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PART TWO

The Influence of Price Changes on Net Worth

CHAPTER 4

Summary and Significance of Findings

PART Two deals with the relations between price changes and the changes in net worth (or wealth) of various groups in the American economy since the turn of the century. (Net worth is defined here as the difference between the current value of assets and of liabilities.) The findings should be read with three important qualifications in mind in order that the data and the conclusions drawn from them should not be misunderstood.

First, this study deals with the influence of price change only on net worth. The effects on income are probably more important to the economic welfare of most groups and these income effects may differ in intensity and sometimes even in direction from net worth effects.

Second, the data used here were not collected for the purpose of studying this question and therefore are not ideally suited to it. The sectors distinguished in the national balance sheets are too broad to permit us to identify the groups whose portfolios are most susceptible to price changes or best placed to benefit from them. Even the sample data for households, which are drawn on in Chapter 8, reveal only some of the characteristics associated with household balance sheet positions, and leave much of the variability still unaccounted for.

Third, the estimates of net worth and changes therein, and the decomposition of these changes into saving and price effects, are mostly by-products of the compilation of national and sectoral balance sheets. They therefore suffer from all the defects of the balance sheets, particularly the weakness of the estimates for the early years and for certain sectors, and the difficulties involved in measuring asset prices, especially in allowing for quality changes.

Despite the caution used in interpretation, the findings must still be regarded as preliminary and tentative. This is the first quantitative treatment of the relation of price changes to net worth that embraces all sectors of the economy and covers the postwar period as well as the half century preceding it.[1] Its purpose is mainly exploratory: to use existing data to suggest hypotheses, to identify problems that need further investigation, to indicate the information required to investigate them more thoroughly, and to encourage additional study of the subject.

[1] For a briefer treatment, ending in 1949, see R. W. Goldsmith, *A Study of Saving in the United States,* Vol. I, Princeton, 1955, pp. 193-200.

Summary of Findings

TRENDS IN NET WORTH

1. The total net worth of all economic units in the United States rose from approximately $110 billion in 1900 to almost $2,250 billion at the end of 1958. Real net worth (calculated by using the GNP deflator) multiplied five times in the same interval and real net worth per capita more than doubled.

2. There were large differences in rates of growth of net worth among the main sectors of the economy. Over the period as a whole, the net worth of state and local governments grew forty times, that of nonfarm households and corporations about twenty-five times, and that of agriculture and unincorporated business roughly seven and fourteen times, respectively. Federal government net worth declined as borrowing for war and defense first wiped out the small positive amount existing before World War I and then turned it into a large negative amount in later years.

3. In the postwar years there was less diversity among the sectors in the growth of net worth. The most slowly growing sector—still agriculture—increased its net worth by 90 per cent, while the net worth of corporations and finance—the most rapidly growing sectors—rose by slightly over 200 per cent.

PRICE TRENDS

1. Taken as a whole, the period from 1900 to 1958 or 1962 was one of rising prices, with the price index underlying deflated gross national product (our measure of the general price level) approximately quadrupling. Of the nine intervals into which we have divided the 1900-58 period, the three covering war and immediate postwar years—1912-22, 1939-45, and 1945-49—showed the most rapid price increases. One period—1922-29—was characterized by price stability, one—1929-33—by severe price decline, and the other four by rises of about 1 to 3 per cent annually, as was 1958-62 also.

2. Aside from the period during and shortly after World War II, when the increase in tangible asset prices exceeded the rise in the general price level, the two indexes moved similarly. Common stock prices, which rose somewhat more than the other two over the whole period, seemed completely unrelated to them in the short run. Stock prices fell to low levels in both wars, when the price level was rising. They also fell even more sharply during the 1930's, when the general price level was declining. They rose most rapidly during periods of stability or moderate rises in the general price level—from 1922 to 1929 and from 1949 to 1958.

3. Sensitive-asset price indexes for the major sectors of the economy reflect the differences between stock and other asset prices. Corporations and households, the main holders of common stock, showed gains in asset prices in 1922-29 when other sectors suffered price declines, and larger gains than the other sectors in 1953-58. They also underwent the largest price declines, outside of agriculture, in 1929-33. The agricultural sector's net worth benefited particularly from a sharp rise in farm land prices between 1900 and 1912.

4. Data on asset portfolios by type of household, provided by Surveys of Consumer Finances and by federal estate tax data, permit the construction of price indexes covering various periods between 1944 and 1962 for groups of households. Because these were years when the stock price index far outdistanced the general price level, the large variation among the estimated sensitive-asset price indexes rests mainly on differences in the proportion of the portfolio invested in common stock. Thus, during these years, higher income and wealth groups experienced much larger asset price increases than less affluent families. High-income, older, and retired renters, who tended to have the highest stock ownership proportions, enjoyed the greatest rise in asset prices.

NET WORTH CHANGES AND PRICE CHANGES

1. The rate of growth of net worth has varied considerably since 1900. The most rapid increases have taken place since World War II; before that, the two wartime periods and 1922-29 showed the fastest growth.

2. Real net worth grew most rapidly during stock price booms: 1922-29 was the leader among the nine periods, followed by 1953-58 and 1949-53. The first two periods were particularly favorable for nonfarm households, the main owners of common stock.

3. Changes in net worth reflect net saving and equity financing as well as a residual due mainly to price changes but also to intersectoral transfers of assets and shifts in the composition of asset portfolios. This residual accounted for almost 65 per cent of total net worth changes between 1900 and 1958, and about the same proportion in the postwar years. Residual changes formed the largest proportion of changes in net worth for agriculture and unincorporated business, the smallest for households. However, the household sector residual was larger in absolute amounts than all the others combined. For the federal government, price increases on tangible assets offset about one-sixth of net dissaving.

4. The deflated residual (the difference between deflated change in net worth and deflated saving and net equity issues) is the result of the effect on price-sensitive assets of differences between asset price and general price movements, and of the effect on monetary assets and lia-

bilities of the changes in the general price level. These deflated residuals accounted for roughly a third of the total change in real net worth for all sectors combined, and they were concentrated in the periods when stock prices jumped ahead of the general price level—1922-29 and 1949-58. The federal government enjoyed the largest absolute real capital gains among the sectors, and also the largest in relation to total net worth changes. Its greatest gains were in 1939-45 and 1945-49, as price level increases cut the real value of the federal debt. The household sector made its largest gains in 1922-29 and 1953-58 and suffered its largest real loss in 1929-33; these changes reflect primarily changes in real stock prices.

LEVERAGE RATIOS

1. Residual net worth changes (aside from transfers, about which we have no information) consist of capital gains and losses on assets held throughout the period and on assets bought or sold during the period. For any sector, the former can be resolved into effects of asset price changes and the influence of the initial structure of assets and liabilities.

A sector's balance sheet structure can be summarized by the leverage ratio, which is defined as the ratio of the change in value of initial net worth to the asset price change that caused it and is expressed as the ratio of the current value of price-sensitive assets to net worth.

For the entire economy, the leverage ratio is necessarily close to unity because the value of claims equals the value of liabilities (aside from foreign claims and liabilities, which are not of great importance for the United States) so that the rate of change in net worth is close to that of price-sensitive assets. But this is not true for sectors or subsectors of the economy.

2. The combination of leverage ratios with sectoral asset price indexes accounts for a high proportion of observed residual net worth changes for major sectors in the postwar years and during the two world wars, but not for earlier periods. Its success in estimating residual net worth changes rests on the stability of leverage ratio relationships—the fact that, for example, households persistently have low leverage ratios, corporations and state and local governments high ones, and the federal government negative ratios and negative net worth. This stability and the correlation of expected with actual net worth changes encourage the use of leverage ratios for smaller sectors in the search for the groups most susceptible to the impact of price changes on their net worth.

3. Although leverage ratios did not differ greatly among the main sectors (aside from the negative figure for the federal government), breakdowns of the household sector by type revealed a much wider

range. The most significant differentiating variable was housing status: the breakdown into renters, home-owners with mortgages, and home-owners without mortgages. Data for both 1950 and 1958 indicate that with very few exceptions home-owners with mortgages had the highest leverage ratios and renters the lowest at every income level, in every occupation, and at every age. Ratios for owners of mortgaged homes were generally above unity, while those for renters were frequently below .50, particularly among those in the lower income and occupational groups.

4. The other variable consistently associated with the leverage ratio was age. Especially among home-owners with mortgages, the younger families showed the highest ratios and older families considerably lower ones. These relationships with family characteristics were not only strong, but were remarkably consistent among the several surveys despite the differences in method and the eight-year interval which included very sharp rises in stock prices.

5. Leverage ratios by type of household can be used in conjunction with corresponding price indexes to yield estimated or expected changes in net worth for 1949-58. In this period renters with high incomes and older or retired renters apparently offset the losses implied by their low leverage ratios with large capital gains on common stock. Presumed losses in real net worth were, however, substantial among younger renters and those with low incomes.

Significance of Findings

There are two important questions on the relation between price changes and net worth changes which could be studied using national and sectoral balance sheets. One is how the economy and its sectors adjust their asset portfolios and debt ratios to past and expected changes in asset and other prices. The other, which is the one examined here, is how the structure of assets and debt transforms price changes into net worth changes. The importance of the second question depends on the stability of sectoral balance sheet structure. If it shifted radically over short periods, the initial balance sheet would have little relevance for a period's net worth changes; a fairly stable structure, on the other hand, could provide a reasonably accurate projection of at least that part of the change in net worth not accounted for by net saving and equity issues.

The findings of this study suggest considerable, but by no means complete, stability. Leverage ratios, for example, do change from year to year. It is the major relationships among groups that have remained fairly consistent over time: the low leverage ratios of households com-

pared to the high ones for corporations and the negative ratios of the federal government, and the relations of leverage ratios to age and housing status.

Despite the stability of some of these relationships, the very fact that balance sheet structure, as measured by leverage ratios, influences the change in net worth implies that price changes bring about leverage ratio changes too. A topic for further investigation, not developed here, is the extent to which groups have accepted passively the changes in balance sheet structure and leverage ratio caused by price movements or have, on the contrary, taken action to restore or move further away from the original structure. This could be done by replacing price-sensitive by monetary assets, for example, or by acquiring new assets and debt in proportions different from the initial ones. The nonfarm household sector as a whole and the federal government seem to have accepted most of the effects of asset price changes since World War II. Most of the time in those years households as well as other sectors have moved toward higher leverage ratios than those which price changes alone would have brought about. An exception was the behavior of households in 1953-58 when they increased their leverage ratios less than projected.

Some of the data in Part Three of this volume on the balance sheet structure of housing suggest that households do make considerable shifts in asset-debt ratios on at least this important asset. They have clearly not permitted the effects of price changes and debt repayment automatically to alter their balance sheet positions. It would be interesting to perform the same calculation for groups within the household sector, but no data comparable to 1950 are available for 1958. Even if we could trace the same families from 1949 to 1958, the comparison would be made more difficult by the fact that the characteristics of an individual family would be likely to have changed in eight years. It is worth noting that a projection of leverage ratios by groups of households from 1949 to 1958 would not alter the main relationships discussed here, despite the great changes in asset prices.

The leverage ratios, and the structure of balance sheets in general, appear to be sufficiently consistent to imply several conclusions about the effects on net worth of the two distinctly different types of price movement that can be identified. The first of these is a rise in the general price level, such as occurred in the war and postwar periods, 1912-22 and 1939-49. The second is a shift in the real price of common stocks—a growth or decline at a more rapid rate than the general price level or even a movement in the opposite direction.

With the present level of federal debt, a rise in the general price level transfers real net worth from the household sector, whose leverage

ratios are the lowest of the main sectors, to the federal government. Within the household sector, it tends to strike particularly at the net worth of renters. Among renters, those in the lower-income classes and the higher-age groups suffer the greatest losses in real net worth. Owners of mortgage-free homes face smaller losses and owners of mortgaged homes, particularly the younger ones, stand to make substantial gains in their real net worth. Age seems to be an unfavorable factor among both renters and owners of mortgaged homes and among families in general, regardless of housing status.

A protracted rise in stock prices more rapid than that in the general price level, such as those that took place in 1922-29 and 1949-58, has quite different effects. Low-income renters fare badly, as in a general price level increase, but upper-income renters are protected by their high stock ownership ratio which can offset the influence of their low leverage ratios. The age relationship is also reversed; it is the older renters and owners of mortgage-free homes whose real net worth advances while the younger ones suffer losses. The greatest gains in real net worth in 1949-58 presumably were made by retired renters and renters over 65.

How powerful such a movement in stock prices can be is shown by the fact that the sharp rise in the 1950's substantially counteracted the decrease in the inequality in the distribution of personal wealth that had occurred in the preceding twenty years.[2]

[2] Lampman estimates that the share of the wealthiest 0.5 per cent of the population in total personal sector equity, which declined from 30 to 19 per cent between 1922 and 1949, had increased to 25 per cent by 1956 (Robert J. Lampman, *The Share of Top Wealth-Holders in National Wealth, 1922-56,* Princeton for NBER, 1962, Table 93, p. 202). The last five years are likely to have witnessed another, though smaller, increase in this share.