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MARKET VALUE VS. FINANCIAL ACCOUNTING MEASURES OF NATIONAL SAVING

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ABSTRACT

Although National Income and Product Account (NIPA) saving measures, and especially NIPA saving rates, are widely used in both scholarly and journalistic treatments, they are seriously defective as representations of the variables derived from economic analysis, either for measuring economic performance or as elements of the explanation for consumption behavior. The cost-based value of a restricted class of assets recorded in the national income and product accounts is a version of the financial accounting for the tangible assets of a business firm. Economic analysis calls instead for the current asset market value of business enterprises (and their equivalents) as the measure of wealth, and the annual change in that value as the measure of saving. National Balance Sheet data on wealth at asset market value presented in this paper show that NIPA saving measures are not good proxies for market value measures. The picture of recent national saving experience that emerges from market value data is quite different. Various conceptual and data quality issues are discussed.

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Introduction

This essay is a venture into well-trodden terrain: the definition of saving. Because so many others have thought about the same issues, probably nothing I say here has not been said before by someone else. J. R. Hicks (1946) mapped the territory in a particularly well-known theoretical treatment. More recently, Auerbach (1984), Boskin (1986, 1988), Eisner (1980, 1988), Goldsmith (1982), Peek (1986), Ruggles and Ruggles (1981), and Shoven (1984) have discussed many of the points raised here in connection with empirical explorations of saving and wealth. In his presidential address to the American Economic Association, Eisner (forthcoming) included the main theses argued here in a broadside indictment of the divergence between measurement and theory to be found in economics. This paper differs, perhaps, in degree of emphasis of two propositions. The minor theme is that saving should be defined by reference to the underlying concept of wealth to which the saving is an increment. The major theme is that the most useful wealth concept is the market value of assets, not the cost-based measure of capital implied by the use of national income and product account (NIPA) saving. Whereas NIPA investment measures tell us something about the margin of productive additions to the stock of wealth in a particular form, the (definitionally equal) saving measures are neither those that

the microeconomic theory of consumption explains nor those appropriate to assess national economic performance.

Inspection of a sample of the extensive literature commenting on and analyzing national saving has surprised me by the diversity of positions, often implicit, on these issues. It appears that the macroeconomists are truer to microeconomic principles than are many of those who approach the subject from a public finance perspective. The fact that so much research is carried out making use of statistical measures of saving that seem to me to bear so little relationship to economic theory suggests there is a place for a review of fundamentals and display of some basic data related to them.

Income, Saving, and Wealth

Beginning students are taught that saving is a residual, what is left from personal income after deducting consumption and taxes, or after deducting from aggregate income consumption by households and governments. But saving is also conceived of as an addition to wealth, and it is not always recognized that the three ideas -- consumption, income, and wealth -- are not independent. Defining any two determines the definition of the third. The Schanz-Haig-Simons (SHS) conception of income familiar to public finance takes the ideas of consumption and wealth as fundamental and defines income as the sum of consumption and the change in wealth during an accounting period. The basic notion of wealth, in turn, is the market value of a household's (or household

aggregate's) stock of claims on goods and services in the future.[1] This is the approach to saving taken by the microeconomic theory of household behavior.

Most commentary on and analysis of national saving, by contrast, start with a NIPA definition of income. To make life confusing, the term "income" in the national income account context is attached to factor payments, and makes distinctions between taxes regarded as falling on factor payments and those that do not (indirect business taxes). It is doubtful that there is an economically meaningful distinction between taxes that bear on factor payments and those that do not. We can cut through the problem if, for the concept of income in the SHS sense, we read "product" in the national accounting sense.

Which of the three notions -- product, consumption, and wealth -- is fundamental in the case of national income accounting is not immediately obvious. As is well known, national income accounts involve two conceptions of product, gross and net. Gross national product, "the market value of the goods and services produced by labor and property supplied by residents of the United States,"[2] and consumption, personal and governmental, can reasonably be described as the fundamental ideas. Together (by subtraction) they define gross investment and saving. To reach net product, net investment, and net saving, it is necessary to

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[1] For discussions of the SHS income concept, see Bradford (1986) or Institute for Fiscal Studies (1978).

[2] U.S. Department of Commerce (1986).

subtract an allowance for the using up of the reproducible capital stock, a wealth notion. Here, then, it is the wealth and consumption ideas that are fundamental: We can think of net product (income) as definitionally equal to the sum of consumption (personal and governmental) and the change in the reproducible capital stock owned by U.S. residents.

NIPA Saving and Financial Accounting

In its treatment of business investment and its yield, the NIPA net income concept can be loosely characterized as a consolidation of the account books of business firms. This is not to suggest that the NIPA accountants actually aggregate the income statements and balance sheets of firms. It is rather to emphasize that investment (and therefore saving) in the national income and product accounts consists of acquisitions of tangible property and is, furthermore, cost-based, constructed from historical data on expenditures for machines, structures, and inventories. Increments in the value of intangible property and (what may be the same thing) revaluations of tangible property arising from its location within going businesses are excluded from the NIPA income and saving concepts. Net saving in the national income and product accounts constitutes the change in the stock of reproducible business capital.[3] The NIPA capital data can be thought of

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[3] For this purpose, owner-occupiers can be thought of as in the business of providing housing services. Other household-owned and -employed capital (consumer durables) is excluded from the NIPA investment and capital concepts, but that is not my main concern here.

as the figures financial accountants would present if they used the NIPA depreciation conventions and adjusted their historical cost-based entries on tangible assets (including inventories) annually to what they would be had historical prices been instead at current levels.

The main difference between the two conceptions of wealth corresponds roughly to the difference between financial accounting for the net worth of business firms, on the one hand, and the market valuation of those firms, on the other ("roughly" because financial accounts include intangible assets acquired by purchase from another firm). The difference is sometimes summed up as that between recognition or not of "capital gains," but this description hides as much as it reveals. The market value of the equity of a firm may differ from the "book" value of its tangible property for many reasons, including changes in the supply price of the capital items in question (for which national income accounting makes a correction), changes in discount rates, and changes in the beliefs about the future upon which market valuation of assets depends -- all of these give rise to capital gains in the popular sense of the term. But the two values also may differ because of the genuinely stochastic character of the returns on investment and the conservative quality of business accounts, which result in little or no tracking of the accumulation of intangible capital and of such assets as proven oil reserves.

Empirical Relevance: A First Look

Available data suggest that the difference in definition corresponds to a significant difference in aggregate wealth measures. Table 1 shows estimates of the net worth of nonfinancial corporate business in the United States (including corporate farms) and of the market value of the equity claims on those firms. The figures are derived from the Balance Sheets for the U.S. Economy (hereafter, National Balance Sheets) prepared by the Board of Governors of the Federal Reserve System (1984).[4] Net worth consists of the difference between assets and liabilities on the account books, after various adjustments. Assets in this case include reproducible assets at replacement cost (i.e., after adjusting valuation based on historical cost for changes in the acquisition prices of the same assets), land at market value, and direct investment abroad by U.S. firms. Liabilities include all the usual sorts of debt (at book value), profit taxes payable, and foreign direct investment in the United States. I would emphasize that in its treatment of fixed investment the net worth in Table 1 is essentially the concept implicit in NIPA accounting for saving. The market value of equity is essentially that appropriate for the SHS saving concept, which, in turn, is the concept "explained" by microeconomic theories of saving behavior.

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[4] To derive the aggregate accounting net worth of the corporate sector, I have added the net worth of corporate farms (line 46 of the Sector Balance Sheet for the Nonfinancial Business Sector) to the nonfarm, nonfinancial total (line 43).

It is evident from Table 1 that the market value of equity and the net worth on firms' books are very different. The column titled "Market Value/Net Worth Ratio" shows the ratio of the market value of the equity claims to the consolidated nonfinancial corporate sector to the consolidated financial accounting measure of net worth, i.e., the sum of tangible and financial assets (including direct investment abroad) less the sum of debt claims (at book value), profit taxes payable, and foreign direct investment in the United States. Since 1948 this ratio has varied over a remarkable range, with a high of 110.1 percent at the end of 1968 and a low of 36.7 percent at the end of 1978.

With this sort of divergence, one would expect very different behavior of income and saving measures based on accounting and market values of wealth. How different is suggested by the column of Table 1 headed "Net Worth less Market to GNP," which shows the ratio of the difference between the accounting and market value measures as a ratio to the GNP. According to Table 1, changing from NIPA accounting to market value measures of saving in the form of nonfinancial corporate equity claims would result in changes in estimated aggregate income ranging between an increase of over 7 percent and a decrease of over 62 percent, with a substantial decrease on average. (This comparison is simply to emphasize the potential significance of the difference in points of view under discussion in the present paper. Since there may be offsetting changes in other elements of national wealth, an aggregate income measure that accounted for all saving at market value might not

differ as much from the NIPA aggregate.) Figures 1 and 2 make the points graphically.

It seems clear that the basic objective of the National Balance Sheets, to measure wealth at market value, is the one appropriate for discussions of saving. Nevertheless, economists widely accept and use for this purpose the NIPA saving data. Distinguished examples (and I make no claim to a systematic review of the literature) include Blades and Sturm (1982), Boskin and Lau (1988), Campbell (1987), Lipsey and Kravis (1987), most of the contributors to Lipsey and Tice (forthcoming), Poterba (1987), and Summers (1985).

In at least some of these instances, lack of market value wealth data is taken to justify resort to NIPA concepts, and some analysts (for example Auerbach, 1984; Boskin, 1986, 1988; Poterba and Summers, 1987) have noted the potential role for the market value data provided in the National Balance Sheets. Summers and Carroll (1987) explicitly analyze aggregate saving in the National Balance Sheet sense (although they do not regard it as preferable to the NIPA measure). Noting that "[n]ational income account (NIA) data provide notoriously poor proxies for the economic concepts of saving and investment," Obstfeld (1986, p. 82) explores some of the biases that may result from the use of NIPA data in comparing saving and investment behavior of countries. Some macroeconomists -- for example, Hall (1978, 1988) and Campbell and Deaton (1988) -- go out of their way to avoid measuring saving. Hall, in particular, has argued that income aggregates are misplaced in

macroeconomics; focus should instead be on aggregate consumption and labor earnings. Granting some such exceptions in the literature, I think it is fair to say that there is wide acceptance of NIPA saving measures.

In this paper I argue that wealth and consumption are both important variables in economic models and important measures of economic performance, that income should be viewed as a derivative concept in this connection, and that the appropriate concept of wealth is measured at asset market value. We should use NIPA saving measures only to the extent that they serve as reasonable proxies for the market value measures. (This is not to suggest that the corresponding investment concepts are not useful in the analysis of production.) Although it is ultimately a statistical question whether the NIPA saving measures are reasonable proxies, the evidence from the National Balance Sheets leads me to doubt it.

In the next part of the paper I review the relationship between the two notions of wealth (and therefore of saving): market value of assets and financial accounting net worth. I then take up objections to the use of market value wealth. The fourth section presents time series data on the behavior of national saving in the United States economy, and the fifth raises, without solving, some significant problems with the National Balance Sheet data as measures of market value.

Much attention has been paid in recent years to the saving performance of U.S. residents, which has been generally judged

disappointing. My contention that the NIPA saving aggregates and ratios of NIPA saving to NIPA income measures are poor indicators upon which to base conclusions is neither inherently in favor of this assessment nor opposed to it. One may still be dissatisfied with the U.S. saving record when it is looked at in the framework suggested by microeconomic theory. The sixth section presents some observations on this issue.

Concepts of Wealth

Market Value of Assets

The SHS notion of income underlying the base of an income tax (or at least generally accepted by academic commentators as the proper base of an income tax) is the sum of the change in the wealth and the consumption of the taxpaying unit, be it an individual or a family. Consumption and wealth are the primitive concepts, which need to be given operational substance to produce a tax system. Although the general ideas seem obvious enough, both pose difficult problems of definition at the margin. Within limits, the standard to which the operational definitions refer in a tax policy context is essentially normative -- one starts with a notion of ability to pay and designs the income measure to implement it. (The limits relate to the substitutability of different forms of wealth in taxpayer portfolios.)

In Untangling the Income Tax (Bradford 1986) I suggested that usual arguments justifying the SHS income concept as a tax base imply a definition of a person's wealth as "the maximum amount of present consumption he could finance currently by selling or otherwise

committing all of his assets" (p. 22). If this definition is accepted, the operational focus shifts to the identification of "assets" and quantifying the opportunities of "selling or otherwise committing" them. Examples of significant but hard to quantify assets are human capital (the present value of a person's future earning power) and the discounted value of inheritances. Interestingly, these two are also examples of assets that are difficult to sell or "otherwise commit." Proponents of SHS income taxation normally exclude both human capital and the value of great expectations from the wealth component of the definition of income.

Experience with tax administration gives us numerous examples of the fact that it is the market value of wealth, rather than its accounting value, that figures in individual behavior. If tax on accruing market value (capital gains) is deferred, taxpayers will concentrate their portfolios in assets that generate accruing value, rather than cash income. If accounting measures of depreciation are different from actually accruing changes in value of assets, taxpayers respond in well known ways.

A simple two-period model of person's intertemporal budget constraint will help clarify the role and nature of wealth in the analysis of behavior, in this case the explanation of consumption levels. For the purpose, we can imagine a world in which there is just one consumption good and in which labor is supplied inelastically, with no welfare significance. We conceive of people as born into this world

with inherited resources (to be specified), working one unit of time during the first period to earn the wage w_1 (measured in consumption units), consuming an amount C_1, and applying any excess of the wage over consumption to purchase assets. In the second period, the person also works one unit of time to earn the wage w_2, and consumes that amount plus the results of liquidating the assets. The problem is to choose an amount of first-period consumption and a portfolio of assets.

In the most basic model, there is no uncertainty (so no information problem). The second-period wage is known and there is a single asset available, which we may think of as a discount bond paying one unit of consumption in period two. The going price for the asset is p_2. The person is born holding B_1 units of the bond, and in the course of period 1 chooses the number of units of the asset to buy (or sell) so as to carry B_2 units into period 2. Two equations (1) and (2) define the lifetime budget constraint.

$$C_1 + B_2p_2 = w_1 + B_1p_2 \tag{1}$$

$$C_2 = B_2 + w_2 \tag{2}$$

The intermediate asset position, B_2, can be eliminated between (1) and (2) to yield a single lifetime budget constraint (3).

$$C_1 + C_2p_2 = w_1 + w_2p_2 + B_1p_2 \tag{3}$$

The right hand side of equation (3), $w_1 + w_2p_2 + B_1p_2$, is the market value of "opening wealth" (<u>including</u> human capital). We see from (3) that in this simple world we can specify the person's opportunity set completely with two numbers, opening wealth and p_2, the price of claims on period-two consumption (or the interest rate). To specify the opportunity set without capitalizing labor services, we need four numbers, B_1p_2, w_1, w_2, and p_2: opening <u>nonhuman</u> wealth, wages in the two periods, and the interest rate.

This simple formulation reminds us that if we are looking forward from a point in time and want to explain consumption levels, wealth is a needed piece of information. It also demonstrates that it is not the only piece of information we need to explain consumption or, a related problem, to assess a person's welfare, even under the simple, perfect market conditions of the model. In general, information about prices is needed -- here, wages and the interest rate; in a multiperiod setting, wages, relative prices of goods, and a term structure of interest rates. By inspection of condition (3) we see that in the simple model the welfare of the individual is increasing in opening wealth including human capital and decreasing in the price of future consumption (i.e., increasing in the interest rate). But even in this case, when human capital is excluded, although welfare is still increasing in opening wealth, the effect of an increase in the interest rate on the assessment is indeterminate and hinges on the taste for consumption in period 2.

Simply put, a high interest rate is bad for someone who wants to borrow against tomorrow's earnings to consume more today.[5]

Initial nonhuman wealth is a given, a parameter, in the model described above; wealth along the way (initial wealth augmented by saving) is chosen, endogenous. A complete model would explain initial wealth, too, so it would drop out of the analysis. Wealth would return as an explanatory variable, though, with the introduction of uncertainty. Then the wealth along the way is the result of the individual person's choice and luck, so second-period consumption would depend upon the market performance of the portfolio. The same would be true for the aggregate of individuals.

The model reminds us that to predict the level of consumption we need to take into account the market value of nonhuman wealth, the interest rate, and current and future wages. In a stochastic setting the distribution of future wages could be correlated with the value of nonhuman wealth, marketed and unmarketed. In particular, one might expect workers observing prosperity (high market value of wealth) to raise their forecasts of future wages. If we take into account that lifetime labor supply is chosen along with consumption levels, it is far

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[5] The importance of intertemporal prices (interest rates) is often overlooked in assessments of welfare. Summers (1983) develops a cost-of-living series corrected for interest rate changes, applicable to a person with a given amount of wealth (and no anticipated earnings).

from clear what sort of consumption behavior one ought to expect to see associated with movements in the market value of wealth.[6]

With enough simplifying assumptions, though, one can derive from the general approach outlined above the conclusion that a person's current consumption will be a function of his forecasted labor earnings and current wealth, e.g.,

$$C_t = aE_t[w_{t+1}L_{t+1}] + bW_t,$$

where a and b are constants, E_t is the expectation conditional on information at time t, and W_t is the (stochastic) market value of nonhuman wealth.[7] Such a model will generate a time path of consumption and wealth, and hence of saving, defined as the change in wealth. The point to emphasize here is that such regularity as the models do lead us to look for is in the relationship among consumption, labor earnings, and wealth at market value.

Net Worth as an Accounting Idea

We can capture in a crude way the role for financial accounting in the simple model of behavior by adding an explicit real asset, say a certain number of machines, M_1, as another element of endowment. In the typical financial accounting context, there is no readily observable market for fixed capital. Assume, therefore, that the machines are

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6 For examples of more refined intertemporal models see Campbell and Deaton (1988), Ingersoll (1987, Ch. 11), Merton (1971, 1973).

7 For a classic example of such a model, see Ando and Modigliani (1963). For recent examples, see Blinder and Deaton (1985), Deaton (1987), Hall (1978, 1988).

inalienable (i.e., they cannot be sold). The number of machines is tracked by the financial accounts. A machine generates output $\tilde{O}$ in period two. ($\tilde{O}$ would be stochastic in a realistic model.) Then the budget constraint is expressed by equations (4) and (5); the single-constraint version that eliminates the financial assets carried over is expressed by (6).

$$C_1 + B_2p_2 = w_1 + B_1p_2 \tag{4}$$

$$C_2 = w_2 + \tilde{O}M_1 + B_2 \tag{5}$$

$$C_1 + C_2p_2 = w_1 + w_2p_2 + B_1p_2 + \tilde{O}M_1p_2 \tag{6}$$

It is evident from (6) that in a world of certainty, with unlimited borrowing and lending of the financial asset, the only use of the financial accounting information is to provide a basis for estimating what the market value of the machines would be ($\tilde{O}M_1p_2$). If one knows the market value of the machines, the accounting information is superfluous.

Complicating the model by introducing an explicit treatment of uncertainty and asymmetries of information does not suggest a further role for financial accounting information. With complete Arrow-Debreu contingent claim markets, the market value of wealth continues to define the position of the budget constraint. Owing to the increased number of

prices, ambiguities about the signs of derivatives multiply in welfare comparisons or positive predictions of the effect of changes in parameters on consumption or labor supply. Missing markets, asymmetries, liquidity constraints, and the like render budget sets nonlinear and reduce the information contained in any single parameter, such as initial wealth, of the individual's problem. Nevertheless, there does not appear to be a general role for accounting information except as the basis for estimating implicit market values.

The function of financial accounting for a business firm is not to duplicate market valuation. A clear statement of this point is presented in an official pronouncement of the Financial Accounting Standards Board: "Financial accounting is not designed to measure directly the value of a business enterprise, but the information it provides may be helpful to those who wish to estimate its value" (Financial Accounting Standards Board, 1978, as excerpted in Gibson and Frishkoff, 1986, p. 19). Financial accounting for asset value and market value converge where there is an actual transaction that renders the market value objectively measurable. Between transactions, accounting rules prescribe transformations (depreciation, amortization, etc.) of the original market value data to describe the stock of assets involved.

It is tempting, and I think even usual among economists, to attribute to the accounting measure of net worth (appropriately corrected to some sort of replacement cost basis) the status of a kind

of "permanent income" measure, a stationary point in the noisy world of asset revaluations. I am not aware, however, of any empirical evidence in support of this characterization of accounting net worth in relation to the valuation of firms (nor of the related characterization of accounting depreciation).[8]

There are really two reasons we should expect accounting values to differ from market values of firms. First, accounting practices clearly lay no claim to tracking the market values of those assets that are carried on the books. Thus, for example, the depreciated accounting value of fixed investment neither is, nor claims to be, a stand-in for market value for the assets involved.[9] Intangible assets acquired by purchase are generally amortized according to formula.[10] Depreciation or amortization deductions or retirements from the stock of assets, based on the amounts paid for the assets, are needed to account for the fact that <u>some</u> systematic effect can be expected with the passage of time. These allowances are, to be sure, based on experience with the physical or otherwise determined useful lives of similar assets in the past, but to serve their purpose they must be formally prescribed in accounting rules. They do not refer to assessments of current market value in the context of the firm, which may deviate up or down from the path implied by accounting rules of thumb.

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[8] See Beaver and Ryan (1985).

[9] See Gibson and Frishkoff (1986, p. 44).

[10] See Gibson and Frishkoff (1986, p. 46).

Second, important intangible assets created by the activities of a firm (i.e., not bought from another firm), are typically not carried on the balance sheet at all. As is well known, research and development and advertising outlays are expensed currently. Successful efforts do not generate assets on the books unless there is an actual transaction, such as a sale of patent rights. The value of a firm that discovered the laser or the transistor and could appropriate the resulting value would surely jump in market value. Its accounting net worth, however, would not change. The same is true for an economy under NIPA capital accounting practices. Since the inventor of a new idea may have difficulty capturing the rents, there is a better basis for excluding the value increase from company books than for excluding it from a national aggregation. Technological and market surprises of many kinds (oil price shocks, technological breakthroughs, discovery of a new oil field) are excluded from company books and from NIPA income and capital accounts. Observation of the histories of firms such as computer, automobile, and pharmaceutical companies make clear that large movements in value are associated with the success or failure of ideas (including marketing) and organizational innovations. Such value changes are clearly of great quantitative significance, quite stochastic, and weakly, if at all, related to investment in fixed capital.

In short, the accounting net worth of the firm is a measure of <u>some</u> of its past inputs. It represents the solution to an intractable statistical problem: how to aggregate information about financial

commitments through time embodied in property of one sort or another. It is not a shortcoming of accounting net worth that it does not perfectly match the valuation of the firm by those making use of accounting information. Accounting data are designed to inform, rather than duplicate, market evaluation.[11]

NIPA Saving and Investment

Gross investment in the national income and product accounts is the sum of net exports of goods and services (as emphasized by Eisner (1989), a measure of the accumulation of claims on foreigners, not a measure of the change in market value of net claims on foreigners), business expenditures on fixed investment (structures, including residential structures, and producers' durable equipment), and the change in business inventories. If we think of gross national product as a flow of physical goods and current services, we can think of gross investment as the portion of that flow devoted to adding to the stock of wealth. This may be an interesting measure; it is arguably the appropriate horizontal axis on a marginal efficiency of investment schedule. (This is not the place to develop the point, but it may be that a market value aggregate belongs in a production function for SHS income. When a firm purchases a piece of real estate for a "revalued" price, presumably it expects to obtain as much extra value of output as it does when it constructs a new building for the same amount.)

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[11] See Foster (1986) for a survey of the accounting literature on the information content of financial statements.

It is a further issue whether there is a useful aggregate, called the capital stock, that can be sensibly employed in a production function.[12] The idea that there is such an aggregate that generates a flow of productive services underlies the capital stock figures complied by the Bureau of Economic Analysis. Although value data provide the starting point, like GNP itself, the capital stock is conceived of as a physical quantity. The depreciation estimates ("capital consumption allowances with capital consumption adjustment") in the national income and product accounts are intended to capture the loss over time in the current productive service flow potential embodied in the accumulation of fixed investment. Other things equal, we might expect the profitable investment opportunities to increase with increases in depreciation allowances, which would signal the need for "replacement" investment. If this model captures the essence of the flow of investment opportunities, it is net investment, not gross, that belongs on the horizontal axis of a marginal efficiency of investment schedule.

NIPA depreciation allowances are not intended to represent the decline in market value of the assets in question, and would not do so even if there were no measurement problems except under very special assumptions about the time path of discount rates and about the way productive capacity of the assets declines over time. (Basically, what is required is constancy of discount rates and exponential decay of

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12 For an overview see Brown (1980).

productivity.[13]) The actual rules used in constructing the depreciation allowances are rooted in studies of retirement and other measures of physical life.[14]

"Economic depreciation" is defined to be the decline in market value of a piece of equipment or a structure between the beginning and end of the accounting period. As it happens, Hulten and Wykoff (1981) have concluded that the U.S. Department of Commerce capital consumption estimates are reasonably similar to the average historically experienced economic depreciation for a subset of assets for which there is an active second-hand market. It is difficult to know, however, how relevant such ex post data on a subset of assets are to the forward-looking market valuation of the bolted-down assets of business firms. A striking implication of the data in Table 1 and Figures 1 and 2, taken at face value, is that the NIPA capital consumption allowances for the nonfinancial corporate sector differed sharply and unsystematically from economic depreciation over the 1948-1987 period.[15] (I take up below some of the reasons one might not take the figures at face value.)

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13 See the clear discussion in Hulten and Wykoff (1981).

14 See U.S. Department of Commerce (1987); also Musgrave (1983, January 1986, August 1986).

15 Using National Balance Sheet data, Bulow and Summers (1984) have emphasized this point in their discussion of the failure of income tax rules to recognize wealth changes in the form of asset revaluations. They suggest that the ex ante depreciation allowances for tax purposes should be increased to compensate the investor for the risk of asset revaluations that are unrecognized by the tax rules.

Objections to the Use of Market Value Measures of Saving

Various objections are sometimes raised to the use of asset market value data, rather than NIPA measures, in analyzing saving.

1. Asset markets are too volatile. They register paper gains and losses, not the steady accumulation of real things.

To a degree that seems often unappreciated, the determinants of wealth are psychological. We need only be reminded of Ponzi schemes and tulip manias, not to mention stock market crashes, to bring home how dependent asset values are upon beliefs about the future. The modern literature on the rationality of expectations and the efficiency of pricing in asset markets has emphasized in a refined way the unpleasant difficulty of rooting asset values in "fundamentals."

Asset valuation is also inherently dependent upon the structure of information. I like to illustrate this dependence with the case of a building that is destined to be destroyed by a meteor on a certain date. As long as no one knows when and where the meteor will strike, the building has the same value as others like it. At the moment the astronomers make public a prediction, the building loses value (to a degree dependent on the distance into the future of the catastrophic event and on the confidence the public places in astronomers' forecasts). It is clear that the owner of the structure suffers a fall in wealth at the point the information is revealed, and presumably we would say that "society" suffers the same fall in wealth, even though in

a sense nothing is changed by the knowledge that causes the loss in value. The meteor was going to crash into the building in any case.[16]

An interesting intermediate case arises if the information about the future is revealed only to the owner of the building. (The analogous situation is not unusual -- it gives rise to the "lemons" problem.) If he keeps the matter a secret and sells the structure, he suffers no loss, nor is there any observable private or social loss until the meteor strikes.

As the examples suggest, the market value of assets has a kind of ephemeral quality that may, for example, lead to doubts about the efficacy of capital markets as institutions of resource allocation.[17] Unfortunately, the ephemeral quality of market assessments of value does not alter the role implied for them in economic theory. Real risk and uncertainty about the future are apparent facts of life, which cannot be avoided by focussing on inputs that can be measured with relative precision. The purpose of asset measures produced by financial accountants is to assist in the estimation of market values. The usual argument applies that the market price will incorporate whatever information the accounting data contain. There is, presumptively, no

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[16] James Poterba has reminded me that, quite apart from discounting, the aggregate market value of wealth may not fall by the full prior value of the doomed building when the meteor news arrives. The aggregate value will depend upon the general equilibrium response of all asset prices, even if the asset in question is a tiny part of the aggregate stock. Bradford (1978) illustrates the point.

[17] See Stiglitz (1972, 1979).

money to be made by betting on accounting net worth against the market.[18]

2. Asset market value changes incorporate price effects. What we need are real saving and wealth stock concepts that are independent of discount rates and other relative asset value changes.

Various examples suggest the importance of taking into account price effects, especially in using wealth measures to draw conclusions about welfare. One of the most important is the effect of changes in the discount rate. At any moment the stock of claims to future goods and services is heterogeneous with respect to the time and contingencies under which the claims pay off. When the prices of future consumption claims change, so does the value of an unchanged stock of assets. In his discussion of the concept of income, Hicks (1946) favored a wealth measure that would be unchanged if the steady-state level of consumption did not change.

The increasing site value of land that we might expect to accompany population growth provides another example. When the value of all houses (including mine) increases, I may be no better off, in spite of my higher wealth, because I have to live somewhere. A third example is suggested by John Shoven: Discovery of a new technology that made

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[18] Summers (1986) has emphasized how difficult it may be to establish the "rationality" of asset markets, i.e., to tell whether one can make money by selling short when prices are too high by some internal standard. But presumably those who would use NIPA saving figures rather than asset market values are not talking about small, hard-to-detect, effects.

computers of enormous power virtually costless and instantaneously producible would render the existing stock of computers valueless (while we're at it, assume that all software transfers costlessly to the new machines).

These are index number problems of the classic sort.[19] A financial accounting measure of saving appears attractive in the particular instances because they seem to call for no change in the real wealth measure in the face of actual changes in market value. (I have not actually tried to sort out whether a real wealth measure would not change in the examples.) But this is surely fortuitous. Dealing with the index number problem requires transforming market value data, and it is only by chance that financial accounts may sometimes give the right answer.

The discount rate change problem is a particularly important one. When we assess performance, it would make sense to look at both wealth and discount rate data. There is no basis, however, for presuming that financial accounting measures of wealth perform adequately as indices of real wealth.

3. There are no reliable data on market value of wealth; therefore, we have to use the NIPA saving measures.

There may be problems with existing data on market values, although very extensive and accurate data are available on assets such

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[19] Pollak (1975) has worked out the index number theory applicable to an intertemporal setting.

as corporate equities. The National Balance Sheet data seem to me an underexploited resource. Furthermore, as in other contexts, an objection such as this one should be grounds for devoting efforts to improving the data and to establishing the adequacy of the proxies we use if direct measurements are not at hand.

Time Series Data on Wealth at Market Value

Figures derived from the National Balance Sheets cast doubt on the adequacy of NIPA saving measures as a proxy for changes in the market value of assets. Table 2 shows the time series of various wealth aggregates. The nominal dollar figures have been reduced to common units using the implicit GNP deflator (taking the average of fourth- and first-quarter values to approximate the year-end figure corresponding to the balance sheet observations). The aggregate net worth of households includes the market valuation of corporate shares and of land. The National Balance Sheets value fixed investment owned directly (in unincorporated businesses and in the form of owner-occupied housing and consumer durables) at replacement cost (using the NIPA data).[20]

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[20] The figures for household net worth (sector basis) included in this paper incorporate an adjustment to deal with an error discovered in the course of this work by Frederick O. Yohn, Jr., of the flow of funds section of the Federal Reserve Board. In the published series, household claims on noncorporate private financial institutions have been omitted from household net worth. I have added the "approximate share of noncorporate companies" in the net worth of the private financial institution sector (line 50 in the Sector Balance Sheet of Private Financial Institutions) to the published household sector net worth.

The column titled "Government Net Worth" in Table 2 is simply the aggregate debt of local, state, and federal governments held by the public (of course, it is a negative number). Government debt is, directly or indirectly, included on the asset side of household balance sheets: to avoid double counting, the column headed "Aggregate Wealth at Market" sums the household and government net worth to produce an aggregate wealth measure. Notice that no attempt at all has been made to evaluate the real asset position of governments.[21]

The difference in aggregate wealth from one year to the next gives us Aggregate Saving in Table 2. Given what we know about the volatility of the stock and real property markets, we should expect significant volatility in the wealth and saving measures, and we find it. Figure 3 displays the wealth time series graphically, and Figure 4 shows the saving series, normalized by dividing by GNP. For comparison, as described numerically in Table 3, Figure 4 also displays the ratio of net national saving to GNP, derived from the national income and product accounts. As we might expect, the market value measure is much more variable than the NIPA measure. The measure based on the National Balance Sheets oscillates over a range from a low of almost -15 percent to a high of almost 25 percent of GNP. The NIPA measure drifts from a high of 10 percent in 1949 to a low of 2 percent in 1987. The two series are very different.

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[21] Boskin, Robinson, and Huber (1987) and Eisner (1986) have developed government real asset series.

Fluctuations in market value are not all that accounts for the difference between the two measures. In particular, the National Balance Sheet concept includes the stock of consumer durables in wealth. The National Balance Sheets include estimates of the "consolidated net assets" of the United States, consisting of the sum of reproducible assets (including consumer durables), land at market value, U.S. gold and SDRs, and certain claims on foreigners.[22] Subtracting government debt and excluding land from this total and taking the difference from year to year gives us a saving figure purged of market revaluations. It consists mostly of reproducible assets: residential structures, nonresidential plant and equipment, inventories, and consumer durables. It thus differs from NIPA net national saving mainly in inclusion of consumer durables, and, in avoiding the inclusion of market revaluations, it is conceptually directly comparable to NIPA saving. Indeed, the figures are taken from the Bureau of Economic Analysis tangible wealth tabulations. To emphasize that this hybrid series is derived from financial accounting data (although it is far from the historical-cost book values on firms' balance sheets), I refer to it as "'Book' less Land" in Figure 5. (Figure 5 simply adds the new series to Figure 4.)

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[22] Perhaps because it is not clear how one would allocate accounting values, the National Balance Sheet "total consolidated net assets" of the United States excludes U.S. holdings of foreign equities and makes no deduction for foreign holdings of U.S. equities (other than via direct investment). The household sector net worth does include holdings of foreign equities. The two wealth concepts are thus not quite parallel.

Although the resulting series is smoother than that of aggregate wealth, significant differences from NIPA national saving remain. Exploration of the reasons for the remaining differences would be a side excursion from my principal line of argument. The evidence from the National Balance Sheet data clearly supports the conclusion that financial accounting saving misses significant amounts of the value change that is revealed in asset markets.

Caveats on the National Balance Sheet Wealth Figures

Several problems with the National Balance Sheet data should be recognized:

1. The market value of equity incorporates the capitalized value of certain variations in tax liabilities that are not balanced by offsetting measured asset values. An instance is the "trapped equity" problem.[23] Corporate payouts in the form of dividends are subject to tax at the shareholder level, and shareholders ought to discount this tax in bidding for shares. A considerable (and inconclusive) literature now exists developing the technical ins and outs of the tax and securities law and practice in relation to the trapped equity argument. To the extent that dividend taxes are discounted in the price of equity, the value of a corporation's shares will be below the market value of the assets owned by the firm.

Another instance is the value of tax liabilities accrued by corporations via such tax rules as accelerated depreciation. An

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[23] See Auerbach (1979, 1983b), Bradford (1981).

increase in such accruals ought to lower the value of corporate equities.[24]

A possible third instance is the tax consequence of changing corporate financial structure. The tax system has set up incentives, which have varied through time, bearing on the choice between debt and equity. One view of the current intense leveraged buyout activity in the United States is that it is strongly motivated by such tax considerations, and the gradual realization of the private profit (at the expense of public revenue) to be made by financial restructuring accounts for some of the bidding up of equity prices.

There is, in all of these instances, a balancing asset "owned" by the public through the public's "ownership" of the government, which we might describe as accrued tax liability. Unfortunately, however, we cannot observe the value of this asset in the market, and so the empirical problem does not go away with aggregation across sectors.

2. Anticipated tax claims are also important in assessing pension reserve assets, which are viewed as belonging to households. Presumably, the great bulk of these claims is subject to income taxation upon distribution. When household and government financial claims are netted in reaching a national wealth figure, this problem goes away.

3. As Auerbach (1984) has emphasized, unfunded pension liabilities of corporations represent unmeasured assets of the

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[24] Auerbach (1983a, forthcoming) and Auerbach and Hines (1987) show that the capitalized value effects of tax law changes can be large.

households that are presumably offset by an effect on measured corporate equity value in the market. This component of wealth is missed in the National Balance Sheets.

4. Debt is carried on the National Balance Sheets at book value. Corporate debt liabilities are thus incorrectly valued. Correcting for inflation, of course, is relatively easy. But there is also a divergence between book and market value in current dollars that varies through time. Tax incentives plus simple changes in the nominal discount rates result in such divergences. Furthermore, the leveraged buyout wave may be responsible for a systematic divergence between book and market valuation of debt. The large premiums paid for equity claims in corporate takeovers are sometimes explained by the implied expropriation of the interests of bondholders. The value of the bonds of RJR Nabisco is said to have fallen by 20 percent as a consequence of the successful takeover of the firm in a leveraged buyout in December 1988.

It might be thought that the misstatement of the value of bonds as liabilities on the books of corporations would be balanced by their misstatement as assets in the hands of the public in an aggregation across sectors. This would be so if the aggregation were in terms of financial accounting concepts. But our aggregation to national saving will sum the market values of equity with the book value of debt. To correct for this problem will require gathering data on the market value

of bonds. (Brainard, Shoven, and Weiss (1980) have developed such estimates for the debt of a large population of U.S. corporations.)

5. I have mentioned above the likelihood that some of the recent increase in equity value has come at the expense of bondholders and of the government (through lost tax revenues otherwise expected). Shleifer and Summers (1987) have suggested that other "stakeholders" in corporations have also lost wealth in the wave of corporate acquisitions. We would probably describe the wealth effects on noncorporate, nonbondholder stakeholders as impacts on human capital; the effects are in any case presumably not reflected in asset market data.

6. The National Balance Sheets present no estimates of the market value of businesses owned directly by households. The data in Table 1 show a large and variable divergence between book and market values of property owned by corporations. There is no obvious reason there should not be a similar degree of divergence in the valuation of non-corporate firms.

7. The Flow of Funds staff expresses reservations about the adequacy of the estimated market value of land, which is built up using ratios of assessed to market values from real estate tax administration reported in five-yearly censuses of governments. I have no independent basis for evaluating these reservations. (Corporate holdings are presumably captured in equity values, but corporations own a small fraction of U.S. land.)

The Saving Performance of the United States

It is usual to assess aggregate saving behavior by reference to saving "rates," ratios of saving to aggregate income. Although dividing the aggregate saving by a national income measure is a natural method of normalizing for the size of the economy, one should be cautious in drawing conclusions about economic performance from trends in, or comparisons across countries of, such ratios. Savings rates thus defined do not obviously relate to the objective of assessing the level of aggregate consumption against a standard either of consistency with past behavior or of prudence with respect to future welfare. For these purposes, measures of wealth per capita are called for, or, more generally, measures of the wealth of various subgroups in the population.[25]

Table 4 displays wealth per capita data for the United States, where wealth is interpreted in the National Balance Sheet sense of household net worth (at market value) minus government debt. Saving per capita is simply the first difference of wealth per capita, and thus incorporates population growth. Figure 6 displays the saving series expressed as the year-to-year growth of wealth per capita ("Growth in Wealth per Capita" in Table 4). Because wealth is a stochastic variable, a particular year's experience conveys limited information.

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[25] Kotlikoff (1984, 1986, 1988) has emphasized a similar point with respect to assessment of the national debt.

It is not clear what one should regard as either a normal or a "good" rate of increase in wealth per capita. If productivity were stationary we would probably expect wealth per capita to be constant, and welfare considerations would also presumably prescribe constancy. In general, both predicted and optimal accumulation would be related to technological progress and demographic structure. As shown in Figure 6, there appears to be a long-term declining trend to the rate of growth of real wealth per capita. Interestingly, the performance of the most recent three years is on or slightly above trend.

For those looking for good news (bearing in mind the caveats mentioned above about the use of wealth as a measure of welfare), Figure 7 displays the trend in real wealth per capita. The picture shows that, on average, since 1948 U.S. residents have been adding to the stock of wealth per capita about $700 (1987 price level) per year. According to Figure 7, the current level of wealth per capita is just a bit above its long-term trend.

Conclusion

Although the NIPA saving measures, and especially NIPA saving rates, are widely used in both scholarly and journalistic treatments, their shortcomings as representations of the saving concepts derived from economic analysis should not be controversial among economists. Saving is the change in a stock of wealth. NIPA saving describes the change in a cost-based measure of some past resource commitments. Households, individually and in the aggregate, measure their situations

instead by reference to a forward-looking assessment of the success or failure of those and other resource commitments. These assessments find expression in the capital market's valuation of enterprises, broadly conceived. The annual change in that value is the measure of saving.

Whatever their usefulness as measures of a certain class of inputs, the NIPA saving and wealth measures are not good proxies for the market-expressed assessments of results. The National Balance Sheets present the conceptually appropriate measures of national wealth and saving. It is clear, though, that much needs to be done to improve the quality of the statistics and to refine their interpretation.

Table 1. "Book" Net Worth and Market Values of U.S. Nonfinancial Corporate Business, Year End, 1948 - 1987

Year	Net Worth of US Nonfinancial Corp. Business	Market Value of Corporate Equities	Market Value/ Net Worth Ratio	Net Worth less Market to GNP
	.....$ millions.....		.....percent....	
1948	209,615	83,862	40.0	48.1
1949	219,672	92,205	42.0	49.0
1950	244,190	116,647	47.8	44.2
1951	269,211	138,250	51.4	39.3
1952	285,071	149,941	52.6	38.4
1953	300,142	144,776	48.2	41.8
1954	315,117	216,033	68.6	26.6
1955	342,531	269,173	78.6	18.1
1956	378,078	289,169	76.5	20.8
1957	403,297	242,470	60.1	35.7
1958	419,289	342,082	81.6	16.9
1959	439,972	361,299	82.1	15.9
1960	448,422	354,114	79.0	18.3
1961	461,733	428,294	92.8	6.3
1962	475,580	389,171	81.8	15.0
1963	489,970	456,076	93.1	5.6
1964	513,321	509,516	99.3	0.6
1965	543,746	553,720	101.8	-1.4
1966	583,906	504,223	86.4	10.3
1967	621,655	651,678	104.8	-3.7
1968	668,880	736,506	110.1	-7.6
1969	729,963	646,230	88.5	8.7
1970	784,634	648,492	82.6	13.4
1971	856,111	758,897	88.6	8.8
1972	934,346	855,233	91.5	6.5
1973	1,048,013	678,436	64.7	27.2
1974	1,337,118	499,098	37.3	56.9
1975	1,491,060	684,337	45.9	50.5
1976	1,647,452	787,807	47.8	48.2
1977	1,817,268	748,002	41.2	53.7
1978	2,107,859	773,143	36.7	59.3
1979	2,419,386	933,373	38.6	59.2
1980	2,780,531	1,293,116	46.5	54.4
1981	3,109,641	1,214,845	39.1	62.1
1982	3,230,025	1,382,773	42.8	58.3
1983	3,327,399	1,638,730	49.2	49.6
1984	3,447,798	1,617,733	46.9	48.5
1985	3,503,026	2,022,648	57.7	36.9
1986	3,560,138	2,332,629	65.5	28.9
1987	3,657,167	2,331,322	63.7	29.3

Sources: See Text. Based on Board of Governors of the Federal Reserve System

Table 2. Household Net Worth and Aggregate Wealth, 1948-1987

Year	Net Worth of U.S. Households	Gov't Net Worth	Aggregate Wealth at Market	Aggregate Saving	Aggregate Saving to GNP
	.....$ millions 1982.....				percent
1948	3,487,654	-857,494	2,630,160		
1949	3,671,501	-889,339	2,782,162	152,002	13.7
1950	3,883,883	-819,665	3,064,218	282,056	23.4
1951	4,189,833	-790,067	3,399,766	335,548	25.3
1952	4,287,324	-795,849	3,491,475	91,709	6.6
1953	4,377,281	-825,250	3,552,031	60,556	4.2
1954	4,687,899	-840,255	3,847,644	295,613	20.9
1955	4,938,926	-814,882	4,124,044	276,400	18.5
1956	5,075,169	-780,335	4,294,834	170,791	11.2
1957	4,984,653	-770,061	4,214,592	-80,242	-5.2
1958	5,427,604	-806,349	4,621,255	406,663	26.4
1959	5,571,610	-809,815	4,761,795	140,541	8.6
1960	5,680,642	-808,103	4,872,539	110,744	6.7
1961	6,086,197	-824,849	5,261,347	388,808	22.8
1962	5,928,471	-832,285	5,096,186	-165,161	-9.2
1963	6,274,049	-833,201	5,440,848	344,662	18.4
1964	6,576,652	-837,694	5,738,958	298,110	15.1
1965	6,871,566	-823,076	6,048,490	309,532	14.8
1966	6,833,612	-806,728	6,026,885	-21,605	-1.0
1967	7,370,297	-831,246	6,539,050	512,166	22.5
1968	7,827,453	-825,822	7,001,631	462,581	19.6
1969	7,493,648	-790,676	6,702,972	-298,659	-12.3
1970	7,432,952	-790,358	6,642,595	-60,377	-2.5
1971	7,752,823	-817,570	6,935,254	292,659	11.8
1972	8,190,783	-815,700	7,375,083	439,829	16.9
1973	7,889,046	-758,254	7,130,791	-244,291	-8.9
1974	7,457,661	-712,663	6,744,998	-385,793	-14.1
1975	7,830,318	-794,411	7,035,907	290,909	10.8
1976	8,348,919	-834,194	7,514,726	478,819	16.9
1977	8,642,746	-837,706	7,805,040	290,315	9.8
1978	9,111,741	-816,502	8,295,239	490,198	15.7
1979	9,631,709	-784,075	8,847,635	552,396	17.3
1980	10,046,585	-790,784	9,255,800	408,166	12.8
1981	10,064,616	-812,292	9,252,323	-3,477	-0.1
1982	10,061,786	-925,358	9,136,427	-115,896	-3.7
1983	10,544,681	-1,067,194	9,477,487	341,060	10.4
1984	10,731,277	-1,188,518	9,542,759	65,272	1.9
1985	11,372,752	-1,328,645	10,044,108	501,349	13.9
1986	11,907,562	-1,473,725	10,433,837	389,729	10.5
1987	12,257,233	-1,596,916	10,660,317	226,480	5.9

Sources: See text. Based on Board of Governors of the Federal Reserve System; U.S. Commerce Dept.

Table 3. Net National Saving in the U.S., NIPA Basis, 1948-1987
ratio to GNP (percent)

Year	Gross Saving	Capital Consumption Allowances	Net Saving
1948	19.4	7.8	11.6
1949	14.0	8.4	5.6
1950	18.2	8.2	10.0
1951	17.6	8.2	9.4
1952	14.9	8.3	6.6
1953	13.7	8.3	5.4
1954	13.9	8.7	5.1
1955	16.9	8.5	8.4
1956	18.1	8.9	9.2
1957	17.1	9.1	8.0
1958	14.1	9.4	4.8
1959	16.2	9.0	7.2
1960	16.3	9.0	7.3
1961	15.5	9.0	6.5
1962	15.9	8.6	7.3
1963	16.3	8.5	7.8
1964	16.7	8.3	8.4
1965	17.5	8.1	9.4
1966	16.9	8.0	8.8
1967	15.9	8.3	7.6
1968	15.6	8.3	7.4
1969	16.5	8.4	8.0
1970	15.2	8.7	6.5
1971	15.6	8.8	6.7
1972	16.5	8.9	7.7
1973	18.5	8.7	9.8
1974	16.8	9.3	7.5
1975	14.9	10.1	4.8
1976	15.9	10.1	5.8
1977	16.9	10.1	6.7
1978	18.2	10.2	7.9
1979	18.3	10.6	7.7
1980	16.3	11.1	5.2
1981	17.1	11.4	5.7
1982	14.1	12.1	2.0
1983	13.6	11.6	2.0
1984	15.1	11.0	4.1
1985	13.3	10.9	2.4
1986	12.7	10.8	1.9
1987	12.4	10.6	1.8

Sources: 1948-1984, Economic Report of the President, Feb. 1988; 1985-1987, Survey of Current Business, July 1988

Table 4. Per Capita Wealth and Saving at Market Value, 1948-1987

Year	Wealth per Capita	Saving per Capita	Growth in Wealth per Capita
	.....$ 1982.....		percent
1948	17,937		
1949	18,649	711	4.0
1950	20,123	1,475	7.9
1951	21,951	1,828	9.1
1952	22,161	209	1.0
1953	22,175	14	0.1
1954	23,601	1,427	6.4
1955	24,854	1,253	5.3
1956	25,428	574	2.3
1957	24,506	-922	-3.6
1958	26,425	1,919	7.8
1959	26,777	352	1.3
1960	26,969	192	0.7
1961	28,642	1,673	6.2
1962	27,320	-1,323	-4.6
1963	28,751	1,431	5.2
1964	29,908	1,157	4.0
1965	31,129	1,221	4.1
1966	30,662	-467	-1.5
1967	32,907	2,245	7.3
1968	34,885	1,978	6.0
1969	33,072	-1,813	-5.2
1970	32,395	-678	-2.0
1971	33,397	1,002	3.1
1972	35,137	1,740	5.2
1973	33,650	-1,487	-4.2
1974	31,540	-2,110	-6.3
1975	32,578	1,038	3.3
1976	34,466	1,888	5.8
1977	35,439	973	2.8
1978	37,268	1,829	5.2
1979	39,313	2,045	5.5
1980	40,639	1,326	3.4
1981	40,203	-436	-1.1
1982	39,293	-910	-2.3
1983	40,364	1,071	2.7
1984	40,265	-100	-0.2
1985	41,977	1,712	4.3
1986	43,184	1,208	2.9
1987	43,705	521	1.2

Sources: See text. Based on Board of Governors of the Federal Reserve System; U.S. Commerce Dept.

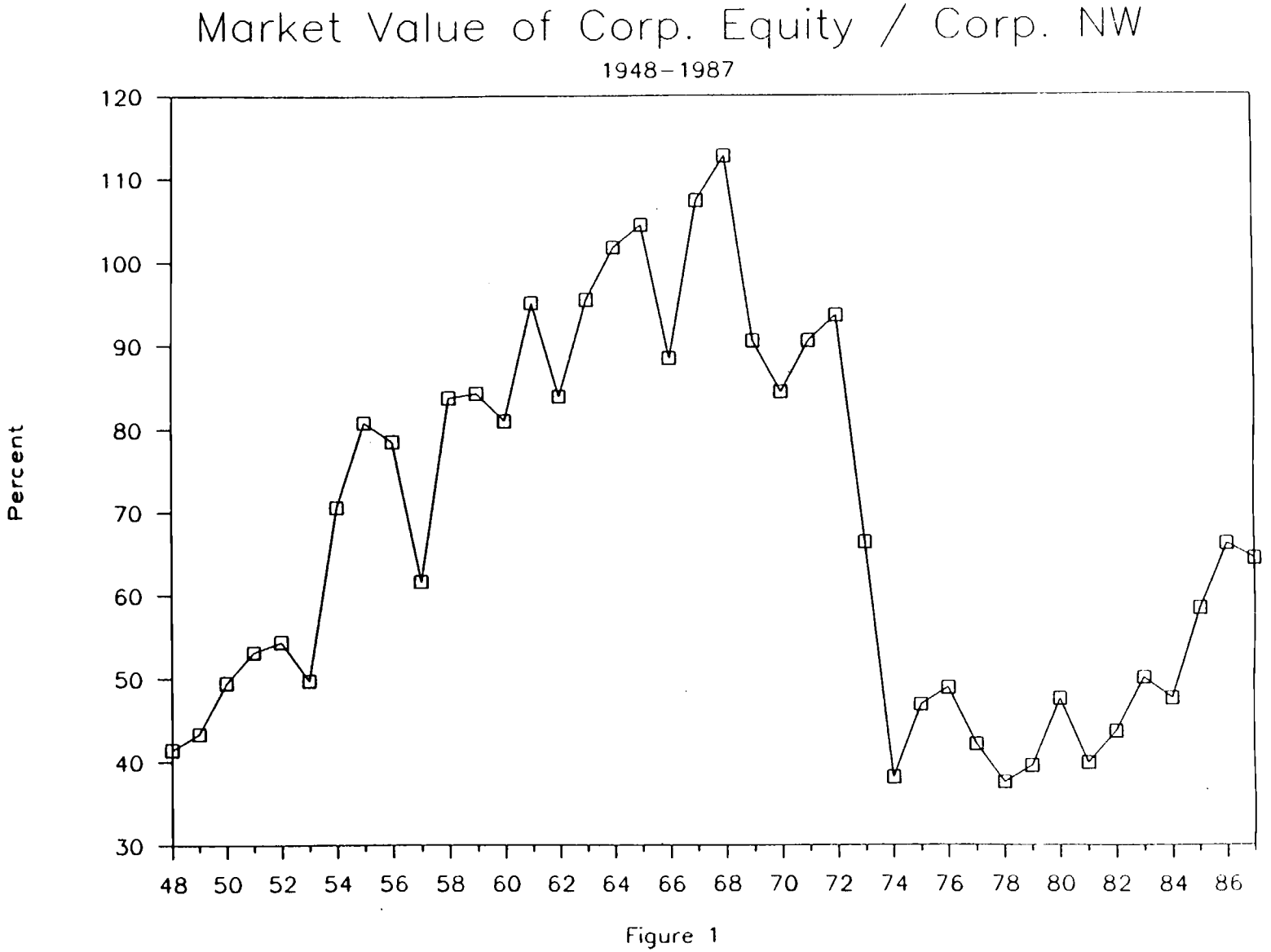
Market Value of Corp. Equity / Corp. NW
1948-1987
Percent
120
110
100
90
80
70
60
50
40
30
48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86

Figure 1

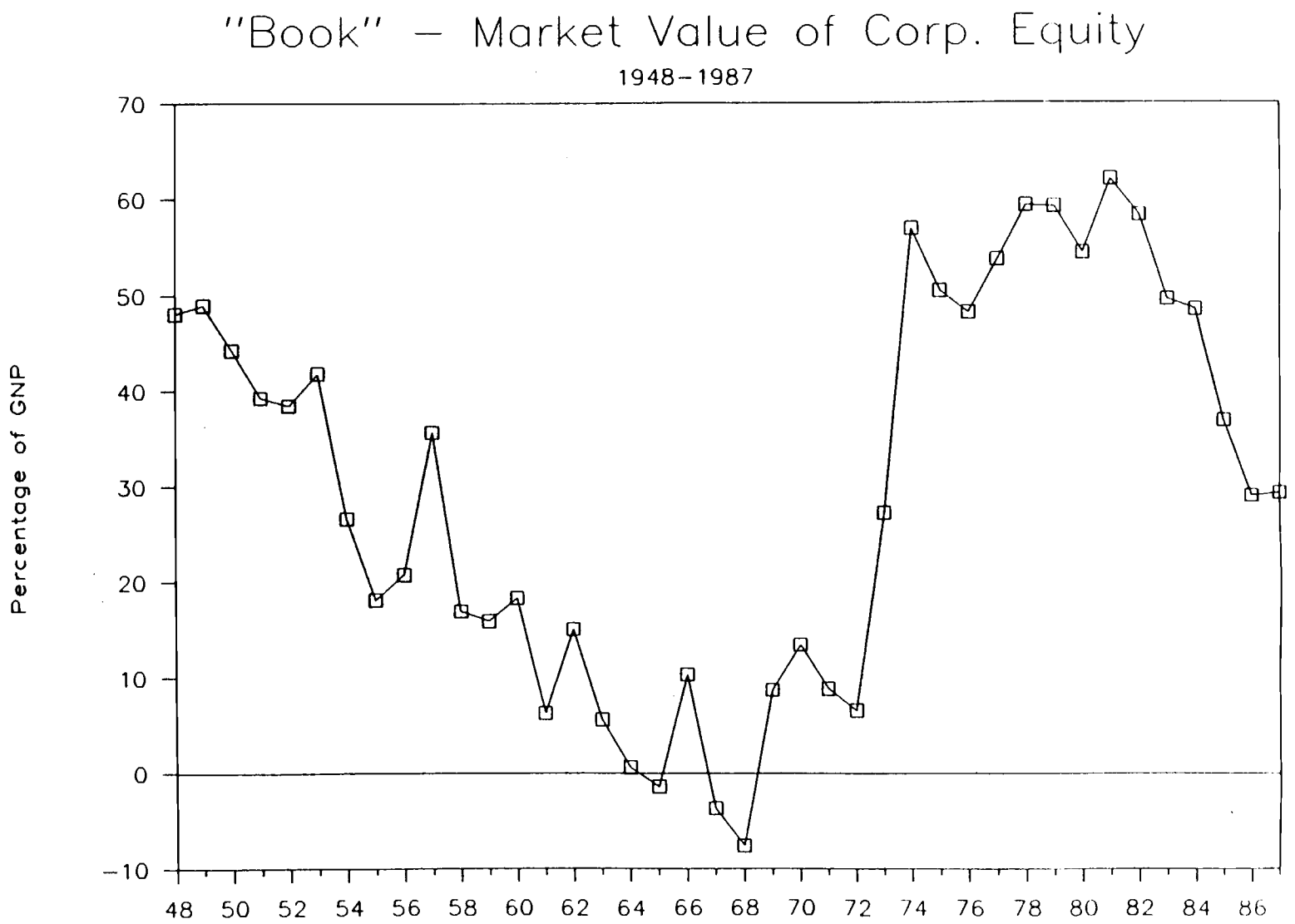
"Book" – Market Value of Corp. Equity
1948–1987
Percentage of GNP
70
60
50
40
30
20
10
0
–10
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
84
86

Figure 2

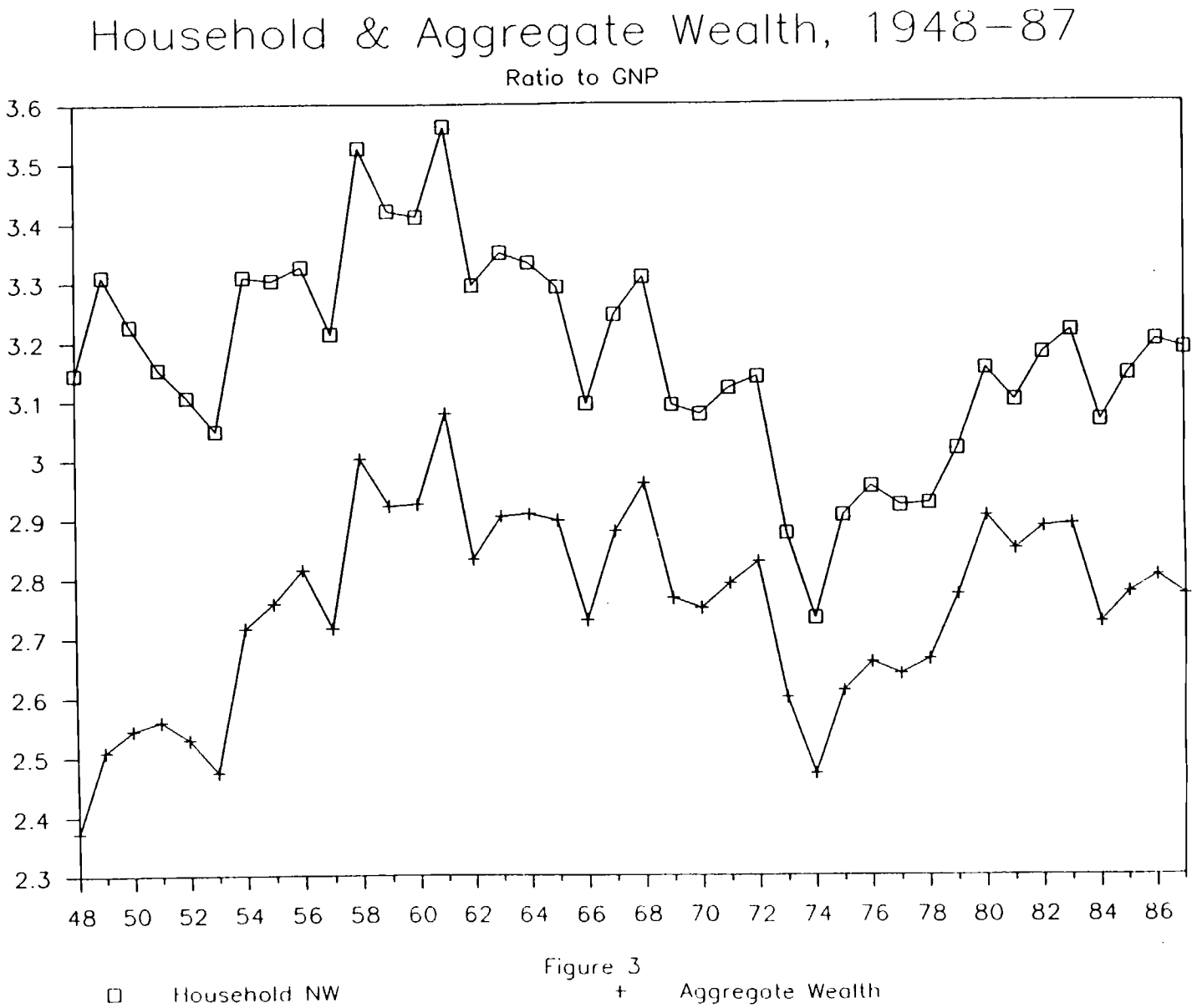
Household & Aggregate Wealth, 1948-87
Ratio to GNP
3.6
3.5
3.4
3.3
3.2
3.1
3
2.9
2.8
2.7
2.6
2.5
2.4
2.3
48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86
Household NW
Aggregate Wealth

Figure 3

Market Value and NIPA Saving, 1949–87

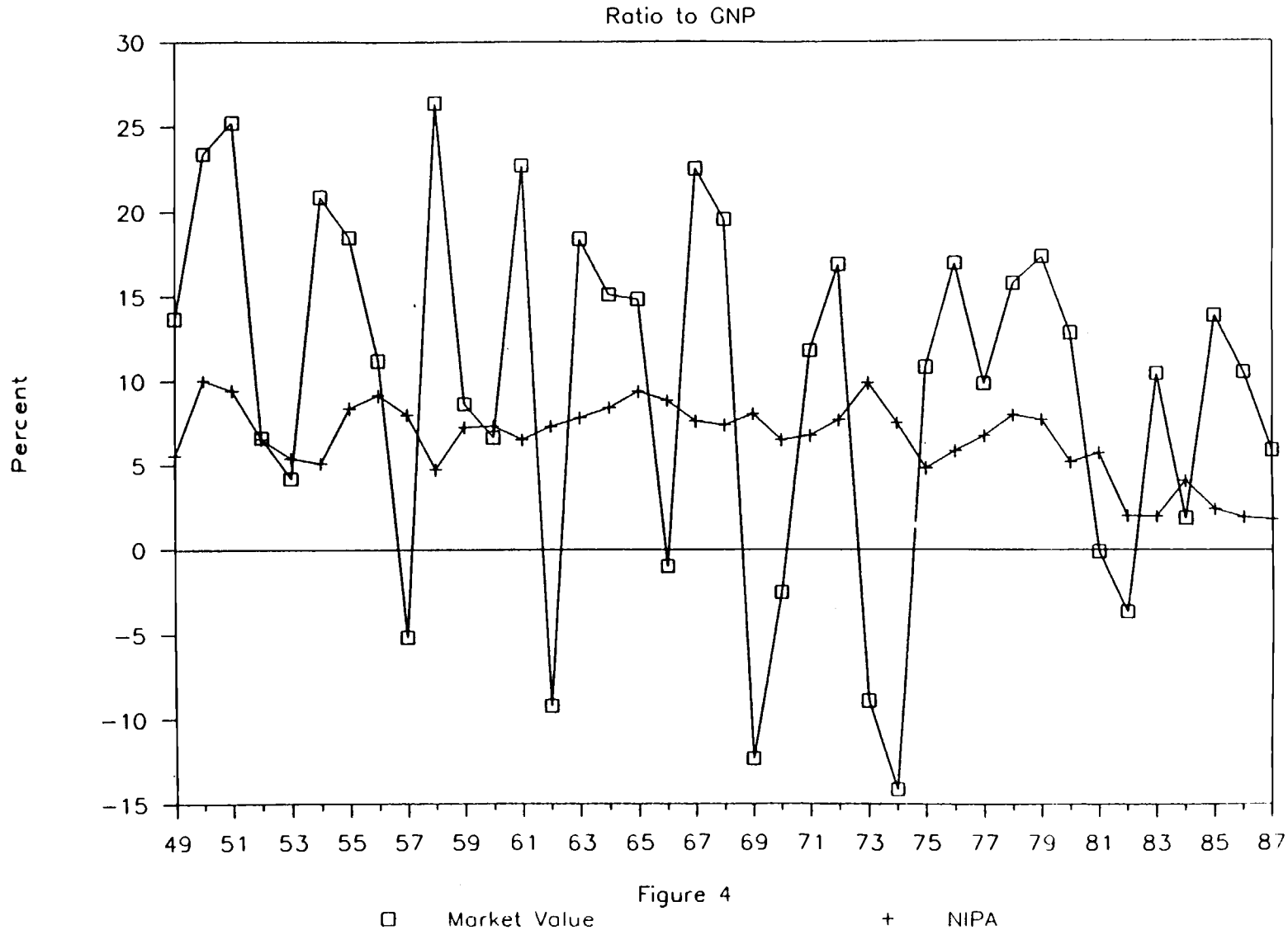

Figure 4

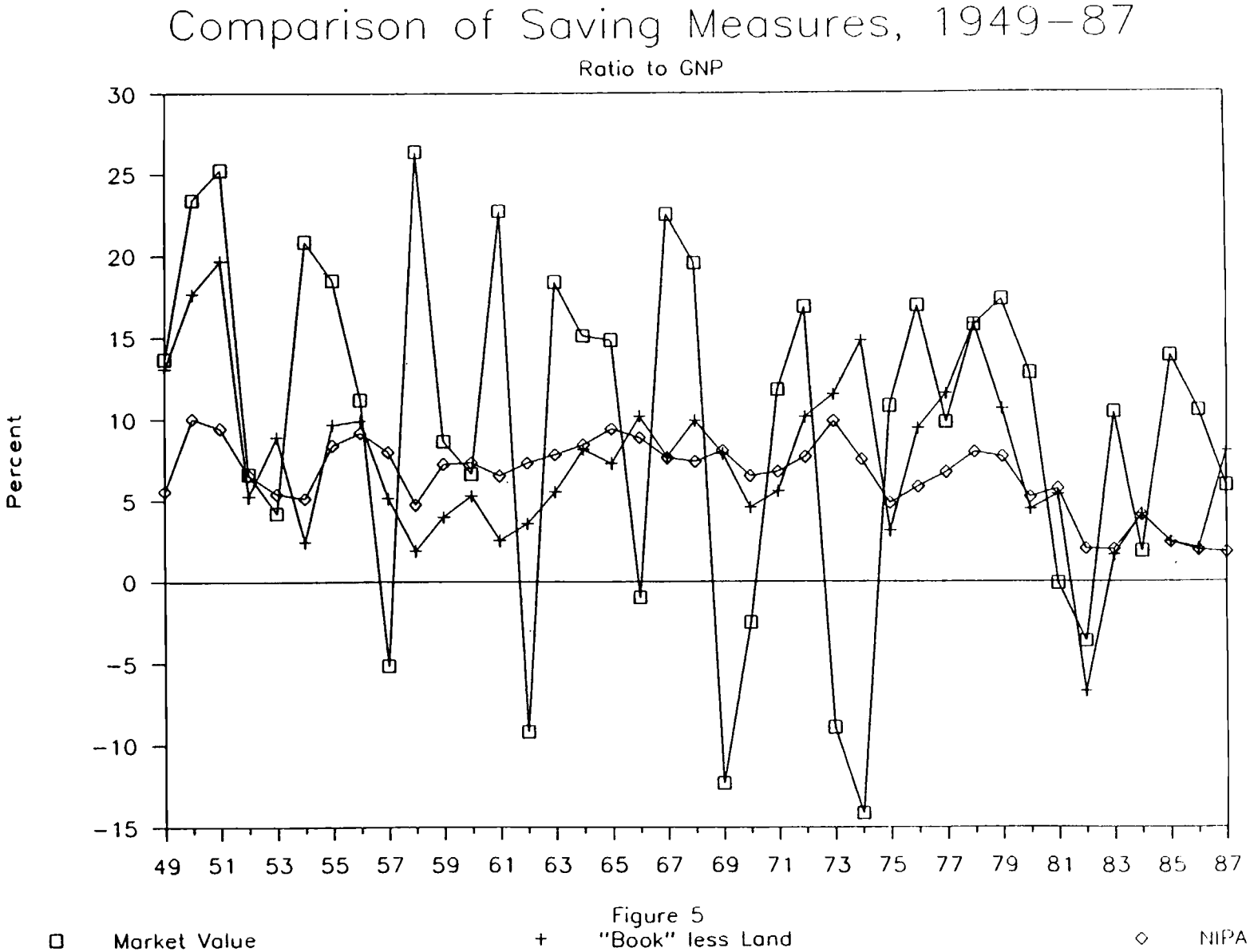
Comparison of Saving Measures, 1949–87
Ratio to GNP
Percent
30
25
20
15
10
5
0
-5
-10
-15
49
51
53
55
57
59
61
63
65
67
69
71
73
75
77
79
81
83
85
87
Market Value
"Book" less Land
NIPA

Figure 5

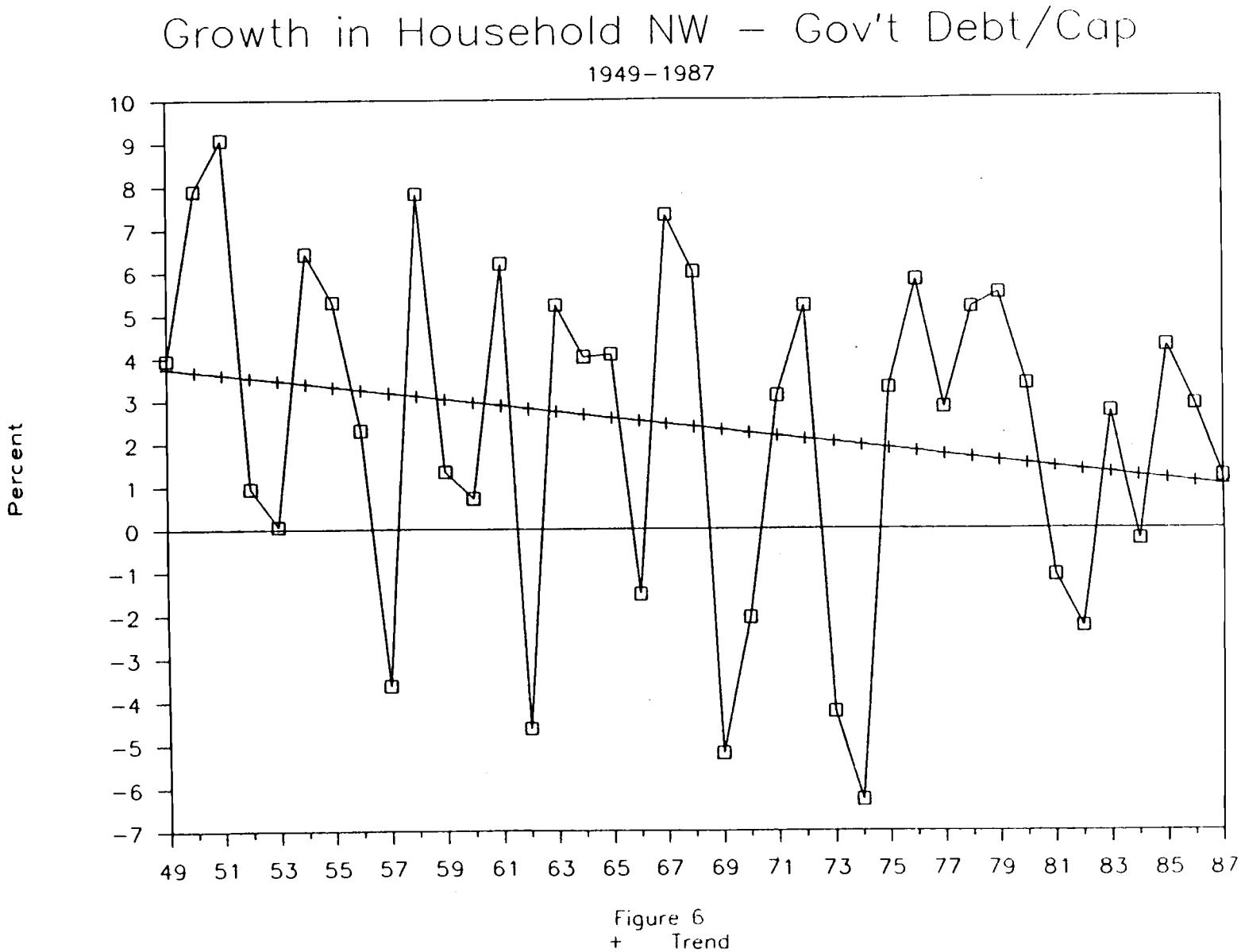

Figure 6
\+ Trend

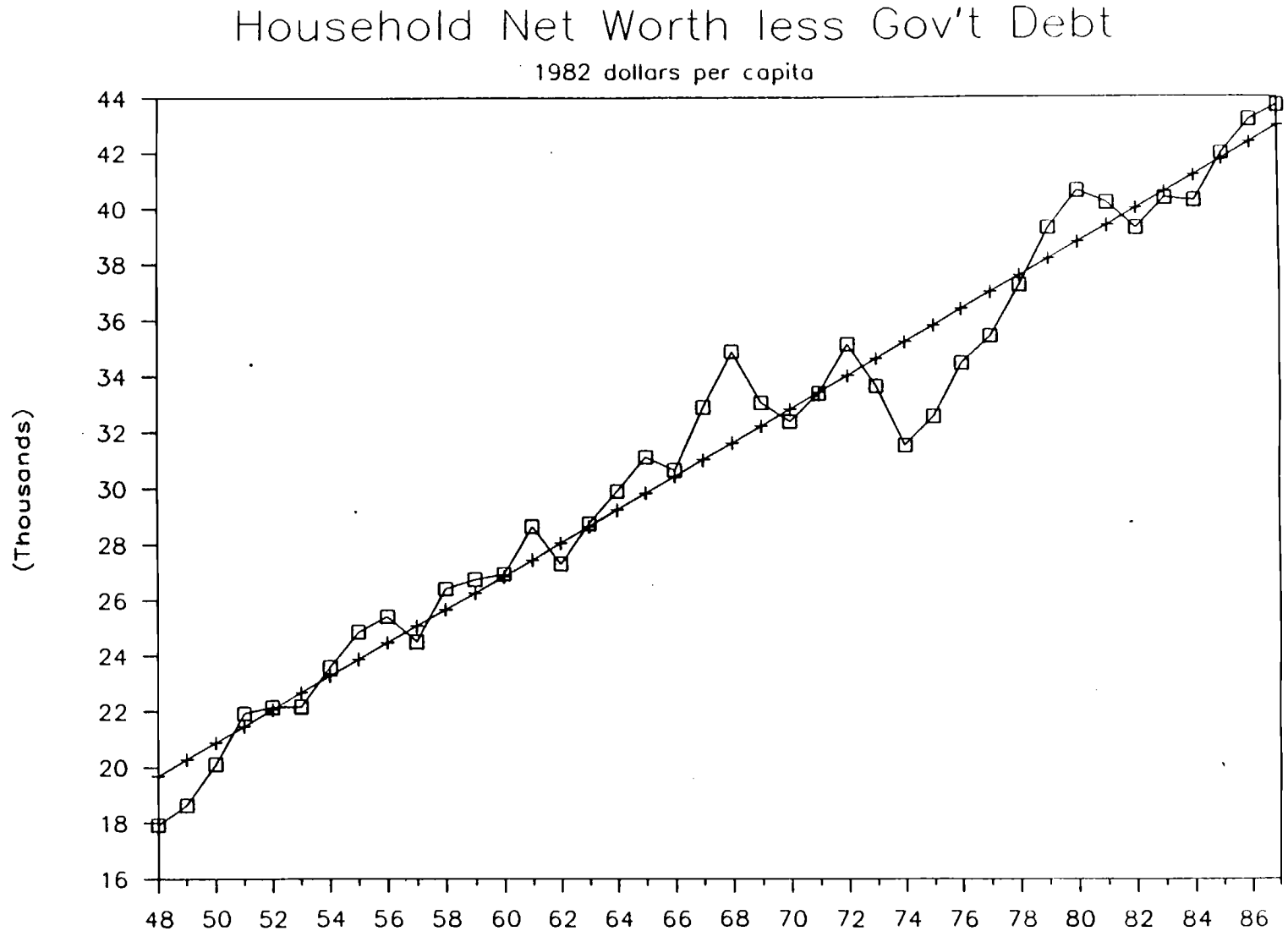

Figure 7
+ Trend

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