INFLATION AS A TAX IN WORLD WAR II

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I

THE real balance effect is a commonplace of monetary theory; it is now a generally accepted point that one way, perhaps the major way, in which inflation releases resources to the government is by reducing the real value of net monetary assets held by the public. There is no need to repeat or elaborate upon these points here, but it does seem worthwhile to say something about the actual magnitudes of these effects. Once we leave the area of almost theological disputes of the "Keynes and the classics" variety, what matters is whether these things are important in practice. Yet the surprising thing is that hardly anyone has investigated the orders of magnitude involved.[1] This paper endeavors to fill part of the gap.

The following discussion falls into three parts: First, the direct effect upon consumers of an assumed 10 per cent rise in the price level is estimated. Second, something is said about the indirect effects upon their real net worth. Third, and this is the main contribution of this paper, the tax on wealth constituted by a rising price level during the war years is computed and compared with the yield of ordinary taxes.

The effect of price-level changes upon real wealth in the United States can be examined in rather more detail than has yet been attempted by using figures of as-

sets and liabilities from the Federal Reserve Board's "Flow of Funds" statistics. Year-end figures are available for 1945–58, but only the figures for the two terminal years are given here (Table 1). They show the sum of the assets of fixed monetary value less the sum of the liabilities of fixed monetary value for each of seven sectors into which the economy is divided.

It follows from Table 1 that a 10 per cent rise in the price level would have had a direct effect equivalent to reducing the wealth of consumers by $23 billion in 1945 and $31 billion in 1958.

II

There would also be an indirect effect if the consumer sector's equity in savings institutions and business did not move proportionately with the price level. It could be argued that in 1958, for example, a rise in prices would raise the real value of equity in business. This is probably true, even though the market value of equity is not always equal to the difference between the value of the assets and that of the liabilities.

The argument must proceed in terms of the effect of changes in the price level upon the profit-and-loss account rather than upon the balance sheet. An unanticipated rise in the price level will raise the profits in real terms of those corporations whose outlays fixed in money terms exceed receipts fixed in money terms. These will not be exactly the same as the corporations whose liabilities fixed in money terms are in excess of their assets fixed in money terms for two reasons: One is that not all these outlays and receipts are interest; rent and pensions, for example, though fixed in money terms, do not correspond to any liability in the

[1] A notable exception is that determined quantifier Thomas Mayer of Michigan State University (see "The Empirical Significance of the Real Balance Effect," *Quarterly Journal of Economics* LXXIII [May, 1959], 275–91). Boris Pesek, one of his colleagues, has essayed an interesting comparison of the distributional burden of a hypothetical inflation and alternative tax measures, using data for 1950 (see "A Comparison of the Distributional Effects of Inflation and Taxation," *American Economic Review*, L [March, 1960], 147–53).

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balance sheet. The other reason is that the interest rate on different assets and liabilities is not the same; little interest is earned on money holdings or trade receivables, for instance, while different forms of borrowing may carry substantially different charges. These two factors mean that there will be only a rough correspondence between the composition of the balance sheet and the income position.

Upon the assumption that the inflation is unanticipated, changes in money profits will be reflected in changes in dividend payments, with some lag reflecting the length of the accounting period and perhaps also

inflations, and deflections. Their analysis of the behavior of stock prices, as represented by about fourteen thousand firm-years of data, shows that during inflations the stocks of debtor firms rose significantly more than did those of creditor firms. Conversely, during deflations the prices of debtor stocks fell more than did the prices of creditor stocks. During periods of price-level stability there were no significant differences between the changes in the prices of debtor and creditor stocks.

The indirect effect of a general price increase upon the real wealth of consumers, working via their equity in business and

TABLE 1

UNITED STATES FINANCIAL ASSETS LESS FINANCIAL LIABILITIES, 1945 AND 1958

SECTOR	ASSETS LESS LIABILITIES AT END OF YEAR (Billions of Dollars)	
	1945	1958
Federal government, monetary authorities, and commercial banks.	−243.1	−220.8
State and local government....................................	− 7.5	− 30.1
Savings, institutions, insurance, and other financial institutions not elsewhere classified..	+ 10.4	+ 32.2
Corporate non-financial business...............................	+ 8.3	− 36.0
Farm business and non-corporate, non-financial business.........	− 2.3	− 39.7
Rest of the world..	+ 3.3	− 6.9
Consumers and non-profit organizations......................	+226.7	+309.7

Source: *Federal Reserve Bulletin*, August, 1959, pp. 1057–62. Three of the items in the "Flow of Funds" table have been excluded here: gold, corporate stock, and the miscellaneous assets and liabilities of the corporate non-financial business sector. Together these rose from $10.8 billion to $14.2 billion. It will be noted that neither of the columns sums to zero as in principle they should; factors accounting for the difference include divergent estimates of trade credit given and received, bank float, and errors of rounding.

some sluggishness in distribution policy. Given the further assumption that interest rates on government paper are stabilized, no big change in the way the market values corporate earnings and dividends seems likely. It follows that changes in the prices of corporate shares caused by a general inflation will be roughly related to net creditor or debtor position.

This conclusion is supported by the results of a study made by Armen Alchian and Reuben Kessel.[2] They investigated the behavior of debtor and creditor stock prices between 1914 and 1952, a period which encompasses periods of price-level stability,

[2] Armen A. Alchian and Reuben A. Kessel, "Redistribution of Wealth through Inflation," *Science*, CIII (September 4, 1959), 537–39, esp. p. 537.

in financial institutions, may therefore go in either direction. In 1945, according to the figures in Table 1, the real value of equity in savings institutions, etc., and business would have fallen had the price level increased substantially. If corporate-profits tax liability and equity in commercial banks are taken into account, this conclusion is not altered. But the order of magnitude of this indirect effect caused by, say, a 10 per cent increase in the price level is very small compared with the direct effect of $23 billion. Similarly, in 1958, even if equity values moved immediately and fully reflected the gains or losses of commercial banks (whose monetary assets exceeded liabilities by $20 billion), other financial intermediaries, and business, the indirect effect would not have exceeded plus $3 billion.

III

We now turn to actual price increases, namely, those which occurred during the war. Table 2 shows how the federal government obtained the money it spent. It will be seen that the proportion raised by taxation rose from one-quarter to one-half of the total. We wish to compare this with the amount of the tax on net monetary wealth imposed by rising prices.

The calculation made for 1945 and 1958 cannot be repeated for the war years, and it is therefore necessary to use the earlier "Flow of Funds" material, which gives less detail. We have to use figures for the net liabilities of the federal, state, and local governments and of the banking system. This is tantamount to assuming that the indirect effect upon consumer's wealth of changes in the price level is proportionate to consumer's net equity in all non-bank businesses. In view of the relative smallness

TABLE 2

FINANCE OF FEDERAL GOVERNMENT EXPENDITURE DURING WORLD WAR II

(Billions of Dollars)

Year	Expend-iture*	Tax Receipts	Miscel-laneous Receipts	Net Increase in Miscellaneous Liabilities Trade Debt, Less Net Increase in Miscellaneous Assets	Borrowing from Non-Bank Public†	Borrowing from Banks,‡ Less In-crease in Holding of Currency and Deposits
1942.....	60.4	15.8	3.8	2.5	21.9	16.2
1943.....	91.5	31.9	6.7	1.5	28.8	22.1
1944.....	99.2	40.9	7.5	3.1	31.9	15.8
1945.....	85.9	42.0	7.1	−0.2	22.8	14.4

Source: Federal Reserve Board, *Flow of Funds in the United States, 1939–1953* (Washington, 1955), Table 17, except where otherwise specified. Figures may not add to totals, owing to errors of rounding.

* Non-financial uses of funds less sale of goods and services.

† Increase in federal obligations to non-bank sectors plus increase in holding of federal obligations by mutual savings banks and Postal Savings System (Table 28).

‡ Increase in federal obligations owed to banking sector less increase in holdings by mutual savings bank and Postal Savings System (Table 28) and increase in federal holdings of currency and deposits (Table 73A).

TABLE 3

NON-BANK PRIVATE SECTORS' FINANCIAL ASSETS AND LIABILITIES

(Billions of Dollars at End of Year)

Year	Federal, State, and Local Obligations*	Demand and Time Deposits Adjusted, plus Currency outside Banks†	Debt to Federal Government and Banking Sectors‡	Net Sum	Average Net Sum over Year
1941......	41.6	71.9	36.3	77.2	.....
1942......	62.0	86.6	31.3	117.3	97.3
1943......	87.1	107.3	29.5	164.9	141.1
1944......	113.8	125.0	29.9	208.9	186.9
1945......	130.2	145.1	34.6	240.7	224.8

Source: Federal Reserve Board, *Flow of Funds in the United States, 1939–1953* (Washington, 1955).

* Federal obligations outstanding, less holdings of banking and state and local government sectors (Table 77B), plus state and local government obligations outstanding, less holdings of banking sector and federal government (Table 78B).

† From Table 31; state and local government holdings (Table 73B) subtracted.

‡ Banking-sector loans including mortgages (Table 31), plus mortgage holdings by federal government (Table 80B), plus federal loans not to rest of the world, less miscellaneous federal liabilities (Table 82B), less net trade credit received by federal government (Table 81B). Banking-sector holdings of corporate securities and private holdings of bank securities are omitted.

of the indirect effect demonstrated above, any error resulting from this procedure is small.

The data are assembled in Table 3, where the final column is our approximation of the part of the net worth of households which is susceptible to changes in the price level. They imply, for instance, that, if prices had risen by 10 per cent between December, 1944, and December, 1945, the real wealth of consumers would have been reduced by an amount equivalent to (10/110) $224.8 billion = $20.4 billion at the average 1944 price level. This figure is the average of the loss of December, 1944, wealth at current prices and the loss of December, 1945, wealth at current prices, and it therefore gives the loss of average wealth during the year at the average price level of the year if we assume that prices and wealth both rose evenly throughout the year.

Two price indexes are available: the Bureau of Labor Statistics cost-of-living index and the implicit price deflator for consumption in the national income statistics of the Department of Commerce. The former shows a 21 per cent rise from average 1941 to average 1945 prices, while the latter shows a 34 per cent rise.[3] Cost-of-living indexes are notorious for understating price increases in times of inflation, so we may use the December-to-December change in the BLS index as a lower limit on the estimate of the change during each year. As a (rough) upper estimate we shall use the other series, on the assumption that the December price level of year t can be approximated by the average of the figures for the years t and $t + 1$.

The application of these price increases to the last column in Table 3 gives the following estimate, in billions of dollars, of the tax on wealth attributable to price increases:

1942.........	8.0– 9.4
1943.........	4.5– 9.5
1944.........	3.8– 8.0
1945.........	5.0–12.2

Comparison with the figures of tax receipts in Table 2 shows that the tax on wealth was probably never less than one-tenth as large as were orthodox taxes and that in the first full year of war it was over half as large. Thus, in terms of improverishing taxpayers, inflation constituted a very important tax.

[3] The Department of Commerce data are from *U.S. Income and Output*, a supplement to the *Survey of Current Business* (Washington, 1958), Table 7.2, l. 2.