Volume Title: Shares of Upper Income Groups in Income and Savings

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Volume Publisher: NBER

Volume ISBN: 0-87014-054-X

Volume URL: http://www.nber.org/books/kuzn53-1

Publication Date: 1953

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Chapter URL: http://www.nber.org/chapters/c3060

Chapter pages in book: (p. 171 - 218)

Part III

Income and Savings

Chapter 6

Shares of Upper Income Groups in Savings

1 *Setting of the Problem*

Distribution of income by size is of importance in so far as it affects the productivity of the various income classes in turning out the country's total product, determines how people use their income, and measures the economy's contribution to the well-being of the several groups in society. To trace these consequences of the income distribution would be difficult and we do not attempt it even for the shares of upper income groups. The discussion that follows is concerned with only one of the many uses to which data on upper group shares can be applied: an analysis of the effect on savings.

Interest in the apportionment of income between consumption expenditures and savings has been intensified by the strategic role Keynesian theory has assigned to it in influencing cyclical fluctuations and, on some interpretations, trends; moreover, the great depression of the 1930's heightened concern as to how well our economy satisfies the needs of various consumer groups. As a result, several countrywide studies of income, consumer expenditures, and savings, by income size classes, have been made. We can therefore, albeit with some difficulty, study upper group shares in individuals' total savings, relating their level and changes to the level of and changes in shares in income.

The data do not yield adequate annual estimates of even total savings of individuals, let alone savings of upper separately from those of lower income groups. Hence, to derive at least reasonable hypotheses concerning the level of, and particularly short term changes in, upper group shares in individuals' total savings, we must analyze the sample data on savings for the various income size classes.

But first it may be helpful to explore the formal relations between shares in income and in savings. Defining upper groups as we have done throughout this study – as the top 5 percent in a classification by current income per capita – we call the percentage of income received by it I_u. The average level of I_u in the economic income variant was about 30 percent during 1919-38. The income share of the lower groups may be designated I_l, and since $I_u + I_l = 1$, its average level was about 70 percent.

The percentage shares of upper and lower income groups in individuals'

total savings are S_u and S_l respectively. The relation between I_u and S_u (or between I_l and S_l) depends upon the proportion of their income units at upper (or lower) income levels save. If we call the savings-income ratio for upper and lower groups R_u and R_l respectively and the savings-income ratio for all individuals R_t, the following simple relations can be stated:

$$S_u = I_u R_u / R_t \tag{1}$$

$$S_l = I_l R_l / R_t \tag{2}$$

$$S_u + S_l = 1 \tag{3}$$

and

$$R_t = I_u R_u + I_l R_l \tag{4}$$

These equations show that if we wish to study the level of and changes in S_u (and S_l) we need to know not only I_u (and I_l), which we studied in the preceding chapters, but also R_u and R_t (or alternatively, R_l and R_t; or R_u and R_l). Information regarding the savings-income ratios for upper groups and for all groups (or for upper and for lower groups) is thus indispensable if we are to learn anything about upper group shares in individuals' total savings.

The average level of one of these ratios, R_u, can be approximated from the sample studies analyzed in detail in Section 3. Let us accept this average level and, in order to demonstrate the effects of changes in I_u alone, assume that R_u is constant, i.e., does not change during the period under study. Observation of these effects, together with what we know about the movement of the ratio of individuals' total savings to their total income, R_t, will lead us to formulate the specific question our study of R_u and R_l should answer.

Calculations based on this assumption appear in Table 47, columns 1-11 where we associate the positions of income groups, i.e., their income multiples, described below, with the savings-income ratios assumed for those positions, specific R_u's. These ratios can be studied for either (a) given percentile groups, i.e., the top 1, 5, etc. percent of the population in each year, or (b) groups at given relative income levels or income multiple positions, i.e., groups that in each year derive incomes x times the average income per capita. Measures under (a) would be more directly relevant to the analysis. But the sample data on expenditures and savings yield more reliable estimates of savings-income ratios for (b). For this reason we couch Table 47 largely in terms of savings-income ratios at income multiple positions.

In columns 1, 4, and 7 we record the percentage shares in total income (economic income variant) received by the three upper groups. When

related to the percentage of the population covered, these shares determine for each year the income multiple position of each group; e.g., in 1919 the income multiple position of the top 1 percent was 14.0; of the 2nd and 3rd percentage band, 3.4. From the scattered sample evidence on expenditures and savings summarized in Section 3 (excluding that for 1948-50, which became available later) we estimate the savings-income ratio corresponding to the given income multiple position on the assumption that its level is constant for the period covered in Table 47 (col. 2, 5, and 8). Multiplying their income shares by their savings-income ratios, we obtain the hypothetical savings of the three upper groups, expressed in percentages of individuals' total income (col. 3, 6, and 9). The sum of these estimates for the three upper groups gives the savings of the top 5 percent (col. 10).

What would their hypothetical savings be if we assumed that the savings-income ratio is constant for a given percentile group instead of for a given income multiple position? This assumption can easily be applied by using in columns 2, 5, and 8 a constant instead of a changing savings-income ratio. Setting the constant savings-income ratio for a given group at its mean level for the period, calculating the product of this ratio and the group's share, and adding the products for the three groups, we get column 11: the hypothetical savings of the top 5 percent group, expressed in percentages of individuals' total income, on the assumption that the savings-income ratio for a given upper percentage band is constant.

In interpreting the results, two cautions must be kept in mind. First, when we convert the average per capita income of an income group (say, the top 1 percent) to an income multiple we identify that group with an income point. But the significance of a given multiple as a factor determining a savings-income ratio may depend upon the income range from which it was derived. Thus the multiple 3 calculated from a range of incomes extending from the multiple 10 down to 0.5 may yield one savings-income ratio; and the multiple 3 calculated from a range of incomes from 3.1 down to 2.9, a somewhat different ratio. Hence, there is an element of arbitrariness in passing from income groups to multiples. However, at the high income levels treated here, where the curve of savings-income ratios tends to be asymptotic to a constant or only slowly rising line of ratios, the possible error cannot be large.

The second caution relates to the savings-income ratios. Those yielded by the sample studies of expenditures and savings are usually higher than those yielded by the residual method which employs over-all totals or other approaches. Therefore, the savings-income ratios assumed for the multiples in Table 47 may be somewhat too high, even for the underlying concept of savings, i.e., including depreciation on consumer durable goods

Table 47

Savings of Upper Income Groups as Percentages of Individuals' Total Income Receipts, Assuming Constant Savings-Income Ratios for Given Upper Income Levels, 1919-1945

	TOP 1 PERCENT			2ND & 3RD PERCENTAGE BAND		
	% Share in Total Income, Economic Income Variant (1)	Savings-Income Ratio (%) (2)	Savings as % of Total Income (1) × (2) (3)	% Share in Total Income, Economic Income Variant (4)	Savings-Income Ratio (%) (5)	Savings as % of Total Income (4) × (5) (6)
1919	14.0	42.10	5.9	6.8	25.80	1.7
1920	13.6	41.86	5.7	6.8	25.80	1.8
1921	16.2	43.06	7.0	9.0	29.46	2.7
1922	15.6	42.84	6.7	8.0	28.00	2.2
1923	14.0	42.10	5.9	8.5	28.60	2.4
1924	14.7	42.48	6.2	8.4	28.60	2.4
1925	15.7	42.88	6.7	8.1	28.00	2.3
1926	15.8	42.92	6.8	8.2	28.30	2.3
1927	16.5	43.15	7.1	8.4	28.60	2.4
1928	17.2	43.34	7.4	8.3	28.30	2.3
1929	17.2	43.34	7.4	8.5	28.60	2.4
1930	15.6	42.84	6.7	8.4	28.60	2.4
1931	15.6	42.84	6.7	9.0	29.46	2.7
1932	15.3	42.72	6.5	9.3	30.01	2.8
1933	14.4	42.33	6.1	8.9	29.18	2.6
1934	13.6	41.86	5.7	8.5	28.89	2.5
1935	13.6	41.86	5.7	8.4	28.60	2.4
1936	14.7	42.48	6.2	8.0	28.00	2.2
1937	14.1	42.16	6.0	8.0	28.00	2.2
1938	12.8	41.38	5.3	8.4	28.60	2.4
1939	13.3	41.68	5.5	8.4	28.60	2.4
1940	13.0	41.50	5.4	7.8	27.70	2.2
1941	12.5	41.19	5.1	7.6	27.35	2.1
1942	10.8	39.84	4.3	6.8	25.80	1.8
1943	10.1	39.12	3.9	6.2	24.60	1.5
1944	9.1	37.92	3.4	5.8	23.40	1.4
1945	9.5	38.40	3.6	6.0	24.00	1.4

Column

2, 5, 8 Multiples of average income were derived by dividing the percentage of income received (col. 1, 4, and 7) by the percentage of population receiving it. To each multiple a savings-income ratio was assigned, set, on the basis of the sample evidence for 1929, 1935-36, 1941, 1942 (first quarter), 1945, 1946, and 1947 in Section 3, at 17 percent for the multiple 2, 24 percent for the multiple 3, 28 percent for the multiple 4, 30.8 percent for the multiple 5, 33.2 percent for the multiple 6, 35 percent for the multiple 7, 37.8 percent for the multiple 9, 39 percent for the multiple 10, and 45 percent for the multiple 25, and interpolated with an allowance for decreasing increments in the savings-income ratio as the multiple increases.

10 Sum of columns 3, 6, and 9.

11 Sum of products of columns 1, 4, and 7 and a *constant* savings-income ratio. The constant ratio for column 1, 41.859 percent, is the arithmetic mean of column 2 for 1919-45; that for column 4, 27.735 percent, the arithmetic mean of column 5; and that for column 7, 24.037 percent, the arithmetic mean of column 8.

12, 13 a) To the NBER estimates of individuals' savings for 1919-38 (*National Income and Its Composition, 1919-1938,* Table 39, p. 276) and the Depart-

4TH & 5TH PERCENTAGE BAND			TOP 5 PERCENT			
			Savings as % of Total Income Assuming Constant Savings-Income Ratio for Given		Rank of Share (Upward) of Top 5 Percent Group in Total Savings Assuming Constant Savings-Income Ratio for Given	
% Share in Total Income, Economic Income Variant (7)	Savings-Income Ratio (%) (8)	Savings as % of Total Income (7) × (8) (9)	*Income multiple* (10)	*Percentage band* (11)	*Income multiple* (12)	*Percentage band* (13)
5.3	21.60	1.1	8.8	9.0	6	6
5.3	21.60	1.1	8.6	8.9	10	10
6.5	25.40	1.7	11.3	10.8	26	26
6.8	25.80	1.7	10.7	10.4	20	20
5.6	22.80	1.3	9.6	9.6	12	12
6.0	24.00	1.4	10.1	9.9	19	19
6.4	25.00	1.6	10.6	10.4	14	14
6.3	24.60	1.5	10.6	10.4	18	18
6.3	25.00	1.6	11.1	10.7	17	17
6.6	25.40	1.7	11.5	11.1	21	21
6.2	24.60	1.5	11.4	11.0	15	15
6.7	25.40	1.7	10.8	10.5	23	23
7.4	27.00	2.0	11.3	10.8	22	22
7.5	27.35	2.1	11.4	10.8	24	24
7.6	27.35	2.1	10.7	10.3	27	27
7.1	26.20	1.9	10.0	9.7	25	25
6.8	25.80	1.8	9.8	9.6	13	13
6.5	25.40	1.7	10.2	10.0	8	8
6.4	25.00	1.6	9.8	9.7	11	11
6.6	25.40	1.7	9.4	9.3	16	16
6.4	25.00	1.6	9.5	9.4	9	9
6.3	24.60	1.5	9.1	9.1	7	7
5.9	23.40	1.4	8.6	8.7	5	5
5.1	21.00	1.1	7.1	7.6	3	3
4.8	20.30	1.0	6.4	7.1	2	2
4.0	17.00	0.7	5.5	6.4	1	1
4.0	17.00	0.7	5.8	6.6	4	4

ment of Commerce estimates of personal savings for 1929-45 (*Survey of Current Business,* July 1949, Table 3, p. 10) was added the latter's series on depreciation on owner-occupied dwellings as shown for 1929-41 in *ibid.,* July 1947, National Income Supplement, Table 39, p. 47, for 1942-45 in *ibid.,* July 1949, Table 39, p. 25, and extrapolated back to 1919 by an index based on depreciation on all residences (Solomon Fabricant, *Capital Consumption and Adjustment,* NBER, 1938, Table 29, p. 160) and the ratio of imputed rent to all rent paid on urban dwellings as computed from data underlying the NBER series on total imputed rent.

b) The series for 1919-38 and 1929-45 calculated in (a) were divided by aggregate payments to individuals including depreciation on owner-occupied dwellings from sources cited in (a).

c) The percentages for 1919-38 and 1929-45 calculated in (b) were converted to indexes with 1919-38 as the base.

d) The index for 1919-38 calculated in (c) was extrapolated through 1945 by that for 1929-45.

e) Columns 10 and 11, each converted to an index with 1919-38 as the base, were divided by the index for 1919-45 calculated in (d), and the ratios ranked in increasing order, to yield columns 12 and 13 respectively.

and residential housing. However, here again a reasonable scaling down of the levels would not greatly affect the significance of the evidence.

The hypothetical savings of upper income groups, whether calculated on the assumption that the savings-income ratio is constant for a given income multiple position (col. 10) or for a given percentile group (col. 11), expressed in percentages of individuals' total income, vary little except for the years since 1939. Their slight fluctuations are counter-cyclical (they rise in 1921 and 1924, decline in 1920 and 1923, and show practically no decline during the great depression of 1929-33).

Columns 10 and 11 should be compared with individuals' total savings, also expressed in percentages of individuals' total income, i.e., R_t, but unfortunately, there is no reliable series. Available series, derived by the residual method, yield savings-income ratios whose average level is not consistent with the evidence yielded by the samples summarized in Section 3 and used in Table 47. But, for purposes of rough comparison, we took individuals' total savings derived crudely as the difference between aggregate income receipts and consumer expenditures plus taxes; added depreciation on owner-occupied houses; expressed the totals as percentages of all income payments to individuals; converted these percentages to an index with 1919-38 as the base; took the ratio of columns 10 and 11 (also converted to indexes with 1919-38 as the base) to this index; and ranked the ratios from lowest to highest.[1]

The share of the top 5 percent in total savings declined after 1939 and, what is more important here, its movement was counter-cyclical (col. 12 and 13). The years of depression, 1921, 1924, 1932-33, and 1938, are marked by high ranks, indicating a high ratio of upper group to total savings. The years of prosperity, 1919-20, 1923, 1929, and 1936-37, in contrast, are marked by low ranks.[2]

The question we propose to explore can now be posed. Is the assumption underlying Table 47 realistic: that the savings-income ratios for the upper income positions or groups, R_u, move relatively little during the short periods associated with business cycles? If they are relatively stable in the short run, the share of upper group savings in total savings, S_u, must vary widely and run counter to business cycles. Only if the savings-income ratios for upper income positions or groups vary with business cycles and much

[1] We used ranks instead of the actual ratios because lack of confidence in the series on individuals' total savings made the ratios suspect.

[2] There is some hint that the decline in the ratio of upper group to total savings reaches a trough somewhat before the peak in general business conditions (in 1919 rather than 1920, 1936 rather than 1937). But the data are too crude to reveal leads or lags.

more widely than those for lower income positions or groups will this greater variability of the former tend to offset the counter-cyclical movement of their income shares and make for a constant share in individuals' total savings. The question, then, reduces itself to one concerning the relative short term variability of savings-income ratios for upper and lower groups.

2 *Effect of Changes in Savings-Income Ratios on Changes in Shares in Individuals' Total Savings*

Before we study the sample data with an eye to the variability of savings-income ratios, let us explore the formal relations between changes in the savings-income ratios, i.e., R_u and R_l, and in the shares in savings, i.e., S_u and S_l. Such an analysis will indicate in what form we should compare the variability of the savings-income ratios of upper and lower income groups respectively if we are to be able to draw unequivocal conclusions concerning changes in their shares in total savings.

a) *Proportional changes in R*

We begin with proportional changes in the savings-income ratios largely because they yield simpler results than absolute changes. Assume that proportional changes in R_u and in R_l are equal and expressible by a factor A. If for the initial point of time we retain the designations in equations (1)-(4) in Section 1, and for the next point of time at which the assumed change is observed, we add a plus sign to the subscripts, we get:

$$R_{t+} = I_u R_u A + I_l R_l A = A R_t \tag{5}$$

$$S_{u+} = \frac{I_u R_u A}{A R_t} = \frac{I_u R_u}{R_t} = S_u \tag{6}$$

$$S_{l+} = \frac{I_l R_l A}{A R_t} = \frac{I_l R_l}{R_t} = S_l \tag{7}$$

As (6) and (7) show, the same proportional change in the savings-income ratios for upper and lower income groups leaves their shares in savings unaffected.

Assume now a proportional change in R_u equal to A, and a proportional change in R_l equal to B, where $B = A\ (1 + m)$.

$$\begin{aligned} R_{t+} &= I_u R_u A + I_l R_l A\ (1 + m) \\ &= I_u R_u A + I_l R_l A + I_l R_l Am \\ &= A\ (R_t + I_l R_l m) \\ &= A\ (R_t + S_l R_t m) \\ &= A R_t\ (1 + S_l m) \end{aligned} \tag{8}$$

$$S_{u+} = \frac{I_u R_u A}{A R_t (1 + S_l m)} = \frac{I_u R_u}{R_t}\left(\frac{1}{1 + S_l m}\right) = S_u\left(\frac{1}{1 + S_l m}\right) \quad (9)$$

$$S_{l+} = \frac{I_l R_l A (1 + m)}{A R_t (1 + S_l m)} = S_l\left(\frac{1 + m}{1 + S_l m}\right) \quad (10)$$

As (9) and (10) show, different proportional changes in the savings-income ratios of upper and lower income groups alter their shares in total savings. The proportional change in upper group shares in savings is measured by the ratio $\frac{1}{1 + S_l m}$ since it equals S_{u+}/S_u (from equation 9); and that in the share of lower groups by $\frac{1 + m}{1 + S_l m}$ (from equation 10).

Let us assume that S_l is positive, i.e., that the lower income groups do save; and that m never becomes algebraically smaller than -1 (if it did, S_{l+} would be negative). Under these reasonable assumptions, we can compare the proportional change in S_u and S_l respectively with the relative difference between A and B.

Line	Sign of m	$\frac{S_{u+}}{S_u}$	$\frac{S_{l+}}{S_l}$
	(1)	(2)	(3)
1	Plus	$\frac{1}{1 + S_l m} > \frac{1}{1 + m}$	$\frac{1 + m}{1 + S_l m} < 1 + m$
2	Minus	$\frac{1}{1 - S_l m} < \frac{1}{1 - m}$	$\frac{1 - m}{1 - S_l m} > 1 - m$

Since S_l is necessarily a proper fraction, a positive m, i.e., a larger proportional increase (or smaller decrease) in the ratio for lower income groups, increases their share in total savings and decreases that of upper groups. But as can be seen from line 1, the proportional increase in the savings share of lower income groups is smaller than $(1 + m)$, i.e., than the relative difference between A and B. Likewise, when m is negative, both the proportional increase in the share of upper income groups in total savings and the proportional decrease in that of lower groups are smaller than the relative difference between A and B. The point to note is that the analysis of *proportional* changes in the savings-income ratios for upper and for lower income groups does not suggest consistent differences in the sensitivity of their shares in total savings.

b) *Absolute changes in R*

The significance of these conclusions becomes evident when we contrast them with the effects of absolute changes in R_u and R_l.

Assume the same absolute change in R_u and R_l, and call it a. Then:

$$R_{t+} = I_u (R_u + a) + I_l (R_l + a)$$
$$= I_u R_u + I_u a + I_l R_l + I_l a$$
$$= R_t + a (I_u + I_l) = R_t + a \quad (11)$$

$$S_{u+} = \frac{I_u R_u + I_u a}{R_t + a} = \frac{I_u R_u + I_u a}{R_t (1 + k)} \quad (12)$$

where $a = k R_t$

$$S_{l+} = \frac{I_l R_l + I_l a}{R_t (1 + k)} \quad (13)$$

It follows that:

$$S_{u+} - S_u = \frac{I_u R_u + I_u a}{R_t (1 + k)} - \frac{I_u R_u}{R_t}$$
$$= \frac{I_u R_u + I_u a - I_u R_u (1 + k)}{R_t (1 + k)}$$
$$= \frac{I_u (R + a - R_u - R_u k)}{R_t (1 + k)}$$
$$= \frac{I_u (a - R_u k)}{R_t (1 + k)} = \frac{I_u (k R_t - R_u k)}{R_t (1 + k)} = \frac{I_u k (R_t - R_u)}{R_t (1 + k)} \quad (14)$$

Likewise:

$$S_{l+} - S_l = \frac{I_l k (R_t - R_l)}{R_t (1 + k)} \quad (15)$$

Equations (14) and (15) provide the key to the effects of absolute changes in the savings-income ratios on the percentage shares of upper and lower income groups in total savings. It should be remembered that $R_t - R_u$ is almost necessarily negative, and $R_t - R_l$ positive. Consequently, if a (and hence k) is positive, $S_{u+} - S_u$ is negative, whereas $S_{l+} - S_l$ is positive. Likewise, when a (and hence k) is negative, $S_{u+} - S_u$ is positive, whereas $S_{l+} - S_l$ is negative. In other words, the same absolute increase in the savings-income ratio for upper and lower income groups causes a decline in the former's share in total savings (and a corresponding rise in the latter's share), and the same absolute decline in the savings-income ratio for the upper and lower income groups causes a rise in the former's share in total savings (and a corresponding decline in the latter's share).

This conclusion is unavoidable inasmuch as we have already observed that only an equal *proportional* change in R_u and R_l leaves the savings shares unaffected. But its significance for the analysis that follows warrants special emphasis. Equality of absolute change in savings-income ratios

does not mean temporal stability of S_u and S_l but rather a change in S_u opposite in sign to that in both R_u and R_l. If the absolute changes in R_u and R_l are in the same direction, as they tend to be during business cycles, their equality would still cause a change in upper group shares in total savings — a counter-cyclical change. Given the same direction of short term changes in R_u and R_l, only an equal proportional amplitude of variations in R_u and R_l would assure a short term constancy of S_u and S_l.

In the light of the sample evidence to be considered in Section 3 (and already used in Table 47), R_u for the upper income groups as we define them is about 5 times as large as R_l. It is, therefore, extremely unlikely that proportional changes in R_u can ever be as large as in R_l.[3] In other words, the smaller proportional variability of R_u than of R_l is almost in the nature of a mathematical necessity. Hence the empirical analysis of R_u and R_l is more in the way of measuring the difference in temporal variability than of proving its existence.

3 *Statistical Evidence on Savings-Income Ratios*

a) *Various samples, total population*

What are the savings-income ratios at upper and at lower income levels? How do they change over time? To answer these questions we used the Brookings estimates for 1929; the Consumer Purchases Study for 1935-36; the Survey of Spending and Saving in Wartime for 1941 and the first quarter of 1942; and the Surveys of Consumer Finances for 1945-50. Their important defects must be borne in mind in appraising the evidence.[4]

First, the sample studies underrepresent upper income groups in varying degree; and while in some this underrepresentation has been adjusted for, the empirical basis for measurement at the upper levels is slender. In short, for the very groups in whose income disposition we are most interested, the sample data are most limited.

Second, with the possible exception of the 1935-36 study, the thinness of the sample when distributed by size of income and by some other charac-

[3] Since R_u has an average level of 30-40 percent, it cannot rise much more than twice as high; nor, in view of the large average income involved, is it likely to decline to a negative value. At lower income levels, where R_l is well below 10 percent, the ratio can easily rise to 2 or 3 times its average level and as easily drop to a negative value. With the decline in the income shares of upper groups in recent years, their savings-income ratio may be lower than the 30-40 percent cited above. But even so, it is high enough, and sufficiently higher than that for the lower groups for the conclusion in the text to hold.

[4] For an analysis of the concept of savings in the first two studies, see also *National Income and Its Composition, 1919-1938*, pp. 292 ff.

teristic (e.g., by urban and rural areas or by family status) makes for irregularity of savings-income patterns.

Third, the years included do not represent a sufficient variety of cyclical experience. Indeed, in the Brookings analysis the income size distribution for 1929 is combined with consumption-savings ratios derived from budget studies covering scattered years from 1918 to 1932. The other studies are based on data for a specific year and none covers a year of marked cyclical depression or trough. Hence, while the years are not at the same stage of cyclical expansion, all are above the cyclical trough and with rising incomes — and similar evidence for years of cyclical trough and with declining incomes is not available, with the single exception of the mild recession from 1948 to 1949. However, some light on savings-income ratios during a period of decline in incomes is provided by the Brookings special sample for 1928-32, discussed in Section 3c.

Fourth, the concept of income used does not correspond to that underlying the national income total. The Brookings distributions are based on income including gains and losses from sales of assets. In the Consumer Purchases Study gifts and transfers from other individuals are included as well as net profits from property bought and sold within the year. In the Surveys of Consumer Finances money income alone is included.

Fifth, the concept of savings does not correspond to the definition implied in national income measurement. In the Brookings study it is seriously affected by the inclusion of capital gains and losses. In practically all the studies savings are gross of depreciation on owner-occupied dwellings unless current expenses happen to exceed current maintenance by an amount equal to the allowable depreciation, and interest accruing to individuals in such institutions as savings banks and life insurance companies is omitted.

Sixth, the unit of classification for both income and savings varies from study to study. The Brookings distribution is among families and single persons. The Consumer Purchases Study and the Survey of Spending and Saving in Wartime are in terms of consuming units which differ from census families in that they exclude members who do not pool their income and expenses. The Surveys of Consumer Finances are in terms of spending units, a concept that seems similar to that of consuming units in the 1935-36 and 1941-42 studies, but it is not clear from the published data whether the definitions coincide in detail.

We now consider how our attempt to compare the results of these several studies removes or reduces these defects and the incomparabilities arising from them. The several steps are described in the notes to the tables

in Appendix 1; here only a minimum summary statement indispensable for understanding the results is given.

1) We tried to adjust the Brookings 1929 distribution to exclude gains and losses on sales of assets. It was easy to approximate the results for the distribution of income by size. But for savings, a problem arose to which we had no ready answer. The savings-income ratios used in that study were derived by applying to the size classes of income including capital gains and losses in 1929 proportions found in various budget studies. The underlying budget studies, with the single exception of the Brookings special sample for 1928-32, were all for incomes in which capital gains and losses were negligible or excluded by definition. We can argue either that (a) consuming units enjoying such gains (or suffering such losses) consider them as *bona fide* income (or losses) and permit them to affect fully their current consumption and savings patterns (Assumption 1). Their true savings can then be calculated by subtracting the estimated capital gains and losses from the savings as estimated in the Brookings study. Or we can argue that (b) consuming units consider capital gains and losses as purely transitory and do not permit them to affect their current consumption and savings patterns, in which case the latter would reflect income excluding capital gains and losses (Assumption 2). We can, then, estimate income excluding capital gains and losses at successive levels, and apply the savings-income ratios used in the Brookings study for identical levels of income including gains and losses.

No attempt at other adjustments for the concept of either income or savings was made.

2) Because the studies vary in the degree to which they underrepresent upper income groups, direct comparison of the savings-income ratios for the top 1 or 5 percent group in each would be misleading. The same top percentage band in two studies would in fact be two different percentage bands in terms of the total population of the country. We therefore converted the income size classes in each study to classes characterized by income expressed as a multiple of the arithmetic mean income for the given sample study; then adjusted the multiples in each study by the relative discrepancy between the total income shown by the study and that shown by comparable and continuous Department of Commerce series. For example, for 1941-42 the family units with incomes of, say, $3,000-5,000, were first expressed as a class whose income was x times the average family income shown by the study; this x was then multiplied by 0.87, the ratio of total income covered by the study to the comparable Department of Commerce total. Thus, the level of each income size class in each study

was measured relative to a comparable and continuous series derived from the Department of Commerce estimates of national income.[5]

This conversion of the income of a sample unit or class to a multiple or relative of per unit income for the country not only serves to adjust for varying degrees of underrepresentation but also expresses the income position of a unit or class in a more meaningful way than would the absolute dollar value of its income or its relative standing within the sample. Countrywide per unit income is, of course, a rather unrepresentative average. But it is near enough some norm or standard to give a unit that enjoys an income x times it a meaningful relative position. For example, a $1,000 income leads to one type of apportionment between expenditures and savings when it is twice countrywide per unit income and to another when it equals the countrywide per unit income. Likewise, a position relative to a countrywide per unit income is more meaningful than a position within a sample that may suffer from various biases. Without claiming too much for this conversion, one could reasonably argue that it is likely to lead to a more useful analysis of savings patterns than relating savings-income ratios to absolute levels of dollar income or to relative positions within each sample.

A final advantage of this conversion is that it makes possible the comparison of the savings-income ratios derived from the samples with our estimates of upper group shares in income, which were measured for groups classified by their position relative to countrywide per capita income.

3) Variation in the unit of count and classification could not be adjusted for. But whenever possible, i.e., for all data except those in the Surveys of Consumer Finances, the family or consuming unit was reduced to a per capita basis and the entire calculation of relative income levels was repeated in terms of income per capita. The reduction was necessarily crude but removed both an element of variability among the several studies and an element that might obscure the savings-income patterns, viz., differences among units, classified by total income, in the number dependent upon that income.

4) Irregularities in the savings-income ratios for the income classes above the lowest ranges in the Surveys of Consumer Finances appeared to be due to the thinness of the samples. We therefore fitted simple straight lines to the ratios (logarithms of income multiples compared with the ratio of the share in savings to the share in income) for these income classes, and read

[5] Elements of discontinuity still remained as far as the scope of intended coverage differed among the studies. The most notable example is the limitation of the Surveys of Consumer Finances to money income.

the savings-income ratios from these lines instead of taking them directly from the published data. A similar procedure might perhaps have been used to advantage on the 1941-42 study, but the income classes were so few that it did not seem worth while.

Obviously, we did not correct all the major defects of the studies, nor could we. The notable defects that still remain are: the limitation of the Surveys of Consumer Finances to money income; the use of a concept of savings gross of depreciation on owner-occupied dwellings; absence of data for years of declining income and cyclical trough; absence or thinness of sample data for upper income groups.

Table 48 covers all the samples and shows the percentage that savings are of income for consuming or spending units classified by the ratio of their income to the per unit income for the country as a whole derived from the Department of Commerce series.

First, the savings-income ratios are higher the higher the relative levels of income (the multiples), with two exceptions: in column 1, beyond the multiple 7.0, and in column 4, from the multiple 0.75 to 1.0. The first exception is due to Assumption 1 which treats gains and losses from sales of assets as *bona fide* income, affecting consumption and savings as do the more stable income receipts. Savings as we define them are thereby greatly reduced at high income levels. The second exception, the drop in column 4, may be due either to a peculiar combination of farm and nonfarm families at these particular income levels (see Table 50) or to the thinness of the sample.

Second, beyond a certain upper range of the income multiples the savings-income ratios cease to rise, or at least rise little in comparison with the rise in the relative income level. The clearest indication is in the data for 1929 and 1935-36: the rise in the savings-income ratio, which is quite large as we pass from the multiple 0.25 to 4.0, slackens appreciably beyond that level and the ratio becomes, as it were, asymptotic to a slowly rising upper limit.[6]

Third, the savings-income ratios at high relative levels of income per unit are fairly stable if we disregard column 1. At the multiple 2.0 the absolute range is from 13.9 to 19.7 percent, or 5.8; at the multiple 3.0, from 18.5 to 28.6 percent if we include 1945, and to 24.9 percent if we exclude 1945, or 10.1 and 6.4 respectively. And the range is even narrower at the higher multiples, although the comparison is circumscribed since fewer

[6] Horst Mendershausen found a similar function connecting savings-income ratios and income multiples for income distributions in 8 large cities in 1935-36 ('The Relationship between Income and Savings of American Metropolitan Families', *American Economic Review*, Sept. 1939, pp. 521-37).

Table 48

Savings as Percentages of Income, Given Relative Levels of Income per Consuming or Spending Unit
Various Samples, 1929-1950

	Multiples of Arithmetic Mean Income per Consuming or Spending Unit	Brookings Data, 1929 *Assumption* 1 (1)	Brookings Data, 1929 *Assumption* 2 (2)	Consumer Purchases Study 1935-36 (3)	Survey of Spending & Saving in Wartime *1941* (4)	Survey of Spending & Saving in Wartime *1942 1st Qu.* (5)	Survey of Consumer Finances *1945* (6)	*1946* (7)	*1947* (8)	*1948* (9)	*1949* (10)	*1950* (11)
1	0.25	−30.4	−30.4	−32.1	−15.6	−25.1	4.9	−9.3	−14.8	−22.2	−31.1	−15.9
2	0.50	−1.7	−1.3	−7.4	0.2	−0.1	7.9	1.9	1.4	−1.3	−5.7	−0.8
3	0.75	7.6	8.1	−1.5	5.3	8.3	10.7	7.0	4.6	3.2	−0.6	3.9
4	1.00	11.0	11.6	3.5	5.0	10.9	12.9	10.8	7.0	6.4	5.0	7.4
5	1.50	15.5	16.3	9.4	10.7	15.9	15.7	15.9	10.2	10.8	11.2	12.1
6	2.00	18.0	19.5	14.1	13.9	18.2	19.6	19.7	14.0	14.0	15.6	15.4
7	3.00	20.4	23.6	21.9	19.3	22.7	28.6	24.9	21.5	18.5	21.8	20.2
8	4.00	24.6	29.0	27.2	24.8	27.2						
9	7.00	29.3	37.0	37.5								
10	10.00	28.5	38.5	39.8								
11	25.00	28.0	43.1	49.2								
	ARITHMETIC MEANS OF ABOVE FOR WIDER GROUPS											
12 (lines 2-4)	0.75	5.6	6.1	−1.8	3.5	6.4	10.5	6.6	4.3	2.8	(−)0.0*	3.5
13 (lines 6 & 7)	2.50	19.2	21.6	18.0	16.6	20.4	24.1	22.3	17.8	16.2	18.7	17.8
14 (lines 6-8)	3.00	21.0	24.0	21.1	19.3	22.7						
15 (lines 8-10)	7.00	27.5	34.8	34.8								

* Less than −0.05.

Interpolations at the specified multiples, lines 1-11, are based on data in Appendix 1: for columns 1 and 2, in Table 59; for column 3, in Table 63; for column 4, in Table 64; for column 5, in Table 65; for columns 6-11, lines 2-11 were derived as the product of the over-all savings percentage and the ratio of the percentage of savings to the percentage of income for the given multiple derived from a straight line fitted to the data in Table 66, and line 1 was extrapolated from line 2 by the movement in the unadjusted sample data.

samples can be used. The lower multiples have much wider absolute ranges. For the multiple 0.75 the range is (excluding 1945) from −1.5 to 8.3 percent, or 9.8; for the multiple 0.50, from −7.4 to 1.9 percent, or 9.3; and for the multiple 0.25, from −32.1 to −9.3 percent, or 22.8. In view of the narrower absolute range at upper than at lower income levels, the greater relative stability of savings-income ratios at the former is in striking contrast to their relative variability at the latter.

This finding can be made to bear more directly on our earlier analysis if we combine the entries in Table 48 into groups, distinguishing between those at upper and at lower income levels. We exclude the lowest income multiple, 0.25, thereby weighting the comparison in favor of greater stability of savings-income ratios at upper levels. Also, we assign equal weight to each multiple position, since we do not have any reason to assume that the frequency 'zone' surrounding one multiple is larger or smaller than that associated with another. The results (using Assumption 2 for the Brookings data) reveal even better the smaller absolute variability of savings-income ratios at upper income levels (lines 13-15) than at lower (line 12). Unfortunately, only two of the samples extend to the income multiple range characterizing our top 5 percent group, 6.0, whereas all cover the lower groups whose average income multiple position is 0.74, i.e., 70/95. But judging by the entries for 1929 and 1935-36, we would not expect much variation in the ratios at these higher multiple levels.

The exceptional behavior in 1929 on Assumption 1 and in 1945 calls for comment. If Assumption 1 is valid, i.e., if recipients allow their capital gains and losses to affect their current expenditures in the same way as equal amounts of more stable income, the savings-income ratios at upper levels, i.e., for the high multiples, would show more marked short term variations than those in Table 48; for capital gains and losses are incurred primarily and largely by persons in the upper brackets, and if they affect consumption-savings patterns, a counter-cyclical movement is introduced when savings are defined in terms corresponding to the national income concept. Whether Assumption 1 or 2 is more valid is a question that cannot be answered until we have more data. Perhaps the true ratios lie between those in columns 1 and 2. But since the Brookings study derived its consumption-savings ratios from income distributions that were little affected by capital gains and losses, Assumption 2 seemed more justifiable.[7]

[7] We preferred Assumption 2 for another important reason. Though we exclude gains and losses on sales of assets from income, we have to use size classes of income that include them. We therefore continue to include at the upper income levels units which, in a proper classification by economic income, would have been much lower in the income scale because large proportions of their income were from gains on

The exceptional showing for 1945 has entirely different causes. The savings-income ratios at the very low multiples, 0.25 and 0.50, and at the top, 3.0, are high compared with those for other years. During part of 1945 the country was still at war, so that on the whole we would expect higher savings-income ratios because of restrictions on the supply of consumer goods and the pressure to buy savings bonds. That the ratios at the upper multiples are not even higher than those in Table 48 is probably attributable to the greater impact of income taxes than in pre-World War II years. The very high (compared with other years) ratios at the low multiples in 1945 are thus partly a reflection of the true situation; but may be due partly to the failure of the Survey to cover dissavings adequately[8] – a failure that may have resulted in overstating particularly the net savings of lower income brackets.

In the light of these comments the following conclusion seems justified. If gains and losses on sales of assets are relatively minor or are treated by recipient units as transitory and have only a partial effect on the true consumption-savings pattern, the savings-income ratios for the high income multiples – beginning with 2.0 or 3.0 – tend to show only small absolute short term changes, except in years of a major war and forceful disturbance of consumption patterns. The ratios for the low multiples, 1.0 and below, on the contrary, show much more marked absolute short term changes.

Fourth, since savings-income ratios at high income levels tend to vary relatively little in the short run, and those at low income levels tend to vary considerably, the function that connects them with the relative position of income must obviously undergo short term changes. Table 48 suggests the character of the changes that can be expected. In relatively good years the spread of the savings-income ratios for the same range of income multiples would tend to narrow; in relatively bad years, to widen perceptibly. This statement can best be corroborated for the income classes that have positive net savings. Between multiples 1.0 and 3.0 in relatively prosperous years such as 1929, 1942, and 1945-48 the ratio ranges from 6.4-12.9 to 18.5-28.6 percent. Thus, with a tripling of the income multiple,

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sales of assets. These units, with their low true savings (on Assumption 1), should not be allowed to depress the savings-income ratios at the high multiples of a true distribution by economic income. In other words, the savings-income ratios as we can calculate them on Assumption 1 are, at upper income levels, lower than they would have been could we have applied Assumption 1 to a true distribution by economic income. At these upper levels the savings-income ratios on Assumption 2 may be nearer the ratios on Assumption 1 as properly applied than are the ratios on Assumption 1 as they were calculated in Table 48.

[8] *Federal Reserve Bulletin,* August 1947, p. 953.

it is at most tripled. But in 1935-36 the range is from 3.5 to 21.9 percent; in 1941, from 5.0 to 19.3 percent; and in 1949, from 5.0 to 21.8 percent — six- or fourfold. If data permitted extension to higher multiples for all the years up to the range where the rise in the savings-income ratio ceases or retards to an insignificant amount, the change in the function connecting the ratios with relative levels of income through cyclical phases would stand out even more. If savings-income ratios at upper income levels resist cyclical change and those at lower levels fluctuate widely with business cycles, the function connecting savings-income ratios with relative income positions must vary with business cycles — the slope of the line by which the ratio rises with the rise in the income multiple being gentler during expansions and periods of high over-all ratios, and steeper during contractions and periods of low over-all ratios.

In Table 48 savings-income ratios are shown for relative levels of income per consuming or spending unit. For all studies except the Surveys of Consumer Finances we can adjust for the number per unit, by income level.[9] The results, in Table 49, confirm the conclusions from Table 48 and accentuate the differences in the level and behavior of savings-income ratios at the various income multiples.

For obvious reasons changes in the ratios associated with changes in the relative income level become sharper in Table 49 since here income is divided by the number of persons dependent upon it and reflects more clearly relative position with respect to consumption needs and savings possibilities. For all comparable columns in Tables 48 and 49 the range of the savings-income ratios is wider in the latter. Thus, in Table 48 between multiples 0.25 and 10.0 it is 68.9 percentage points in 1929 (Assumption 2) and 71.9 in 1935-36; in Table 49 it is 77.5 and 77.6 percentage points respectively. Between multiples 0.25 and 3.0 the range in the savings-income ratios in Table 48, columns 2-5, is 54.0, 54.0, 34.9, and 47.8 percentage points respectively; in Table 49, 65.5, 62.2, 44.9, and 58.4 respectively.

Second, the tendency of savings-income ratios to approach some upper level, or at least for their rate of rise to retard as we approach the high multiples, is also more evident in Table 49. Between multiples 3.0 and 10.0 the ratios in Table 48 rise 14.9 percentage points in 1929 (Assumption 2) and 17.9 percentage points in 1935-36; in Table 49, 12.0 and 15.4 percentage points respectively.

[9] The published data for the Surveys of Consumer Finances and other data kindly provided us can be used to reduce the income distribution to a per capita basis. But this cannot be done as easily for the savings-income ratios; and we did not deem it worth while to apply this refinement to the Survey sample.

Table 49

Savings as Percentages of Income, Given Relative Levels of Income per Capita: Various Samples, 1929-1942

	Multiples of Arithmetic Mean Income per Capita	Brookings Data, 1929 *Assumption* 1 (1)	2 (2)	Consumer Purchases Study 1935-36 (3)	Survey of Spending & Saving in Wartime *1941* (4)	*1942 1st Qu.* (5)
1	0.25	−38.8	−38.9	−37.5	−20.5	−30.6
2	0.50	−3.9	−3.5	−8.2	−0.6	−1.5
3	0.75	7.9	8.4	−0.8	5.6	7.8
4	1.00	12.3	12.9	4.2	5.1	11.4
5	1.50	16.9	18.0	11.5	12.6	17.4
6	2.00	18.8	21.0	16.9	16.5	20.9
7	3.00	23.1	26.6	24.7	24.4	27.8
8	4.00	26.8	31.0	30.1		
9	5.00	28.7	33.9	31.7		
10	7.00	29.2	37.3	35.1		
11	10.00	28.2	38.6	40.1		
ARITHMETIC MEANS OF ABOVE FOR WIDER GROUPS						
12 (lines 2-4)	0.75	5.4	5.9	−1.6	3.4	5.9
13 (lines 6 & 7)	2.50	21.0	23.8	20.8	20.4	24.4
14 (lines 6-8)	3.00	22.9	26.2	23.9		
15 (lines 9 & 10)	6.00	29.0	35.6	33.4		

See notes to Table 48.

Third, the resistance of the ratios at upper income levels to short term changes and the sensitivity of the ratios at lower levels is more conspicuous in Table 49. For multiples 2.0 and 3.0 the range in Table 48 for 1929-42 (Assumption 2 for 1929) is 5.6 and 4.3 percentage points respectively; that in Table 49, 4.5 and 3.4 percentage points respectively. For the four lower multiples, from 1.0 down, the range for these years is 8.1, 9.8, 7.6, and 16.5 percentage points in Table 48; and 8.7, 9.2, 7.6, and 18.4 percentage points in Table 49.

Fourth, it follows from the accentuation of the first three conclusions that the fourth, viz., the short term changes in the function that connects savings-income ratios with the relative income levels, associated largely with business cycles, would also be more conspicuous for distributions in which the relative income level is on a per capita than on a per unit basis.

b) *Evidence on savings-income ratios for population subdivisions*

Are the relative stability of savings-income ratios at upper income multiples and their variability at lower multiples true for population subdivisions as well as for total population?

Few subdivisions are distinguished in the available sample studies. The Surveys of Consumer Finances for 1945-50 do not admit of subdivisions

comparable with those in earlier samples, all of which separate single persons from families, and farm families from nonfarm, and some of which (those for 1935-36, 1941, and 1942) separate rural nonfarm families from urban. The evidence for these subdivisions is presented in Tables 50 and 51.

The income multiple positions for a given subdivision were calculated relative to the average income for that subdivision: e.g., the average income of single persons in a given income class was calculated as a multiple of the average income for all single persons in the given sample, not as a multiple of the average income for the total sample. And since the average income for each subdivision of the sample was also adjusted — to the countrywide average for the given subdivision — and thus linked to a continuous series of per capita or per unit income for total population, the calculations involved apportioning the total adjustment of the sample among its various subdivisions, sometimes rather arbitrarily.

The first set of comparisons is for single persons and families (Table 50). It covers 1929, 1935-36, and 1941, and omits 1942 since the published data for single persons for that year do not yield acceptable results for the savings-income ratios of the top bracket, derived as a residual. But even for these few years the conclusions are fairly clear.

The first is the difference between the level of savings-income ratios for single persons and for families commented on in Chapter 5. The data there indicated that, on the whole, at the same absolute income level the savings-income ratio for single persons is lower, and this is true of the ratio at the same relative income levels as shown for the multiples in Table 50. This is not unexpected when the comparison is for multiples in terms of average income per consuming or spending unit: the family is so much larger a unit than the single person that its average income per unit is also much larger and it follows that a given multiple represents a higher absolute income position for a family than for a single person. It is therefore not surprising that, except for the lowest multiple, 0.25, the savings-income ratios for single persons in Table 50, Part A, are appreciably lower than those for families at identical multiples in Part B. But the difference, though much smaller, holds even when the data are adjusted to a per capita basis in Part C. Average per capita income is smaller for families than for single persons; nevertheless, at identical multiples, with the exception of the very lowest, the savings-income ratios for single persons are lower than those for families in almost every instance.

The second conclusion is more important in the present connection. Even when we differentiate between single persons and families, the relative stability of savings-income ratios at high multiples and their variability at

Table 50

Savings as Percentages of Income, Given Relative Levels of Income per Consuming Unit and per Capita, Single Persons and Families Various Samples, 1929-1942

Multiples of Arithmetic Mean Income per Unit or per Capita	Brookings Data, 1929 *Assumption* 1 (1)	2 (2)	Consumer Purchases Study 1935-36 (3)	Survey of Spending & Saving in Wartime *1941* (4)	*1942* *1st Qu.* (5)
A Single Persons per Consuming Unit or per Capita					
0.25	−16.2	−16.4	−10.3	−27.6	
0.50	−7.6	−7.3	−5.3	−10.1	
0.75	0.9	1.7	−0.4	2.7	
1.00	6.9	7.7	2.6	3.2	
1.50	13.1	13.7	8.6	8.2	
2.00	17.8	18.5	13.3	14.5	
3.00	20.9	22.6	20.5	18.0	
4.00	21.2	24.5	25.7	21.5	
7.00	23.9	30.5	33.4		
10.00	26.3	34.6	38.4		
25.00	27.8	41.7	46.4		
B Families per Family					
0.25	−39.0	−39.0	−40.1	−14.4	−25.7
0.50	2.3	2.7	−8.2	0.5	2.5
0.75	8.4	8.9	−0.9	5.2	8.6
1.00	11.9	12.4	3.8	4.9	11.6
1.50	16.0	16.8	10.0	11.9	17.2
2.00	18.1	19.9	15.1	14.9	19.9
3.00	22.3	25.2	22.6	21.1	25.2
4.00	27.3	31.2	28.6	27.2	30.6
7.00	29.6	37.9	38.9		
10.00	28.2	38.8	39.8		
25.00	28.1	43.2	50.5		
C Families per Capita					
0.25	−38.8	−38.8	−41.5	−15.1	−27.6
0.50	2.5	3.0	−7.7	0.0	1.1
0.75	8.6	9.1	−0.8	5.2	8.1
1.00	12.2	12.8	3.7	4.7	11.3
1.50	16.4	17.4	10.3	12.5	17.9
2.00	18.5	20.6	15.8	16.6	21.6
3.00	23.3	26.7	23.8	24.9	29.0
4.00	27.7	31.6	29.6		
5.00	29.5	34.7	31.3		
7.00	29.6	37.9	34.6		
10.00	29.0	39.0	39.7		

See notes to Table 48.

low multiples persists. For single persons the absolute range (Assumption 2 for 1929) is about 4.2 percentage points at multiple 4.0, 4.6 at multiple 3.0, and 5.2 at multiple 2.0. The corresponding absolute range at multiple 0.25 is 17.3 percentage points, at 0.50, 4.8, at 0.75, 3.1, and at 1.0, 5.1. The differences in variability are perceptible, although they are reduced by the smaller number of years compared. They are more obvious in the comparison for families: on a per unit basis the absolute range is below 5 percentage points for multiples from 2.0 to 4.0; for multiples 1.0 or below it is close to 10 percentage points or more; and on a per capita basis, the range for multiples 2.0 and 3.0 is also about 5 percentage points, whereas for 1.0 or below it is close to 10 percentage points or more.

Consequently, there must be some systematic relation between the distribution of income among single persons and that among families which, at least during the period studied, permitted differences between these subdivisions in their levels of savings-income ratios and relative stability in their combined savings patterns (on either a per consuming unit or per capita basis). For if a population comprises two subdivisions with distinctly different savings patterns at all income levels, the temporal stability in its savings patterns depends upon the stability or some systematic relation between the two subdivisions.

In Table 51 farm families are compared with nonfarm for four years, on both a per family and a per capita basis. Some of the conclusions suggested can be accepted as at least well founded while others raise new questions about the character of the sample data and hence place additional qualifications on the conclusions in Section 3a.

a) Farm families have a much wider absolute range of savings-income ratios than nonfarm. From multiple 0.25 to multiple 3.0 the savings-income ratios for farm families range from less than −40 percent, even if we disregard the evidence for 1942 which is confined to the first quarter, to about +50 percent; those for nonfarm families, from about −40 percent, disregarding the erratic showing for 1929, to less than +30 percent. The difference is similar when we omit the lowest multiple, 0.25, at which the savings-income ratio may gyrate wildly because the base for the percentage calculation, the income itself, may be very small.

This difference is easily explained. The income of farm families is preponderantly from entrepreneurial activities; that of nonfarm families, from wages and salaries. Entrepreneurial income is probably subject to wider intra-group variations, for it can be zero or a deficit whereas wages and salaries can scarcely be less than a given minimum; and we can assume also that its temporal variations are larger than those in wages and salaries. Hence for a given year, entrepreneurs who happen to be at a low income position will tend to have a lower savings-income ratio than wage and

Table 51

Savings as Percentages of Income, Given Relative Levels of Income per Consuming Unit and per Capita, Farm and Nonfarm Families Various Samples, 1929-1942

Multiples of Arithmetic Mean Income per Family or per Capita	Brookings Data, 1929 *Assumption* 1 (1)	*Assumption* 2 (2)	Consumer Purchases Study 1935-36 (3)	Survey of Spending & Saving in Wartime *1941* (4)	*1942* *1st Qu.* (5)
			A PER FAMILY		
I FARM FAMILIES					
0.25	−46.4		−59.2	−43.3	−225.2
0.50	−14.3		−25.2	−9.2	−102.2
0.75	1.4		−5.8	−0.1	−3.4
1.00	8.0		2.0	11.4	11.3
1.50	23.4		14.9	21.5	19.1
2.00	32.6		24.3	29.2	40.0
3.00	44.4		36.7	44.1	52.6
4.00	52.8		45.3	53.5	57.5
5.00	60.1		50.4	63.0	62.4
II NONFARM FAMILIES					
0.25	−60.8	−60.7	−37.2	−11.0	−16.8
0.50	2.6	3.2	−6.4	−0.8	2.3
0.75	7.5	8.2	−0.7	2.8	7.6
1.00	10.5	11.3	2.8	4.3	10.9
1.50	14.0	15.4	8.6	10.4	16.0
2.00	16.6	19.1	13.3	13.5	19.0
3.00	22.8	27.2	19.5	19.6	25.2
4.00	29.2	33.6	24.3		
5.00	30.0	36.6			
7.00	29.2	38.3			
10.00	27.0	39.2	37.7		
			B PER CAPITA		
I FARM FAMILIES					
0.25	−49.1		−62.1	−45.3	−227.7
0.50	−15.0		−26.1	−11.4	−113.7
0.75	1.7		−5.5	−0.1	−4.2
1.00	9.0		2.8	15.4	12.9
1.50	24.4		15.7	21.3	20.7
2.00	34.1		25.3	25.0	39.7
3.00	45.2		37.7	46.2	50.9
4.00	54.9		45.9	55.4	56.7
5.00	61.9		50.6		61.4
II NONFARM FAMILIES					
0.25	−64.0	−64.0	−38.4	−12.7	−20.2
0.50	2.8	3.3	−6.4	−1.8	1.4
0.75	7.7	8.4	−0.7	2.8	7.5
1.00	11.2	12.0	2.8	4.9	11.6
1.50	15.1	16.8	9.3	11.6	17.5
2.00	17.3	20.3	14.6	16.0	22.1
3.00	24.3	28.6	21.0	24.7	
4.00	29.2	33.6	25.0		
5.00	30.1	36.7			
7.00	29.2	38.3			
10.00	27.0	39.2	38.2		

See notes to Table 48. In the Brookings distribution all capital gains and losses are assigned to nonfarm families and none to farm families. The savings-income ratios for the latter are therefore identical under Assumptions 1 and 2.

salary recipients at the same low position on the relative income scale; and those at a high income level will tend to have a higher savings-income ratio than employees at the same relative position. Their position on the relative income scale is less permanent than that of employees; they adjust their consumption to any given year's income less than employees or recipients of more stable types of income; consequently, there will be a much wider differential between their savings patterns at low and high relative income positions. Furthermore, since farm families receive on the average an appreciably smaller income than nonfarm, higher savings-income ratios, either negative or positive, are more likely, arithmetically, for the former.

b) The savings-income ratios for the multiples above 1.0 are consistently higher for farm than for nonfarm families. Since the average income of the former is smaller, the difference in positive savings-income ratios is even bigger when compared for equal levels of dollar income. One explanation may be that consumers' outlay at higher income levels can be expanded less readily on farms than in cities.[10] Another may inhere in the general characteristics of entrepreneurial income described under (a): that savings of entrepreneurial units when their income position is relatively high must compensate and provide for past or future years of either small savings or losses. Finally, the economic advancement of an entrepreneur depends much more upon an accumulation of savings than does that of a person whose main income is a wage or salary: the latter may well advance his economic position by expenditures on education and other things and not depend upon money savings alone. This factor would give entrepreneurs in general and farm families in particular a much stronger incentive to save.

c) The conclusions under (a) and (b) are sharpened when farm and nonfarm families are compared on a per capita instead of on a per family basis. A farm family consists of more persons than a nonfarm family and has a wider range in size. Hence any differences between farm and nonfarm families in savings-income ratios with respect to either their range or level are accentuated when differences in the number per family are taken into account.

d) At all income multiples the savings-income ratios of farm families vary greatly. Even if we omit the evidence for 1942 as too erratic, they decline from 1929 to 1935-36 and rise from 1935-36 to 1941. This is true also of the ratios for all families at the lower income multiples (Table 50) but their ratios at the higher ones, i.e., 2.0 and 3.0, have a much narrower

[10] See my comment in *Studies in Income and Wealth, Volume Ten,* pp. 304-5.

amplitude. In other words, the savings-income ratios for farm families vary more at the higher multiples than those for all families.

There is indication below that the savings-income ratios for farm families in 1935-36 may be overstated in Table 51. But it is quite plausible that farm families with their fixed business costs and relatively low levels of average income even at the higher end of the relative income scale are more sensitive to cyclical variations in income than nonfarm families. Moreover, it must be remembered that high income multiples for farm families are substantially reduced when translated into income multiples for all families: a multiple of 5.0 for farm families is roughly equivalent to a multiple of slightly over 3.0 for all families.

e) We come now to the most puzzling conclusion of Table 51 — the failure of savings-income ratios of farm families to show a much greater variability over time than those of nonfarm, particularly at the higher income levels. The range from 1929 (Assumption 2) to 1935-36 at the multiple 2.0, is 8.3 for farm families, 5.8 for nonfarm; at the multiple 3.0, 7.7 and 7.7 respectively; at the multiple 4.0, 7.5 and 9.3 respectively. In view of the much wider range in the ratios for farm families at any given point of time and the particularly severe impact of the depression of the 1930's on farm income, one would expect that, at least for this period, the range over time in the savings-income ratios for farm families at upper income levels would be much wider than those for nonfarm families.

The opposite showing in Table 51 calls for consideration of the average income levels and weights assigned to farm and nonfarm families in the successive years in the various samples. The average income of farm families is as follows: 1929, $1,232; 1935-36, $1,215; 1941, $1,696; 1942 (first quarter), $367. In our calculations we accepted these figures for farm family income given by the samples, and assigned the entire adjustment to the income of nonfarm families. Corresponding figures for nonfarm families, adjusted to the Department of Commerce series per nonfarm family, are: 1929, $2,932; 1935-36, $1,779; 1941, $2,875; 1942 (first quarter), $774.

Average income per farm family declines only slightly from 1929 to 1935-36, markedly from 1941 to 1942. This movement does not tally with that of other estimates of farm family income, and suggests that the samples overestimate it in 1935-36 and underestimate it in 1942. This leads us to discard the sample data for 1942, at least as far as farm families are concerned. But the 1935-36 data are important in our analysis and we must see how the possible overestimate of income per farm family affects our comparisons.

We estimated farmers' income to be $8.9 billion in 1929, $6.6 billion in

1935, and $7.3 billion in 1936. Corresponding estimates based on Department of Commerce series are $8.7, $7.1, and $6.3 billion respectively. Farm families were estimated to number 5.8 million in 1929 by the Brookings study; 6.77 million in 1935-36 by the Consumer Purchases Study. If their income declined by the proportions indicated by the figures just cited, average income per farm family in 1935-36 should be $828 instead of $1,215. This overestimate of farm family income means, *ipso facto,* an underestimate of nonfarm family income, which, on revision, becomes $1,894 per family instead of $1,779. While these adjustments are inevitably crude, they are called for if we are to bring the movement of income in the sample studies into rough agreement with the movement of the over-all income totals for farm and nonfarm population.[11]

Farm families were estimated in the samples to number 5.8, 6.77, and 6.11 million in 1929, 1935-36, and 1941 respectively. According to the Census, rural farm families of 2 or more numbered 6.3 million in 1930 and 6.7 million in 1940; farms, 6.3 million in 1930, 6.8 million in 1935, and 6.1 million in 1940 (*Statistical Abstract for 1944-45,* Table 46, p. 50, and Table 653, p. 597). Apparently the only possible error in the sample estimates is a minor understatement in 1929, and we therefore confine our experimental revisions to income per farm and nonfarm family in 1935-36.

What would be the effect of these revisions on the savings-income ratios in Table 51 and on the savings-income ratios for all families or all consuming units? The first question can be answered easily if only approximately. If the true average income per farm family is appreciably smaller in 1935-36 than that used in calculating Table 51, Part A, the multiples are not comparable with those for the other years: all are higher in terms of the true average and their revision would reduce the savings-income ratios for the standard multiples below those shown in Table 51. Likewise, if the true average income per nonfarm family in 1935-36 is larger than

[11] In other words, we must revise our original calculations in which we did not assign any part of the adjustment to the income of farm families. A similar rough check on the 1941 data shows that income per farm family may be somewhat too high. The aggregate income of the 6.1 million farm families estimated for 1941 (BLS *Bulletin 822,* p. 68) is $10.4 billion. Our estimate of income received by the total farm population, based on Department of Commerce data, is $10.3 billion. The possible discrepancy is within 10 percent; and considering the crudity of these comparisons, we thought adjustments were unwarranted.

In drastically reducing income per farm family for 1935-36 we do not mean to imply that the overestimate is so large. Full analysis and the establishment of the true level are beyond the scope of this report. Our purpose is merely to see how even such a drastic revision would affect our analysis of savings-income ratios.

Table 52

Illustrative Recalculation of Savings as Percentages of Income, Given Relative Levels of Income per Family: Consumer Purchases Study, 1935-1936

Multiples of Arithmetic Mean Income per Family	Farm Families		Nonfarm Families		All Families	
	Original (Table 51) (1)	*Revised* (2)	*Original (Table 51)* (3)	*Revised* (4)	*Original (Table 50)* (5)	*Revised* (6)
0.25	−59	−70	−37	−35	−40	−41
0.50	−25	−47	−6	−6	−8	−13
0.75	−6	−24	−1	0	−1	−1
1.00	2	−11	3	4	4	4
1.50	15	2	9	10	10	11
2.00	24	11	13	14	15	17
3.00	37	25	20	20	23	24
4.00	45	33	24	25	29	30
10.00			38	39	40	36

Column

2 Standard multiples were adjusted by 1.467, the ratio of 1,215 to 828 (see text); then the savings percentages (from Table 51) were reinterpolated for the standard multiples.

4 Standard multiples were adjusted by .939, the ratio of 1,779 to 1,894 (see text); then the savings percentages (from Table 51) were reinterpolated for the standard multiples.

6 Average income, $1,646, was derived by weighting income per farm family, $828, by 1, and income per nonfarm family, $1,894, by 3.3 (see text). Multiples of farm family income were adjusted by .503, the ratio of 828 to 1,646; and of nonfarm family income by 1.151, the ratio of 1,894 to 1,646. The savings percentages of each (col. 2 and 4) were then interpolated for the standard multiples and weighted by 1 and 3.3 respectively to yield the percentages savings are of income for all families. For the multiple 10, the savings percentage is for nonfarm families only, and is lower than the original in column 5 because the latter presumably includes some farm families.

that used in calculating Table 51, Part A, the multiples would be lower in terms of the true average; and their revision would raise the savings-income ratios for the standard multiples above those shown in Table 51. For illustrative purposes such an adjustment was carried through, using the new figures for income per family for 1935-36, i.e., $828 per farm family and $1,894 per nonfarm (Table 52, col. 2 and 4).

As expected, the revised savings-income ratios for farm families are lower than as originally calculated and those for nonfarm families higher. The revision more than confirms the greater variability in savings-income ratios for farm families even at high multiples, and changes the contrary evidence in Table 51.

But the second, more important, question concerns the effects on the savings-income ratios for all families and, by implication, for all consuming

units in 1935-36. The proper answer is contingent not only upon the revision of the income for all farm and all nonfarm families but also upon the distribution of the revised totals by income brackets. An elaborate apportionment is unwarranted in view of the margin of error attaching to the results. We made a simple adjustment, however, by weighting the multiples for farm and nonfarm families (adjusted to take account of the revision in the average income of farm and nonfarm families) by 1 and 3.3 respectively, representing roughly the relative weight of farm and nonfarm families given in the 1935-36 study. In assigning the same weights at each multiple position, we assume implicitly that the relative inequality in income distribution is the same among farm and nonfarm families. After converting each multiple underlying columns 2 and 4 to multiples for all families, we interpolated again to get the savings-income ratios for farm and nonfarm families separately at the standard multiple levels. Weighting these ratios by 1 and 3.3 respectively yielded the ratios for all families shown in column 6.

The revision alters materially the savings-income ratio at the multiple 0.50 but not at the other multiples. It thus leaves the major conclusions in Section 3a intact. This may at first seem surprising but it is traceable to the underlying figures: a decline in income per farm family from $1,232 to $828, or about 33 percent, from 1929 to 1935-36; and a decline per nonfarm family from $2,932 to $1,894, or over 35 percent. Even more important, farm families were estimated to number 5.8 million in 1929; nonfarm families, 21.7 million, or in the ratio of 1 to 3.7; the corresponding numbers for 1935-36 are 6.77 and 22.6 million respectively, or in the ratio of 1 to 3.3. Thus, according to the two samples, from 1929 to 1935-36 the income of farm families relative to that of nonfarm improved slightly; moreover, farm families increased in number relative to nonfarm. Consequently, the bolstering effect of the much higher savings-income ratios of farm families at the higher multiples was greater in 1935-36 than in 1929; and even though the ratios at the higher multiples for both farm and nonfarm families declined, the ratio for farm and nonfarm combined becomes almost constant or changes only slightly owing to the relative improvement in income and the relatively greater growth in the number of farm families.

This conclusion is important in two respects. First, it partly explains the stability of savings-income ratios at upper income multiples in Section 3a: as far as such stability is attributable to the absence of a substantial decline in the ratios in 1935-36 it is due, if we use unrevised data for 1935-36, to the possible overestimate of income per farm family, and if we use revised data, to a combination of shifts in income levels and weights between the

farm and nonfarm family groups that may be unusual. In any event, we must consider further to what extent the relative weight and levels of farm and nonfarm groups, or of any groups characterized by different savings-income ratios, accompany short term shifts in income associated with business cycles.

The second respect is perhaps more important. Total population, comprising groups whose savings patterns differ materially, can have stable savings-income ratios though the ratios of the groups change, and change in the same direction. In other words, the ratio for the total population is a complex of components whose savings responses to changing conditions differ, and whose weights in the total income structure, as gauged by their income per unit levels and relative number of units, may shift concurrently. In a sense, therefore, a full explanation of the stability or variability of savings-income ratios for groups at any income level is impossible without a thorough account of the components. The explanations attempted below are presented with cognizance of this limitation, and merely as preliminary hypotheses designed to open the field for more realistic analysis.

c) *Brookings Special Sample for 1928-32*

In connection with its study of income and economic progress, the Brookings Institution distributed in 1933 a questionnaire designed to obtain information on savings by families with incomes above $5,000 (though some recorded smaller incomes). Respondents were asked to report income including capital gains, expenditures, and savings for each year, 1928-32. Of the 1,500-1,600 questionnaires tabulated, somewhat over a quarter were from university professors and teachers outside universities, about three-tenths from professional and managerial groups, about a third from federal employees and persons in clerical-mechanical occupations, and only about a fourteenth from business plus a special group with high incomes (either business or managerial, with a sprinkling of professional). Through the courtesy of Clark Warburton, we were given access to unpublished tables summarizing this special sample which were prepared under his direction and for his use; the original questionnaires were not available.

The sample material is presented in some detail in Appendix 1, Tables 60-62 (see also *America's Capacity to Consume,* Brookings Institution, 1934, App. B, pp. 254-5). Income per sample unit declines much less from 1928-29 to 1932, somewhat over 20 percent, than countrywide income per unit, almost 50 percent. The chief reason for this relative stability is the fact that the data were collected in 1933 from persons who were then in occupations such as would be expected to yield incomes of $5,000 or more. Obviously, persons in the same occupations or of similiar economic

status in 1928 who had lost their jobs, or who had had serious misfortunes because of the depression, were automatically excluded. For the same reason the over-all savings-income ratio for the sample declines much less than that for the country. Finally, because the sample was confined to persons expected to have incomes of $5,000 or more, the average level of income per unit is way above that for the country – from over twice to almost four times as high (Table 61). In short, the sample is distinctly overweighted in favor of the higher income brackets and the more stable types of occupation.

For our purposes the sample has three other limitations: (a) capital gains are included, and we must adjust for losses, which are given separately in the summary tables; (b) the income information is by spending units, and we do not know their size (except in a few special high income cases); (c) the data are subject to the errors that are common to information collected by a mail questionnaire. Yet it seemed worth while to analyze the sample and observe what light it sheds on the movement of savings-income ratios at various income levels.

The summary tabulations classify the units first by their income for the given year (Table 60); then, those units that reported for each of the five years, are classified by their average income for the quinquennium (Table 62). The moderate reduction in the savings-income ratio for the sample as a whole – from 29.6 percent in 1928 to 24.0 in 1932 (Table 60) and from 28.4 to 23.7 percent (Table 62) – might be taken as further support of the relative stability of savings-income ratios at upper income levels (Sec. 3a and b). But this inference is severely limited by the occupational structure of the sample: it obviously is not an unbiased sample of upper income groups. Furthermore, as Table 61 shows, the income multiple position of the sample as a whole rises steadily from 1928 to 1932, so that for a constant income multiple position, the savings-income ratio might decline more than that for the entire sample. We must, therefore, study the data for the various income classes.

We first analyze the sample as classified by current year income, treating it as we did the other samples – expressing the per unit income of each income class as a multiple of countrywide income per unit, then interpolating the savings-income ratios for such standard multiples as are within the range of the sample (Table 53, Part A). The one important difference is that here both the sample and the countrywide income include capital gains and losses.

The upper multiples, say, 4.0 and 10.0, are probably the only ones significantly affected by the inclusion of capital gains and losses: even in the depression years, reported losses do not greatly affect the lower income

Table 53

Summary of Analysis of Brookings Special Sample, 1928-1932

A SAVINGS AS PERCENTAGES OF INCOME, GIVEN RELATIVE LEVELS OF INCOME PER UNIT

SAMPLE CLASSIFIED BY CURRENT YEAR INCOME

Multiples of Arithmetic Mean Income per Unit	*1928*	*1929*	*1930*	*1931*	*1932*
0.50	0.9	−1.6	−18.8	−9.7	−17.2
0.75	14.7	13.0	4.2	2.3	−9.5
1.00	16.7	16.5	14.0	14.2	−1.7
1.50	21.6	19.9	19.1	16.3	10.8
2.00	23.8	22.1	21.8	21.1	17.0
3.00	25.3	28.0	24.6	23.1	22.1
4.00	31.1	32.2	24.4	24.2	22.3
10.00	39.7	38.3	34.5	34.1	31.3

B PROPORTION OF ABSOLUTE CHANGE IN SAVINGS PERCENTAGE TO PERCENTAGE CHANGE IN INCOME (LIMITED TO INCOME CHANGE OF 5% OR MORE)

SAMPLE CLASSIFIED BY AVERAGE INCOME FOR 1928-32

Income Classes (ranked upward)	Year to Year Change		Change from 1928, 1929, or 1930 to 1932
	Number	*Av. Proportion*	*Av. Proportion*
I	1	0.56	0.50
II	1	0.24	0.53
III	1	*	0.21
IV	1	0.15	0.23
V	1	0.36	*
VI	1	0.09	..
VII	1	0.11	*
VIII	1	0.09	0.09
IX	1	0.02	*
X	1	0.10	0.19
XI	2	0.44	0.27
XII	3	0.30	0.34
XIII	2	0.13	0.11
XIV	3	0.20	0.31

* Sign of change in income differs from that of change in savings percentage.

PART A

Arithmetic interpolation between multiples for the income groups in Table 61.

PART B

Calculated from Table 62 by the procedure described in the text. For income classes covered, see Table 60.

brackets (see Tables 60 and 62). The movement of the savings-income ratios at income multiples below 4.0 confirms our conclusion that the ratios at lower income multiples fluctuate more widely than those at the higher multiples. For example, at the multiples 0.50, 0.75, and 1.0 the range is 20, 24, and 18 percentage points respectively; at the multiples 2.0 and 3.0, it is 7 and 6 percentage points respectively.

The variations in the ratio become again somewhat wider for the multiples 4.0 and 10.0: 10 and 8 percentage points respectively. Even so, they are narrower in range than the variations for the multiples 1.0 and lower. Furthermore, the exclusion of capital gains and losses would presumably reduce the savings-income ratios in the prosperous years, 1928 and 1929, and increase them in the depression years, 1930-32. It would affect also the multiple positions in the successive years and hence the movement of the savings-income ratios. Its effect on the latter cannot be estimated but is unlikely to be marked. Part A of Table 53 can be taken as confirming, on the whole, the stability of savings-income ratios at upper income levels and their variability at lower levels.

Part B summarizes the results of our attempt to analyze the Brookings special sample as a body of identical returns classified by their average income position for 1928-32. Here we are not interested in converting to multiples in terms of current year countrywide income since the results would be roughly the same as those in Part A.[12] Instead, for each of the 14 income classes we found the changes from year to year and from 1928, 1929, or 1930 to 1932 that represented an increase or decline of 5 percent or more in per unit income (smaller changes were ignored since their effect on the savings-income ratios was not likely to be significant). For each percentage change in income per unit we measured the absolute change in the savings-income ratio. In all except four cases the association was positive – when income increased, the ratio rose; when income decreased, it fell.[13] But our interest was mainly in the relation of the change in the ratio associated with a percentage change in income at different levels. We therefore calculated for each change the proportion of the absolute change in the ratio to the percentage change in income; and for income levels for which more than one such proportion was found, took a geometric mean of the proportions.

Since there were few instances in which the percentage change in income was sizeable the results are somewhat limited in significance. However, in the very low income classes, I and II, the proportions are fairly high; they tend to be quite low in the intermediate classes; and rise in the upper classes, although they never reach the level of the proportions in Class I in columns 2 and 3, or that in Class II in column 3.

It is clear that at the lower income levels a given percentage change in

[12] Of the 1,587 questionnaires, only 59 did not cover all the years.

[13] Of the 20 significant year to year changes in income, only 3 were positive; and of the 13 changes from 1928, 1929, or 1930 to 1932, only 1 was positive. The sample is, therefore, preponderantly one in which declines in income cause declines in savings-income ratios.

income is associated with a much larger absolute change in the savings-income ratio than is the same or a similar percentage change in income at the intermediate or upper levels; and there is some evidence that savings-income ratios at the upper income levels are more sensitive to percentage changes in income than those at the intermediate; but how much is due to the effect of including capital gains and losses can be only conjectured. Part B of Table 53 thus more or less confirms Part A, though only as to the variability of the savings-income ratios at very low income levels.

Finally, the savings-income ratios at upper levels are more variable when the levels are based on average income for a longer period than when based on current year income. In the classification by average income we deal with a continuous identical body of units in the upper and lower brackets, which removes the effects of mobility. Mobility may well have a more stabilizing (or less disturbing) effect on the savings-income ratios of upper than of lower income groups (Sec. 4), and may explain why savings-income ratios at upper levels appear more stable in Part A than in B. However, the difference is too small to be considered of much importance.

4 *Factors Making for Stability of Savings-Income Ratios at Upper Income Levels*

The empirical analysis in Section 3, bearing upon the relative variability of savings-income ratios at upper and lower income levels, is subject to numerous qualifications. We mention the most important before attempting to indicate the factors that may explain them.

First, the sample data yield general levels of savings-income ratios that are far higher than those obtained by other methods used by the author and recently by the Department of Commerce which involve comparisons of income and expenditures. True, deriving savings by such comparisons may cause large errors. Yet even allowing for such lack of reliability in year to year estimates, it is a matter of concern that the average savings-income ratios from the sample studies are almost uniformly so much higher than those derived by the residual method. Some of the difference may be due to the inclusion of certain depreciation and expense items (e.g., depreciation on owner-occupied houses, and brokers' fees) in the sample estimates of savings; some to an underestimate of expenditures compared with income. On the other hand, the shortages in estimates of countrywide income may be larger than those in consumer expenditures, and the residual method may well yield a smaller total for savings, and hence a lower level of the savings-income ratio than the true one.

Since the first qualification affects only the average level of savings-income ratios it is not likely to affect the analysis of their short term changes.

The second qualification is more important: the sample data are confined largely to cyclical expansions, and shed little light on movements of savings-income ratios during contractions. Yet the Brookings special sample covering the 1930-32 depression suggests the same conclusion; and for the years covered by the different samples, the over-all ratio varies considerably. In the sample data (Assumption 2 for 1929), savings constituted 17 percent of income in 1929, 10 in 1935-36, 9 in 1941, 12 in 1942, 15 in 1945, 12 in 1946, 9 in 1947, 7 in 1948, 5 in 1949, and 8 in 1950. The unadjusted savings-income ratios thus ranged from 5 percent to over three times that; and it is against this background that the relative stability of savings-income ratios at upper income levels must be considered.

The third qualification lies in the errors that can be attributed to the sample data, particularly the few cases covered at the upper income levels. Few samples reach the upper tail of the size distribution; most stop below the income multiple levels associated with the top 5 percent group in our analysis in Chapters 1-5. And a special case of uncertainty created by the character of the sample is the difficulty of choosing between Assumptions 1 and 2 in our treatment of the 1929 data.

Yet all these qualifications do not undermine the main conclusion from the sample data: the smaller relative variability of savings-income ratios at upper than at lower income levels. Furthermore, they strongly suggest smaller absolute variability at upper levels, say, top 5 to 10 percent.

Dorothy Brady and Rose Friedman came to a similar conclusion concerning absolute variability, though for urban families alone, in Savings and the Income Distribution, *Studies in Income and Wealth, Volume Ten* (p. 261). Their Chart 4 shows the percentages savings are of income for urban families classified by the ratio of their income to average income, i.e., by our multiples. For the multiple 2.0 the ratios in 1917-19, 1935-36, and 1941 are almost identical; and in 1935-36 and 1941 the ratios for the multiples from 2.0 to above 3.0 are very similar; they diverge much more at multiples below 2.0. However, the ratios for their 1901 sample are much higher at multiple 2.0 and above. Evidently stability of savings-income ratios at high income levels characterized the 1920's and 1930's but not the beginning of the century. Still, as far as one can tell, the average income levels in the successive years have not been tested for comparability, i.e., Chart 4 is based on unadjusted multiples and adjustments might modify the results.

The importance of the narrower absolute variability of savings-income ratios at upper than at lower income levels, and the qualifications that necessarily attach to the empirical analysis in Section 3, warrant some

further exploration. We therefore consider the factors that might make for greater absolute stability of savings-income ratios at upper income levels.

a) The first factor is purely technical. It can be presented in a simple illustration, then generalized in an equally simple mathematical expression. Assume that in a given year real income is 400, that each of four income classes has a total income of 100, and that the savings-income ratios for these classes are 40, 20, 0, and −20 percent respectively. These income classes with vastly different income levels per capita would spend 60, 80, 100, and 120 percent respectively of their base-year income. Assume that real income rises 20 percent, so that total income the next year is 480; and that each income class continues to spend exactly what it spent the preceding year. What happens to their savings-income ratios provided their real incomes also rise 20 percent, i.e., that their relative shares in total income remain the same?

In the top class income increases from 100 to 120, and since expenditures remain the same, savings increase from 40 to 60. The savings-income ratio rises from 40 to 50 percent (60/120). The income of the second class increases from 100 to 120, expenditures remain at 80, savings increase from 20 to 40, and the savings-income ratio rises from 20 to 33 percent (40/120). The income of the third class increases from 100 to 120, expenditures remain at 100, savings increase from 0 to 20, and the savings-income ratio rises from 0 to 17 percent (20/120). Finally, in the bottom class income increases from 100 to 120, expenditures remain at 120, savings increase from −20 to 0, and the savings-income ratio rises from −20 to 0 percent. The point of the illustration is that with an equal relative increase in income and stable expenditures the savings-income ratio rises 10 percentage points in the top income class, 13 in the second, 17 in the third, and 20 in the bottom.

The results would be similar, in fact somewhat accentuated, if we assumed a 20 percent decline in real income while retaining all the other assumptions: the savings-income ratios would decline least in the top income class and most in the bottom. Likewise, if instead of assuming inflexible expenditures in real terms, i.e., complete lack of response to changes in real income, we assumed partial response, so that at each income level consumption would rise or decline but relatively less than income, the absolute change in the savings-income ratio would still be least in the top income class and most in the bottom.

This conclusion can be generalized by introducing four equations. Let i be income; e expenditures; s savings; k proportional change in income; ak proportional change in expenditures, a ranging from 0 to 1; R the

savings-income ratio. A plus sign as subscript indicates the item in the year following the base year. Then:

$$R = \frac{s}{i} = \frac{i-e}{i} \tag{1}$$

$$R_+ = \frac{s_+}{i_+} = \frac{i\,(1+k) - e\,(1+ak)}{i\,(1+k)} = \frac{i + ik - e - ake}{i\,(1+k)} \tag{2}$$

$$R_+ - R = \frac{i + ik - e - ake}{i\,(1+k)} - \frac{i-e}{i}$$

$$= \frac{ek - ake}{i\,(1+k)} = \frac{ek\,(1-a)}{i\,(1+k)} \tag{3}$$

But from (1): $e = i\,(1-R)$. Hence, we get in (3):

$$R_+ - R = \frac{i\,(1-R)\,k\,(1-a)}{i\,(1+k)} = \frac{k\,(1-a)}{1+k}\,(1-R) \tag{4}$$

If k and a are the same at all income levels, it follows that:
(i) As R grows progressively smaller from the upper to the lower brackets, the absolute change in the savings-income ratio $(R_+ - R)$ grows larger.
(ii) Given the value of k, the change in the savings-income ratio will be smaller the larger a is and vice versa; it will be at a maximum when $a = 0$.
(iii) Given the value of a, the change in the savings-income ratio will vary with the value of k; but $k/(1+k)$ will be weighted for each income bracket by the factor $(1-a)(1-R)$.

If a is less than 1 and is identical from income bracket to income bracket, the same proportional change in income will produce a smaller absolute change in the savings-income ratios at upper than at lower brackets. By definition, equal multiples of average income in two or more years represent a percentage change in income equal to the percentage change in total income. Hence k by definition is equal at the same multiples. What remains to be explored is whether a tends, in the short run, to differ between the high and low income multiples; and whether such differences reenforce or offset the conclusions from equation (4).[14]

[14] Our analysis can be restated in terms of average and marginal propensity to save (spend). R and R_+ are the average propensities to save, i.e., s/i and s_+/i_+, where s and i are savings and income for the respective years. Marginal propensity to save (and spend) is defined as d_s/d_i (and d_e/d_i), where d_s is the change in savings, d_e the change in expenditures, and d_i the change in income.

a in the text equation is the relative marginal propensity to spend and equals (d_e/R): $(d_i/i) = (d_e/d_i) \cdot (i/R)$. The absolute marginal propensity to save (spend) equals the product of the relative marginal propensity and the savings- (spendings-) income ratio in the initial year of the period.

b) The general hypothesis here is that a, i.e., the ratio of the relative change in expenditures to that in total income, is likely to vary more at upper multiples than at lower. In other words, the expenditures of upper income classes are more sensitive to fluctuations in income than those of lower, making for short term stability of the savings-income ratios at upper brackets and short term variability at lower.

This hypothesis is most plausible if we first deal with a period during which real income declines. Expenditures at lower income levels can be curtailed only with difficulty for the simple reason that most consumer goods purchased are in the nature of necessities and contraction encounters serious, almost physiological, obstacles. Since expenditures of consumers at low income levels are chiefly on food, shelter, and clothing, a sizeable reduction may be inimical to health. Expenditures at upper income levels, on the contrary, are much more heavily weighted by luxuries and semi-

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The conclusions from equation (4) can, therefore, be expressed as follows. If the average propensity to save changes during the period because the marginal propensity differs from the average in the initial year, the change is inversely related to the level of the average propensity to save in the initial year provided the relative marginal propensity to spend is the same for all income classes.

Equation (4) parallels those of Franco Modigliani (*Studies in Income and Wealth, Volume Eleven*, NBER, 1949) and James Duesenberry (*Income, Employment and Public Policy, Essays in Honor of Alvin H. Hansen*, Norton, 1948, pp. 54-82). Both authors express the over-all savings-income ratio by an equation in which there is a constant term and a term moving with the ratio of the given year income to the preceding cyclical peak income. When R is defined as the savings-income ratio during the preceding cyclical peak year, and a, the proportion associated with the latter, both become constants; and R_+ may be defined as the savings-income ratio for any subsequent year. On this interpretation, k becomes the proportional change in income from the preceding cyclical peak income; and equation (4) can be rewritten as

$$\frac{R_+}{1-R} = \frac{R}{1+R} + (1-a)\frac{k}{1+k}$$

Since R and a are constants, the changing R_+ is a function of a constant term $\left(\frac{R}{1+R}\right)$ and a term moving with k, the ratio of the given year income to the preceding cyclical peak income.

However, we need not define R and a as ratios associated with the preceding cyclical peak or k as relating to changes in income from the preceding cyclical peak. They may well refer to the preceding year or to secular levels (of the savings-income ratio or the propensity to consume). The role to be assigned to R, a, and k remains to be explored in the light of what yields the most efficient account of empirically observed short term changes in R_+. What is particularly important here is that a need not be the same for all income groups; and the short term variations in R_+, the latter conceived as the over-all savings-income ratio, are much more complex than Modigliani and Duesenberry assume.

luxuries, and contraction, while still painful because of the desire to maintain class standards, is easier. One can, therefore, infer that when real income per capita declines, expenditures will be curtailed proportionately less at lower than at upper income levels; in other words, that a will be higher at lower levels. Clearly, this difference in the response of expenditures to contraction will be wider the larger the relative contraction in real income per capita. If the decline is just 1 or 2 percent, a may well be the same through the range of income multiples; if the decline is 20 percent, the difference in the response of expenditures at the various income levels is likely to be much wider.

If this relative inflexibility of expenditures at lower income levels and greater flexibility at upper levels is accepted as characterizing short term declines in per capita income, consequences follow for short term increases. Offhand, one would surmise that when per capita income increases, expenditures would tend to increase proportionately more among lower income groups than among upper: the former live closer to the margin of subsistence and have a much bigger unsatisfied potential. But in the continuous succession of short term cyclical changes increases in real income succeed decreases. During declines the lower income groups tend to dissave, either reducing their savings reserves, always relatively inadequate, to dangerously low levels or piling up a large net indebtedness. Hence, when recovery comes and income increases, any tendency to spend more is checked by the need to repay debts and by the desire to rebuild a safe reserve. Thus, the relative inelasticity of expenditures at low income levels during short term declines in income carries over into periods of increases in income, damping the responsiveness of current expenditures to a current increase in real income.[15]

[15] If income per capita continues to increase for some time the effects of the preceding contraction are likely to diminish, perhaps vanish. At the end or in the later phases of a long cyclical expansion accompanied by a substantial increase in real income per capita, expenditures at the lower incomes multiples may become fully responsive to an increase in income, giving a a value not much lower than at the upper multiples.

Another complicating factor is the effect of consumer credit. If consumer credit is of major importance in budgets at the lower multiples, the net addition to it during cyclical expansions enhances the responsiveness of expenditures to increases in income; likewise, the net contraction of consumer credit during cyclical declines enhances the sensitivity of expenditures to declines in income. However, it may well be that consumer credit is more important at the intermediate than at the very low income levels. If so, its cyclical responsiveness would tend to make the a values for the intermediate income groups higher than for the low groups, and bring them closer to those for the upper groups to whom consumer credit may be of little moment.

Another reason for the greater sensitivity of expenditures at upper income levels is that holdings of assets are heavily concentrated there, and fluctuations in their value, even if not realized in the form of capital gains or losses, are keenly felt. Increases in their value during cyclical expansions, i.e., during short term increases in real income per capita, are likely to induce upper income groups to spend more. The impression of larger investment reserves and optimism concerning their adequacy in the future takes on the opposite hue during cyclical contractions, when the value of assets declines. Thus in expansions, upper income groups may spend more than they would were they not misled by the illusion of the rising value of assets; and in contractions, they may cut expenditures more than they would if declining property values did not cause them to worry about the future. These illusions affect the lower income groups too, but less, since a larger proportion of their incomes are wages and salaries, which do not fluctuate as violently as do assets. They operate regardless whether gains and losses are realized by sales of assets.

c) The discussion so far has dealt with income groups as if their composition remained the same, i.e., we have disregarded inter-class movements of the type studied in Chapter 4. During short periods such movements are limited and a given income class contains a large proportion of the same units in successive years. But some shifts do occur, and their effects on the behavior of savings-income ratios for upper and for lower income groups must be explored. Lack of data makes the exploration largely a matter of conjecture.

In this hypothetical analysis we must consider not merely income multiples, i.e., points on the income scale, but classes, since only for the latter can groups of units be observed and movements studied. We deal then with income classes as represented by income multiples, and distinguish between an income unit whose real income does not change during a given interval (designated R for 'resident'), and one whose real income rises or declines (a 'migrant up' is designated Mu, a 'migrant down', Md). The distinction between an R and an M is the constancy or change in its amount of income, not its income rank.

The systematic changes during business cycles can easily be postulated. During expansions and contractions there are R's, Mu's, and Md's, but there are more M's when levels of activity change materially; and Mu's outnumber Md's during expansions, whereas the reverse is true during contractions. In this continual movement of Md's and Mu's do the effects upon the savings-income ratios for upper and for lower income groups differ?

In an income group characterized by a given income multiple there are

R's, Mu's, and Md's. At a given income level the Mu's are likely to have a higher, and the Md's a lower, savings-income ratio than the R's. The spread between the ratios of R's and M's will depend upon the relative level of income. But for the present we may ignore this point.

The first obvious difference is that between extreme and intermediate income classes. In the lowest income class, classified by current income, there can be R's and Md's but few Mu's; in the intermediate classes there can be both Mu's and Md's, with an income balance of the two more possible the nearer the class is to the center of the distribution; and in the very top class there can be R's and Mu's but few Md's. On the average and disregarding short term fluctuations, the extreme income classes and those near them will have a preponderance of either Md's or Mu's; hence their savings-income ratios are likely to be lowered and raised more by inter-class migration, i.e., by the effect of the M's.

These statements, bearing upon the average effects of migration on the savings-income ratios for the extreme and intermediate income classes respectively, explain why, on the average, the ratios for the extreme income classes are so conspicuously low or high compared with those for the intermediate classes. In thinking of what this means in terms of temporal change, one is likely to conclude that during short term cyclical changes, variations in the income displacement attributable to the Mu's and Md's are likely to be larger for the extreme income classes than for the intermediate.[16]

But whether income displacement is greater or less for upper than for lower income groups, its effect on savings-income ratios is likely to be less at the upper levels. As noted in Section 3, the function associating savings-income ratios with income multiples looks like an hyperbola, rising rapidly (almost vertically) in the change from the very low multiples to the intermediate ones and flattening out as we reach the high multiples. And since beyond the multiple 5.0 or so, the savings-income ratios barely rise, a similar shape would be preserved were we to use logarithms of multiples on the X scale — in the sense that the curve would still flatten beyond a certain high multiple level. Hence, when an income unit moves

[16] This conjecture, as far as it refers to absolute income displacement, is not confirmed by the Wisconsin sample of identical returns for 1929-35. But this sample does show that displacement measured relatively to the income level of a given class declines in amplitude as we pass from the lower to the upper income brackets — another factor accounting for the stability of savings-income ratios at upper levels. In view of the limited value of the Wisconsin data, which do not reach far down the income distribution, it did not seem worth while to present the results or to attribute much significance to them.

into a higher or lower class within the income range well below the top, a given change in its income causes a large change in the savings-income ratio; when a similar movement occurs at the high income levels, a given change, whether absolute or relative, in its income does not greatly affect the ratio. True, the function just described is derived for income classes affected by migration, and hence may be due partly to differences in the relative income displacement associated with income level. But it may be surmised that could we study resident units alone, the slope of the low and the high segments of the income distribution would still differ. This means that, in addition to differences between the low and high income classes in the amplitude of short term changes in relative income migration, differences in the impact of income displacement also minimize the short term changes in the savings-income ratios for upper groups.

Finally, shifts associated with specific types of income may produce differentials in short term changes in savings-income ratios at different points on the income scale. As observed in Section 3b, the spread of the savings-income ratios for farm families was wider than for nonfarm families for the same range of income multiples; and at the higher multiples, where savings were positive, the ratios were consistently and appreciably higher for farm families. The factors explaining these differences between farm and nonfarm families may apply, in large part, also to a comparison between units depending upon entrepreneurial income and those depending mainly upon other, cyclically more stable, types of income.

The per unit income of entrepreneurial groups, whether farm or nonfarm, may rise during cyclical expansions and decline during contractions more than the per unit income of other groups. But for these entrepreneurial groups savings-income ratios may be higher at the same levels of income, once we pass the minimum level that yields positive savings; and the relative weight of entrepreneurs, particularly farm entrepreneurs, in the population, may increase during substantial cyclical contractions and diminish during substantial expansions. The latter shift may raise savings-income ratios at upper income levels during contractions and depress them during expansions although the ratios of the entrepreneurial groups proper, and of other groups, decline during contractions and rise during expansions. Elements of stability would thereby be introduced into the ratios at such multiples as can be influenced by the relative number and savings patterns of the entrepreneurial groups. This would presumably not affect the very top income brackets, where incomes of entrepreneurs, especially of farm and similar small scale individual business men, play a minor role. Yet it may affect the savings-income ratios at the multiples from, say, 2.0 to 4.0, as in the analysis in Sections 3a and b.

5 *Summary and Implications*

As far as upper income groups can be characterized by their average income levels, they are at high multiples; consequently if their relative income position were constant during business cycles, their savings-income ratios would fluctuate with a much narrower relative amplitude than those of lower groups. Furthermore, the greater relative stability of their savings-income ratios is reenforced by the counter movement of their income multiple position to business activity, except for the irregular behavior of the share of the top 1 percent. The movement in the ratios for upper income groups is a product of two sets of opposite changes: the countercyclical movement of their income shares (multiple positions) and the movement of the ratios at given upper income multiples with business cycles. We cannot tell with any assurance what the net effect of these opposite movements is in setting the cyclical pattern of changes in the savings-income ratios of upper groups: in most pronounced cyclical shifts the positive pattern of the ratios for a given multiple position probably outweighs the inverted pattern of shifts in income shares, i.e., in income multiple position, making the ratios for upper groups move with business cycles.

Even so, the savings of upper income groups must vary less cyclically than those of lower groups – for two reasons: (a) the inverted movement of upper group shares in total income tends to offset the positively conforming movement of savings-income ratios for given income multiples, whereas for lower income groups both the shares of total income received and the ratios move with business cycles; (b) the savings-income ratios vary less for upper multiples than for lower, and the difference in the relative variation must be quite large.[17]

As far as the savings of upper income groups, expressed as percentages

[17] Of all the evidence examined so far only one item for recent years qualifies the generalization that savings-income ratios for upper income groups change less absolutely than those for lower groups (both groups taken widely). George Katona of the University of Michigan Survey Research Center kindly provided a break at the upper 5 percent line for the samples for 1946-48 (Surveys of Consumer Finances). The ratio for the top 5 percent group declined from 26 percent in 1946 to 21 percent in 1947 and to 17 percent in 1948, 9 points. The corresponding ratio for the lower 95 percent declined from 8 percent in 1946 to 5 in 1947 and to 4 in 1948, only 4 points. We do not know how far this larger absolute, but not relative, decline in the ratio for the top group depends upon the exceptional conditions in 1946-48 or upon peculiarities of the sample. However, the sample data still support our basic conclusion that when the over-all savings-income ratio declines, the share of upper groups in savings increases. Thus while the over-all ratio in the sample declined from about 12 to about 7 percent, the share of the top 5 percent group in total savings increased from 50 to 58 percent.

of individuals' total income receipts, are stable or vary little, whereas the savings of lower groups vary markedly with business cycles, two further conclusions follow. First, the marked fluctuations in the over-all savings-income ratio for individuals and its conformity to business activity must be due largely to variations in the ratios for lower income groups; they can be attributed only in small part to variations in either the income shares or the ratios for upper groups. Second, the shares of upper and lower income groups in individuals' total savings must change significantly during business cycles: as total savings and their ratio to total income rise during expansions, the percentage shares of upper groups must decrease; as total savings and their ratio to income decline during contractions, they must increase. In years of cyclically high savings by individuals, upper income groups must contribute proportionately less, and in years of low savings, more; lower income groups must do the opposite.

These conclusions are subject to several qualifications. The sample data we had to use were scanty, particularly in their coverage of the top income group and of cyclical contractions; and our adjustments were unavoidably crude. Furthermore, our analysis covers a period so short that we can merely surmise, not generalize. Yet one aspect of our conclusions is worthy of emphasis. If the average level of the savings-income ratio for upper groups (say, top 5 or 10 percent) is 25 or 30 percent, and that for lower groups 5 percent or less, the relative variability of the former can hardly be as wide as that of the latter. Consequently, the greater relative variability of savings-income ratios for the latter is so highly probable as to be almost in the nature of an algebraic necessity. If this is granted, the inference concerning the counter-cyclical movement of upper group shares in total savings must follow.

By way of final illustration we present Table 54, which in a sense restates data used in Section 3, but brings out more distinctly the association between changes in the over-all savings-income ratio and in the share of individuals' total savings accounted for by upper income groups. For the two samples that cover more than a year and for which changes in savings-income ratios and in the shares of both income and savings can therefore be studied without adjustment for comparability, we assembled measures of over-all savings-income ratios and of shares of the upper one-tenth and lower nine-tenths in savings and income. All these were taken from the sample distributions, with only minor adjustments. The groups are classified by income per consuming or spending unit.

Whenever the over-all savings-income ratio rises from one year to the next, the percentage share of upper income groups in individuals' total savings declines; and whenever it declines, their share rises. The consistent

Table 54

Shares of the Top Income Group in Total Savings in Periods of Change in the Over-all Savings-Income Ratio: Two Samples

		OVER-ALL SAVINGS-INCOME RATIO FOR SAMPLE	TOP TENTH OF UNITS			LOWER NINE-TENTHS OF UNITS		
			Share in		Savings-Income Ratio	Share in		Savings-Income Ratio
			Savings	*Income*		*Savings*	*Income*	
		(percent)						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
	SURVEY OF SPENDING AND SAVING IN WARTIME							
	Farm							
1	1941	13.8	56.0	23.4	33.1	44.0	76.6	8.0
2	1942, 1st Qu.	−10.2	*	33.7	47.3	*	66.3	−39.3
	Rural Nonfarm							
3	1941	5.8	68.6	23.2	17.1	31.4	76.8	2.4
4	1942, 1st Qu.	11.2	47.9	24.0	22.4	52.1	76.0	7.7
	Urban							
5	1941	9.0	78.4	31.6	22.4	21.6	68.4	2.9
6	1942, 1st Qu.	13.9	68.3	31.5	30.1	31.7	68.5	6.4
	SURVEY OF CONSUMER FINANCES							
7	1945	15	46	29	23.8	54	71	11.4
8	1946	12	63	32	23.6	37	68	6.5
9	1947	9	77	33	21.0	23	67	3.1
10	1948	7	78	31	17.6	22	69	2.2
11	1949	5	105	30	17.5	−5	70	−0.4
12	1950	8	73	29	20.1	27	71	3.0

* Not shown because of difference in signs: for column 2 there are positive savings 156.9 percent as large as the negative total; for column 5, there are negative savings 256.9 percent as large as the negative total.

Line

1-4 Calculated from Rural Family Spending and Saving in Wartime (Department of Agriculture, *Miscellaneous Publication 520*, Table 5, p. 26). Income classes for which data are not given (a few families with negative incomes and with incomes of $5,000 or over) are omitted.

5, 6 Calculated from Family Spending and Saving in Wartime (BLS *Bulletin 822*), pp. 33, 34, 94, 102, and 103.

7-12 Col. 1: 1945 and 1946 supplied by the University of Michigan Survey Research Center; 1947 and 1948 from *Federal Reserve Bulletin*, January 1950, p. 24; 1949 and 1950 from *ibid.*, September 1951, Table 13, p. 1072.

Col. 2 & 5: *Federal Reserve Bulletin*, August 1949, Table 9, p. 923, January 1950, Table 10, p. 23, and September 1951, Table 8, p. 1067.

Col. 3 & 6: *Ibid.*, June 1948, Table 4, p. 653, July 1949, Table 7, p. 786, and September 1951, Table 8, p. 1067.

Col. 4: the product of columns 1 and 2 divided by column 3.

Col. 7: the product of columns 1 and 5 divided by column 6.

negative association between changes in the over-all ratio and in the proportion of total savings contributed by upper income groups is due to a negative association between changes in the income share of upper groups and in the over-all ratio, and a consistently narrower relative, and often absolute, change in the savings-income ratio of the upper than in that of the lower income groups.

The significance of Table 54 is limited by the smallness of the samples and especially by the presence of war years in the period covered. Nevertheless, it is further evidence that short term variations in the percentage shares of upper income groups in individuals' total savings are large and run counter to variations in the over-all savings-income ratio, hence counter to business cycles.

Further implications of this conclusion cannot be pursued here. However, they seem, at least at first glance, to be far reaching. The savings of upper and of lower income groups tend to flow into different kinds of investment. Upper groups dominate in receipts of dividends and dividends constitute a large proportion of their property incomes. Their savings may, therefore, flow into dividend-bearing assets to a much greater extent than those of lower groups. Of the property incomes of lower groups, on the contrary, dividends constitute a small proportion; and one would surmise that their savings go largely into interest-bearing assets or into equities in small business units. Similar evidence concerning differences in the composition of assets held by upper and lower income groups is provided by the 1949 Survey of Consumer Finances (*Federal Reserve Bulletin,* Aug. and Sept. 1949). Cyclical shifts in upper group shares in total savings may alter the proportion of individuals' savings available for different types of investment, and an analysis of the relation between the new supply of savings and of investment opportunities during business cycles must take account of cyclical shifts in savings coming from upper and from lower income groups.

There are similar consequences in the distribution of consumption expenditures between those by upper and by lower income groups. The counter-cyclical movement of income shares and the lesser variability in savings-income ratios for upper groups mean that a decreasing share of income in expansions is offset by only a moderate rise in the ratio, whereas for the lower groups an increasing share of income may be offset by a sharp rise in the ratio. The proportion of upper group expenditures in total consumer expenditures may rise during expansions, or at least through a substantial part of them, and decline during contractions. But in the case of consumer expenditures, the counter-cyclical movement of the income shares of upper groups makes for a similar movement in the proportion

of upper group expenditures in total expenditures, whereas the movement of the savings-income ratio makes for cyclical conformity in that proportion. Thus, while the proportion of upper group savings moves counter to business cycles because of both the counter movement of income shares and the narrower amplitude of changes in the savings-income ratio, the proportion of upper group expenditures is subject to conflicting pressures – one, the movement of income shares, making for a counter-cycle pattern, the other, the narrower amplitude of changes in the savings-income ratio, making for a movement with business cycles. Because the effects may be offsetting, and also because the average shares of the upper groups in total expenditures are much smaller than those in total savings, the cyclical changes in the former may be quite small; and it is not clear whether they would run counter to or with business cycles.