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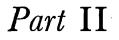Volume URL: http://www.nber.org/books/unkn51-1

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Part II

Postwar Changes in the

Income of Identical Consumer Units

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INFORMATION ON THE DISTRIBUTION of changes in income and on the characteristics of consumer units whose incomes increase or decrease enriches our knowledge of economic developments. It not only clarifies the meaning of changes in aggregate incomes but also contributes to the analysis of the effects of changes in aggregate incomes. When we know merely that total personal income increased in a given year, say, 10 percent, several interpretations of what has been going on are possible. For instance, the income of every consumer unit in the nation may have risen 10 percent. Or the income of a few units may have fallen while that of most units may have risen more than 10 percent. Or the income of a minority at the top

of the first-year income distribution may have increased and the incomes of most people decreased. Similarly, unchanged aggregate income may mask a multitude of compensating changes in the incomes of individual consumer units. However, since people react differently to increases or decreases in their incomes, we must have information about what happened to the incomes of individual units in order to trace the effects of income change on economic behavior.

This paper is concerned primarily with changes in income from 1946 to 1947 and 1947 to 1948. Some data on changes in income from the last war year, 1945, to the first postwar year, 1946, are also presented. The sources of these data are the annual Surveys of Consumer Finances conducted by the Survey Research Center of the University of Michigan for the Board of Governors of the Federal Reserve System. The first survey was made in January–February 1946, and the most recent one considered in this paper in January–February 1949.[1]

Persons interviewed were selected by probability sampling. About 3,500 detailed interviews were made in each survey by the fixed question-free answer method.[2] In studying changes in income, three further aspects of the underlying data require careful consideration: the definition of the income receiving unit, the nature of the population sampled, and the methods of measuring both the size and degree of change in income.

The major criterion for selecting a consumer unit was joint expenditure of income. This unit, called the 'spending unit', is defined as a person or group of persons living together, related by blood, marriage, or adoption, who pool their incomes for their major expenditures. For some purposes, such as studying housing expenditures, this unit may not be satisfactory, but for income and saving studies, it is useful. Especially immediately

[1] In the first survey, in contrast to the later ones, annual changes in income were not investigated.

[2] For a description of sampling and interviewing methods and the reliability of results, the reader is referred to the *Federal Reserve Bulletin*, June 1948 and June 1949. The major findings of the surveys, some of which are presented here, were published in ibid., June, July, August 1947; June, July, August, September 1948; and June, July, August, September 1949.

after the war, when 'doubling up' was relatively common, the spending unit is considered preferable to the family unit. Most spending and family units are identical, but a substantial number, i.e., 15 percent of all families, consist of two or more spending units.

The Surveys of Consumer Finances are sample surveys of the population of the continental United States residing in private households. They exclude persons living in institutions, hotels, or other transient establishments and members of the armed forces.

Although some data from a relatively small sample are available from two consecutive annual interviews with the same units, most of the material used in this paper is derived from single interviews with a representative sample of consumer units. The respondents selected for each survey were asked several questions to determine their income in the year ending shortly before the interview (for instance, in the survey conducted in January–February 1948, for their 1947 income). Then they were asked how their income for that year compared with their income in the preceding year.[3] This means that we have to rely on the respondents' memory in determining both the direction and extent of income changes.

Working backward from the income of a given year to that of the preceding year has some disadvantages. One results from the mobility of the spending unit population. Each year some new units are formed which in the preceding year had not been independent units; and some old units disappear through amalgamation with other units or through death.

While the sample for each survey conducted before 1949 consisted of respondents not previously interviewed for any similar survey, the 1949 sample contained a subsample of 655 respondents who had been interviewed also at the beginning of 1948. This reinterview sample was selected from units in urban areas (towns and cities with populations of 2,500 or more) which did not move between early 1948 and 1949. From this subsample, therefore, information is available about changes in

[3] See Table 1, note, for the wording of the question.

income from 1948 to 1949 that is subject to smaller memory errors than the information from the national samples. From interviews with identical spending units at the beginning of both 1948 and 1949, the differences between the two 'current' incomes can be computed and a new measure of income change obtained. These computations may serve as a check upon the reliability of answers to the question that asks the respondents to compare their 'current' with their income in the preceding year. The results of these checks on the reliability of recollected changes in income are discussed in Section E. Information on income reported by identical units in two consecutive surveys was used to calculate average annual income for the two years.[4]

The 1949 survey differed from the preceding surveys in containing a question about the dollar amount of income received during the year that ended 12 months before the date of the interview, i.e., 1947. The new question was experimental and did not prove entirely successful. About a third of all respondents were either unable or unwilling to give exact data about their income in 1947. Most of these, however, answered the usual question about the direction and approximate extent of changes in their incomes from 1947 to 1948.

Along with answers to the questions about size and change in income, answers to many of the other 150 questions asked in each survey were drawn upon. Information on the demographic characteristics of spending units, on their savings and expenditures for durable goods as well as answers to several attitudinal questions are studied in conjunction with information on changes in income.

A DISTRIBUTION OF CHANGES IN INCOME AND THEIR RELATION TO ITS SIZE

In each of the three periods, 1945–46, 1946–47, and 1947–48 the annual income of about 7 out of every 10 spending units in the

Table 1

Changes in Income, 1945–46, 1946–47, 1947–48

Percentage Distribution of All Spending Units

Income in Second Year Compared with Income in First	*1945–46*	*1946–47*	*1947–48*
Much larger	17	18	20
Somewhat larger	25	31	31
About the same	27	30	27
Somewhat smaller	16	11	12
Much smaller	12	8	6
Not ascertained	3	2	4
Total	100	100	100

Income for the 'second year' was ascertained by asking the head of each spending unit 13 questions about different forms of income received by each member. Then the following question was asked: "We found that your income during the year just ended was $———. Thinking back to the year before that, was your income (and that of your wife, etc.) about the same, or was it larger or smaller than in the year just ended? (If larger or smaller) Could you say that it was much larger (smaller) or only slightly larger (smaller)?"

Some respondents reported the dollar amount of their income in the preceding year. Income changes of ±4 percent or less were considered as 'about the same'; changes of 5–24 percent as 'somewhat' larger or smaller, and changes of 25 percent or more as 'much' larger or smaller. Other respondents said whether their income had been much (slightly) higher (lower) or about the same in the preceding year.

The total number of cases was 3,058 in the 1947, 3,562 in the 1948, and 3,510 in the 1949 survey. The number is given in the following tables if they are based on relatively small cells. This information is relevant for judging the reliability of the data and the significance of differences among magnitudes. Because the sample was weighted, however, the number of cases does not reflect the proportion of a cell in the universe. In Table 2, for instance, the proportion of each cell is 10 percent (one decile) but the number of cases in each cell differs.

'Income' is defined as annual money income before taxes.

nation changed (Table 1). Although increases outnumbered declines, the incomes of substantial proportions of the spending units fell during these years of increase in national income. The proportion of units with gains was somewhat higher and the proportion with declines somewhat lower in 1946–47 and 1947–48 than in 1945–46.

About half of all spending units reported an increase in annual income from 1947 to 1948; more than a fourth reported no substantial change, and about a fifth a decline. Of those with increases, 20 percent reported a big gain (25 percent or more) and 31 percent a small gain (5–24 percent). Of the 18 percent with declines, 6 percent reported a big decline and 12 percent a small decline. In 1945–46 and 1946–47 the patterns were quite similar. In all three periods large changes were less frequent than small ones.

What the incidence of changes in income among high, middle, and low income groups is and how it affects the distribution of income cannot be completely determined. Yet data are presented that may further our understanding of the incidence of changes in income by income level.

Changes in income may be related to the size of the income in either the first or the second year for which they are measured. Relatively complete information, from representative samples of the nation's spending units, is available for computing the relation between respondents' recollections of changes in their income and their incomes in the second year. In three successive annual surveys the sequence of questions was the same: first, the income for 1948 (or 1947, or 1946); then how it differed from the income in the preceding year (Table 2 and App. Table 1).

Table 2
Changes in Income by Size of Income in Second Year, Percentage
Distribution of Spending Units in Each Income Decile

1947 Income Compared with 1946 Income	1947 Income Ranked by Size in Deciles									
	Low- est	2nd	3rd	4th	5th	6th	7th	8th	9th	High- est
Much larger	11	17	18	15	13	17	15	19	27	22
Somewhat larger	13	12	26	34	28	38	41	40	36	38
About the same	47	39	33	27	38	26	24	21	22	26
Somewhat smaller	11	13	11	12	12	12	12	11	11	9
Much smaller	15	14	10	9	6	4	7	8	3	4
Not ascertained	3	5	2	3	3	3	1	1	1	1
Total	100	100	100	100	100	100	100	100	100	100
No. of cases	332	311	316	313	335	352	361	365	402	474

1948 Income Compared with 1947 Income	1948 Income Ranked by Size in Deciles									
Much larger	14	16	17	21	21	16	24	20	23	24
Somewhat larger	19	28	28	30	30	38	34	37	36	30
About the same	33	29	28	27	30	27	24	25	25	25
Somewhat smaller	11	11	14	11	11	11	14	12	11	11
Much smaller	17	10	8	5	4	5	3	3	2	4
Not ascertained	6	6	5	6	4	3	1	3	3	6
Total	100	100	100	100	100	100	100	100	100	100
No. of cases	343	331	323	313	326	327	342	362	387	456

Information for studying the relation between changes in income and its level during the first year is less complete and re-

liable. There are no such data on changes in income except from 1947 to 1948 because the other surveys did not include the necessary questions. In the 1949 survey the attempt to get figures on both 1948 and 1947 incomes was not too successful inasmuch as only 65 percent of the respondents interviewed at the beginning of 1949 gave information about their 1947 incomes (Table 3, Part A). The results of these responses must be used

Table 3

Changes in Income by Size of Income in First Year

Percentage Distribution of Spending Units within Each Group

1948 Income Compared with 1947 Income	1947 Money Income before Taxes				
	Under $2,000	$2,000– 2,999	$3,000– 4,999	$5,000 & over	Not Ascertained †

A Derived from 1949 Survey of Consumer Finances in which 35 percent of the spending units were unable or unwilling to report their 1947 income; income change determined by asking respondents about direction and extent of changes

Much larger	37	28	15	16	8
Somewhat larger	25	37	42	27	29
About the same	25	23	24	27	33
Somewhat smaller	5	8	14	18	14
Much smaller	7	4	5	12	5
Not ascertained	1	*	. . .	. . .	11
Total	100	100	100	100	100
Total of each column as % of all spending units	21	17	19	8	35
No. of cases	601	564	649	381	1,275

B Derived from reinterview survey; 655 identical urban spending units, interviewed at the beginning of 1948 concerning their 1947 income and at the beginning of 1949 concerning their 1948 income; changes calculated from the two answers

Much larger	38	26	20	15	
Somewhat larger	24	36	31	22	
About the same	12	12	17	16	
Somewhat smaller	10	21	18	21	
Much smaller	14	5	12	24	
Not ascertained	2	. . .	2	2	
Total	100	100	100	100	
Total of each column as % of all spending units	29	22	32	16	1
No. of cases	130	130	218	173	4

* Less than 0.5 percent.
† Data are not given in Part B because of the small number of cases.

with caution because there is no assurance that the 35 percent of all spending units whose 1947 incomes were not ascertained did not differ with respect to changes in income. Since the indications many of the 35 percent gave of the change in their incomes from 1947 to 1948 suggest that increases were relatively infrequent and declines relatively frequent, it is even probable that the pattern of income change for this group differed from that of the 65 percent who gave full information.

From a subsample of urban spending units interviewed at the beginning of 1948 and again at the beginning of 1949 (Table 3, Part B) we find that calculated changes in income differ from recollected changes primarily in that 'no change' is much less common in the former. Comparison of calculated with recollected changes in income reveals also differences between the two types of information obtained for identical units. Such differences are somewhat more common among those who recollected that their income declined than among those who recollected that their income increased (see Sec. E).

When changes in income are related to the income of the second year, increases are apparently relatively frequent among units with high incomes and relatively infrequent among units with low incomes. Conversely, declines are fewer the higher the second year income. From 1946 to 1947 over 60 percent of the units in the two top 1947 income deciles and less than 30 percent in the two bottom deciles had increases; less than 15 percent of the units in the two top deciles and more than 25 percent in the two bottom deciles had declines. The 1947–48 relation was similar, although the differences in the number of increases were not quite as large as in the preceding period (Table 2).

When changes in income are compared with income in the first year the relation is reversed. Increases, especially large increases, are more frequent among units with low than with high incomes. Decreases, both small and large, are more frequent among units with high than with low incomes (Table 3).

The difference between the relationship of changes in income to its size in the first as contrasted with the second year is

consistent with 'regression toward the mean'. If individuals are classified by income in any one year, and for each class average income is computed for another year, the averages for the 'other' year will tend to be more alike than the averages for the base year. For example, if individuals are classified by income in 1947, the average 1947 income of the highest 1947 income group will deviate more from the over-all 1947 average than its average 1946 income will deviate from the over-all 1946 average. Furthermore, the income of an undue proportion of those in the highest and lowest 1947 income groups will have risen and declined respectively since 1946.

When examining the relation between changes in income and its size in the second year, it must be remembered also that the latter is not an independent variable. The second year income is determined in part by the change.

Many other factors would have to be considered for a complete understanding of the relation between change in income and its level.[5] The complexity of the problem is illustrated in Table 8, where we see the general finding that 'the higher the income in the second year the more numerous the increases' does not apply consistently to all occupational groups.

Relative income stability can be studied by examining not only the units reporting stable incomes but also the proportion that are in the same income bracket in successive years. Similarly, change may be studied by examining shifts from one income bracket to another. Some indication of the size of these groups was obtained from the subsample of urban spending units interviewed at the beginning of 1948 about their 1947 income, and at the beginning of 1949 about their 1948 income.

The percentage of units in the same income bracket in both 1947 and 1948 was largest for the open-end top bracket; units with higher incomes, of course, remained in this bracket (Table 4). Next follow the lowest brackets; in the middle brackets 50–70

[5] Milton Friedman and Simon Kuznets, *Income from Independent Professional Practice*, Ch. 4 and 7; Horst Mendershausen, *Changes in Income Distribution during the Great Depression*; Frank Hanna, 'The Accounting Period and the Distribution of Income', *Analysis of Wisconsin Income*, Ch. 4 and 5 (NBER, 1945, 1946, and 1948, respectively).

percent of the spending units shifted from one bracket to another, somewhat more shifting upward than downward. In the entire sample for which data are available from the 1947 and 1948 surveys 51 percent were in the same bracket; 27 percent in the next higher bracket; 13 percent in the next lower bracket; 4 percent were two or more brackets higher; 5 percent were two or more brackets lower.

Table 4

1948 Income Distribution of Spending Units in Different 1947 Income Brackets, Percentage Distribution of Spending Units within Each Group

	1947 Money Income before Taxes						
1948 Money Income before Taxes	Under $1,000	$1,000– 1,999	$2,000– 2,999	$3,000– 3,999	$4,000– 4,999	$5,000– 7,499	$7,500 & over
Under $1,000	66	11	1	3	. . .	. . .	. . .
1,000–1,999	21	62	13	4	4	1	. . .
2,000–2,999	11	23	47	12	8	2	1
3,000–3,999	. . .	2	35	39	22	9	. . .
4,000–4,999	. . .	1	1	33	31	24	1
5,000–7,499	. . .	. . .	3	7	33	48	15
7,500 & over	. . .	. . .	. . .	. . .	. . .	13	81
Not ascertained	2	1	. . .	2	2	3	2
Total	100	100	100	100	100	100	100
No. of cases	45	85	130	135	83	93	80

From reinterview survey; 655 identical urban spending units who did not move between early 1948 and early 1949. Because the cases were few, the data represent approximate indications of probable tendencies.

Since a substantial number of spending units were in different brackets in 1948 and 1947, it might be thought that the distribution for the two years would differ from the two annual distributions; and since there were both upward and downward shifts that it would be less concentrated than either one-year distribution.

Distributions of income for single years and year to year changes in annual income distributions may shed light on many economic problems. But to appraise the prevailing rate of income equality in the United States, distributions prepared both for one year and for a longer period should be studied. Unusually high or low annual incomes, caused by fortuitous circumstances, may accentuate the inequality in any given year. This

argument is of special significance when changes in income are frequent and the number of families who enter and those who retire from the labor market is relatively large.[6]

Table 5
Spending Units, Percentage Distribution by Income Groups for 12 and for 24 Months

Money Income before Taxes	A All Urban Spending Units: Two Samples of About 2,300			B Identical Urban Spending Units: Sample of 655		
	1947	*1948*	*1947 & 1948* *	*1947*	*1948*	*1947 & 1948* *
Under $1,000	9	9		10	10	9
1,000–1,999	19	16		19	18	20
2,000–2,999	22	22		22	20	21
3,000–3,999	20	21		20	20	19
4,000–4,999	12	14		12	13	12
5,000–7,499	11	11		10	12	11
7,500 & over	6	6		6	6	6
Not ascertained	1	1		1	1	2
Total	100	100		100	100	100

* Half of 2 years' income. These data are not available for the sample of 2,300 spending units.
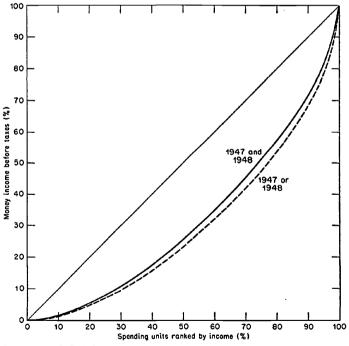
From data from the Surveys of Consumer Finances distributions for three or more years cannot be studied, but for the sub-sample that was interviewed twice the distributions of income for 1947, for 1948, and for January 1, 1947 to December 31, 1948 can be calculated. The distributions of urban spending units by income groups for 1947 and 1948 did not differ greatly (Table 5). There was some decline in the proportion with $1,000–2,000 incomes and some increase in the proportion with $3,000–5,000 incomes. The distribution of the two years' income is based upon half the sum of the incomes for 1947 and 1948 for each spending unit. For example, if a spending unit received $2,500 in 1947 and $5,200 in 1948, his two-year income would be $3,850 (one-half of $2,500 plus $5,200). In other words, this spending unit would appear in the third bracket for 1947, in the sixth bracket for 1948, and in the fourth bracket for the joint distribution.

[6] Similar considerations are pointed out in *Analysis of Wisconsin Income*. In the Foreword Milton Friedman writes (pp. 8 and 9): "The meaning of a distribution of annual income depends upon the importance of . . . shifts in income from year to year. . . . The variability of income for a two or three year period tends to be decidedly less than the variability of annual income."

The two-year distribution is quite similar to both one-year distributions. Differences, if any, are too small to be significant. There is no indication that more cases cluster in the center of the two-year distribution than in either one-year distribution.

In the distribution of income, instead of spending units, by income brackets, we find differences are consistent between the two-year distribution on the one hand and the two one-year distributions on the other (the chart and App. Table 2). If the curves of the 1947 and 1948 distributions, instead of the average for these two years, had been drawn, they would have been practically identical. According to the surveys, the distribution of urban incomes did not change from 1947 to 1948. The two-year distribution shows less inequality than either of the two one-year

Cumulative Frequency Distributions of Shares of Income for 12 and for 24 Months

Source: Appendix Table 2.

distributions. Every point determined on the two-year curve is closer to the diagonal (line of equal distribution) than the analogous point on either of the one-year curves.

Future studies should be directed not only toward computing distributions for several years but also toward basing them on incomes that are not affected by windfalls or accidental losses. Furthermore, income distributions of consumer units whose heads are between 25 and 65 years old may serve as valuable supplements to distributions of all units so as to discern the effect of entrance into and retirement from the labor force on income distribution.

B   CHANGES IN INCOME AND DEMOGRAPHIC CHARACTERISTICS

To understand some of the causal factors related to changes in income and to learn more about the incidence of such changes we need to study them for spending units that differ in size and location and whose heads differ in age, occupation, and so on. From analysis of year to year changes in the incomes of identical consumer units for long periods we might be able to distinguish between regular and nonrecurrent patterns. Certain patterns in classification by age or family size may be constant. Changes for occupational groups might reveal cyclical patterns and changes in the income of units classified by the education of their heads, long run shifts. Data currently available do not permit so ambitious a project. With information for three periods of year to year changes we can, nevertheless, begin to discern relationships between various factors that will yield hypotheses to be tested in the light of data collected in subsequent surveys.

Changes in income are studied here in relation to six characteristics of spending units selected on the basis of availability of information as well as *a priori* notions about the importance of their relations to changes in income: age, occupation, and education of head, type of community, veteran status, and size of spending unit.

Among the characteristics that on *a priori* grounds suggest themselves for study but because of limitations imposed by the

data are not included here is the regional distribution of consumer units whose incomes change in various ways and degrees. Other examples are the shift in consumer unit composition and the total asset position of consumer units at the beginning and end of the periods for which changes have been measured.

The characteristics of spending units, or of heads of spending units, studied were determined as of the date of interview in each survey, i.e., at the end of the period for which the changes were measured. Additional information about shifts from one occupational group to another are available for 1946–47 and 1947–48. Among the other characteristics for which information would be of interest for the entire period are the size and composition of spending units.

1 *Age*

Classification of spending units by the age of the head reveals the most striking differences in the proportions with various changes in income. In each period for which we have data the differences among the various age groups in the proportions of units with different directions of change in income are similar. Over 60 percent of the spending units headed by persons 18–24 years old reported increases in all three periods (Table 6, Part A). The proportion reporting increases declines systematically as age increases to less than one-third for the group over 65 years old. It is the proportion of units reporting stable incomes, not the proportion with declines, that seems to be positively correlated with age.[7]

The proportion of units in each age group that reported declines does not show a consistent systematic pattern for any of the three periods. Over 20 percent of both the oldest and the youngest groups and 35 percent of the 35–44 age group reported declines from 1945 to 1946. From 1946 to 1947 the differences in the proportions of various age groups that reported declines are even smaller and few are large enough to be statistically significant. One exception is that significantly fewer spending

7 This finding is not consistent with results obtained from the subsample reinterviewed (see Sec. E).

units in the 18–24 age group than in the upper age groups reported declines. The 1947–48 age pattern of declines in income was in these respects similar to that for the preceding period.

As changes in income are related to income level and as the relative proportions of spending units at different income levels vary from one age group to another, further studies of the interrelations among changes in income, size of income, and age are suggested. When the patterns of change by the age of the head of the spending unit are determined separately for several income groups, the results are quite similar to those obtained when differences in income size were not taken into account (Table 6, Part B). The greater irregularity of these patterns as contrasted with those in the two-way cross-classification is due primarily to the larger sampling errors in the smaller cells when data are classified by 3 rather than 2 variables. Nevertheless, for each period covered, the following tendencies are found for each income quintile: the proportions of units with increases tend to be higher in the younger than in the older groups; the proportions with no change in income tend to be smaller in the younger than in the older groups; there is also some indication, especially at higher income levels, that the income of a smaller proportion of spending units in the youngest than in the oldest age group declined.

The interrelations between age and changes in income warrant further study. First, among the youngest group are many spending units whose heads have been regular income receivers only during the second year studied, and who have previously belonged to other spending units and may still be partly dependent upon others for their support. Many of these had little or no income during the first year, and were therefore classified as having large increases. This, of course, does not mean that they had large incomes in the second year. Secondly, youth and the lower middle ages are periods of life when earning power tends to increase. The general trend of rising money incomes in 1946, 1947, and 1948 may, however, have accentuated the rise for many in these age groups as contrasted with periods of relatively stable national income. With respect to the value of increasing experi-

Table 6

Changes in Income by Age of Head of Spending Unit

A Percentage Distribution of Spending Units in Each Age Group

	Age of Head of Spending Unit (years)				
	18–24	*25–34*	*35–44*	*45–64*	*65 & over*
1946 Income Compared with 1945 Income					
Much larger	36	27	13	9	9
Somewhat larger	27	25	27	25	18
About the same	13	18	23	34	46
Somewhat smaller	9	15	18	18	15
Much smaller	12	13	17	10	7
Not ascertained	3	2	2	4	5
Total	100	100	100	100	100
No. of cases	250	656	737	1,033	323

	18–24	*25–34*	*35–44*	*45–54*	*55–64*	*65 & over*
1947 Income Compared with 1946 Income						
Much larger	38	22	17	10	11	9
Somewhat larger	26	35	34	34	28	20
About the same	17	24	29	29	38	49
Somewhat smaller	8	10	13	14	11	12
Much smaller	7	7	6	10	10	9
Not ascertained	4	2	1	3	2	1
Total	100	100	100	100	100	100
No. of cases	325	742	833	692	554	402
1948 Income Compared with 1947 Income						
Much larger	38	25	17	18	13	8
Somewhat larger	34	35	30	32	31	20
About the same	12	20	30	29	31	43
Somewhat smaller	9	11	15	11	13	11
Much smaller	4	5	6	6	7	10
Not ascertained	3	4	2	4	5	8
Total	100	100	100	100	100	100
No. of cases	343	717	793	739	518	388

B Percentage Distribution of Spending Units within Income Quintiles

	Age of Head of Spending Unit (years)					
	18–24	*25–34*	*35–44*	*45–54*	*55–64*	*65 & over*
1947 Income Compared with 1946 Income						
Lowest 1947 Income Quintile (negative income—$1,199)						
Much larger	50	8	11	7	7	9
Somewhat larger	11	12	15	6	14	15
About the same	13	38	42	45	46	54
Somewhat smaller	11	14	14	17	10	11
Much smaller	10	23	12	20	19	9
Not ascertained	5	5	6	5	4	2
Total	100	100	100	100	100	100
No. of cases	80	56	75	84	142	202

Table 6 (*cont.*)

	Age of Head of Spending Unit (years)					
	18–24	*25–34*	*35–44*	*45–54*	*55–64*	*65 & over*
Second 1947 Income Quintile ($1,200–2,099)						
Much larger	34	11	18	9	13	6
Somewhat larger	34	31	28	36	27	20
About the same	16	29	30	27	36	50
Somewhat smaller	8	12	14	15	12	10
Much smaller	5	12	9	11	11	14
Not ascertained	3	5	1	2	1	. . .
Total	100	100	100	100	100	100
No. of cases	123	125	111	106	85	77
Third 1947 Income Quintile ($2,100–2,999)						
Much larger	33	20	12	9	3	12
Somewhat larger	23	36	35	35	39	28
About the same	23	29	35	30	38	39
Somewhat smaller	6	10	13	17	14	10
Much smaller	8	3	4	6	5	11
Not ascertained	7	2	1	3	1	. . .
Total	100	100	100	100	100	100
No. of cases	63	186	167	121	98	48
Fourth 1947 Income Quintile ($3,000–4,199)						
Much larger	35	26	14	9	12	17
Somewhat larger	33	40	39	45	41	18
About the same	17	18	25	22	28	34
Somewhat smaller	3	9	15	11	10	26
Much smaller	7	6	7	10	9	5
Not ascertained	5	1	. . .	3	. . .	. . .
Total	100	100	100	100	100	100
No. of cases	39	211	198	146	97	32
Highest 1947 Income Quintile ($4,200 and over)						
Much larger	37	37	24	15	21	9
Somewhat larger	39	37	41	39	26	39
About the same	9	13	23	27	36	36
Somewhat smaller	11	8	9	13	11	14
Much smaller	4	4	3	5	2	2
Not ascertained	. . .	1	*	1	4	. . .
Total	100	100	100	100	100	100
No. of cases	20	164	282	235	132	43

1948 Income Compared with 1947 Income

	18–24	*25–34*	*35–44*	*45–54*	*55–64*	*65 & over*
Lowest 1948 Income Quintile (negative—$1,499)						
Much larger	40	15	12	16	9	8
Somewhat larger	29	36	26	21	22	20
About the same	8	21	26	29	35	44
Somewhat smaller	12	13	15	15	9	7
Much smaller	9	14	20	11	16	13
Not ascertained	2	1	1	8	9	8
Total	100	100	100	100	100	100
No. of cases	95	68	81	99	118	211

Table 6 (*concl.*)

	Age of Head of Spending Unit (years)					
	18–24	*25–34*	*35–44*	*45–54*	*55–64*	*65 & over*
	Second 1948 Income Quintile ($1,500–2,399)					
Much larger	32	19	16	16	14	10
Somewhat larger	38	27	23	29	31	19
About the same	14	32	30	34	26	35
Somewhat smaller	7	8	23	9	15	19
Much smaller	4	8	7	8	4	11
Not ascertained	5	6	1	4	10	6
Total	100	100	100	100	100	100
No. of cases	121	132	110	107	100	63
	Third 1948 Income Quintile ($2,400–3,199)					
Much larger	30	23	17	16	16	5
Somewhat larger	40	36	34	37	31	16
About the same	16	21	32	28	32	55
Somewhat smaller	13	13	9	10	15	9
Much smaller	. . .	4	5	8	2	7
Not ascertained	1	3	3	1	4	8
Total	100	100	100	100	100	100
No. of cases	60	166	148	134	95	45
	Fourth 1948 Income Quintile ($3,200–4,499)					
Much larger	50	30	16	17	12	10
Somewhat larger	24	40	33	36	42	21
About the same	14	15	30	31	26	35
Somewhat smaller	5	11	17	9	17	24
Much smaller	3	2	2	3	3	10
Not ascertained	4	2	2	4	. . .	. . .
Total	100	100	100	100	100	100
No. of cases	45	192	212	147	84	24
	Highest 1948 Income Quintile ($4,500 and over)					
Much larger	61	30	23	23	13	10
Somewhat larger	29	36	31	33	34	24
About the same	8	15	30	23	35	35
Somewhat smaller	2	9	11	12	9	19
Much smaller	. . .	2	4	4	6	. . .
Not ascertained	. . .	8	1	5	3	12
Total	100	100	100	100	100	100
No. of cases	22	159	242	252	121	45

Because of rounding, some figures do not add to totals.

Spending units were first ranked by income, divided into 5 income quintiles, then classified by age groups. The results might be different if income quintiles were calculated for each age group separately. All subsequent tables containing income quintiles were prepared by the same method (ranking first by income, then by place of residence, number of persons, etc.).

* Less than 0.5 percent.

ence, there may be substantial differences among persons in different occupations.[8] Unfortunately, there are too few cases in the Surveys of Consumer Finances to give much reliable information on the joint variation of age, occupation, and changes in income. Nevertheless, data here shown are consistent with the view that different groups experience income declines at different periods of their lives.

2 *Occupation*

In all three periods the proportions of spending units in the various occupational groups with income increases differed appreciably. Compensating differences were divided between the proportions with declines and with no changes in income. Thus the differences among occupational groups were smaller for the proportions reporting declines and no changes than for the proportions reporting increases in income.

In all year to year comparisons, spending units in the 'clerical and sales' group ranked first or tied for first place in having the highest proportion of their number with increases in income (Table 7). In 1947 and 1948 spending units whose heads were in the 'professional' group ranked second to, or equaled, the 'clerical and sales' group. About the same proportions (roughly 40 percent) of the spending units in the business, skilled and semi-skilled worker, and farm operator groups reported increases in annual incomes from 1945 to 1946. Spending units among the unskilled group fared somewhat less well, 35 percent reporting increases. However, from 1946 to 1947 the proportion of skilled and semi-skilled workers reporting increases rose to 58 percent and the proportion of unskilled to 44 percent, while the proportions of businessmen and farm operators who reported increases remained about the same as from 1945 to 1946. The only important change in the next period was a further increase in the proportion of unskilled workers whose incomes rose. These differences between the three periods seem to reflect the differ-

[8] For a discussion of such differences among persons in different professional groups, see *Income from Independent Professional Practice*, pp. 237–60.

For an indication of such differences between wage earners and professional persons, see Kaplan, Williams, Parten, and Evans, Family Income and Expenditure in New York City, 1935–36, Part I, Family Income (BLS *Bulletin 643*, 1941), p. 55.

ential impact of postwar economic developments together with recurrent patterns of leads and lags in changes in the income of persons in different occupations.

Table 7
Changes in Income by Occupation of Head of Spending Unit
Percentage Distribution of Spending Units in Each Occupational Group

	Profes-sional	Self-em-ployed or man-agerial	Clerical or sales	Skilled or semi-skilled	Un-skilled or service	Farm oper-ator	Retired
1946 Income Compared with 1945 Income							
Much larger	14	17	24	17	15	16	5
Somewhat larger	32	25	35	24	20	24	18
About the same	29	29	21	21	27	32	47
Somewhat smaller	14	15	8	21	20	18	12
Much smaller	10	12	9	15	13	6	8
Not ascertained	1	2	3	2	5	4	10
Total	100	100	100	100	100	100	100
No. of cases	247	379	479	906	369	221	128
1947 Income Compared with 1946 Income							
Much larger	18	17	24	20	15	14	11
Somewhat larger	44	24	38	38	29	24	14
About the same	19	35	22	24	35	36	55
Somewhat smaller	11	13	9	9	13	13	8
Much smaller	7	9	5	7	6	8	11
Not ascertained	1	2	2	2	2	5	1
Total	100	100	100	100	100	100	100
No. of cases	294	484	539	861	350	437	157
1948 Income Compared with 1947 Income							
Much larger	20	22	24	20	20	21	9
Somewhat larger	40	24	38	34	34	24	19
About the same	23	30	25	26	26	22	49
Somewhat smaller	11	14	8	12	11	17	6
Much smaller	3	6	3	4	5	11	10
Not ascertained	3	4	2	4	4	5	7
Total	100	100	100	100	100	100	100
No. of cases	293	470	495	886	427	430	176

Classification of spending units by occupation and by the level of their second year income reveals some further differences in patterns of income change (Table 8). Some of these differences are not consistent for the two periods for which we have data, probably because they are based upon so few cases.

In the professional group, unlike most of the other occupa-

Table 8

Changes in Income by Occupation of Head of Spending Unit

Percentage Distribution of Spending Units within Various Income Groups

1947 Income Deciles*

1947 Income Compared with 1946 Income	Professional			Self-employed or Managerial			Clerical and Sales				Skilled or Semi-skilled				Unskilled			Farm Operator		
	1–5	6–8	9–10	1–5	6–8	9–10	1–3	4–5	6–8	9–10	1–3	4–5	6–8	9–10	1–3	4–5	6–10	1–3	4–5	6–10
Much larger	17	14	22	14	14	19	44	17	18	21	18	17	18	30	16	12	14	10	14	24
Somewhat larger	44	38	47	9	24	31	21	43	44	40	22	31	45	38	22	31	41	16	33	34
About the same	13	21	21	44	38	29	16	25	24	21	28	35	19	23	40	36	28	43	27	22
Somewhat smaller	5	19	8	16	12	13	6	10	8	13	13	7	11	6	13	15	10	12	19	15
Much smaller	19	7	1	14	12	5	12	4	5	5	14	8	5	2	8	4	4	12	5	3
Not ascertained	2	1	1	3	...	3	1	...	1	...	5	2	2	1	1	2	3	7	2	2
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
No. of cases	52	81	161	101	105	278	92	110	200	137	100	173	420	171	155	107	90	230	83	119

1948 Income Deciles

1948 Income Compared with 1947 Income	Professional			Self-employed or Managerial			Clerical and Sales				Skilled or Semi-skilled				Unskilled			Farm Operator		
	1–5	6–8	9–10	1–5	6–8	9–10	1–3	4–5	6–8	9–10	1–3	4–5	6–8	9–10	1–3	4–5	6–10	1–3	4–5	6–10
Much larger	32	14	16	17	19	27	35	21	20	20	20	21	19	21	16	17	32	15	22	30
Somewhat larger	28	56	37	18	32	23	33	38	38	43	30	28	35	42	31	36	36	25	26	23
About the same	27	16	25	34	19	32	18	29	27	22	16	28	28	23	28	30	18	28	17	15
Somewhat smaller	7	12	14	19	21	9	8	8	8	10	17	14	13	7	11	10	11	15	9	23
Much smaller	4	1	3	8	5	5	5	3	4	2	13	4	4	2	10	1	1	11	18	5
Not ascertained	2	1	5	4	4	4	1	1	3	3	4	5	3	5	4	6	2	6	8	4
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
No. of cases	68	86	139	109	95	266	90	117	184	104	85	182	426	193	194	114	119	237	63	130

* '1–5' indicates combined data for the 5 lowest income deciles; '6–8' combined data for the 6th, 7th, and 8th deciles, etc. See Table 6, note.

tions, the patterns of change at different income levels are not systematically different. Among the self-employed and managerial group the proportion reporting increases both from 1946 to 1947 and from 1947 to 1948 was substantially greater among those with high incomes than among those with low incomes. Declines were more frequent among businessmen with low than with high incomes.

In the clerical and sales group patterns of change differ little among those at different income levels except in the proportions with large as contrasted with small increases. In the lower income deciles large increases were more frequent than small, while in the higher deciles, the reverse was true in both 1946–47 and 1947–48.

Among skilled and semi-skilled workers the rise in the proportion with income increases from the lowest to the highest income deciles was compensated for primarily by a shift in the proportion whose incomes decreased.

Among unskilled workers in the first but not in the second period small but not large increases in income were more frequent at high than at low income levels. In both periods more of this group reported stable incomes at low than at high income levels.

Among farm operators the proportion with increases was higher for those at high than at low income levels, but the proportion with decreases varied little with income level. The proportion with stable incomes declined.

As noted earlier, the occupational classifications of heads of spending units were determined as of the date of interview. Some shifted from one group to another during the period for which changes in income were measured. From the two later surveys we have information about such shifts in occupation and also about the relation between changes in occupation and income. However, the two types of report do not refer to exactly the same periods.

Some of the differences in occupational patterns of income change may be due to recent entry into the occupation. According to the 1948 Survey of Consumer Finances the clerical and sales group and the unskilled workers contained almost 20 per-

cent new entrants during 1947; the farm group 4 percent, the business group 8 percent, the professional group 10 percent, and skilled and semi-skilled workers 13 percent. In 1948 the proportion of new entrants was much smaller. Some of the difference between the two years is probably accounted for by the progress of veterans in finding civilian employment. Heads of spending units who after discharge from the armed forces entered an occupation were classified as 'new entrants'. They were probably few in 1948, more in 1947, and many more in 1946. Of those interviewed at the beginning of 1949, roughly 5 percent of the professional, clerical and sales, and unskilled workers, and 2 percent or less of the skilled and semi-skilled workers, businessmen, and farm operators had not been so employed a year earlier. An additional 9 percent of the unskilled group, 7 percent of the clerical and sales group, and 6 percent of the businessmen also shifted to these respective occupations during the second year.

Substantial changes in income were much more frequent among spending units whose heads changed occupations than among those whose heads did not (Table 9). On the other hand, small increases were more frequent among those who did not change occupation in 1947. In both 1947 and 1948 more units whose heads did not change occupation than of those who did reported stable income.

Table 9
Changes in Income by Changes in Occupation
Percentage Distribution of Spending Units in Each Group

Income in Second Year Compared with Income in First	1947 Compared with 1946 Change in Occupation			1948 Compared with 1947 Change in Occupation	
	In 1947	In 1945 or 1946	None 1945–47	In 1948	None in 1948
Much larger	27	28	12	30	19
Somewhat larger	18	29	34	19	33
About the same	20	23	34	20	28
Somewhat smaller	13	9	12	14	11
Much smaller	18	9	6	12	5
Not ascertained	4	2	2	5	4
Total	100	100	100	100	100
No. of cases	457	614	2,413	324	3,144

Change in occupation means change in classification of occupation, not change of job. It does not include occupational shifts within the classifications here used. For example, a change from semi-skilled to skilled labor is not included among changes in occupation.

Table 10

Changes in Income by Type of Community

Percentage Distribution of Spending Units in Each Type of Community Group

Income in Second Year Compared with Income in First	1946 Compared with 1945			1947 Compared with 1946			1948 Compared with 1947		
	Metropolitan Areas	Other Urban Areas	Rural Areas	Metropolitan Areas	Other Urban Areas	Rural Areas	Metropolitan Areas	Other Urban Areas	Rural Areas
Much larger	17	19	14	19	18	16	20	20	19
Somewhat larger	24	26	23	33	32	26	31	32	30
About the same	24	25	31	26	30	34	27	27	28
Somewhat smaller	17	16	16	11	10	14	12	10	13
Much smaller	14	12	11	9	8	7	7	6	6
Not ascertained	4	2	5	2	2	3	3	5	4
Total	100	100	100	100	100	100	100	100	100
No. of cases	969	1,297	792	1,064	1,353	1,144	1,074	1,298	1,138

Because of rounding, figures may not add to totals.

3 *Type of Community*

Changes in income differ less when spending units are classified by type of community than by either age or occupation. A somewhat higher proportion of increases was reported in urban than in rural areas, except in 1947–48 (Table 10). The proportion of declines, on the other hand, does not differ much from one type of community to another in any period, while stable incomes were reported by a higher proportion of rural than urban residents in the first two periods. These patterns probably reflect those found for farmers as contrasted with other occupational groups.

A further classification by income does not add much to what we know about the over-all patterns of income change by type of community. The difference between the proportions with increases in urban and in rural communities is largest among low income groups in 1946–47 (App. Table 3).

The absence of large differences in the incidence of income change by type of community indicates, in one sense, how general the impact of the postwar rise in national income has been.

4 *Veteran Status*

Differences in patterns of income change between veterans and nonveterans should be considered in conjunction with the differences noted for age groups. In the periods covered, veterans were predominantly in the younger groups. A relatively higher proportion of spending units containing one or more veterans than of those with no veteran reported substantial income increases and a lower proportion reported stable incomes in all three periods. Veterans and nonveterans differ little if at all in the proportions reporting small increases or large declines (Table 11).

The differences in the income changes of veterans and non-veterans were more pronounced from 1945 to 1946 than in the following years. At the end of the first period a relatively large proportion of veterans had been recently discharged from service, and these reported income changes from military to civilian pay.

Table 11
Changes in Income by Veteran Status
Percentage Distribution of Spending Units in Each Veteran Status
Group

Income in Second Year	*Spending Units*					
Compared with Income	With veteran(s)			Without veterans		
in First	*1945–46*	*1946–47*	*1947–48*	*1945–46*	*1946–47*	*1947–48*
Much larger	34	27	28	11	15	17
Somewhat larger	23	30	35	26	31	30
About the same	14	24	18	30	32	30
Somewhat smaller	13	11	10	18	20	12
Much smaller	12	6	5	12	8	7
Not ascertained	4	2	4	3	2	4
Total	100	100	100	100	100	100
No. of cases	689	767	823	2,277	2,769	2,647

Because of rounding, figures may not add to totals.

As the interval since the end of the war lengthens, analysis of
income change by veteran status will probably yield smaller
differences. Yet it may contribute to an understanding of what
happened immediately after the war. The income of many more
young than middle-aged persons increased (see Table 6). Is this
difference due to recent discharge from the armed forces rather
than to age? Comparison of the three postwar years makes an
affirmative answer improbable. The predominant position of
those with income increases among the younger age groups was,
if anything, more pronounced in 1948 than in the two preceding
years.

5 *Size of Spending Unit*
Relatively little difference in patterns of income change is
revealed when spending units are classified by size. Nor do any
consistent systematic relationships appear when we compare the
patterns of change in 1946–47 and 1947–48 (Table 12). Two-
person units—most of them married couples without children
—do not differ much with respect to patterns of income change
from units consisting of several persons—most of them parents
with children. The relatively small differences in income changes
among spending units that vary in size are interesting in view
of what we know about the relatively large differences among

Table 12

Changes in Income by Number in Spending Unit
Percentage Distribution of Spending Units of Different Size

Income in Second Year Compared with Income in First	1947 Compared with 1946 Number in Spending Unit					1948 Compared with 1947 Number in Spending Unit				
	One	Two	Three	Four	Five or more	One	Two	Three	Four	Five or more
Much larger	22	17	17	15	14	24	17	17	21	23
Somewhat larger	27	29	30	38	35	30	29	34	33	30
About the same	34	31	28	27	27	27	30	27	26	24
Somewhat smaller	6	12	14	12	13	9	12	11	13	15
Much smaller	8	10	8	6	7	7	7	7	5	4
Not ascertained	3	1	3	2	4	3	5	4	2	4
Total	100	100	100	100	100	100	100	100	100	100
No. of cases	710	1,059	683	546	520	692	1,071	729	503	507

size distributions of income for large and small spending units.[9]

Further classification of spending units by income level reveals some differences among units that vary in size: a tendency for more single-person units than spending units of four or more members to experience decreases in the second and third income quintiles, and a tendency for the reverse to occur in the fourth and fifth quintiles (App. Table 4). Spending units with several members may have not only more dependent children but also more income receivers than units with few members. Yet no significant differences were found with respect to changes in income.

6 *Education*
In both 1946–47 and 1947–48 patterns of income change differ significantly between spending units whose heads had only a grammar school education or less and those who attended high school or college (Table 13). Fewer spending units whose heads had little schooling than those who attended high school or college had increases. Since education is highly correlated with several other variables, this finding calls for further studies which could not be carried out with the available data. Nevertheless, it is worth while to discuss the problems raised by the relation between education and changes in income. First, income level is associated with education. The higher the education, the larger the average income. The difference in income is larger between those who attended college on the one hand and those who attended only grammar and high school on the other. Secondly, those who attended grammar and high school are relatively similar with respect to income level but differ greatly with respect to changes in income. Persons who attended only grammar school, however, constitute a higher proportion of older than of younger groups. The age differences between persons who attended high school and college are much smaller. Finally, education is associated with occupation. Persons who do

9 *Federal Reserve Bulletin*, July 1949, Part III, 'Distribution of Consumer Income in 1948', Table 13; June 1948, Part II, 'Distribution of Consumer Income in 1947', Table 8.

·not go beyond grammar school are most numerous among skilled and unskilled workers and farmers, and for them the trend of increasing income may end at an earlier age than in other occupations.

Table 13
Changes in Income by Education of Head of Spending Unit
Percentage Distribution of Spending Units in Each Education Group

Income in Second Year Compared with Income in First	*1947 Compared with 1946*			*1948 Compared with 1947*		
	Grammar School or Less	High School	College	Grammar School or Less	High School	College
Much larger	12	22	19	17	22	22
Somewhat larger	27	33	36	28	34	34
About the same	37	25	23	30	25	25
Somewhat smaller	12	10	13	14	10	11
Much smaller	8	8	8	7	6	5
Not ascertained	4	· 2	1	4	3	3
Total	100	100	100	100	100	100
No. of cases	1,430	1,395	704	1,342	1,355	717

Those who attended but did not graduate from high school or college are included in those groups respectively.

Because of rounding, figures may not add to totals.

The average educational level of the middle-aged and elderly will probably be higher in the future. Therefore, to correlate future patterns of income change with education, changes in the income of the elderly with less education should be compared with those of the elderly with more education. The question we are left with is whether factors associated with age or occupation are primarily responsible for the patterns of income change of consumers in different educational groups.

7 *Conclusions*
The differences in patterns of income change are largest when spending units are classified by age of head and second largest when classified by occupation; the differences are smallest when they are classified by type of community and spending unit size. Classification by the veteran status of the head or any other member and by the education of the head reveals larger differences

than by type of community and spending unit size but smaller than by age and occupation.

For all the variables except occupation, patterns of income change were substantially the same in 1945–46, 1946–47, and 1947–48. Differences in the distributions of income increases and decreases were less marked than differences in the size distributions of spending units classified by size, type of community, and so on.

Three-way classifications of spending units—by age, income, and income change; by occupation, income, and income change; and so on—in most instances supported the relations found in two-way classifications at most or all income levels. However, when classified by three variables, the data are subject to bigger sampling errors, and the income classes used in this study are larger than desirable for such an analysis.

Because of the interrelations among the characteristics here studied, subsequent work in this area should concern the joint relation of changes in income with several variables. For example, spending unit size should be studied jointly with age and income level; age with occupation, education, and income level; and so on. The major reason for not presenting more three- or four-way cross-tabulations is the limitation imposed by the small subgroups within samples of about 3,500 units. Relatively large sampling errors for proportions computed from few cases restrict the possibilities of drawing reliable conclusions on the basis of small differences. The large sampling errors in a comparison of small subgroups might be reduced by more comprehensive surveys, by oversampling special segments of the population, or by combining data from successive surveys. If units with similar incomes and in similar age, occupation, and education groups in 2 or 3 successive annual surveys were combined, they would yield cells large enough for reliable results.

The relation between changes in income and other variables should be analyzed also under economic conditions different from those in the late 1940's. For example, the relation between age and increases in income may not be the same when national income remains stable or declines as when it rises. From such

studies we may be able to evaluate the assumption that income change is an independent variable determining changes in savings and expenditures. However, factors associated with changes in income may well be as influential as the changes themselves.

Finally, study of demographic variables may not prove sufficient for explaining the interrelations between changes in income and economic behavior. It describes certain prevailing conditions to which individuals' reactions differ. Each individual reacts to given conditions according to the way he perceives them, and perception depends not only upon income, age, education, and other circumstances, but also upon attitudes, expectations, and motives.

C SUBJECTIVE EVALUATION OF INCOME CHANGES

To gain some understanding of the relation between changes in income and economic behavior, it is important to know how individuals evaluate these changes. In the Surveys of Consumer Finances several questions are asked with this end in view. They are directed at a discussion of the causes of changes in income and the respondent's evaluation of such changes. How do individuals explain that their income has increased or decreased? Do they think they are better off or worse off than they were a year ago?

Several factors may have jointly brought about the change in the annual income of even a single family. And when all families in the nation are considered, a wide variety of factors and their combinations have to be taken into account. On the crowded schedule of the Surveys of Consumer Finances, only the respondent's opinion about the major cause or causes could be ascertained.

Table 14 points to 4 conclusions:

1) Increases in wage and salary rates were fairly common in all 3 years studied. They were, however, much less frequent from 1945 to 1946 than during the following 2 years.

2) From the last war year, 1945, to 1946 the incomes of relatively many workers declined because of loss of overtime or less steady work. Others took lower paying jobs after war produc-

Table 14

Reasons Given for Changes in Income

Percentage Distribution of Spending Units Reporting Change in Income

Reason	*1945–46*	*1946–47*	*1947–48*
Same job			
Higher wage or salary rate	20	39	41
Higher income due to steadier work, more overtime	6	6	8
Lower wage or salary rate	18	{ 2	3
Lower income due to less steady work, less overtime		{ 12	17
Different job			
Higher income	18	10	7
Lower income	6	5	4
Self-employment			
Higher income	9	10	5
Lower income	5	10	7
Members of spending unit working			
More	3	6	7
Fewer	3	3	4
Head retired, sick	2	4	6
No reason given	11	38	35
Total	101	145	144

In this table all spending units reporting that their incomes changed are taken as 100 percent. Some did not explain the changes in their income. Those who mentioned two or even three factors are included twice (three times) in the table.

The interviewing and coding procedures used in the first survey (1945–46) were not quite the same as those in the later surveys. Farm operators were asked the question and are included in the first survey, but not in the second and third surveys. Discharge from military service is classified as 'different job'.

tion ended. The proportion of those who took higher paying jobs was likewise relatively high in this period when many returned to civilian jobs from service in the armed forces. All these forms of income change declined in frequency during the following 2 years.

3) Individual wage earners may encounter a variety of unfavorable trends even during years of full employment and increasing wage rates, e.g., 1946–47 and 1947–48. Income declines because of less steady work and loss of overtime were especially frequent.

4) Change in the number of spending unit members working (wives, dependent children, etc.) was not often mentioned as a factor contributing to changes in income.

Respondents were asked also whether they thought they were

better or worse off financially than a year earlier. The data collected on income changes have certain shortcomings. Confined to money income, they do not reflect the presence or absence of fluctuations in income in kind and the increase in the cost of living. Survey data that would correct for these factors are not available. But the subjective evaluation of changes in financial situation, while by no means measuring changes in total real incomes, is indicative of what occurred. It, however, takes into account the effect of other changes as well. Among them, increases or decreases in expenditures due to factors other than changes in price were mentioned rather frequently. For instance, some said that they were worse off because of large expenses for hospitalization or the birth of a baby, or that they were better off because their or their wives' and children's health had improved. In some instances attitudes and expectations (job security or an expected increase in income) colored these evaluations.

Despite these differences in the frame of reference, subjective evaluation of changes in financial position and its relation to changes in income are of interest. In each period there was a positive relation between income change and evaluation of financial position, but its degree varied. During the first few postwar years the proportion of spending units that said they were better off was substantially smaller than the proportion that said their incomes had increased (Table 15). At the beginning of 1947 and 1948, for instance, about 30 percent said they were better off, while 42 and 49 percent respectively reported increases in income. Conversely, many more units said they were worse off than reported declines in income. But, despite the substantial advance in living costs, 25–30 percent of all spending units believed that their financial situation had improved, and another 30 percent that it was unchanged. Many of the latter expressed satisfaction with their financial position.

Early in 1949 the proportion of spending units that said they were better off was somewhat higher, the proportion worse off somewhat smaller than early in 1948, although the proportion with income increases and decreases did not change from 1948 to 1949. This difference in the evaluation of financial position

Table 15
Evaluation of Changes in Financial Position
Percentage Distribution of All Spending Units

Opinion about Financial Position *	Time of Survey					
	Early 1946	Early 1947	July 1947	Early 1948	July 1948	Early 1949
Better off now than a year ago	20	31	26	29	25	33
Same	42	30	31	28	30	35
Worse off now than a year ago	31	34	41	39	42	30
Uncertain	2	2	1	2	1	1
Not ascertained	5	3	1	2	2	1
Total	100	100	100	100	100	100

* The question — "Would you say you people are better or worse off financially now than you were a year ago?" — was asked in 3 national surveys conducted by the Survey Research Center.

probably reflects a substantially smaller rise in prices during 1948 than during the preceding year.

Making more money seems to be associated with the feeling that one is better off, and making less money with the feeling that one is worse off (Table 16). The degree of relationship, however, varies with the direction of income change. Among those whose incomes declined, relatively few said they were better off, while, in 1948 at least, among those whose incomes increased, a substantial proportion said they were worse off. In explaining why

Table 16
Changes in Income and Evaluation of Changes in Financial Position
Percentage Distribution of Spending Units in Each Group

Opinion about Financial Position	Early 1948 Income Compared with Early 1947 Income *			Early 1949 Income Compared with Early 1948 Income *		
	Larger	*Same*	*Smaller*	*Larger*	*Same*	*Smaller*
Better off now than a year ago	48	15	10	56	18	12
Same	25	43	13	29	55	17
Worse off now than a year ago	24	40	75	14	26	70
Uncertain, not ascertained	3	2	2	1	1	1
Total	100	100	100	100	100	100
No. of cases	1,350	1,047	635	1,285	1,083	638

* The question was: "Are you making as much money now as a year ago, more or less?" It is different from that basic to Table 15 and other tables. The opinions about changes in financial position from early 1947 to early 1948 and from early 1948 to early 1949 were related to the opinions about changes in income in the same period.

they felt they were worse off, most units referred to the higher cost of living. About 1 out of 4 spending units with income increases, about 2 out of 5 with stable incomes, and 3 out of 4 with income declines thought at the beginning of 1948 that they were worse off than a year before because of higher prices. Early in 1949 complaints about price increases declined considerably.

The higher the second year income the larger the number who said they were better off. In both 1947 and 1948 about half of those with an income over $7,500, but only a fifth of those with an income under $1,000, thought their financial situation had improved (App. Table 5). This finding undoubtedly reflects the earlier one about the relation of income change to second year income level.

D INCOME CHANGES, DURABLE GOODS EXPENDITURES, AND SAVING

The relation between consumer expenditures and changes in income cannot be studied in detail from the Surveys of Consumer Finances because they cover expenditures only for automobiles, furniture, refrigerators, and other household appliances. These goods are of special interest, however, because they represent the postponable expenditures that are subject to relatively wide cyclical fluctuations. The relation between amounts saved and changes in income can be studied from the surveys.

1 *Durable Goods Expenditures*
In both 1947 and 1948 the largest proportion of spending units who bought durable goods was among those whose incomes had risen substantially; the smallest proportion in 1947 among those whose incomes had remained stable; units whose incomes had declined occupied the middle position (Table 17). In 1948 substantial income declines are associated with the lowest frequency of durable goods purchases, but in this year again fewer units reporting stable incomes bought such goods than units with small reductions in income. Small expenditures for durable goods depended less on increases, decreases, or stable incomes

than did large expenditures. The assumption that purchase of durable goods is a function of size rather than of change in income is tested partly in Appendix Table 6. Data for each of three broad income groups for 1948 and one for 1947 are consistent with the findings for all units.

Table 17
Changes in Income and Purchases of Durable Goods
Percentage Distribution of Spending Units in Each Group

Expenditures for Durable Goods 1947	Much larger	Somewhat larger	Same	Somewhat smaller	Much smaller
		1947 Income Compared with 1946 Income			
None	50	54	65	58	60
$1–199	14	15	13	14	14
200–999	23	21	16	18	19
1,000 or over	12	9	6	9	6
Not ascertained	1	1	*	1	1
Total	100	100	100	100	100
No. of cases	594	1,128	1,084	411	271
1948		1948 Income Compared with 1947 Income			
None	43	48	62	51	65
$1–199	15	16	11	15	10
200–999	26	27	17	24	17
1,000 or over	16	9	9	· 10	7
Not ascertained	*	*	1	*	1
Total	100	100	100	100	100
No. of cases	653	1,096	944	417	215

Expenditures on automobiles, furniture, refrigerators, and other household appliances bought minus trade-in values of automobiles.
* Less than 0.5 percent.

Because of the relatively small proportion of spending units whose incomes declined, units with small and with large reductions in income are not differentiated in Appendix Tables 6 and 7. In 1947 and 1948 the real incomes of all units whose money incomes declined also declined substantially. The real incomes of units with stable incomes declined little. What is called in the tables a 'small income increase' represents a relatively insignificant change in real income, and a 'large income increase' an increase in real income.

Other variables—age, occupation, size of the spending unit,

liquid assets, household inventories of durable goods, as well as consumers' outlook, expectations, and hopes—are probably related to both income changes and durable goods expenditures, and there is need for more detailed analysis than can be made here. At this point we can only report that consumer optimism or pessimism appears to have affected purchases of durable goods. Among those who expected their incomes to increase and good times to continue, a larger proportion bought such goods than among those who feared a decline in their incomes or that depression was around the corner.

It is not surprising that more of those whose income had gone up than of those whose income had gone down should have decided to satisfy their desires for durable goods. Assuming that all groups have unsatisfied needs for durable goods, an increase in income (and optimism about prospective income) would naturally lead more often to purchases than would a stable or declining income.

The relatively few purchases by units reporting stable incomes require further explanation. Possibly, this is to be found in variables correlated with income stability rather than in income stability itself. The elderly, for instance, are relatively numerous among units reporting stable incomes, and fewer old than young or middle-aged persons bought durable goods.

2 Saving

In 1946–48 there was a strong relation between buying durable goods and dissaving.[10] For instance, half of the units who spent $1,000 or more for durable goods dissaved in 1947; but of those who either did not purchase any durable goods or spent less than $200 on them, only 22 percent dissaved. Since income increases are associated with purchases of durable goods, they may be associated also with dissaving.

Theoretical considerations suggest an entirely different relation between saving and changes in income. It has been widely

[10] According to the definitions used in the surveys (and by the Department of Commerce), money spent for durable goods is considered as an expenditure, not as saving.

thought that there is a lag in the adjustment of expenditures to a change in income. Therefore, it may be assumed that most units whose income declined would either save relatively little or would dissave, while most units whose income increased would save relatively much and few would dissave.

On the basis of data for 1946 and 1947, George Katona discusses the relation between income changes and amounts saved in the 'Effect of Income Changes on the Rate of Saving', *Review of Economics and Statistics,* May 1949. Table 18 and Appendix Table 7 present these relationships for 1947 and 1948. In all 4 years dissaving was common not only among spending units whose income declined but also among those whose income increased substantially, i.e., who had a gain in real income. It was less common among units with stable incomes and among those with small gains. High rates of saving were most common among units with large increases in income.

Table 18
Changes in Income and Proportion of Income Saved
Percentage Distribution of Spending Units in Each Group

Rate of Saving	Much larger	Somewhat larger	Same	Somewhat smaller	Much smaller
1947		1947 Income Compared with 1946 Income			
Negative	30	25	25	29	44
Zero	5	5	13	7	9
1–19% of income	40	49	44	44	33
20% or more of income	25	21	18	20	14
Total	100	100	100	100	100
No. of cases	594	1,128	1,084	411	271
1948		1948 Income Compared with 1947 Income			
Negative	32	28	27	35	46
Zero	6	5	9	4	6
1–19% of income	37	48	46	39	32
20% or more of income	25	19	18	22	16
Total	100	100	100	100	100
No. of cases	679	1,096	953	417	220

The high frequency of dissaving by units whose income declined may have been due to maintenance of living standards. But this was not the only factor that accounted for dissaving, and other kinds of dissaving must be recognized; for instance, dissaving due to purchases of durable goods was common among

units whose income increased.[11] The relative frequency of different kinds of dissaving may vary considerably from years of cyclical upswing to years of cyclical decline. Possibly, the relation between dissaving and the large increases in income that prevailed during the first postwar years was a function of optimism and the relatively high levels of income. It may have been influenced also by the postponed demand for durable goods that was satisfied during the first few postwar years.

Cross-section analysis for the first few postwar years indicates that consumer units should be classified into several groups whose spending and saving behavior are influenced by different sets of factors. Analyses must, of course, be carried out for years when conditions differ from those of the postwar period, that is, for periods not affected by wartime postponement of demand and for periods reflecting other stages of cyclical activity. Furthermore, the scope of the investigation must be extended to cover the joint variation of several factors. Finally, studying the effects of changes in income on amounts saved and on expenditures for durable goods does not suffice. As Ruth P. Mack has pointed out in 'The Direction of Change in Income and the Consumption Function', *Review of Economics and Statistics,* November 1948, increases and decreases in income will probably affect expenditures for different commodities differently.

Hypotheses based upon economic and psychological theory may serve to guide these studies, and cross-section data derived from detailed interviewing surveys to test these hypotheses. Only then can principles of motivation to spend and to save be established, and the effects of changes in income within the framework of such a motivational analysis studied.

E   METHODOLOGICAL NOTE

As noted above, the analysis of data obtained from respondents who were interviewed twice (early in 1948 and again early in

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[11] In 'Analysis of Dissaving', *American Economic Review,* June 1949, George Katona presents evidence of association between dissaving on the one hand, and certain kinds of income decline, large purchases of durable goods, and other variables on the other.

1949) may provide some check upon the reliability of information used in this article. The contributions of reinterviewing will be reported fully in a separate publication by the Survey Research Center of the University of Michigan. Here, only some relevant findings are summarized briefly.

1) Income data for 1947 obtained early in 1949 differ in many individual cases from income data for 1947 obtained early in 1948 from the same respondents. Yet the majority of reports are in the same thousand dollar bracket, and almost all are in the same or an adjacent bracket.

2) For the 655 spending units interviewed twice, data on income changes from 1947 to 1948 are available by means of what may be called the 'two-interview method': by computing the difference between the 1947 income, ascertained early in 1948, and the 1948 income, ascertained early in 1949. This method differs from the 'one-interview method' which in the 1949 Survey of Consumer Finances had the following form: the income of spending units was first ascertained for 1948, then, in the same interview (conducted early in 1949) for 1947. (Respondents who said they could not give their 1947 income were asked to tell whether their 1947 income was much larger, larger, the same, smaller, or much smaller than their 1948 income.) When the income changes derived by the two methods were tabulated in 5 categories, the distributions were similar with one exception: the one-interview method yielded a much higher frequency of answers 'about the same'. Three-fourths of identical respondents were in the same or in closely similar categories; and one-fourth in different categories. Unreliability of the direction of the recollected income changes—report by the one-interview method that the income was higher (lower) when the two-interview method indicated that it was lower (higher)—was observed in 15 percent of the responses.

3) Unreliability of recollected income changes—measured by comparing the one-interview method with the two-interview method—does not appear to be related to age or occupation. It is, to some extent, related to income size and to the change from the first to the second year. When some of the major tabulations

based on the one-interview method were recalculated on the
basis of the two-interview method for the small reinterview
sample the relationships were substantially the same with one
exception. The increase in income stability with age was not
supported because unreliability in reporting stable incomes,
although about equally frequent at all age levels, is more perti-
nent to the oldest age group than to any other.

All the information presented in this paper is in the form of
frequency distributions. The tables contain the proportion
of the nation's spending units, or of groups of units, with certain
characteristics. By combining survey data with other information
some of these findings can be expressed also in millions of units
and some in dollars. Such survey aggregates can be compared with
information compiled by other methods.

To express the major survey findings in numbers of spending
units, it suffices to know that all the spending units of the nation
living in private households totaled about 50.4 million on Feb-
ruary 1, 1949 (the midpoint of the interviewing period for the
1949 survey) and 48.9 and 47.2 million on February 1, 1948 and
1947, respectively. These estimates are based upon Bureau of the
Census computations of the number of dwelling units and on
survey findings about the proportion of dwelling units with
multiple spending units.

From these estimates and from survey findings about incomes,
aggregate consumer money income for each postwar year can be
estimated. The changes in aggregate income based upon these
estimates are in the same direction as those based upon the
Department of Commerce estimates. The magnitudes of the
changes also are similar, but survey estimates of total income are
consistently lower. Some of the differences are due to differences
in the definition of income and others to the fact that the survey
samples are drawn from private households in the continental
United States only. After allowing for these differences, survey
aggregates still remain below the Commerce Department esti-
mates. The differences between the aggregate incomes estimated
from the Surveys of Consumer Finances and the Department of
Commerce figures, approximately 10 percent for both 1947 and

1948, may be due to a combination of several factors, such as sampling and reporting errors, non-response in survey data, and overestimation or inclusion of amounts that do not represent consumer income in the Commerce Department computations.

If we assume that Commerce Department estimates are correct, the 10 percent·difference may indicate the order of magnitude of the maximum net error—joint effect of sampling error, reporting error, and errors due to non-response—involved in the income frequency distributions derived from the 1948 and 1949 Surveys of Consumer Finances. Compensating errors in survey data will, of course, not be reflected. The errors in aggregates derived from surveys are relatively large in relation to proportions obtained from surveys. The surveys were designed to measure the latter rather than the former. The relative difference between the errors in aggregates and in frequency distributions may be illustrated as follows: The number of spending units with more than $100,000 income in a given sample affects the aggregates considerably but the proportion of units with over $10,000 income hardly at all.· Underreporting of income affects the aggregates to the extent of the underreporting but the size distribution of income only in certain instances and in much less degree. Therefore, the income size distributions are subject to smaller errors than the income aggregates.

If we attempt to divide the total error into its components, we must bear in mind that sampling errors are random and may cause either over- or underestimates. The main explanation of the consistent underestimates in surveys must therefore be reporting and non-response errors.

Occasional long answers to income questions and second visits for the purpose of clarifying discrepancies in financial data yielded some information on reporting errors. Neglecting errors due to rounding of income data by respondents and to gross falsifications, attention must be called first to memory errors. Every person who had odd sources of small income can hardly be expected to remember all amounts received 6 or 12 months earlier. Secondly, income tax returns were often being prepared at the time of the interviews and were frequently consulted in

answering questions. Though this may greatly contribute to the accuracy of many survey reports, some respondents probably reported amounts similar to those entered on their tax returns; both may be underestimates. Of course, overstatements are possible too; for example, because of reluctance to report low income or income that had declined recently. The relative frequency of over- and understatements is not known, but probably in the aggregate the effect of the former is smaller.

We do not have any evidence in the Surveys of Consumer Finances that the reporting errors are relatively larger or more frequent for high than for middle or low income units. They need not be in years when many skilled and unskilled workers may have earned some money in addition to their regular pay through occasional work of their own, their wives, or their children. On the other hand, persons with large incomes would be more likely not to report business, dividend, or interest income, intentionally or unintentionally. Furthermore, their rate of non-response (not-at-home cases and refusals to be interviewed) is relatively high.[12] In calculating aggregates, or shares of different income groups in total income (Lorenz curves), survey deficiencies probably loom larger at the upper than at the middle or lower end of the income distribution. But there is no reliable method of correcting survey data separately for the reporting and other errors of high and low income respondents.

Probably neither the direction nor the extent of reporting errors will vary greatly in successive annual surveys using the same methods. Errors due to non-response also probably remain relatively constant from year to year. From recent studies we learn that the percentage of non-response in various strata of the sample is relatively constant in successive surveys. We may therefore conclude: surveys probably supply more reliable information about year to year comparisons, i.e., trends, than

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[12] In the Surveys of Consumer Finances new respondents are not substituted when the original respondents are not at home upon repeated visits or refuse to be interviewed. To compensate for non-response, a larger sample is drawn. Furthermore, each stratum is weighted separately to reflect its differential non-response rate. Nevertheless, non-response errors occur because those who do not respond may have a different position from the average respondent in their stratum.

about conditions in any one year. Furthermore, the reliability of year to year comparisons is subject primarily to random variations in the sample which are measured by the estimated sampling error. The main statistical supplement to the survey tabulations consists, therefore, of sampling errors of differences (App. Table 8).[13]

As sampling error varies inversely with the square root of sample size, the sampling error of a difference calculated for small groups may be very large. For instance, if we calculate the relation between income changes and purchases of durable goods for each thousand dollar income bracket, we get cells of 40–50–60 spending units within the 3,500 sample of the Survey of Consumer Finances. The sampling error of the difference is then more than 20 percentage points for values around 50 percent and larger than the differences obtained. Such statistically nonsignificant differences cannot be interpreted to mean either that there is or is not a *true* difference between two magnitudes. In other words, we may not learn much from dealing with data based on few cases.

In deciding for how small a cell data shall be published, another consideration is in order. When very small cells alone would provide evidence for or against certain hypotheses—for instance, about the saving behavior of spending units with over $10,000 income and different income changes—publication of data for them might do more harm than good. But when confirmation of trends revealed by comparisons of large groups is desired, smaller but more homogeneous subgroups may be observed. For instance, the frequency of large income gains decreases the older the head of the spending unit (see Table 6, Part A). Does this relation prevail within 'identical' income groups? A partial answer is presented in Table 6, Part B, on the basis of 30 subgroups, some of which are very small. In this instance the cells are not considered independently but the data are fitted into patterns.

The limitations of surveys may be overcome and sampling

13 The table is similar to that in the Appendix to the '1949 Survey of Consumer Finances', *Federal Reserve Bulletin,* June 1949.

errors reduced by enlarging the sample. Yet, weighty reasons besides cost make a substantial increase inadvisable. For larger samples, selecting and training interviewers, supervising the uniformity of their procedures, and checking and editing interviews may become very difficult and probably less effective. The reduction in the sampling error may be over-compensated by an increase in other errors. It is therefore appropriate to close this methodological note by emphasizing that survey accuracy depends both on the methods of selecting the sample and on the methods of approaching and motivating the respondents.

The Surveys of Consumer Finances are designed to attain this goal primarily by asking questions about finances as part of an inquiry into respondents' attitudes and opinions. Rapport with the respondents is built by long explanations of the purposes and value of the survey at the beginning of a conversational interview. Requesting detailed answers and recording them as nearly verbatim as possible, as well as expressing interest in the answers and encouraging respondents to enlarge on them, make reports on income more complete and facilitate the editing of data in the central office. Information on respondents' assets, such as real estate or common stock holdings, their major expenditures, such as purchases of durable goods and farm machinery, house repairs, and checks on the consistency of their accounting also ensure more complete income reporting.

Concerning issues of sampling, the fixed question-free answer interviewing method, selection and training of interviewers, and treatment of non-response, the reader is referred to Part IX of this volume and to the following publications:

Angus Campbell, 'Measuring Public Attitudes', *Journal of Social Issues,* May 1946

Angus Campbell and George Katona, 'A National Survey of Wartime Savings', *Public Opinion Quarterly,* Fall 1946

Charles F. Cannell, 'Factors Affecting the Refusal Rate in Interviewing', presented at the Meeting of the American Statistical Association, December 1948

Roe Goodman, 'Sampling for the 1947 Survey of Consumer Finances', *Journal of the American Statistical Association,* September 1947

Roe Goodman and Eleanor E. Maccoby, 'Sampling Methods and

Sampling Errors in Surveys of Consumer Finances', *International Journal of Opinion and Attitude Research,* Fall 1948

Roe Goodman and Leslie Kish, 'The Use of Controls Beyond Simple Stratification in the Probability Selection of a Sample', presented at the Meeting of the American Statistical Association, December 1948

George Katona, 'Contribution of Psychological Data to Economic Analysis', *Journal of the American Statistical Association,* September 1947

George Katona, 'Financial Surveys Among Consumers', *Human Relations,* January 1949

George Katona, 'Effect of Income Changes on the Rate of Saving', *Review of Economics and Statistics,* May 1949

George Katona, 'Analysis of Dissaving', *American Economic Review,* June 1949

Rensis Likert, 'The Sample Interview Survey', *Current Trends in Psychology* (University of Pittsburgh Press, 1947)

Eleanor E. Maccoby and Roe Goodman, 1947 Survey of Consumer Finances: Part I, Appendix, *Federal Reserve Bulletin,* June 1947

Eleanor E. Maccoby, 'Interviewing Problems in Financial Surveys', *International Journal of Opinion and Attitude Research,* December 1947

Staff of the Survey Research Center, 1948 and 1949 Survey of Consumer Finances: Part I, Appendix, *Federal Reserve Bulletin,* June 1948 and June 1949

The psychological aspects of the surveys are discussed in detail in *Psychological Analysis of Economic Behavior,* by George Katona (McGraw-Hill, 1951).

Appendix Table 1
Changes in Income Related to Size of Income in Second Year
Percentage Distribution of Spending Units

	Money Income before Taxes							
	Under $1,000	$1,000–1,999	$2,000–2,999	$3,000–3,999	$4,000–4,999	$5,000–7,499	$7,500 & over	Total
1946 Income Compared with 1945 Income				*1946*				
Much larger	1	3	5	3	2	1	1	17
Somewhat larger	2	5	7	5	3	2	1	25
About the same	6	6	6	4	2	2	1	27
Somewhat smaller	3	4	4	3	2	1	*	16
Much smaller	3	3	3	2	*	*	*	12
Not ascertained	1	*	*	*	*	*	*	3
Total	17	23	25	16	8	6	4	100
1947 Income Compared with 1946 Income				*1947*				
Much larger	2	4	3	3	2	2	1	18
Somewhat larger	2	5	8	7	4	3	2	31
About the same	6	7	7	4	2	3	1	30
Somewhat smaller	2	3	3	2	1	1	*	11
Much smaller	2	3	1	1	1	*	*	8
Not ascertained	*	*	1	*	*	*	*	2
Total	14	22	23	17	10	9	5	100
1948 Income Compared with 1947 Income				*1948*				
Much larger	2	3	5	4	2	2	1	20
Somewhat larger	3	5	7	7	4	4	1	31
About the same	4	5	6	5	3	3	1	27
Somewhat smaller	1	2	3	3	1	1	1	12
Much smaller	2	2	1	1	*	*	*	6
Not ascertained	1	1	1	*	*	*	*	4
Total	12	18	23	20	12	10	5	100

Because of rounding, figures may not add to totals.
* Less than 0.5 percent.

Appendix Table 2

Spending Units and Shares of Income Received for 12 and for 24
Months, Cumulative Percentage Distributions
Reinterview Survey, 655 Identical Spending Units

| | *1947 or 1948 Annual Income** | | *Av. Annual Income Jan. 1, 1947 to Dec. 31, 1948* | |
| | Cumulative Percentage of | | | |
	Spending units	Income	Spending units	Income
Under $1,000	10.2	1.2	9.1	1.3
$1,000–1,999	28.8	8.8	29.2	10.2
2,000–2,999	50.3	23.5	50.8	26.2
3,000–3,999	70.3	42.0	70.5	45.7
4,000–4,999	83.0	57.6	83.0	61.4
5,000–7,499	94.0	75.5	94.3	79.6
7,500 & over	100.0	100.0	100.0	100.0

For a few not ascertained cases, known incomes of similar spending units were as-
signed.

* Since the distributions of income for 1947 and for 1948 are practically identical,
their weighted average is presented.

Appendix Table 3

Changes in Income by Type of Community
Percentage Distribution of Spending Units within Income Quintiles

	Metropolitan Areas	Other Urban Areas	Rural Areas
1947 Income Compared with 1946 Income			
	Lowest 1947 Income Quintile		
Much larger	20	16	11
Somewhat larger	14	13	12
About the same	37	41	46
Somewhat smaller	9	11	14
Much smaller	16	17	12
Not ascertained	4	2	5
Total	100	100	100
No. of cases	83	199	361
	Second 1947 Income Quintile		
Much larger	16	17	16
Somewhat larger	31	34	25
About the same	28	29	32
Somewhat smaller	11	8	16
Much smaller	11	11	8
Not ascertained	3	1	3
Total	100	100	100
No. of cases	143	250	236

Appendix Table 3 (*cont.*)

	Metropolitan Areas	Other Urban Areas	Rural Areas
		Third 1947 Income Quintile	
Much larger	15	14	16
Somewhat larger	30	33	39
About the same	30	33	31
Somewhat smaller	13	12	11
Much smaller	9	5	2
Not ascertained	3	3	1
Total	100	100	100
No. of cases	188	289	210
		Fourth 1947 Income Quintile	
Much larger	18	18	16
Somewhat larger	39	38	44
About the same	21	26	21
Somewhat smaller	11	10	14
Much smaller	10	7	3
Not ascertained	1	1	2
Total	100	100	100
No. of cases	274	295	157
		Highest 1947 Income Quintile	
Much larger	23	25	25
Somewhat larger	39	41	27
About the same	24	21	28
Somewhat smaller	10	8	14
Much smaller	3	4	4
Not ascertained	1	1	2
Total	100	100	100
No. of cases	376	295	180

1948 Income Compared with 1947 Income

	Metropolitan Areas	Other Urban Areas	Rural Areas
		Lowest 1948 Income Quintile	
Much larger	19	19	11
Somewhat larger	16	24	27
About the same	28	29	34
Somewhat smaller	10	9	12
Much smaller	24	11	10
Not ascertained	3	8	6
Total	100	100	100
No. of cases	110	216	348
		Second 1948 Income Quintile	
Much larger	19	20	19
Somewhat larger	29	27	31
About the same	26	28	28
Somewhat smaller	15	10	13
Much smaller	7	8	5
Not ascertained	4	7	4
Total	100	100	100
No. of cases	170	225	241

Appendix Table 3 (*concl.*)

	Metropolitan Areas	Other Urban Areas	Rural Areas
		Third 1948 Income Quintile	
Much larger	19	18	19
Somewhat larger	34	35	33
About the same	30	27	29
Somewhat smaller	11	12	11
Much smaller	4	4	6
Not ascertained	2	4	2
Total	100	100	100
No. of cases	194	273	186
		Fourth 1948 Income Quintile	
Much larger	18	21	28
Somewhat larger	37	38	30
About the same	25	24	24
Somewhat smaller	14	11	15
Much smaller	3	4	2
Not ascertained	3	2	1
Total	100	100	100
No. of cases	238	291	175
		Highest 1948 Income Quintile	
Much larger	24	21	26
Somewhat larger	30	37	31
About the same	27	25	21
Somewhat smaller	11	9	14
Much smaller	4	3	4
Not ascertained	4	5	4
Total	100	100	100
No. of cases	362	293	188

See note to text Table 6.

Appendix Table 4

Changes in Income by Number in Spending Unit
Percentage Distribution of Spending Units within Income Quintiles

	Number in Spending Unit				
	One	Two	Three	Four	Five & over
1947 Income Compared with 1946 Income					
		Lowest 1947 Income Quintile			
Much larger	21	12	7	10	3
Somewhat larger	14	9	14	12	19
About the same	44	47	37	44	37
Somewhat smaller	7	12	22	19	12
Much smaller	12	18	14	10	17
Not ascertained	2	2	6	5	12
Total	100	100	100	100	100
No. of cases	248	179	83	44	83

Appendix Table 4 (*cont.*)

	Number in Spending Unit				
	One	Two	Three	Four	Five & over
		Second 1947 Income Quintile			
Much larger	24	13	14	5	17
Somewhat larger	36	28	18	33	30
About the same	26	32	33	33	26
Somewhat smaller	5	14	16	14	17
Much smaller	6	13	14	10	8
Not ascertained	3	*	5	5	2
Total	100	100	100	100	100
No. of cases	205	181	92	69	78
		Third 1947 Income Quintile			
Much larger	21	11	16	15	13
Somewhat larger	31	32	35	35	41
About the same	31	37	29	30	27
Somewhat smaller	8	11	13	16	12
Much smaller	6	6	5	4	3
Not ascertained	3	3	2	. . .	4
Total	100	100	100	100	100
No. of cases	132	189	143	103	109
		Fourth 1947 Income Quintile			
Much larger	24	19	20	14	13
Somewhat larger	37	37	36	48	42
About the same	26	20	24	22	26
Somewhat smaller	5	12	11	9	14
Much smaller	5	11	7	6	3
Not ascertained	3	1	2	1	2
Total	100	100	100	100	100
No. of cases	70	222	167	131	125
		Highest 1947 Income Quintile			
Much larger	22	26	23	23	23
Somewhat larger	34	35	39	41	38
About the same	26	25	23	21	24
Somewhat smaller	11	9	11	10	12
Much smaller	2	4	4	3	3
Not ascertained	5	1	*	2	. . .
Total	100	100	100	100	100
No. of cases	55	288	198	199	125

1948 Income Compared with 1947 Income

	One	Two	Three	Four	Five & over
		Lowest 1948 Income Quintile			
Much larger	21	12	14	10	11
Somewhat larger	20	25	25	33	27
About the same	34	30	33	22	28
Somewhat smaller	9	9	9	13	21
Much smaller	12	15	18	14	7
Not ascertained	4	9	1	8	6
Total	100	100	100	100	100
No. of cases	262	201	71	55	85

Appendix Table 4 *(concl.)*

Number in Spending Unit

	One	Two	Three	Four	Five & over
		Second 1948 Income Quintile			
Much larger	27	12	15	16	22
Somewhat larger	36	24	29	26	24
About the same	19	33	24	42	28
Somewhat smaller	9	17	14	8	17
Much smaller	4	8	10	7	5
Not ascertained	5	6	8	1	4
Total	100	100	100	100	100
No. of cases	206	174	106	73	75
		Third 1948 Income Quintile			
Much larger	20	20	13	22	18
Somewhat larger	42	27	38	30	36
About the same	26	35	25	25	27
Somewhat smaller	9	10	13	16	10
Much smaller	2	4	6	7	4
Not ascertained	1	4	5	*	5
Total	100	100	100	100	100
No. of cases	119	185	159	87	103
		Fourth 1948 Income Quintile			
Much larger	28	20	23	18	24
Somewhat larger	32	35	36	42	31
About the same	27	28	23	20	25
Somewhat smaller	10	12	12	16	15
Much smaller	3	3	4	2	2
Not ascertained	*	2	2	2	3
Total	100	100	100	100	100
No. of cases	61	216	179	128	118
		Highest 1948 Income Quintile			
Much larger	28	20	18	29	34
Somewhat larger	29	35	34	32	29
About the same	30	25	32	22	16
Somewhat smaller	11	10	8	12	14
Much smaller	2	4	3	2	3
Not ascertained	*	6	5	3	4
Total	100	100	100	100	100
No. of cases	44	295	214	160	126

See note to text Table 6.
* Less than 0.5 percent.

Appendix Table 5

Opinions about Financial Position by Income Size

Percentage Distribution of Spending Units in Each Income Group

Opinion about Financial Position	Under $999	$1,000– 1,999	$2,000– 2,999	$3,000– 3,999	$4,000– 4,999	$5,000– 7,499	$7,500 & over
Early 1948			Annual Income, 1947				
Better off	19	25	28	32	31	39	49
Same	34	28	26	28	25	28	25
Worse off	42	43	42	38	40	31	24
Uncertain, not ascertained	5	4	4	2	4	2.	2
Total	100	100	100	100	100	100	100
Early 1949			Annual Income, 1948				
Better off	20	28	33	34	37	42	47
Same	37	36	34	36	37	33	30
Worse off	42	33	31	29	25	24	21
Uncertain, not ascertained	1	3	2	1	1	1	2
Total	100	100	100	100	100	100	100

Appendix Table 6

Changes in Income and Purchases of Durable Goods within Various Income Groups

Percentage Distribution of Spending Units in Each Group

Expenditures for Durable Goods	Much larger	Somewhat larger	Same	Smaller
		1947 Income Compared with 1946 Income		
1947		*1947 Income $3,000–4,999*		
None	35	48	57	52
$1–199	13	15	15	16
200–999	36	27	18	22
1,000 or over	15	9	9	9
Not ascertained	1	1	1	1
Total	100	100	100	100
No. of cases	181	393	237	158
		1948 Income Compared with 1947 Income		
1948		*1948 Income under $3,000*		
None	53	60	72	67
$1–199	18	20	13	13
200–999	22	17	11	16
1,000 or over	7	3	3	4
Not ascertained	*	*	1	. . .
Total	100	100	100	100
No. of cases	282	475	487	344

Appendix Table 6 (*concl.*)

Expenditures for Durable Goods	Much larger	Somewhat larger	Same	Smaller
1948	1948 Income Compared with 1947 Income			
	1948 Income $3,000–4,999			
None	39	41	51	42
$1–199	14	13	10	17
200–999	32	36	26	28
1,000 or over	15	10	12	12
Not ascertained	*	*	1	1
Total	100	100	100	100
No. of cases	227	398	268	179
	1948 Income $5,000 and Over			
None	24	33	43	35
$1–199	11	14	4	6
200–999	25	29	24	31
1,000 or over	40	23	28	26
Not ascertained	. . .	1	1	2
Total	100	100	100	100
No. of cases	143	217	180	101

Expenditures on automobiles, furniture, refrigerators, and other household appliances bought minus trade-in values of automobiles.
* Less than 0.5 percent.

Appendix Table 7
Changes in Income and Proportion of Income Saved
Percentage Distribution of Spending Units within Each Income Quintile

Rate of Saving 1947	Much larger	Somewhat larger	Same	Smaller
	1947 Income Compared with 1946 Income			
	Lowest 1947 Income Quintile			
Negative	29	14	23	40
Zero	25	26	30	18
1–19% of income	34	44	37	30
20% or more of income	12	16	10	12
Total	100	100	100	100
No. of cases	85	87	274	173
	Second 1947 Income Quintile			
Negative	42	25	27	34
Zero	4	9	15	8
1–19% of income	35	53	44	47
20% or more of income	19	13	14	11
Total	100	100	100	100
No. of cases	96	185	194	138

Appendix Table 7 (*cont.*)

	Much larger	Somewhat larger	Same	Smaller
	1947 Income Compared with 1946 Income			
	Third 1947 Income Quintile			
Negative	29	28	27	34
Zero	1	2	4	2
1–19% of income	42	52	54	42
20% or more of income	28	18	15	22
Total	100	100	100	100
No. of cases	104	231	213	126
	Fourth 1947 Income Quintile			
Negative	32	30	29	34
Zero	2	2	1	2
1–19% of income	45	50	48	40
20% or more of income	21	18	22	24
Total	100	100	100	100
No. of cases	123	286	185	122
	Highest 1947 Income Quintile			
Negative	21	20	19	32
Zero	. . .	1	2	. . .
1–19% of income	40	44	42	43
20% or more of income	39	35	37	25
Total	100	100	100	100
No. of cases	186	339	218	123
	1948 Income Compared with 1947 Income			
1948	*Lowest 1948 Income Quintile*			
Negative	35	33	26	44
Zero	22	22	27	13
1–19% of income	30	36	36	29
20% or more of income	13	9	11	13
Total	100	100	100	100
No. of cases	103	160	206	165
	Second 1948 Income Quintile			
Negative	31	31	27	44
Zero	8	6	9	2
1–19% of income	43	52	53	38
20% or more of income	18	11	11	16
Total	100	100	100	100
No. of cases	120	179	175	128
	Third 1948 Income Quintile			
Negative	34	26	29	34
Zero	2	3	4	2
1–19% of income	42	50	51	46
20% or more of income	22	21	16	18
Total	100	100	100	100
No. of cases	146	231	116	105

Appendix Table 7 (*concl.*)

	Much larger	Somewhat larger	Same	Smaller
	1948 Income Compared with 1947 Income			
	Fourth 1948 Income Quintile			
Negative	30	28	29	34
Zero	1	1	1	2
1–19% of income	41	52	47	40
20% or more of income	28	19	23	24
Total	100	100	100	100
No. of cases	150	249	176	114
	Highest 1948 Income Quintile			
Negative	28	23	24	35
Zero	. . .	1	*	. . .
1–19% of income	30	45	45	34
20% or more of income	42	31	31	31
Total	100	100	100	100
No. of cases	187	277	218	125

Because of rounding, figures may not add to totals.
See note to text Table 6.
* Less than 0.5 percent.

Appendix Table 8
Estimated Sampling Errors of Differences
Differences Required for Significance (95% probability) in Comparisons of Percentages Derived from Successive Surveys of Consumer Finances and from Two Subgroups of the Same Survey

Size of Sample or Group, n_2	Size of Sample or Group, n_1							
	100	200	300	400	500	700	1,000	3,500*
	For Percentages from about 30 to 70 Percent							
100	16							
200	14	11						
300	13	11	9					
400	12	11	9	8				
500	12	10	8	7	7			
700	12	10	8	7	6	6		
1,000	11	9	7	6	6	5	5	
3,500*	10	8	7	6	5	5	4	2.9
	For Percentages about 20 and 80 Percent							
100	13							
200	11	9						
300	10	8	7					
400	10	8	7	6				
500	10	8	7	6	6			
700	10	7	6	6	5	5		
1,000	9	7	6	5	5	5	4	
3,500*	9	6	5	5	4	4	3	2.2

Appendix Table 8 (*concl.*)

Size of Sample or Group, n_2	100	200	300	400	500	700	1,000	3,500*

Size of Sample or Group, n_2	Size of Sample or Group, n_1							
	100	200	300	400	500	700	1,000	3,500*
For Percentages about 10 and 90 Percent								
100	9							
200	9	7						
300	8	7	6					
400	8	7	6	5				
500	8	6	6	5	5			
700	7	6	5	4	4	4		
1,000	7	6	5	4	4	3	3	
3,500*	6	5	4	4	3	3	2	1.6
For Percentages about 5 and 95 Percent								
100	7							
200	6	5						
300	5	4	4					
400	5	4	4	3				
500	5	4	3	3	3			
700	5	4	3	3	3	3		
1,000	5	4	3	3	3	2	2	
3,500*	5	3	3	2	2	2	2	1.2

The true sampling errors of differences vary somewhat from item to item, but for practical purposes these variations may be ignored.
* Entire sample of each survey.

Comment

Milton Friedman, *University of Chicago*

The following comments are not a general appraisal or criticism of this interesting paper; they are rather to be regarded as notes on three points it suggests. The first note is statistical and is perhaps less applicable to this paper in its present form, than to many others. The other two bear on the meaning of data of the kind presented and on techniques for analyzing them.

1) The following quotations are the text for the first comment. "The major reason for not presenting more three- or four-way cross-tabulations is the limitation imposed by the small subgroups within samples of about 3,500 units." (Sec. B7) "When very small cells alone would provide evidence for or against certain hypotheses . . . publication of data for them might do more harm than good." (Sec. E)

It is entirely understandable that there should be considerable

reluctance in releasing figures for general public consumption that are subject to a wide margin of error, and that accordingly lend themselves to misinterpretation. One can, therefore, sympathize with the growing tendency of data-collecting agencies to release figures only when the margin of error of each figure taken separately is within certain clearly specified limits. Unfortunately, good public relations may be poor science. For analysis, the fundamental point is that it is always better to have some data than none. Indeed, it is obvious that replacing a sample of zero by a sample of one reduces the standard error more (namely, from infinity to a finite number) than any subsequent increase in the size of the sample. The real problem of statistical analysis is to squeeze information from whatever data are available. If sufficient cases were always available, there would never be any need for statistical analysis at all.

Numerous examples could be cited of important and valid conclusions reached from 3 and 4 and more-way cross-tabulations of samples containing many fewer than 3,500 observations, and the authors are to be congratulated for presenting as many such tabulations as they do. True, individual figures in such tabulations have wide margins of error, and no difference between any two selected figures may be statistically significant. Yet, as the authors note, the general trend of results may be: all differences may tend to be in the same direction or support or contradict evidence from other sources. The accumulation of a large number of probabilities, no one of which is small enough to justify regarding the particular difference as arising from anything other than chance, may yield a probability that is sufficiently small to justify regarding the set of differences as arising from something other than chance. The statistician's real function is to make significant inferences by putting together a large number of pieces of evidence, no one of which would itself yield such an inference.

Of course, selection is inevitable; no one can or should present every last figure he has collected or used. But at least in publications intended primarily for a scientific audience, it seems to me highly inappropriate for authors to suppress infor-

mation because in their view it "would do more harm than good". The fundamental premise of scientific work must be that knowledge is better than ignorance; that appropriate use of published material will more than counterbalance inevitable misuse. The responsibility of scientific workers is to present their data accurately and precisely, and as fully as time, space, and resources will permit; not to set themselves up as censors. No one can predict in advance how any particular information will be used—or misused. The history of science is studded with examples of the unexpected fruitfulness of material originally supposed of little or no value.

2) It is refreshing to see explicit recognition by the authors of the statistical phenomenon of 'regression toward the mean' in their analysis of the relation between changes in income and income level. Other publications presenting data from the sources used in this paper have been seriously defective because of their failure to recognize the influence of this phenomenon on the results.*

The techniques developed in the sources referred to by the authors for extracting valid conclusions from data showing the relation among incomes of the same units in different periods cannot be applied directly to many of their data because of the qualitative character of one classification. But the techniques can be modified for such data and applied directly both to some existing data and to data it is apparently planned to collect. It is to be hoped that in the future the basic character of the data will affect the analysis more fundamentally than it has in this paper.

3) The tables on changes in income show the net result of two forces: the general rise in income from year to year over the period covered and the differential behavior of individuals—changes in average income and changes in relative income status. If the effect of these two forces could be separated, the analytical value of the material would be greatly increased and its comparability with data for other years and other groups en-

* For example, '1949 Survey of Consumer Finances, Part III, Distribution of Consumer Income in 1948', *Federal Reserve Bulletin,* July 1949, pp. 784, 786.

hanced. For example, the conclusion that stability rather than decline becomes more frequent with old age may well be misleading. Stability of money income when incomes in general are rising means a decline in relative income status and might show up as an absolute decline in periods of stable or declining average income.

As the authors note, the separation can to some extent be made by reinterpreting the qualitative classes showing different degrees of income change. But this is at best a crude device. It would be highly desirable if, in future work, these two effects were sharply distinguished in the statistical material, either by the techniques referred to in the preceding comment, which automatically separate them, or in some other way. For example, it might be possible to construct tables showing the relation between income in one year and a computed income in the other year corrected for the change in average income between the two years.