contrast, the NBER studies also showed that, from 1890 to 1950, the gross retained income of the regulated industries (railroads, telephones, and electric power) was often less than half of their gross capital formation, indicating that in these industries gross capital formation has always been financed to a major extent by external borrowing.

Subsequent NBER research by Dawson, Meiselman and Shapiro developed data on the corporate sources and uses of funds for manufacturing, the regulated industries and trade and services on an annual basis from 1931 to 1955, (Table 4). Their data, when examined in terms of gross retained income and gross capital formation, generally confirmed the earlier NBER findings with respect to manufacturing and the regulated industries.

Finally, the Federal Reserve Board's flow of funds accounts provide data on gross retained income and gross capital formation from 1946 to 1990 for three broad sectors of enterprises, (1) farm business, (2) noncorporate nonfarm business, and (3) nonfinancial corporate business, (Table 5).

For farm business, the FRB data show that from the mid 1950s to the 1980s capital consumption varied between 70 percent to 88 percent of gross capital formation. Since 1980 gross saving of the farm sector has exceeded farm gross capital formation. This primarily reflects the depressed levels of farm capital formation.

Non-farm non-corporate business capital consumption allowances were equal to about 90 percent of the capital formation taking place from 1946 to 1990. In periods of recession and for the period from 1986–90, gross capital formation was less than capital consumption allowances.

In the non-financial corporate business sector, which includes not only mining, manufacturing, trade, and services but also the regulated industries, transportation and utilities, gross saving was equal to about 90 percent of gross capital formation over the whole period from 1947–90. Again, however, the fluctuation in gross capital formation is more pronounced than the fluctuation in gross saving, so that in recession the gross saving of non-financial corporations exceeded their gross capital formation.

3. *Evidence from cross-sectional corporate tax return data*

The statistics of income data tabulated by the U.S. Internal Revenue Service are based on the tax returns filed by corporation, partnerships and sole proprietors. These data provide a basis for constructing current income accounts and balance sheets that reflect the market transactions of enterprises. The relation between gross saving and gross capital formation and between the financial assets and liabilities of corporations in 1983 were analyzed by major industry groups. Analysis of these Internal Revenue Service tax data confirm the historical evidence, and provide useful additional information.

In general it was found that for 1983 the gross saving for most major industry groups in manufacturing industries and services exceeded their gross capital formation (Tables 9A, 9B and 13). In contrast, the gross saving of public utilities fell far short of their gross capital formation (Table 10). In those major industry groups where net income retained was negative such as agriculture, mining, and construction gross saving also tended to be smaller than gross capital formation (Table 8). Although gross saving in wholesale and retail trade exceeded their purchases of capital goods, the central importance of inventories in these industries and the lack of information relating to inventory valuations and to inventory change make analysis of these industries questionable. (Tables 10 and 11).

Finance, insurance and real estate pose a variety of different problems (Table 12). According to the IRS tax returns only banking institutions, brokers and insurance agents had positive gross saving. Credit institutions in 1983 ran large losses that resulted in sizeable gross dissaving. Holding companies, however, had large earnings, but since they also had considerable capital gains, they distributed to stockholders more than their earnings—so that they also had large gross dissaving. Real estate corporations ran considerable losses, but the cash flow provided by capital consumption allowances permitted their payment of dividends such that their gross saving was zero. Finally, although insurance companies were reporting gross dissaving, they were at the same time accumulating substantial amounts of employers' pension and insurance reserves. As was noted in Part I, such pension and insurance reserves should be treated as funds retained in the enterprise sector in much the same manner as undistributed corporate profits are so treated. Employers' pension and insurance reserves do, of course, provide funds for financing capital formation in the net borrowing industries, utilities, mining and real estate.

B. Conclusions

The introduction to this paper posed, essentially, two questions: (1) what are the observed relationships between gross saving and gross capital formation for different enterprise sectors in the economy, and (2) how do these observed relationships accord with conventional theoretical views? The summary has presented the evidence with respect to the first question. Based on these findings, it is now possible to state some conclusions with respect to the second question, in terms of (1) the determinants of saving and capital formation within sectors, and (2) the role of saving and capital formation in the economy.

1. *The Determinants of Sector Saving and Capital Formation*

A first set of conclusions relates to the observed empirical behavior of saving and capital formation and the factors determining it. Economic theory in general considers that the determinants of saving and capital formation are independent at both the sectoral and the micro level. However, the close relationship that has been observed between gross retained income and gross capital formation for institutional sectors suggests that this assumption of independence needs to be reexamined.

For households, some purchases of durable reproducible goods are simultaneously both saving and capital formation. If a household uses current income to acquire durables, it is simultaneously saving (by refraining from spending its income on current consumption) and also making capital outlays for capital formation. Borrowing by a household for the purchase of a new owner-occupied house represents capital formation greatly in excess of the household's current saving. In subsequent periods, however, mortgage repayments will absorb income, displacing current expenditures and thus augmenting saving. As a number of studies of household budgets have shown, home owners tend to have a higher level of saving than non-homeowners because of mortgage repayment.

When expenditures for new owner-occupied housing and consumer durables are growing rapidly, the gross capital formation of the household sector exceeds its gross saving and the household sector becomes a net borrower from other sectors. When the purchase of houses and durables contract due to recession, household gross saving tends to exceed its gross capital formation and the households sector becomes a net lender.

Household sector data as shown in Table 2 indicate that, on balance over the past 40 years in the United States, household sector net lending and net borrowing have been relatively insignificant. It is this intimate relationship between household saving and the financing of household capital formation (for both durables and housing) that has resulted in approximate equality between gross saving and gross capital formation in this sector. This strongly suggests that for many households saving unrelated to the accumulation of tangibles and/or debt repayment over the period studied was negligible. This finding is quite consistent with the analysis of the change in household wealth from 1947 to 1980 where it was found that two-thirds of the change in household wealth was due to revaluations (i.e. capital gains) and one-third was due to household saving in the form of houses and durable goods. (Ruggles and Ruggles, 1982; Wolff, 1981).

For enterprises a number of somewhat different factors are at work. First, there is a close interrelation among such circumstances as the ability of an enterprise to find attractive investment opportunities, its past and current record of profitability, and its ability to finance its capital formation out of retained earnings. If the past operation of a firm has been particularly profitable, this may result in a pool of financial assets, the existence of which both encourages and enables the management to expand its operations. A firm that is incurring a loss may be doing so because of limited investment opportunities. Even if such a firm

did consider that it could successfully invest, without past profits or the ability to convince the financial community of its future profitability, the required financing would not be available. It is somewhat paradoxical that firms that are profitable and can borrow funds may not need to borrow them, but those that do need to borrow are denied funds.

Second, firms also prefer self-financing because of risk and uncertainty since if an investment should be unsuccessful, the resulting reduction in net worth will not jeopardize future operations in the same way that defaulting on a fixed claim liability would.

Finally, many firms hesitate to borrow funds since the lenders often insist on becoming involved in management decisions. For all of these reasons, there is a tendency to rely on self-financing for capital formation except where special circumstances apply.

There are, however, special institutional reasons why saving and capital formation in certain activities may not match. There are some activities where external financing is sufficiently advantageous to offset the ordinary disadvantages. The most obvious case is that of the regulated industries, where the prices which can be charged are controlled and borrowing costs can be taken into account in determining appropriate rates of return. Under these circumstances enterprises tend to rely somewhat more on outside financing for expansion. In a similar manner, tax regulations relating to depreciation, depletion, and other capital costs and the tax treatment of capital gains create tax shelters in real estate and mining where borrowed funds can be used to maximize the after-tax return on equity. Finally, where inventory fluctuations tend to be large, as in agriculture and trade, financing often needs to be obtained externally.

On the other hand, there are also activities which may regularly be expected to generate excess funds well above what is used for current operations. The obvious case here is employers' pension and insurance funds, which will have growing reserves as long as employers contributions and the earnings of the funds exceed the benefits that are actually paid out.

In summary, thus, it appears that with respect to sector saving and capital formation the general rule is that each tub tends to stand on its own bottom. The household sector is not, and historically has not been, a net supplier of funds to other sectors; furthermore the manufacturing sector does not more absorb funds than it generates. There are exceptions, however, arising from particular institutional characteristics of certain industries. Utilities are net borrowers, and pension funds are net lenders. Agriculture, and wholesale and retail trade borrow when inventories accumulate and reduce their debt when inventories contract. Tax shelters convert the capital consumption allowances and losses generated in mining and real estate into tax-free cash flow, and capital gains. This simplistic picture must, of course, be modified to incorporate government and the foreign sector, and cyclical and inflationary effects. In recessions, both households and enterprises may reduce their capital formation more than their gross saving, and the excess saving is matched by increased government deficits. In boom times the reverse is true. Rising prices may also create capital gains that augment available funds in some sectors at the expense of other sectors.

2. *The Role of Saving and Capital Formation in the Economy*

It is a basic premise of growth theory that increased capital is an essential for growth, and that saving is required for capital to grow. In the usual functional approach, is is assumed that the saving must be done by consumers. There is seldom much discussion of the content of capital as a factor of production; empirical analyses usually accept the gross (or infrequently now, net) capital formation and capital stock figures of the national accounts, and relate them to personal saving. This study suggests that there are a number of problems with this formulation.

One set of problems relates to the concept of capital itself. The United States national income accounts recognize only private fixed capital investment and inventory change as capital formation. Recently, there have been recommendations about broadening the definition to include research and development and computer software. (Eisner 1985, 1988) Some national accountants have suggested that the concept of capital should be expanded even further to include training of employees, pollution control, and employee health programs. Currently, expenditures for these are written off as part of the enterprise current operating costs, and thus, like research and development represent self-financed capital formation. Private gross capital formation and its corresponding capital stock also omit much of the infrastructure of society that is required for growth. Some of the infrastructure is provided by government, partly for tangibles like highways which in the United States are not counted as capital. Finally, additional capital formation is provided by households in the form of child-rearing and education (Kendrick, 1979; Jorgenson and Alvaro, 1983).

A second set of problems relates to the question raised by Kuznets about the low level of capital formation in the United States as a percentage of gross national product. Kuznets argued that the most plausible explanation for the low level was the limitation in the supply of saving because the ultimate consumers managed to save only a small portion of their income (Kuznets, p. 398, 1961). On the other hand, Kuznets' own findings indicated that in periods of recession enterprise capital formation often fell considerably below their own gross saving. A more reasonable explanation is that during periods of recession when enterprises have excess capacity, demand is slack, and profits are low, managers show restraint by cutting back on their capital formation expenditures. In an economic system where recession is a fairly normal state and periods of prosperity are relatively short, this restraint exercised by enterprises is translated into a slow rate of growth of the capital stock. Kuznets may have thus been in error; the sporadic and chronic recessions in the United States may have limited the opportunity for profitable investment. Excess capacity and low profits or losses may have been more important in most years in determining the level of capital formation than the supply of saving.

While this paper was intended primarily as an empirical investigation of the saving and capital formation behavior of institutionally defined sectors, we cannot leave the topic without noting that the empirical findings carry with them some simple and rather obvious policy implications. First, measures designed to stimu-

late household saving as the basis for enterprise capital formation have a misguided view of the saving and capital formation process. In so far as an increase in household saving is achieved by reductions in consumer spending it will reduce enterprise receipts and profits, and consequently reduce enterprise capital formation. Second, if the objective is to increase enterprise capital formation, direct incentives which increase profits and induce enterprises to reinvest their own retained earnings would seem far more likely to be effective. Whether that is better done from the supply side or the demand side is another question, but from past evidence it is apparent that a high level of aggregate demand is needed for enterprises to undertake high levels of capital formation. Any policy measures that fail to recognize the institutional constraints and institutional incentives under which the various sectors of the economy are operating has little chance of success.

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