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## CHANGES IN THE DISTRIBUTION OF INCOME

We have been speaking of the influence of changes in aggregate income of American consumers on their shoe purchasing, but it might make a considerable difference in this context if account were taken of *which* American consumers underwent a given change in income – whether rich or poor, farmers or city folk, white collar or factory workers.

*Income Size Distribution*

The importance of change in size distribution of income in explaining changes in shoe buying depends on the difference at any one time in the extent to which change in income affects the shoe buying of families with incomes at various levels, and the extent to which income size distribution actually did change over the period under review.

The 1935-1936 income and expenditure studies give the amount spent on shoes for families, though not for single individuals. The figures are shown by income level in Table 2. The proportion of income spent on shoes declines as income rises, as would necessarily follow from the fact that families having no income would still, on the average, buy shoes. But columns 7 and 8 show that the declining percentage is due to the curvature as well as the level of the regression of shoe buying on income. This means that shifts in distribution of an unchanged aggregate income, other things the same, would affect total shoe buying: over twice as much shoe buying, the table indicates, would result from a dollar added to the income of a family in the lowest two income groups as in the highest two. Thus the survey suggests that if income distribution actually had varied substantially over the period under investigation, it might have had a perceptible influence on shoe buying.

A recent study of income size distribution by Simon Kuznets has developed annual estimates of the proportion of income received by the segment of the population having the top 5 per cent per capita incomes.[1] Of course, information for the top 5 per cent of the population, which is all that is available for the period, is less adequate as a basis of studying the impact of changing size distribution on shoe expenditure, and indeed on most expenditures, than on saving, since the top 5 per cent of the family income distribution did a very large proportion of the net saving for the country – around 80 per cent, according to the 1935-1936 survey – and only a small proportion of the shoe buying – the table suggests perhaps 15 per cent.[2]

[1] Simon Kuznets, assisted by Elizabeth Jenks, *Shares of Upper Income Groups in Income and Savings* (National Bureau of Economic Research, 1953).

[2] The top 5 per cent of the families would include the 794,000 in the top income class and another

Kuznets found that the proportion of total country-wide income received by the top 5 per cent of the population rose from 1920 to 1928 and then fell through 1944 – abruptly during the war years. The percentages of aggregate disposable income received by the top 5 per cent were 24 per cent in 1920, 34 per cent in 1928, 25 per cent in 1940, and 16 percent in 1944.[3] Fitting a straight line to the data for 1926-1941, we find that the percentage of income received by the top 5 per cent of the population fell between 1926 and 1941 by almost 10 points – that is, from about 34 per cent to around 24.5 per cent. The deviations from the line of trend were seldom more than ± 1 percentage point. It would be highly desirable to be able to learn from area surveys whether changes of this magnitude might have a tangible impact on shoe buying.

All that can be done is to use the 1935-1936 data to see what the impact would be with three large "ifs": (1) if the figures are accurate representations of the situation in 1935-1936; (2) if they are applicable to other times; (3) if change through time follows the pattern of interfamily differences at one time. We know of course that at best the conditions could be met only in a highly approximate fashion; whether the approximation is even close enough to provide estimates of the proper order of magnitude cannot be said. The procedure is beset not only by the usual problems about the meaning of income sensitivity of spending based on area surveys and its applicability to change over time but, in addition, by special problems associated with group standards and their influence on individual behavior when income distribution shifts. In spite of this skepticism it may be worthwhile to make the calculations and see what they say. We compute separately the trend impact and that of the deviation around the trend.

Let us assume that relative income distribution within the lower 95 per cent and within the upper 5 per cent of the families remained fixed as disclosed by the 1935-1936 survey, but the proportion received by the two segments shifted between 1926 and 1941 in accordance with the trend disclosed in Kuznets' figures for the top 5 per cent of the population.[4] From Table 2, column 8, we compute the average change in shoe buying accompanying a change in income of $100 for the lower and upper segments of the distribution. For the lower 95 per cent it is $1.23 and for the upper 5 per cent it is $.60.[5] In the fifteen-

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676,000 from the 1,585,000 families in the next income class. Column 5 of the table suggests about how much shoe buying these 1,470,000 families might be doing – $77.0 million plus around a half of $74.6 million. Single individuals, for whom no information on shoe buying was collected, are not included in these figures.

[3] Kuznets, *op. cit.*, p. 637, Table 122.

[4] Note that Kuznets' calculations refer to population, whereas the survey data refer to families and thus are, for this reason and others, by no means strictly comparable.

[5] Half the $3,000-$5,000 income group falls in the upper and half in the lower group. The calculation is made for the lower incomes by multiplying the marginal propensities in col. 8 for all income groups under $5,000 by the corresponding aggregate income in col. 1, except for the $3,000-$5,000 group, which was multiplied by half the income. The figures were summed, divided by total income for these groups, and multiplied by 100. The corresponding calculation for the two upper groups gave the second figure.

TABLE 2

FAMILY EXPENDITURE ON FOOTWEAR AND ITS RELATION TO INCOME AND SHIFTS IN INCOME, 1935-1936

| INCOME GROUP | AGGREGATE INCOME[a] (mill. $) (1) | NUMBER OF FAMILIES[a] (thousands) (2) | AVERAGE INCOME[a] (3) | EXPENDITURE ON FOOTWEAR: Total per Family[b] (4) | EXPENDITURE ON FOOTWEAR: Aggregate Expenditure (Cols. 2 × 4) (mill. $) (5) | EXPENDITURE ON FOOTWEAR: Per $100 of Family Income[c] (6) | Change per $100 Shift in Family Income: For Interclass Interval[e] (7) | Change per $100 Shift in Family Income: For Each Income Class[f] (rough approx.) (8) |
|---|---|---|---|---|---|---|---|---|
| Under $500 | $ 1,302 | 4,178 | $ 312 | $ 8 | $ 33.4 | $2.56 | | $1.57 |
| $ 500-$1,000 | 6,122 | 8,076 | 758 | 15 | 121.1 | 1.98 | $1.57 | 1.54 |
| 1,000- 1,500 | 8,256 | 6,748 | 1,224 | 22 | 148.5 | 1.80 | 1.50 | 1.37 |
| 1,500- 2,000 | 7,247 | 4,240 | 1,709 | 28 | 118.7 | 1.64 | 1.24 | 1.20 |
| 2,000- 3,000 | 9,043 | 3,779 | 2,393 | 36 | 136.0 | 1.50 | 1.17 | 1.02 |
| 3,000- 5,000 | 5,780 | 1,585 | 3,647 | 47 | 74.5 | 1.29 | .88 | .72 |
| 5,000 and over | 9,930 | 794 | 12,506 | 97 | 77.0 | .78 | .56 | .56 |
| All incomes | $47,680 | 29,400 | 1,622 | 24 | $709.2 | 1.49[d] | | 1.06[d] |

[a] National Resources Planning Board, *Family Expenditures in the United States* (1941), p. 25, Table 74. Column 3 may not equal precisely col. 1 divided by col. 2 because of rounding errors.

[b] *Ibid.*, p. 4, Table 9.

[c] Column 4 divided by col. 3 times $100.

[d] The figures for each income class were multiplied by the percentage of total income falling in that class, summed for all classes, and divided by 100.

[e] Interincome group differences for col. 4 divided by interincome group differences for col. 3 times $100, for example

$$\frac{\$15 - \$8}{\$758 - \$312} \times \$100 = \$1.57.$$

[f] The figures in col. 7 apply to families having incomes between the center of two adjacent income classes. We approximate the figure which applies to the whole of any given income class by averaging the figures applying to each class. For the top and bottom classes we have simply used the only figure we have, which applies presumably to the half of the class that lies on the inside of the income range. The figures are at best crude approximations of what would be obtained were the data studied without first grouping it into a few income classes.

year interval 1926-1941 the proportion of income received by the lower income group rose by 9.5 percentage points. For each percentage point shift in income distribution, shoe buying would have increased by $.0123 and decreased by $.0060, a net gain of $.0063, which for 9.5 percentage points comes to $.0599. Since in 1935-1936 a total of $1.49 was spent on shoes for every $100 of income (col. 6, last line), the increase over the period would have amounted to 4.02 per cent of the 1935-1936 figure, or .27 per cent a year, over the fifteen-year interval.

An analogous calculation based on the same assumptions serves to estimate the extent to which shoe buying might have been affected by deviations in income distribution around its line of trend, which were in only two cases more than ± 1 percentage point (they average .5 for the period that we can examine with the aid of time series). Were the trend separately accounted for, shoe buying would, on the basis of the survey data, have shifted by a maximum of ± .4 per cent of the 1935-1936 figure, as per cent of income going to the upper 5 per cent shifted ± 1 percentage point.[6]

As suggested at the outset, it is hard to say just what these calculations show. One would expect that the upward trend of the share of income received by the lower 95 per cent would make itself felt. But actually the net trend in shoe buying – if other things, including aggregate income, be separately accounted for – was, as we shall see, down, not up. In other words, other factors making for a reduction in dollars spent on shoes more than compensated for the upward trend that might have followed in the wake of less inequality of income distribution. The deviation from the trend may well be so small that it might be ignored. But factory payrolls do show a provocative similarity to shoe buying, especially in the short movements. Besides, our estimates of shoe sales may, the Appendix indicates, overrepresent the buying of factory workers. Consequently, it seems well to leave the matter open for further examination in a regression scheme.

In any event these calculations indicate that the relatively small impact of size distribution (other than the trend influence which cannot be isolated) is a function of the *small experienced change (other than long-term trend)* rather than, as far as we know, an insensitivity of marginal shoe buying to the size of family income. Were a period to come when there were substantial changes in the concentration of income of a sort that could be separated from other influences, palpable changes in shoe buying, *ceteris paribus* – or indeed in the buying of any other commodity equally sensitive to income distribution – might follow. The war years would certainly qualify as such a period, judging from Kuznets' tables for 1942 on. Any effort to project prewar conditions into postwar shoe markets would therefore have to make allowances for the decrease in the concentration of income that took place.

[6] Following the previous calculation, .0123 – .0060 = .0063. Deviations of this size amount to ±.42 per cent of 1.49, the 1935-1936 average figure. Incidentally, if we make the extreme assumption that the whole shift occurred between the two extreme income groups, the total effect is still only ±.7 per cent.

Contrasts in the association between income and expenditure for shoes of farm and urban families appear in the data collected in 1935-1936.[7] The figures are given in Table 3. Columns 3 and 4 show that poorer farm families spend a larger, and wealthier families a smaller, percentage of their income on shoes than city families at the same income level.[8] The last two columns (7 and 8) show that the regression of shoe buying on income is less steep for farm than for city families, especially at the upper end of the range, and is bowed in both cases. This means that shoe buying would be affected by a shift in the distribution of income within each group as well as by a shift between the two groups.

From 1926 to 1941 the proportion of total personal income going to farmers and their employees ranged between 6.3 per cent (in 1932) and 10.9 per cent (in 1935). If the size distribution of income within the farm sector and within the urban sector remained the same as that shown in the 1935-1936 study, a shift in over-all income size distribution would have occurred as a result of the income shifts between the sectors. In that case, assuming that the 1935-1936 spending patterns for each income class applied to a shift in income throughout the period, then out of every $100 of aggregate national personal income, .9 of a cent less would have been spent on shoes in 1935 than in 1932, and this would have amounted to about .6 per cent of aggregate shoe buying. If, on the other hand, the relative income size distribution for the population as a whole did not change, a shift in size distribution would have occurred within the farm sector and within the urban sector. In that case the shift in income in favor of the farm population would have been somewhat larger in its effect on shoe buying — about 1.7 cents per $100 of income, or about 1.1 per cent of aggregate shoe buying.[9]

It is clear, I think, that no other differences involving substantial groups of

[7] It seems probable that income as calculated in the study is not truly comparable for farm and city families. See, for example, Margaret Reid, "Effect of Income Concept upon Expenditure Curves of Farm Families," Conference on Research in Income and Wealth, *Studies in Income and Wealth, Volume Fifteen* (National Bureau of Economic Research, 1952). At the moment, however, there seems to be no adequate way out of the difficulty.

[8] Farm families spend a smaller proportion of their incomes and save a larger one than city families, but shoes are a larger part of total consumption of farm than of city families. See cols. 5 and 6.

[9] We assume that farm income was spent in accordance with the patterns of farm families and all other income with those of urban families. In 1932 for every $100 of aggregate consumer income farmers got $6.30 and others $93.70; in 1935 the corresponding figures were $10.90 and $89.10. Thus between the two years, out of every $100 of aggregate income farmers gained $4.60 and the others lost $4.60. The marginal shoe buying propensity for the weighted average of all farm families was .94 per cent (Table 3, col. 8, last line); therefore, farmers spent $.043 more. The marginal propensity for city families was 1.14 per cent; therefore, city families spent $.052 less. The net difference was $.009 per $100 of income. In 1935-1936, average shoe buying for the country as a whole was $1.49 per $100 of income (see Table 2, col. 6). Thus the shift amounted to about .6 per cent of aggregate shoe buying.

If, instead of assuming that the income distribution within the farm and city families was unaltered, we assume that when city families having incomes, say, between $1,000 and $1,500 lost a proportionate share of the total drop in income for city families, it was just farm families in the $1,000-1,500 class who were the beneficiaries, and, similarly for all income classes, the weighted marginal propensity for farm families (weighted by the city income distribution) falls to .76 per cent. Consequently, the shift of $4.60 of income out of every $100 from city to farm

TABLE 3

THE RELATION OF SHOE BUYING TO INCOME OF FARM AND OF URBAN FAMILIES, 1935-1936

| INCOME RANGE | % OF ALL INCOME RECEIVED BY FAMILIES IN EACH INCOME GROUP[a] | | % OF INCOME SPENT ON FOOTWEAR[b] | | % OF TOTAL OUTLAY SPENT ON FOOTWEAR[b] | | % OF SHIFT IN INCOME SPENT ON FOOTWEAR[e] | |
|---|---|---|---|---|---|---|---|---|
| | *Urban* (1) | *Farm* (2) | *Urban* (3) | *Farm* (4) | *Urban* (5) | *Farm* (6) | *Urban* (7) | *Farm* (8) |
| Under $500 | 1.4 | 5.0 | 2.74 | 3.54 | 1.52 | 2.23 | 1.30 | 1.21 |
| $ 500-$ 1,000 | 9.2 | 21.8 | 1.90 | 2.26 | 1.75 | 2.08 | 1.31 | 1.33 |
| 1,000- 1,500 | 17.4 | 23.4 | 1.69 | 1.95 | 1.69 | 2.04 | 1.46 | 1.24 |
| 1,500- 2,000 | 19.0 | 17.1 | 1.66 | 1.69 | 1.75 | 1.99 | 1.40 | .89 |
| 2,000- 3,000 | 25.5 | 16.8 | 1.53 | 1.42 | 1.70 | 1.93 | 1.06 | .58 |
| 3,000- 5,000 | 17.5 | 10.3 | 1.32 | 1.08 | 1.61 | 1.77 | .74 | .36 |
| 5,000- 10,000 | 10.1 | 5.7 | .97 | .73 | 1.33 | 1.63 | .56 | .30 |
| All incomes under $10,000 | 100.0 | 100.0 | 1.54[c] | 1.81[c] | 1.66[d] | 2.02[d] | 1.14[f] | .94[f] |

[a] Calculations are based on data from National Resources Planning Board, *Family Expenditures in the United States* (1941), pp. 7 and 8, tables 20 and 21. All the figures in this table refer to families that did not receive relief during the survey year, and the income received by families with incomes of over $10,000 is not included.

[b] Shoe expenditure for families in each income range was calculated from detailed information on clothing purchases supplied by 150,000 family members and single individuals. It is published in *ibid.*, Tables 151 and 185. We have used these data in conjunction with statistics on the income and total outlay of nonrelief families given in the same volume, Table 21. Information from the source cited in note a was also used to make certain income and expenditure groups comparable.

[c] Aggregate expenditure on footwear for all families with incomes under $10,000 divided by aggregate income.

[d] Aggregate expenditure on footwear for all families with incomes under $10,000 divided by aggregate expenditure on all consumption.

[e] Interclass shift in shoe buying divided by interclass shift in income and averaged for upward and downward shift. The computation was analogous to that shown in Table 2, note d.

[f] Marginal propensities applicable to each income class weighted by the proportion of aggregate income received by that class (col. 1 or 2) and divided by the sum of the weights.

people would be so strong as the farm-urban one. Though it seems likely that manual workers would spend more on shoes than would clerical workers, we simply have as yet no adequate information to go by.[10]

On the basis of these rough explorations we certainly cannot dismiss the possibility that shoe sales would be adversely affected in years when there was a shift of income both toward rural pursuits and toward upper income brackets, whereas a year in which low-income urban manual workers fared well might cause shoe sales to be perceptibly better at any given level of aggregate income. The efforts to test this proposition by the use of time series are discussed later.

families would, under these assumptions, have decreased city shoe spending by $.052, as before, but increased farm spending by only .0076 times $4.60, or $.035 – a net decrease of $.017. This shift amounted to $.017 divided by $1.49, or 1.1 per cent of shoe buying.

[10] The information on income and spending of individual families in 1935-1936 was classified by the occupation of the head of the family, and some differences do seem to appear on the average in the proportion of income spent and saved at various income levels by wage earners', clerical, and businessmen's families. But even these differences cannot be assigned to the occupational factor with certainty. As to the relevant difference for the present purpose – difference in *marginal* spending patterns – very little can be said.