ECONOMICS OF THE FAMILY RELATIVE TO NUMBER OF CHILDREN

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INTRODUCTION

LARGE families are now economically handicapped, in the United States and in many other countries, in three respects.[2] (1) Larger families tend at the present time to be concentrated at the lower income levels. This is true as regards regional variations, and as regards variations among economic groups in the same community or region.[3] The situation in the urban population of the United States in 1935-1936, as regards distribution of families comprising husband and wife and varying numbers of children under 16 years of age, by economic classes, is shown in Figure 1. For example, 17.4 per cent of the families with only one or two children received incomes of $2,000 or more per year, but only 10 per cent of

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Based on data from the Study of Consumer Purchases, with supplementary references. The Study of Consumer Purchases presents data from a nation-wide survey conducted by the Bureau of Labor Statistics of the United States Department of Labor and the Bureau of Home Economics of the United States Department of Agriculture, with the cooperation of the Works Progress Administration, the National Resources Committee, and the Central Statistical Board. This paper treats one phase of consumption pattern in relation to family types. The reader is referred to the published reports for full discussion of methods and findings in the survey.

The paper was prepared in the Seminar on Population Studies, Graduate School, American University, the data drawn from the following sources: Family Expenditure in Chicago, 1935-36. Bureau of Labor Statistics, Bulletin No. 642, Vol. 2; Family Income and Expenditure in Nine Cities of the East Central Region, 1935-36. Bureau of Labor Statistics, Bulletin No. 644; Family Income and Expenditure, Middle Atlantic and North Central Region, Farm Series. Bureau of Home Economics, United States Department of Agriculture (To be published). The present writers are solely responsible for the treatment and interpretations presented in this paper.

[2] In this statement and in the following treatment, size of family is considered only as it is affected by number of children. We are not concerned here with size of family as affected by groupings of "primary" and "secondary" families or other variations in numbers of adults, nor with "broken" or "single-person families."

[3] National Resources Committee: THE PROBLEMS OF A CHANGING POPULATION, Chaps. 4 and 5; Karpinos, Bernard D. and Kiser, Clyde V.: The Differential Fertility and Potential Rates of Growth of Various Income and Educational Classes of Urban Populations in the United States. The Milbank Memorial Fund *Quarterly*, October, 1939, xvii, No. 4, pp. 367-391.

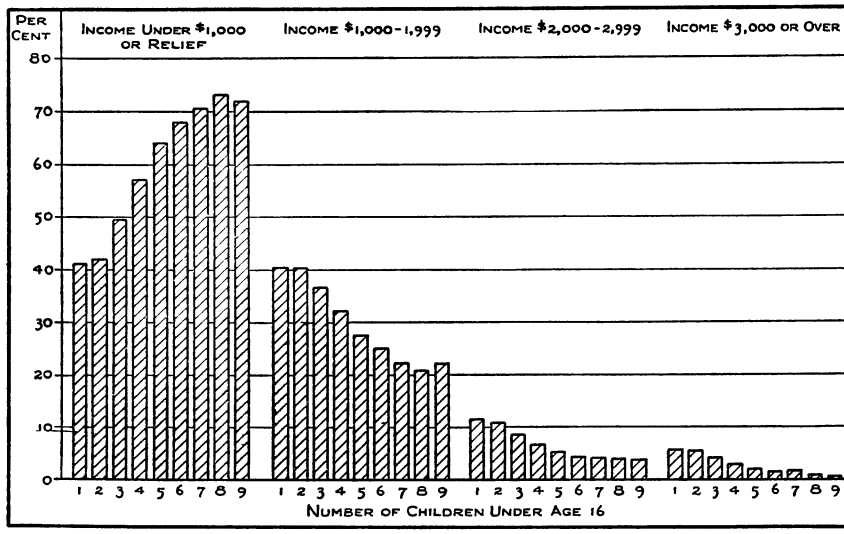

Fig. 1. Per cent of urban families with husband and wife and specified number of children in each of four economic classes. Public Health Survey Sample, 1935-36. Data from the "Economic Status of Urban Families and Children" by I. S. Falk and Barkev S. Sanders, *Social Security Bulletin,* May, 1939, 2, No. 5, pp. 25-34.

the families with four children, and only 5 per cent of the families with eight children. (2) The possibility of increased family income through gainful work by wives is sharply reduced by the presence of a child in the family, and somewhat further reduced as the number of children increases.[4] (3) The consumption level of the family, in given income classes, is lowered by the necessity of dividing the available economic resources among a larger number of members.

The last statement is axiomatic; but it has been impossible, until recently, to know how this general lowering of consumption levels with increased size of family affects different items in the family budget. The present paper is concerned with an investigation of this topic, using data provided by the Federal Study of Consumer Purchases, 1935-1936, limiting the comparisons to the four family

[4] This topic is developed in a collateral paper by Edward Hollander. *See also* United States Department of Agriculture: Family Income and Expenditures, Plains and Mountain Division, Part One, Family Income. Miscellaneous Publication 345, p. 58; Pacific Region, Part One, Family Income. Miscellaneous Publication 339, p. 76.

types which include husband and wife but no other persons over 16 years of age, for native white, nonrelief families in the East North Central area. The data relate to the families in the "controlled sample" for two of the four community groups in this area studied by the Bureau of Labor Statistics, namely (1) Chicago and (2) three middle-sized cities (New Castle, Pa.; Muncie, Ind.; Springfield, Ill.; which for convenience sake, will be called "middle cities" in this paper), and to a sample of farm families in Pennsylvania and Ohio, studied by the Bureau of Home Economics. The family types used in this analysis following the family type classification[5] used in the study of Consumer Purchases are as follows:

I. Husband, wife, no children.
II. Husband, wife, one child under age 16.
III. Husband, wife, two children under age 16.
VI. Husband, wife, three or four children under age 16.

Methods

Throughout the investigation, comparison is made between families of different types at given income levels. The results, therefore, are intended to show differences in consumption patterns and in savings among families with varying numbers of children under age 16 years, on the assumption that all types of families are distributed in the same way among income classes. Actually, as already stated, we know that this assumption is fictitious; but it is used in order to show how expenditures and savings are influenced by the size of family when the influence of differences in distribution by income is held constant.

Standardized proportional expenditures for various consumption categories are presented for each family type. These values are derived from the percentages of total money expenditure (or percentage of total value of living, i.e., money income plus imputed

[5] Not all of the family type classifications used in the original study have been used in this analysis. The classification numbers used in the Consumer Purchases Study have been retained.

value of economic goods and services obtained without direct money expense, in the case of farm families) spent for each consumption category by families of a given type in each income class. The percentage expenditures for particular categories by families of the same type in different income classes are then averaged, using as weights for each area the number of families in each income class in a "standard population." The "standard population" used here represents the distribution by income of families of all types in the random ("eligible") sample in each area. The values obtained therefore represent average proportional expenditures for different consumption categories by families of each type, weighted according to the income distribution of all nonrelief, native white families in each area. A similar procedure is followed in the analysis of savings.

Several supplementary methods were also used, but the results, which in general merely confirm those obtained by the method described above, are not reported in detail in this paper. One supplementary method (using sums of ranks) and the results obtained are presented in an appendix. Another procedure was as follows: the expenditure for each consumption category by families of a given type was expressed as a ratio to the expenditure for that category by families of all types, combined, separately for each income class. The average of such ratios for each family type, with respect to each expenditure category, was then computed, using as weights the number of schedules obtained from families of each type in each income class. In this procedure the number of cases sampled in each cell is taken into account, without regard to the distribution of families by income in the community—whereas the reverse holds for the standardized proportional expenditures. The family type variations shown by these "averages of ratios" were in general the same as those indicated by the "standardized proportional expenditures" reported below. In discussing expenditures for food, reference will be made to a related analysis by another investigator.

General Results

The proportion of family income spent for food rises as size of family increases from husband-and-wife, to husband-wife-and-one-child, to husband-wife-and-two-children, to husband-wife-and-three-or-four-children. This pattern appears consistently in each of the three areas. In spite of this rise in proportional expenditure, the nutritional level, as measured by actual expenditure for food per meal per adult-equivalent, falls in inverse proportion. It is therefore apparent that food requirements exert an urgent pressure on the budget of American families, which is intensified as the size of family increases.

The increased expenditure for food, at given income levels, by families with children is offset by curtailment of expenses on many different items. Except for decreases in gifts and taxes, which offset about one-third or one-fourth of the increases for food, this curtailment is not consistently evidenced for any particular group of expenditures, but appears at various points, notably household operation, furnishings and equipment, and transportation.

Apparently the increased housing needs of families with children are just about balanced by increased financial strain, so that proportional expenditure for housing remains fairly constant. In some areas, but not all, clothing expenditure rises with increasing size of family. Expenditure for formal education rises consistently, but such expenditure is a negligible item in the total budget of most American families with no children aged 16 or over.

Summary results are presented in Table 1 and Figure 2. Supplementary information on particular items will be reviewed topically.

The preceding paragraphs relate to distribution of expenditures, or value of family living (including imputed value of food, housing, and household operation, in the case of farm families). Number of children also affects the relation of total expenditure to income. When the data for both urban series are standardized, families

without children, or with only one child under age 16, show on the average small but substantial net savings during the period covered by the study (3 per cent to 5 per cent of money income, as the standardized mean of the proportional net savings in different income classes). On the other hand, in both urban series, families with two or more children had, on the average, a very narrow margin between income and expenditure (less than 1 per cent of money income). In other words, among such families, the deficits of those who were unable to make both ends of the family budget meet just about cancelled the savings of those who kept expenses below current income. Among farm families the savings were

Table 1. Standardized percentage distribution of money expenditures (urban) or value of family living (farm) by consumption categories for specified family types.

Expenditure Classes	Chicago				Middle Cities				Pennsylvania-Ohio Farms			
	Family Type				Family Type				Family Type			
	I	II	III	VI	I	II	III	VI	I	II	III	VI
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Food[1]	31.1	34.2	36.6	38.6	30.2	31.6	33.7	36.4	35.8	38.3	39.4	42.8
Housing[2]	26.4	26.0	24.4	25.6	24.9	24.2	23.0	23.9	23.0	20.5	19.6	18.7
Household Operation[3]	4.6	4.7	4.3	4.3	4.7	4.2	4.0	3.9	11.2	10.3	9.4	10.1
Furnishings and Equipment	3.2	2.6	3.0	2.4	4.9	5.0	4.2	3.6	3.8	3.4	2.8	2.8
Clothing	9.0	8.9	9.0	8.8	8.5	9.2	9.2	9.4	5.7	7.0	8.4	8.4
Transportation	8.7	7.1	7.4	5.4	9.3	8.6	9.8	7.4	8.7	8.9	9.7	7.0
Gifts and Taxes	3.7	2.6	2.3	2.0	4.4	2.9	2.9	2.4	4.3	2.4	2.4	2.4
Medical Care	4.4	5.3	4.3	4.5	4.2	4.9	3.9	4.2	3.2	3.9	4.0	3.7
Recreation and Amusements	2.8	2.7	2.9	2.4	2.8	3.2	3.0	2.6	1.1	1.8	1.3	1.2
Reading	1.2	1.1	1.1	1.0	1.2	1.2	1.2	1.1	.7	.7	.6	.5
Miscellaneous	4.9	4.8	4.7	5.0	4.9	5.0	5.0	5.1	2.5	2.8	2.4	2.4
Education	0.2	0.3	0.5	0.9	0.0	0.3	0.6	0.9	0.0	0.2	0.2	0.3
Personal Care	2.1	2.1	2.0	2.0	2.0	2.3	2.2	2.1	0.9	1.2	1.1	1.1
Tobacco and Other	2.6	2.4	2.2	2.1	2.9	2.4	2.2	2.1	1.6	1.4	1.1	1.0

[1] Including imputed values for farm families only.
[2] Money expenditure for housing, plus fuel, light, refrigeration for urban families; money plus imputed value of housing for farm families.
[3] Including imputed values and including fuel, light, refrigeration for farm families only.

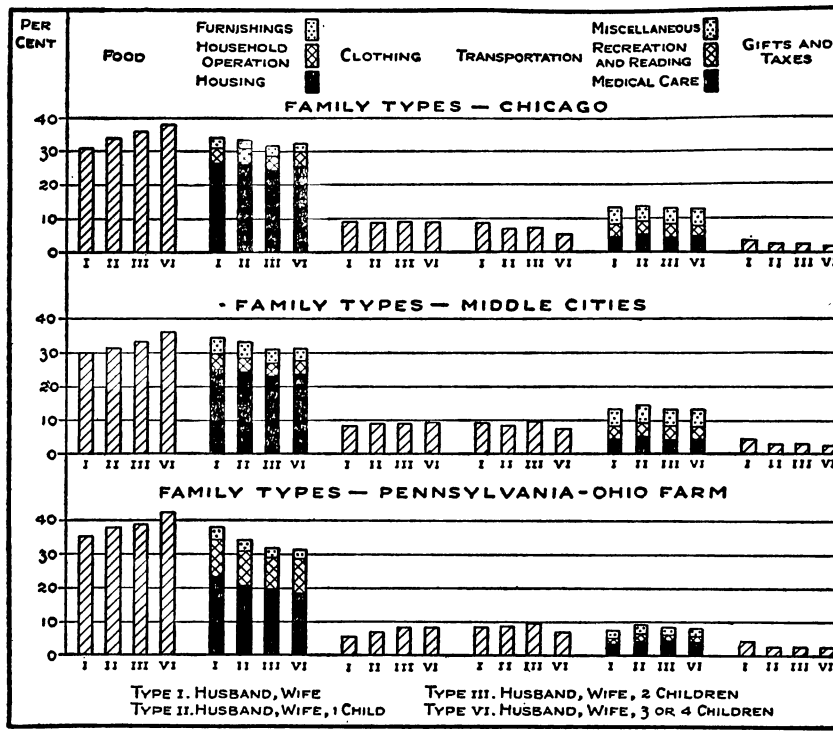

Fig. 2. Per cent of total money expenditure (Chicago, Middle Cities) or per cent of total value of family living (Pa.-Ohio Farm) in specified consumption categories by area and by family type. Standardized mean proportions. Data from Consumer Purchases Study.

larger, but the proportion declines as size of family increases. The results of this analysis, using data for a highly variable item from small samples, must be accepted with some caution. However, in so far as the results are accepted, they point to the extremely precarious financial situation of urban families with children, under present conditions. This is also evidenced by the large proportion of such families which have been compelled to apply for public relief.[6]

[6] Families that had received relief during the previous year were not included in the "eligible sample" of the Consumer Purchases Study. Falk and Sanders found that among urban families relief was reported by 13.3 per cent of the families without children, 16.8 per cent of the families with one child, 20.1 per cent of the families with two children, 35.9 per cent of the families with four children, and 56.7 per cent of the families with eight children.

Food

Food is the major item in the expense account of most American families. For example, in Chicago, it accounts for over 40 per cent of the total money expenditure of families with incomes below $1,000, 33 per cent of the total money expenditure of families with incomes of $2,000-$2,249, 30 per cent of the total money expenditure of families with incomes of $3,500-$3,999, and 21 per cent of the total money expenditures of families with incomes of $7,500-$9,999. Because of the importance, for the present investigation, of the data on food costs, a description of the terms and methods used in the preparation of these data is quoted at length.[7]

Food

Included here were all family expenses for food, together with expenditure for such items as ice cream, candy, soft drinks, beer, and alcoholic beverages. Cod-liver and haliver oil were also considered food.

Nonfood articles which may be bought in grocery stores, such as cleaning supplies, matches, soap, tobacco, and food for pets were excluded from this category.

Food At Home. A distinction was made between food purchased to be prepared at home and food purchased and eaten away from home. In the former category was included expense for any food prepared at home but eaten away from home, such as home-prepared lunches for work, school, or picnics. Expense for articles such as coffee, milk, or other food, bought at work or school to supplement the home-prepared lunches was classified with expense for food away from home.

Food purchased to be prepared in a vacation home occupied by the family was classified as expense for food at home.

The amount spent for food served to boarders was derived through use of the average expense per meal per equivalent adult (explained below), and was deducted from total expense for food at home, so that the figures shown in table 2, column 6, and table 3 of the Tabular Summary represent net family expense.

[7] United States Bureau of Labor Statistics: Family Expenditures in Chicago 1935-36, pp. 226-228. The same terms and definitions are used by all the agencies cooperating in the Study of Consumer Purchases.

Food Away From Home. Included here was expense for meals at work and at school (except for food carried from home), including board at school, meals while traveling or on vacation (except for food prepared in a vacation home), meals purchased on a business trip for which there was no reimbursement by an employer, other meals eaten out, and ice cream and candy, soft drinks and alcoholic beverages consumed away from home.

Expense for food away from home necessarily included in many cases some expense for service and entertainment as well as food costs proper.

Average Money Expenditure Per Meal Per Equivalent Adult. In recognition of the variations in quantity, and thus in expense, of food consumption among persons of different ages, the following scale of relative requirements for various persons served from the family food supply was adopted:[7] (Footnote 7, p. 228: This scale of food relatives was developed from data secured from the Bureau of Home Economics of the Department of Agriculture, which furnished information on standard food allowances, based on actual expense records, differentiated by age, sex, and activity.)

Age of Person	*Relative Food Expense*
20 Years of Age and Over	1.0
13 to 19 Years	1.1
6 to 12 Years	.9
Under 6 Years	.6

These relatives were applied, whether the person was a member of the economic family or a boarder, guest, or domestic servant. The relative factor applied to nurses for the sick was 0.9. The term equivalent adult is used in the text as representing one food expenditure unit.

It was assumed that twenty-one meals per week were eaten by each member of the economic family during that portion of the report year spent at home. For other members of the household (boarders, house guests, household help, and nurses) the actual number of meals eaten was ascertained. The average expense per meal per equivalent person was derived by dividing the total family food expense (after subtraction of expense for food eaten while traveling or on vacation) by the total number of equivalent person meals.

In order to determine the expense for meals served to boarders, the

average expense per meal per food expenditure unit was multiplied by the total number of meals served to boarders; the resulting sum was deducted from the total family expense for food at home.

Food produced at home is not taken into account in the case of the urban families, in the values presented in this paper. Food produced for home consumption is, however, taken into account in the case of farm families. Such food was valued, by the Bureau of Home Economics, at the prices farm families would have paid had they purchased similar food at the most likely place of purchase.

Table 2. Relative expenditures for food, standardized as regards income distribution.[1] (Expenditure by Family Type VI=100.)

	Type I	Type II	Type III	Type VI
Chicago	80.9	88.6	95.0	100
Middle Cities	82.8	86.8	92.7	100
Pa.-Ohio Farm	83.7	89.5	92.2	100

[1] Based on values given in Table 1.

Expenditure for food is strongly influenced by family composition. As the number of children increases, expenditures for food in specific income classes rise consistently. The relative standardized expenditures for food for the urban areas and the corresponding values for the farm area (including imputed values) for different family types are presented in Table 2.

In spite of the increased proportions allotted to food by families with children, the actual value of food consumed per food-cost unit decreases sharply as the number of children increases. Standardized expenditures (or values) per meal per equivalent adult are as follows:

	Family Type I	*Family Type II*	*Family Type III*	*Family Type VI*
Chicago	$.246	$.200	$.170	$.144
Middle Cities	$.183	$.148	$.124	$.103
Pa.-Ohio Farm	$.138	$.122	$.105	$.092

If the urban samples are broken at the $2,000 income level, the influence of family type on expenditures for food appear to be

operative with similar force at both lower and higher income groups —except apparently as regards percentage expenditures for food in the middle-sized cities. The results of this trial run as follows:

Standardized Percentage Expenditures for Food

	Family Type I	*Family Type II*	*Family Type III*	*Family Type VI*
Chicago				
Under $2,000	34.7	37.1	40.0	41.6
$2,000 and Over	26.5	30.2	32.2	34.5
Middle Cities				
Under $2,000	32.3	34.1	36.1	39.2
$2,000 and Over	24.2	24.7	27.2	28.7

Standardized Expenditures per Meal per Equivalent Adult

	Family Type I	*Family Type II*	*Family Type III*	*Family Type VI*
Chicago				
Under $2,000	$.211	$.168	$.143	$.126
$2,000 and Over	.292	.243	.205	.169
Middle Cities				
Under $2,000	.167	.137	.115	.094
$2,000 and Over	.228	.178	.148	.126

A more exact treatment of the influence of family type on expenditures for food as income rises is afforded by a comparison of curves fitted to data on total expenditures and expenditures per food-cost unit for Chicago.[8] The divergence of such curves for different family types remains fairly constant through a wide income range.

It is necessary in the case of urban families to give special consideration to the cost of food (including beverages) outside the home. Such consumption takes a larger proportion of total food expenditures among families without children than among families with children. The standardized proportions of total food ex-

[8] Unpublished study by Richard M. Graham.

penditures accounted for by food consumed away from home are as follows:

	Family Type I	*Family Type II*	*Family Type III*	*Family Type VI*
	Per Cent	*Per Cent*	*Per Cent*	*Per Cent*
Chicago	16.9	11.5	9.6	8.5
Middle Cities	9.6	5.6	5.5	4.4

It is possible that about one-half of the expenditure for food outside the home is attributable to service.[9] If we assume that this is the case, we obtain the "adjusted" expenditures per meal per equivalent adult shown in Table 3. The inter-area differences shown here are partly due to community differences in the distribution of families by income; but the inter-family-type differences are independent of this factor, since all family types within each area are

Table 3. Adjusted standardized expenditures, or values, per meal per equivalent adult.

Area	Family Type	Adjusted Expenditure or Value[1]	Relative Expenditure (Type VI = 100)
Chicago	Type I	$.225	163
	Type II	$.188	136
	Type III	$.162	117
	Type VI	$.138	100
Middle Cities	Type I	$.174	172
	Type II	$.144	143
	Type III	$.121	120
	Type VI	$.101	100
Pa.-Ohio Farm	Type I	$.138	150
	Type II	$.122	133
	Type III	$.105	114
	Type VI	$.092	100

[1] Urban values adjusted on assumption that only one-half of money spent for food outside the home is credited to "food." Farm values include imputed value of goods supplied from farm.

[9] No data are available that bear directly on this point, but see article on Restaurants in Encyclopedia of the Social Sciences for estimate of distribution of costs in restaurant management.

weighted with reference to a single standard population as regards distribution by income.

All the results obtained in this analysis are subject to several limitations. The number of cases in each sample is fairly small, and the data are necessarily imperfect. The weights used in calculating food-cost units, although based on studies of actual family food consumption and estimates of individual consumption, are rough and to some degree, arbitrary. The inclusion of expenditures for alcoholic beverages, candy, etc., introduces a luxury element which may vary widely in families of different composition and different tastes and in different income classes. Some small economies are possible in purchasing and utilizing food for larger family units. Subject to these limitations, the picture is very clear. In general, as the number of children increases, families at given income levels compromise between increased food requirements and other added needs by devoting a larger part of their available resources to food but nevertheless accepting a more restricted diet than they would otherwise be able to afford.

It is interesting to note that if all family types in each area had invested the same proportion of their total money (or total values of family living in the case of the farm families) in food, the relative expenditures per equivalent adult would have run as follows[10]:

Area	*Family Type I*	*Family Type II*	*Family Type III*	*Family Type VI*
Chicago	201	153	123	100
Middle Cities	209	165	129	100
Pa.-Ohio Farm	179	149	124	100

Taken at face value, these results would indicate that among urban families the average family with three or four children would need about twice as much income as a family without children to

[10] Dividing the relatives in Table 3 by the relatives in Table 2. *Note:* In obtaining derived values all available decimals have been used so that the results sometimes differ slightly from those obtained on the basis of the smoothed values presented elsewhere.

maintain the same plane of living, as regards food, without greater sacrifice at other points. We cannot attach much importance to these exact values, but obviously the expenditure requirements for the maintenance of similar planes of living are very different for families with no, one, two, and three or four children.

Clothing

Among Chicago families there appears to be no significant relation between number of children in the family and proportional expenditure for clothing, at given income levels. In the middle cities, families with children seem to devote a somewhat larger share of total money expenditures to clothing than do childless couples; but the difference is small. A significant relationship at this point does appear in the case of the Pennsylvania-Ohio farm families (*see* Table 1, also Appendix). In the case of clothing, separate data are available on expenditures for husbands and wives and for children. Combining the standardized proportions of total expenditure paid for clothing with proportions of this expense used for clothing of husband and wife, we obtain another index of the influence of family type on plane of living at given income levels (*see* Table 4).

It is apparent that among farm families represented in this sample, the number of children in the family has very little influence on expenditures for clothing of husband and wife. This finding can not be accepted as representative of farm families in general, because in several of the communities included in this sample dress was more or less prescribed by religious tradition. It is generally true, however, that among farm families serviceability of clothing, relative to the prestige value, is more important than among urban families. In other samples of farm families, it might be expected that the relative values of the proportional expenditures for clothing of husband and wife would be intermediate between the urban series and that for the farm families represented in this sample.

	Expenditure for Clothing of Husband and Wife as Per Cent of Total Expenditure for Clothing	Expenditure for Clothing as Per Cent of Total Money Expenditure (or Total Value of Family Living)	Expenditure for Clothing of Husband and Wife as Per Cent of Total Money Expenditure (or Total Value of Family Living)	Relative Values (Type VI = 100)
Chicago				
Type I	99.0[1]	9.0	8.9	182
Type II	80.1	8.9	7.1	145
Type III	65.5	9.0	5.9	120
Type VI	56.2	8.8	4.9	100
Middle Cities				
Type I	99.0[1]	8.5	8.4	162
Type II	78.0	9.2	7.2	138
Type III	66.2	9.2	6.1	117
Type VI	55.2	9.4	5.2	100
Pa.-Ohio Farm				
Type I	99.3[1]	5.7	5.7	136
Type II	73.0	7.0	5.1	121
Type III	63.4	8.4	5.3	126
Type VI	49.9	8.4	4.2	100

[1] Some families classed as Type I include a person other than husband and wife present in the family for a fraction of the year.

Table 4. Standardized proportional expenditures for clothing.

If the results described above were taken at face value, with an assumption of equal interest in clothing for husbands and wives in all family types, it would appear that the average urban family with three or four children would need from 60 per cent (Middle Cities series) to 80 per cent (Chicago series) more income than a family without children to maintain the same level of living in this respect. The differences appear to be much smaller in this respect among the farm families in this sample. Again, these results must be received with caution; but, taken in conjunction with those obtained by the analysis of expenditures for food, they throw some light on the pressure of increased size of family on levels of family living.

Housing and Related Expenses

No large variation among family types appears in expenditures

for housing among urban families at the same income levels, but in these figures the imputed rental value of owned homes is not taken into account. The relative importance of such imputed values does apparently differ somewhat among family types; it is highest for Type I (which may include the largest proportion of older couples) and lowest for Type II (which includes many young couples). The imputed values of housing used without direct money expense, as standardized percentages of money expenditure for housing, run as follows:

	Family Type I	*Family Type II*	*Family Type III*	*Family Type VI*
Chicago	10.1	4.9	9.0	9.0
Middle Cities	29.2	15.8	19.5	16.2

These variations are principally due to differences in the percentages of home owners among families of different types. These figures (standardized) run as follows:

	Family Type I	*Family Type II*	*Family Type III*	*Family Type VI*
	Per Cent	*Per Cent*	*Per Cent*	*Per Cent*
Chicago	16.5	9.2	16.5	17.2
Middle Cities	44.7	25.0	30.3	33.0

The proportional values of housing by family type, relative to total expenditure, are shown in Table 5, with urban values adjusted to represent total values of housing (money expenditure plus imputed value) as per cent of total money expenditure.

Except for the indication of somewhat higher values of housing available to Type I, perhaps as the result of property accumulation among the older families, there seems to be little variation among families with varying numbers of children, as regards value of housing relative to income. It is, therefore, apparent that larger families (as regards number of children under 16) are forced to

accept more crowded quarters or to live in less desirable situations than would otherwise be necessary. The influence of increased number of children does not greatly affect expenditures for housing at specific income levels; its influence on adequacy of housing relative to family needs is presumably far more serious.

Table 5. Value of housing as per cent of total money expenditure (urban), or as per cent of total value of family living (farm).

Area	Family Type			
	Type I	Type II	Type III	Type VI
Chicago	29.1	27.3	26.6	27.9
Middle Cities	32.2	28.0	27.5	27.8
Pa.-Ohio Farm	23.0	20.5	19.6	18.7

In the case of household operation, and still more in the case of furnishings and equipment, there is some evidence of the influence of increased economic strain in lowering expenditures as size of family increases.

Transportation

Expenditure for automobile is the major and most elastic factor in the transportation group. Variations in expenditures for transportation may therefore be understood as reflecting, for the most part, variations in expenses for the purchase, upkeep, and operation of autos.[11] Apparently the number of children in the family has little influence on the relative frequency of ownership of autos. Size of family does, however, appear to influence expenditures for transportation, at given income levels. There is a suggestion that expenditures for transportation (chiefly automobile) are heaviest in Type I (husband and wife only) and Type III (husband, wife, and two children under age 16). All the indices agree in pointing to the need felt by families with three or four children to get along with cheaper cars, or to purchase a new car less frequently, than families

[11] Even in cities, there is little change in expenditure for transportation other than automobile, as number of children increases. The standardized percentage expenditures for other transportation run as follows: Chicago, Type I, 2.5; Type II, 2.2; Type III, 2.1; Type VI, 1.9. Middle Cities, Type I, 0.7; Type II, 0.7; Type III, 0.7; Type VI, 0.5. The standardized percentage expenditures for automobiles run as follows: Chicago, Type I, 6.2; Type II, 4.9; Type III, 5.3; Type VI, 3.5. Middle Cities, Type I, 8.6; Type II, 7.9; Type III, 9.1; Type VI, 6.9.

	A. STANDARDIZED PERCENTAGES OF FAMILIES OWNING AUTOMOBILES, BY FAMILY TYPE			
	TYPE I	TYPE II	TYPE III	TYPE VI
Chicago	49	47	51	50
Middle Cities	61	64	65	57
Pa.-Ohio Farm	84	88	88	87
	B. EXPENDITURE FOR TRANSPORTATION AS PER CENT (STANDARDIZED) OF TOTAL MONEY EXPENDITURE OR TOTAL VALUE OF FAMILY LIVING			
	TYPE I	TYPE II	TYPE III	TYPE VI
Chicago	8.7	7.1	7.4	5.4
Middle Cities	9.3	8.6	9.8	7.4
Pa.-Ohio Farm	8.7	8.9	9.7	7.0

Table 6. Proportions of families reporting automobile ownership and proportional expenditures for transportation, by family type.

with only one or two children (*see* Table 6, also Appendix). Apparently, however, such families regard the ownership of some sort of car as sufficiently urgent to justify almost the same proportional frequency of ownership as that found among families with fewer persons to feed or clothe.

Other Expenditure Categories

Disbursements for "gifts outside the family and taxes" decrease, at given income levels, as number of children increases. This is clearly significant as a general relationship. Comparing Family Type VI with Family Type I, the reduction in this category offsets 22 per cent of the difference in expenditure for food in the Chicago sample, 31 per cent of the difference in the Middle Cities sample, and 28 per cent of the difference in value of food in the Pennsylvania-Ohio farm sample.

Expenditure for formal education in families with children under age 16 increases consistently as the number of children increases. However, these expenditures (mostly incidental or supplementary to public provisions for education) are less than 1 per

cent of total expenditures in all family types, in each area. Unfortunately, it is impossible with the data at our disposal to analyze variations in expenditure for education of older sons and daughters.

Medical care is an important, and highly variable item in family accounts. A somewhat higher proportional expenditure by urban families with one child (Type II) is indicated in Table 1, perhaps because of the frequency of payments for maternity and infant care in this group. In general, however, family expenditure for medical and dental care does not vary greatly in relation to number of children. The same is true of expenditure for reading, recreation and amusements, personal care, tobacco and other miscellaneous items. However, the sum of all these items shows a tendency to decrease, among families with children, as the number of children increases.

Savings and Deficits

Evidence regarding variations in average net change in assets or liabilities is presented in Table 7. It must be borne in mind that we are concerned here with distributions of savings and deficits at specific income levels, and with averages of proportional savings and deficits, as bearing on the financial situation of American families and not with volume of savings in relation to the national income.

Table 7. Standardized percentage of net change in assets or liabilities relative to money income (urban) or value of family living (farm), by type of family.[1]

	Type I	Type II	Type III	Type VI
Chicago	3.3	3.7	0.3	−0.2
Middle Cities	5.0	3.1	0.5	0.7
Pa.-Ohio Farm	26.4	20.8	18.5	17.3

[1] The reader is cautioned to note that these values represent averages of proportions. If average savings were related directly to average income for families of each type, the proportions would be higher due to the greater influence of savings by high-income families.

Among the farm families represented in this sample, the amounts saved or invested (largely in the farm enterprise) run very high in relation to the level of family living. The amounts saved in relation to money income earned, of course, run still higher. Among these families, there appears to be a definite trend toward decreased earnings, as number

of children under age 16 increases. Changes in assets and liabilities vary widely among farm families from area to area, and from year to year; it would be unwise to make any generalizations on the basis of data for a particular region for a single year. However, it may be that the tendency to save whenever possible, regardless of the immediate level of family living, is stimulated among farm families by participation in a speculative family enterprise, with many of the basic necessities of life drawn directly from the same source.

The standardized proportional savings of city families in these areas in 1935, even among families with no children or only one child, were very small—the relative losses of many families offsetting a large share of the relative gains of other families. Among families with two or more children the situation was even worse. Here the relative losses just about equaled the relative gains, so as to leave a precarious balance of current income and current expenditures as the general pattern.

An analysis of payments for insurance premiums indicates that investment in insurance is higher among families with children, but this may be due, in part at least, to a larger number of older couples in Type I families. There is also a suggestion that payments for insurance may reach a maximum in the case of two-child families, where the need for protection is keenly felt but where the pressure of current expenditure on income is less urgent than in the case of families with three or four children. The standardized annual payments for insurance premiums in the Chicago sample run as follows: Family Type I, $107; Family Type II, $116; Family Type III, $135; Family Type VI, $119. In the middle cities, the payments run as follows: Type I, $77; Type II, $95.60; Type III, $96.40; Type VI, $92.

Conclusion

Size of family, as regards number of children under age 16, influences the relation of expenditures to income and the distribution

of expenditures. The largest increases in expenditures, with increase of size of family at specific income levels, are found in the expenditure for food. There is very little difference in proportional expenditure for housing among the family types considered in this investigation. The excess expenditure for food by the larger families is offset by relative decreases in expenditures for various items. The most important decrease occurs in personal taxes and contributions, but this offsets less than half the excess expenditure for food. The lowering of consumption levels per consumption unit, as size of family increases, is indicated in all categories of family living. This appears in the case of food, housing, clothing, transportation, household furnishings and equipment, medical care, and recreation. As far as the available evidence goes, this influence appears to be operative through a wide range of income levels. One important category of expenditure, namely, that for education of older sons and daughters, is unfortunately not covered by this study.

The investigation indicates that no measures designed to equalize the financial resources and consumption levels of families with different numbers of children would be generally effective in meeting this objective unless applicable in some way, over a broad income range, to the major categories of family consumption such as food and housing.

Appendix

The use of rank sums follows the method described by Milton Friedman, with modifications described by A. C. Rosander. The reader is referred to their presentations for description of method and theoretical discussion.[1] The method as applied in this case, relates to the frequency with which each of the four family types ranks lowest (first), second, third or fourth in expenditure, or value, for each consumption category in given income classes. The

[1] Friedman, Milton: The Use of Ranks to Avoid the Assumption of Normality Implicit in the Analysis of Variance. *Journal of the American Statistical Association,* December, 1937, xxxii, pp. 675-701; Family Expenditures in Chicago. United States Bureau of Labor Statistics, 1935-36, pp. 243-253 (Appendix D).

distributions of rank sums for different family types are then tested (using k, a derivative of χ^2) in comparison with the probabilities of chance distribution.

This is a rigorous method, but it does not utilize all the available information because size of deviations by family type is not taken into account, but only their order, as regards size, in each income class. Unfortunately, no equally rigorous method is available that does take all information into account, and could be extensively applied with the resources available for this investigation. Moreover, the data used in this study are subject to large chance varia-

Appendix Table A. Sums of ranks of expenditures for specified consumption categories and savings by families of specified type.

Expenditure Classes	Chicago					Middle Sized Cities					Pennsylvania–Ohio Farms				
	Family Type				Distribution	Family Type				Distribution	Family Type				Distribution
	I	II	III	VI	k-test k″=246 k′=169	I	II	III	VI	k-test k″=208 k′=143	I	II	III	VI	k-test k″=189 k′=130
Food[1]	14	25	42	49	761[b]	12	22	34	42	523[b]	10	22	30	38	428[b]
Housing[2]	31	31	33	36	21	31	25	31	24	50	30	26	22	23	34
Household Operation[3]	37	36	30	29	50	30	32	27	22	51	27	27	19	28	58
Furnishings, Equipment	41	26	35	29	138	28	31	24	28	29	28	27	23	22	26
Clothing	27	30	39	35	86	16	31	28	36	206[a]	10	21	34	36	424[b]
Transportation	44	29	35	23	240[a]	26	26	31	27	17	22	24	36	19	175[a]
Gifts, Taxes	47	33	28	23	331[b]	41	25	28	17	310[b]	36	21	22	23	149[a]
Medical Care	26	42	29	34	145	24	33	26	28	49	18	27	29	26	70
Recreation, Reading	35	35	35	26	66	23	35	32	21	137	18	36	24	24	171[a]
Education	18	25	37	51	607[b]	12	25	32	42	489[b]	11	30	28	32	272[b]
Personal Care, Tobacco, Other	41	35	29	26	138[a]	29	31	31	20	77	22	26	31	23	49
Food Expense per Food Unit	52	39	25	14	821[b]	44	33	22	11	605[b]					
Insurance, Savings, Deficit	44	37	28	21	305[b]	38	26	25	21	161[a]	35	26	21	18	166[a]

[b] Values of k above k″. [a] Values of k between k′ and k″.
k″ = Value of k when probability of obtaining distribution by chance = .01.
k′ = Value of k when probability of obtaining distribution by chance = .05.
Rank sums with .5 raised in tabular presentation.
[1] Including imputed values for farm families only.
[2] Including fuel, light, electricity for urban families only.
Including imputed values for both urban and farm families.
[3] Including fuel, light, electricity and including imputed values for farm families only.

tions, due to the small number of cases in many of the cells. The absence of statistical significance should not, therefore, be interpreted as indicating the probable absence of real variations in relation to family type, with respect to the consumption categories in question, in the populations represented by these samples. In such cases, however, this analysis fails to yield any confirmation of the results otherwise obtained. The results of this application are shown in Appendix Table A. This method was also applied to data for selected occupational classes. The influence of number of children on proportional total expenditure for food and expenditure per food cost unit was significant for each of four occupational classes treated in Chicago and each of two occupational classes examined in the data for the middle cities. No distinctive differences among occupational groups in the relation of family type to consumption patterns were found, but this may be due, in part at least, to the small number of cases in each cell.