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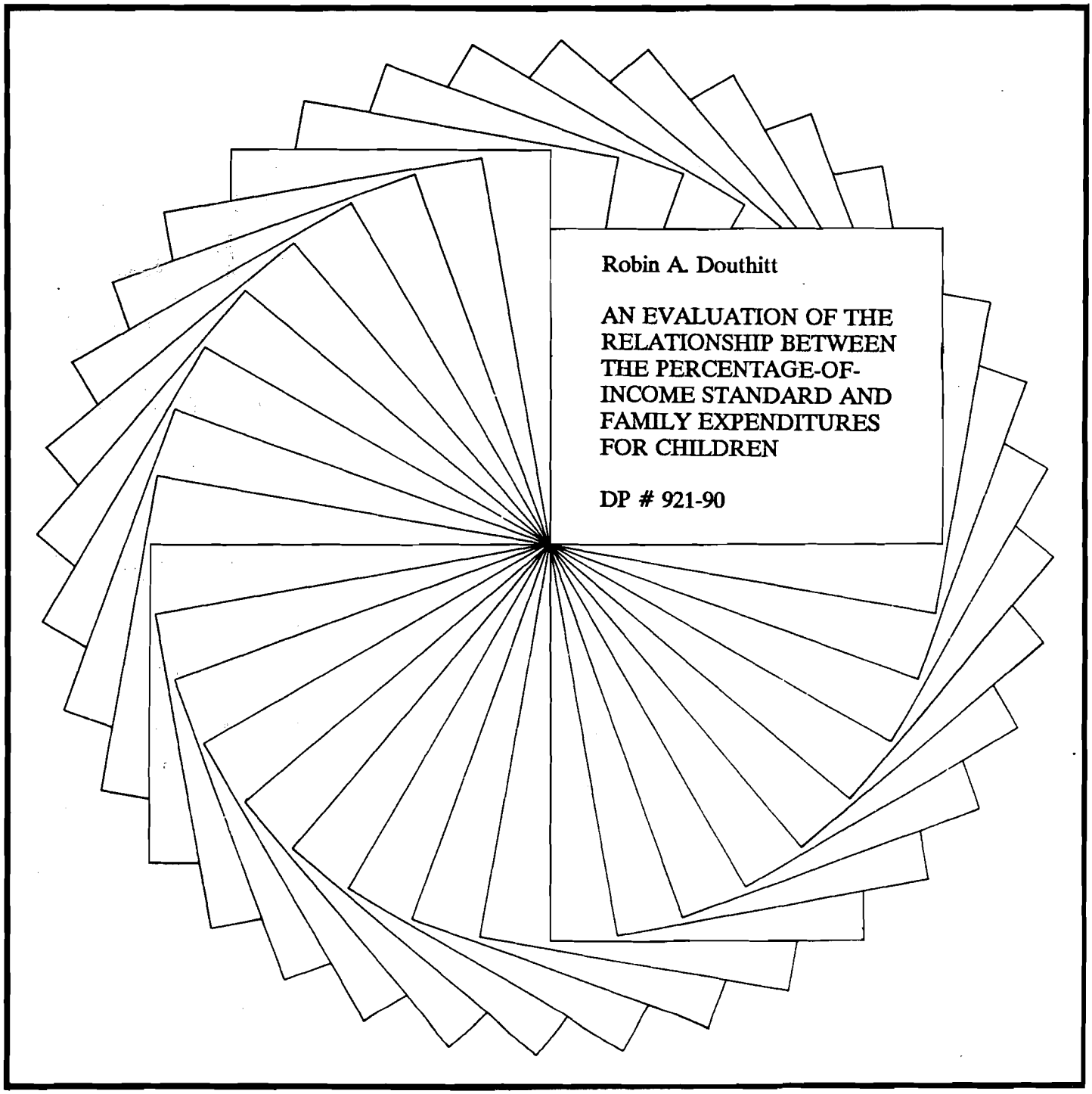

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AN EVALUATION OF THE RELATIONSHIP BETWEEN THE PERCENTAGE-OF-INCOME STANDARD AND FAMILY EXPENDITURES FOR CHILDREN

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Abstract

Two questions have been raised about the percentage-of-income standard used in Wisconsin to determine the size of child support awards. First, does the standard, which takes a fixed percentage of gross income, require upper-middle-income absent parents to pay a larger portion of their after-tax income to child support than is the case for lower-middle-income absent parents? Second, does the Wisconsin standard require upper-middle-income absent parents to pay more than their fair share of child costs?

An analysis of micro-level data from the 1982-83 and 1984 Consumer Expenditure Survey indicates the answers to both questions are negative. No significant differences were found in the average tax rates of lower-middle-income and upper-middle-income parents. It is possible that if social security taxes and sales taxes had been included in the study as well as income and property taxes, the results would have indicated that upper-middle-income parents face even lower average tax rates than their lower-middle-income counterparts. So basing the Wisconsin standard on gross income rather than net income does not penalize upper-middle-income absent parents. It was further found that although, on average, upper-middle-income parents spend a smaller percentage of their gross income on their children than do their lower-middle-income counterparts, the percentage of income spent by both these groups exceeds the Wisconsin standard for absent parents. Thus the two major criticisms of the Wisconsin percentage-of-income standard do not appear to be supported by the data.

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INTRODUCTION

On July 1, 1987, the state of Wisconsin implemented presumptive guidelines that family court judges follow to establish child support awards.[1] These guidelines, referred to as the percentage-of-income standard or PYS, require that absent parents share a portion of their income with dependent children.[2] The specific guidelines state that 17%, 25%, 29%, 31%, or 34% of the absent parent's gross income be shared with one, two, three, four, or five or more children, respectively. This report uses data from the U.S. Bureau of Labor Statistics Consumer Expenditure Survey (CEX) to examine total tax incidence and the relationship between PYS-based child support awards and actual two-parent family expenditures attributable to children's presence. It is a follow-up to Douthitt (1988), in which the author examined similar relationships using Canadian expenditure data. Many of the issues touched on here are discussed more completely in that report and the interested reader is referred to that discussion. This report is organized as follows. First, a review of the specific research questions of interest is presented. Then the methodology and data to be used in the analysis are discussed. The report concludes with results and their policy implications.

THE QUESTIONS OF INTEREST

Two major questions will be examined in this report. The first question relates to one of the most controversial aspects of the PYS--that child support awards are based on the absent parent's gross rather than net income.[3] If the overall tax system is indeed progressive and if parents at all income levels allocate the same portion of their income to support their children, then the PYS

would require that higher-income absent parents pay a larger percentage of their after-tax income for child support than do their lower-middle-income counterparts. Thus, the first question to be explored is "Do upper-middle-income parents pay a larger portion of their after-tax income to child support under the flat PYS regime than their lower-middle-income counterparts?"

This question is difficult to address. Numerous studies on tax incidence have been conducted and the general consensus is that although our U.S. income tax system is theoretically progressive, in fact the overall tax system is proportional (see, for example, Pechman, 1987). Thus if other federal taxes in combination with state and local taxes are effectively proportional, then the first PYS criticism is without merit.

The second question of interest relates to another aspect of the PYS that has been subject to criticism--that it is based on a flat rather than varying PYS. Currently Wisconsin is one of 23 states that base child support awards on a percentage-of-income standard and one of 13 that have adopted a flat percentage standard. With the flat standard the percentage used to establish the child support award does not vary with the absent parent's income. The varying standard typically takes a smaller percentage of upper-middle-income parents' income for child support when compared to their lower-middle-income counterparts. If, indeed, upper-middle-income families prior to divorce allocate a smaller percentage of their net (after-tax) income for meeting their children's basic needs than their lower-middle-income counterparts, and if the overall tax system is progressive, then by applying a flat percentage-of-income formula to establish child support awards, the PYS may be doubly punitive to upper-middle-income absent parents. Thus, the second question to be explored is, "How are child rearing costs related to total family income and how does this compare to Wisconsin's PYS?"

The second criticism of PYS is based largely on consumption studies showing that the marginal propensity to consume is negatively related to current income. Thus critics of the flat

PYS argue that child-rearing costs are similarly related and as a percentage of total income will decline as income rises.[4]

However, it is enlightening to consider important variable definitions used in these consumption studies. Specifically, these studies examine family outlays as a function of total current consumption rather than current income. The life cycle and other income hypotheses as well as behavioral evidence suggest that families with access to credit markets will consume more than they earn during the early stages of the life cycle or during other periods of their life when income temporarily drops below an expected level. Thus, although consumption and income are highly correlated, child-rearing costs as percentage of income, particularly for families with young children, may be greater than that same outlay expressed as a percentage of total consumption.

DATA

The data used in this analysis are taken from a merged file of the BLS 1982-83 and 1984 Consumer Expenditure Survey (CEX) interview data (U.S. Bureau of Labor Statistics, 1986). The CEX interview survey collects data on major items of expense as well as on demographics, income by source, employment of household members, and changes in household assets and liabilities. The sample frame for the survey was generated by the U.S. Census Bureau. Samples were national probability samples of households representative of the urban U.S. civilian population. The sample design was a rotating panel survey in which approximately 8,400 addresses were contacted quarterly. Once respondents agreed to participate, they were interviewed five times over a period of fifteen months (quarterly). In each quarter, one-fifth of the panel was replaced. Responses to the second through fifth interviews are released on the public use tapes.

For this study we analyze data collected during the second interview for families living in the midwest region of the United States. The second interview was chosen because of the detailed

questions asked on labor force participation. Merging the 1982-83 and 1984 tapes maximized the number of independent observations used without having to rely on pooling of household responses across interviews. For reasons of confidentiality, the BLS does not identify records at the state level. Thus, included in this sample are families not only from Wisconsin, but also from Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, and South Dakota. We used a sample selection procedure similar to that outlined by Espenshade (1984, p. 19) in his study of child-rearing costs. The final sample consists of husband-wife households, in which no persons other than the couple's own children younger than age 26 were present. The sample was further restricted to households of couples who reported their complete incomes and in which the husbands were under age 56.[5] In addition, households were excluded if one parent (or both) was disabled, a student, or retired, and if the total family income fell below the poverty level.[6] The final sample consisted of 714 husband-wife couples. Table 1 presents some descriptive statistics on the total sample.

In order to examine potential behavioral differences by income level, the sample is divided into two groups. The first group is designed to represent "lower- to middle-income" families and includes those respondents reporting a total family (gross) income below the median for the sample ($29,000). The second sample includes respondents with incomes above the sample median and represent middle- to upper-income families. Descriptive statistics for each group are presented in Tables 2 and 3.

METHOD

To address the first question of interest we examine the effective income tax structure across families by analyzing regional micro-level expenditure and income data from the CEX. The CEX data include income and tax-payment information for families as well as detailed expenditure

Table 1

Descriptive Statistics for Total Sample
(Number of valid observations = 714)

Variable Label	Mean	Std. Dev.	Minimum	Maximum
Family income	$30,475	$14,056	$6,950	$107,000
PSU <75,000	.028	.165	.00	1.00
PSU 75,000-1.24 million	.361	.481	.00	1.00
PSU 1.25-4 million	.445	.497	.00	1.00
AGE 1-2	.193	.416	.00	2.00
AGE 3-5	.312	.531	.00	2.00
AGE 6-8	.280	.535	.00	3.00
AGE 9-11	.234	.474	.00	3.00
AGE 12-14	.203	.455	.00	2.00
AGE 15-17	.088	.321	.00	3.00
AGE 18-24	.263	.588	.00	2.00
AGE 25-34	.971	.866	.00	2.00
AGE 35-44	.557	.769	.00	2.00
AGE 45-54	.227	.574	.00	2.00
AGE 55+	.008	.091	.00	1.00

(table continued)

Table 1, continued

Variable Label	Mean	Std. Dev.	Minimum	Maximum
Women employed:				
Full time	.321	.467	.00	1.00
Part time	.300	.458	.00	1.00
Quarterly Expenditures				
FOOD	$908	$443	$120	$4,685
HOUSING	1,845	1,157	111	9,646
CLOTHING	283	279	0	2,379
ADULT GOODS	138	132	0	785
HH OPERATION	533	288	0	2,174
HH FURNISHINGS	259	577	0	5,669
TRANSPORTATION	1,145	1,938	0	18,860
HEALTH	167	207	0	1,974
EDUCATION	83	188	0	2,794
MISCELLANEOUS	1,085	789	123	8,822
TOTAL EXPENDITURE	6,445	3,384	1,421	33,998

Table 2

Descriptive Statistics for Upper-Middle-Income Sample
(Number of valid observations = 351)

Variable Label	Mean	Std. Dev.	Minimum	Maximum
Family income	$41,257	$11,734	$29,163	$107,000
PSU <75,000	.017	.130	.00	1.00
PSU 75,000-1.24 million	.350	.478	.00	1.00
PSU 1.25-4 million	.422	.495	.00	1.00
AGE 1-2	.154	.392	.00	2.00
AGE 3-5	.274	.518	.00	2.00
AGE 6-8	.274	.528	.00	3.00
AGE 9-11	.239	.478	.00	3.00
AGE 12-14	.214	.457	.00	2.00
AGE 15-17	.085	.309	.00	3.00
AGE 18-24	.151	.424	.00	2.00
AGE 25-34	.960	.881	.00	2.00
AGE 35-44	.641	.816	.00	2.00
AGE 45-54	.265	.620	.00	2.00
AGE 55+	.009	.092	.00	1.00

(table continued)

Table 2, continued

Variable Label	Mean	Std. Dev.	Minimum	Maximum
Women employed:				
Full time	.430	.496	.00	1.00
Part time	.242	.429	.00	1.00
Quarterly Expenditures				
FOOD	$1,001	$421	$239	$3,780
HOUSING	2,196	1,282	421	9,646
CLOTHING	361	325	0	2,379
ADULT GOODS	146	140	0	721
HH OPERATION	609	306	90	2,174
HH FURNISHINGS	337	683	0	5,669
TRANSPORTATION	1,387	2,388	0	18,860
HEALTH	182	229	0	1,974
EDUCATION	102	193	0	2,585
MISCELLANEOUS	1,441	851	356	8,822
TOTAL EXPENDITURE	7,763	3,765	2,659	33,998

Table 3

Descriptive Statistics for Lower-Middle-Income Sample
(Number of valid observations = 363)

Variable Label	Mean	Std. Dev.	Minimum	Maximum
Family income	$20,049	$5,854	$6,950	$29,000
PSU <75,000	.039	.193	.00	1.00
PSU 75,000-1.24 million	.372	.484	.00	1.00
PSU 1.25-4 million	.468	.500	.00	1.00
AGE 1-2	.231	.435	.00	2.00
AGE 3-5	.350	.543	.00	2.00
AGE 6-8	.287	.542	.00	3.00
AGE 9-11	.229	.470	.00	3.00
AGE 12-14	.193	.454	.00	2.00
AGE 15-17	.091	.332	.00	3.00
AGE 18-24	.372	.695	.00	2.00
AGE 25-34	.981	.852	.00	2.00
AGE 35-44	.477	.714	.00	2.00
AGE 45-54	.190	.525	.00	2.00
AGE 55+	.008	.091	.00	1.00

(table continued)

Table 3, continued

Variable Label	Mean	Std. Dev.	Minimum	Maximum
Women employed:				
Full time	.215	.411	.00	1.00
Part time	.355	.479	.00	1.00
Quarterly Expenditures				
FOOD	$817	$446	$120	$4,658
HOUSING	1,504	901	111	6,390
CLOTHING	206	198	0	1,340
ADULT GOODS	129	124	0	785
HH OPERATION	460	249	0	1,469
HH FURNISHINGS	183	440	0	5,127
TRANSPORTATION	911	1,331	0	9,148
HEALTH	151	181	0	1,092
EDUCATION	64	182	0	2,794
MISCELLANEOUS	741	532	122	6,415
TOTAL EXPENDITURE	5,170	2,354	1,420	15,541

information. Although the tax data are self-reported and may not be as reliable as those maintained by the Internal Revenue Service, the CEX is used because it is the only source that includes expenditures, income, and tax records at the micro level.

To evaluate the second question, child-rearing costs will be imputed as a percentage of income for both upper- and lower-middle-income families using the CEX data and finally compared to Wisconsin's flat PYS. Although the underlying principle of the PYS is the parental obligation to share income with the children, the percentages were established after a thorough review of the literature regarding the influence of family composition on expenditures (van der Gaag, 1982) and adjustment of the percentages to reflect costs incurred by the payer for visitation and maintaining children's health insurance coverage.[7] However, many states have relied heavily on Williams (1986), whose recommendations were based almost exclusively on Espenshade's (1984) child-rearing cost estimates.

Because of its wide use and in order to have a benchmark for comparison, we will adopt Espenshade's general methodological approach.[8] However, this analysis will also represent an advance over Espenshade and previous studies in that more recent expenditure data will be used. To date no published studies of family expenditures have used data subsequent to the 1980-81 CEX. Lazear and Michael (1980) use the 1960-61 CEX, while Olson (1983), Lazear and Michael (1988), Espenshade (1984), and van der Gaag and Smolensky (1982) all use the 1972-73 CEX.

Although Espenshade (1984) applies the Consumer Price Index (CPI) to update expenditures to 1981 dollars, such an approach can misrepresent current consumption expenditures. Espenshade himself identified the problems associated with CPI adjustments in his critique of the U.S. Department of Agriculture's estimates of child-rearing costs. The bias results from using commodity-specific CPI figures to update expenditure data when the relative prices of goods changed over that period. Economic theory postulates that as relative prices change, families will

substitute away from consumption of goods that become relatively more costly. Thus, as Espenshade indicates, the bias will be to overstate (understate) the importance of commodities whose prices have exceeded (fallen short of) the average inflationary trend.[9] If the cost of raising children has increased over time relative to other goods, indexing consumption may result in an overstatement of child-rearing costs.

A further advantage of using more recent expenditure data can be gleaned from the work of Lazear and Michael (1988), who found that relatively more total dollar resources are allocated to children in families in which two adults are employed. Thus, in addition to possible changes in family expenditures attributable to changes in commodity prices, family consumption patterns may have changed since 1971 as a result of increased labor force participation by married women with children under the age of 18. Since 1971 the labor force participation rate of women with no children under the age of 18 has increased by only 6.1 percentage points, whereas the participation rate of women with children under the age of 6 has increased from 29.6 percent to 53.4 percent (Zill and Rogers, 1988). Thus, the use of more recent expenditure data will shed light on whether direct child-rearing costs have increased over time as families substitute market-purchased for previously home-produced goods and services.

Espenshade (1984) adopts an isoprop approach to measuring child-rearing costs. The essence of his approach is that families who spend the same percentage of their income for food at home are equally well off (i.e., enjoying the same standard of living). Thus, one can measure the annual cost of raising a child by calculating how much one would need to augment the annual income of parents such that the percentage that they allocated to food at home (and thus their standard of living) after the addition of a child would be the same as the percentage they allocated when childless, ceteris paribus. The interested reader is referred to Appendix A for the exact

specification of the standard of living (SOL) regression equation estimated and to the Appendix of Espenshade's book for an additional explanation of his empirical results.

To estimate total child-rearing costs one must use the standard of living parameters and simulate annual estimates over the life cycle. To do that, hypothetical family characteristics must be specified. To remain consistent with Espenshade, the same synthetic family characteristics were used; husband and wife the same age who begin childbearing at age 22 and space each of their children's births two years apart.

In addition to family characteristics, it is necessary to specify a life cycle income stream before cost estimates can be calculated. Because we would ultimately like to relate costs back to actual income, this is a two-step procedure. First life cycle income streams are derived using parameters from regressing the log of annual gross family income on age and education of respondent and spouse. The expected stream of income is then used to predict annual current consumption by using parameters from regressing current consumption on gross income, the ages of family members, wife's labor force attachment, and size of resident's town. (Regression parameters for both equations are reported in Appendix B.) In this way it is possible to link estimated child costs back to gross family income and in turn compare percentage costs with a flat PYS. Table 4 presents the socioeconomic characteristics of the synthetic family used to simulate costs over the life cycle.

In addition to examining total child rearing costs, we will examine how specific expenditures are influenced by changes in income and family size. Espenshade conducted a similar analysis looking at the effect of total consumption on actual dollar outlays for various commodity groups. However, in the context of the PYS evaluation, it is useful to examine the effects of gross income on specific expenditures as a percentage, or share of total consumption. Thus, such a

Table 4

Synthetic Family Characteristics Used for Simulations

Parent Age	Child 1 Age	Child 2 Age	Child 3 Age	High Income	Low Income
22	NB[a]			$36,376	$17,265
23	1			$36,799	$17,531
24	2	NB[a]		$37,209	$17,791
25	3	1		$37,606	$18,043
26	4	2	NB[a]	$37,991	$18,289
27	5	3	1	$38,366	$18,528
28	6	4	2	$38,730	$18,762
29	7	5	3	$39,085	$18,991
30	8	6	4	$39,431	$19,214
31	9	7	5	$39,769	$19,433
32	10	8	6	$40,098	$19,647
33	11	9	7	$40,420	$19,857
34	12	10	8	$40,735	$20,062
35	13	11	9	$41,044	$20,264
36	14	12	10	$41,345	$20,462
37	15	13	11	$41,641	$20,656
38	16	14	12	$41,931	$20,847
39	17	15	13	$42,215	$21,035
40		16	14	$42,494	$21,219
41		17	15	$42,767	$21,401
42			16	$43,036	$21,579
43			17	$43,300	$21,755
44				$43,560	$21,929

[a]NB = Newborn child.

specification will be estimated using a maximum likelihood, simultaneous equation regression procedure imposing the necessary conditions for adding-up.

A final but important difference between this analysis and Espenshade's approach is that child-rearing costs are examined by lower- versus upper-middle-income groups rather than by socioeconomic status, as proposed by Espenshade. Espenshade used consumption and demographic-related variables (including education and occupation of the parents) to classify households into different socioeconomic groups.[10] While there may be ample consumer-behavior literature to support this type of classification scheme, practically, an education- or occupation-based child support award schedule is not viable. Thus, we examine expenditure allocations based directly on family income.

RESULTS

The first question to be addressed in this report is whether the average tax rates paid by lower- and upper-middle-income families differ significantly. To that end Table 5 presents average tax rates from the two samples by wife's employment status and number of children in the family.[11] Although these measures include federal, state and local income and property taxes, it is important to note that two of perhaps the next largest and most regressive taxes, the sales tax and Social Security contributions are <u>not</u> included in these estimates.[12] Between 1982 and 1984, the state of Wisconsin's sales tax stood at 5%[13] while Social Security contributions amounted to 6.7-7% of gross earnings up to a ceiling of $32,400 to $37,800.[14] Tests of differences between independent sample means reported in Table 5 were conducted, but no significant differences were found. Generally, if the mother was employed full-time year round in the paid labor force, lower-middle-income families reported slightly lower average tax rates than their upper-middle-

Table 5

Average Tax Rates and Significance Tests of Difference between Means for Upper- and Lower-Middle-Income Families

	Lower-Income	Upper-Income
Mother employed full-time/year		
1 child	.08	.10
2 children	.07	.10
3 or more children	.08[a]	.09[a]
Mother employed part-time		
1 child	.09	.10
2 children	.04	.11
3 or more children	.03[a]	.16[a]
Mother full-time homemaker		
1 child	.15	.14
2 children	.07	.09
3 or more children	.11	.09

[a]Mean based on 15 or fewer observations

Note: None of the results was significant at the .05 level or above.

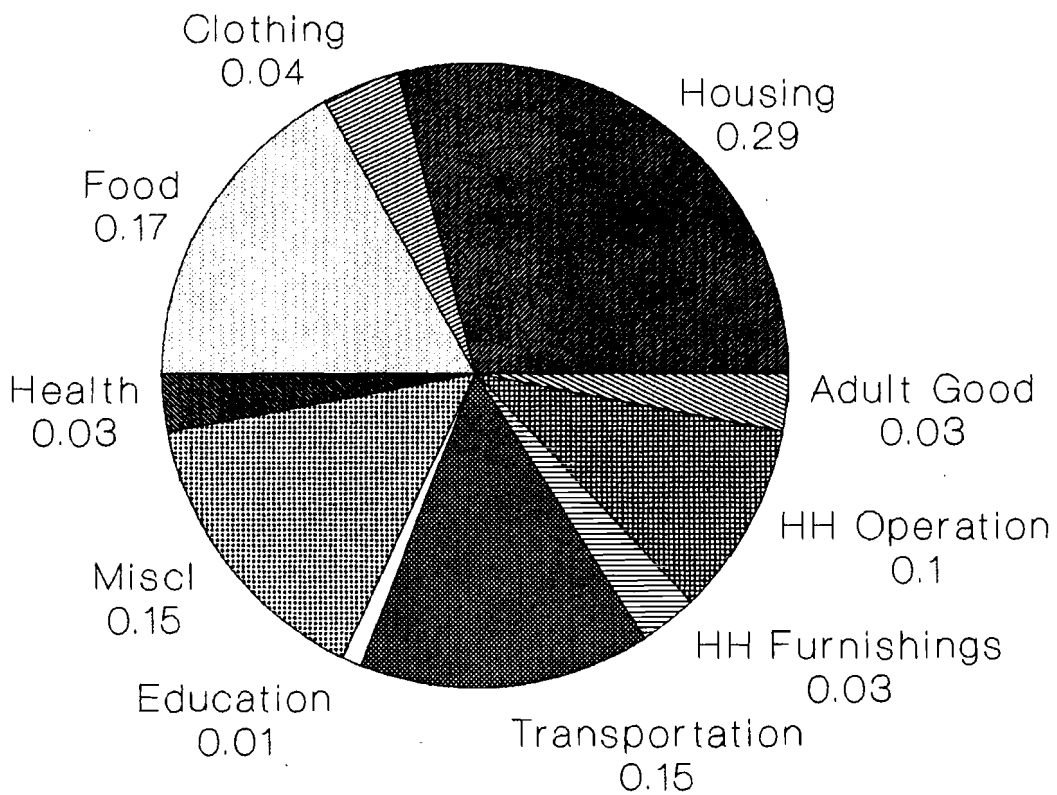
income counterparts. However, a similar trend did not emerge in comparing the taxes paid by families when the mother was a full-time homemaker for the entire year.

From these results the criticisms of basing the PYS on gross rather than net income (assuming that upper-middle-income parents pay a larger share of their income to taxes than their lower-middle-income counterparts) are unsupported. Further, given both recent federal tax reform reducing the maximum marginal tax bracket to 27%, and the fact that neither sales tax nor social security withholding is accounted for, it is possible that today upper-middle-income families are facing even lower average tax rates than their lower-middle-income counterparts.

The second question addressed in this report is how child-rearing costs relate to gross income. Figures 1 and 2 compare average budget shares of different expenditure categories by lower- and upper-middle-income families, respectively. Most striking are the similarities of the budget allocations made by the two groups. As a percentage of total expenditures, all types of budget allocations by lower-middle-income families are within 1 percentage point of their upper-middle-income counterparts with the exception of food and miscellaneous goods. Thus Engel's principle that as family income increases, the percentage allocated to food expenditures will decline, seems to hold. However, these simple means would imply on their face that child-cost estimates like Espenshade's, which rely on food expenditures as the numeraire for estimating influence of family composition on household expenditures, could underestimate child costs faced by upper-middle-income parents.

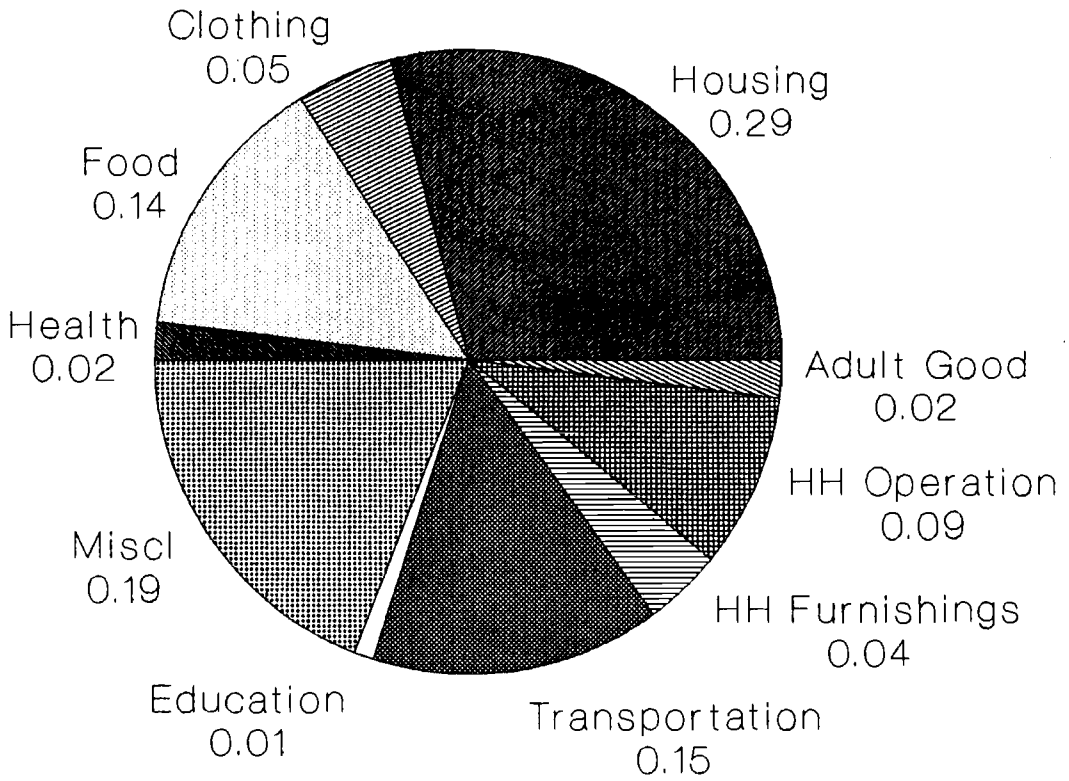
Regression results from analysis of categorical expenditures by lower-middle-income and upper-middle-income family expenditures are included in Appendices C.1-C.11 and C.12-C.22, respectively. Among all types of expenditures, the only expenditure category to bear a significant relationship with total family income by both upper- and lower-middle-income families was share

Figure 1
Lower Income Family Expenditure Shares



Average income is $20,066

Figure 2
Upper Income Family Expenditure Shares



Average income is $41,446

of total expenditures allocated to food. Consistent with our sample mean analysis, share of expenditures allocated to food declines as income increases.

With respect to the upper-middle-income sample, we see that the share of total expenditures allocated to clothing is significant and positively related to income even after controlling for labor force status of women. Further, as income increases, we see that upper-middle-income families allocate a smaller share of total expenditures to both household operations and health expenditures. Stiefvater (1989) noted a similar negative relationship between income and out-of-pocket health care expenditures.

Among lower-middle-income families, the only expenditure category other than food that was significantly related to family income was adult goods. Results indicate that an increase in income precipitates a decline in the budget share allocated to adult goods.

Table 6 includes estimates of child-rearing costs for North Central families derived from SOL parameters (Table A.1) with one to three children, when the mother is either employed full time or is a full-time homemaker living in a primary sampling unit (PSU) with a population of between 75,000 and 1.24 million. Consistent with previous studies relating income with consumption, lower-middle-income families spend a larger percentage of their gross income on child-rearing costs than do their upper-middle-income counterparts. Lower-middle-income families with one child spend between 25 and 34% of gross family income as compared to 20-21% by their upper-middle-income counterparts.

If we compare expenditures as a percentage of gross income to Wisconsin's PYS, we notice that these percentages are higher, although they are lower than those noted in some previous studies.[15] Upper-middle-income families in which the mother is a full-time homemaker spend a higher percentage of income on children than the PYS allows; 21% versus 17% for one child; 30% versus 25% for two children; 35% versus 29% for three children. The difference between

Table 6

Child-Cost Expenditures by Family Income

	Percentage of Gross Income	Total Dollar Expenditure	Espenshade Estimates[a] U.S.A. Non-Metropolitan	Espenshade Estimates[a] North Central
Lower-Middle-Income				
Mother employed full time				
1 child	34%	$117,113	$124,360	$143,448
2 children	46%	$180,390	$190,883	$223,345
3 children	51%	$223,425	$236,604	$283,353
Mother full time homemaker				
1 child	25%	$88,426	$98,756	$117,959
2 children	40%	$158,487	$151,907	$184,597
3 children	45%	$196,094	$188,712	$234,547
Upper-Middle-Income				
Mother employed full time				
1 child	20%	$144,973	$150,306	$152,478
2 children	29%	$241,084	$231,918	$237,175
3 children	34%	$309,136	$288,611	$361,193
Mother full time homemaker				
1 child	21%	$158,981	$116,359	$136,476
2 children	30%	$271,731	$179,681	$214,544
3 children	35%	$367,681	$224,145	$223,444

[a]Espenshade's results are reported in 1984 dollars by family SES category rather than family income. His cost simulations for the middle SES group (comparable to our lower-middle-income sample) were based on an average family income, when both parents were employed full time in the labor force, of $34,879 (1984 dollars). His cost simulations for the high SES group (comparable to our upper-middle-income sample) were based on an average family income, when both parents were employed full time in the labor force, of $39,264 (1984 dollars).

the PYS and lower-middle-income families is even greater; 25% versus 17% for one child; 40% versus 25% for two children; 45% versus 29% for three children.

Families employ various strategies to meet child-rearing costs. Strategies include parents' spending less on their own consumption, spending more time in home production (a common early life cycle strategy), spending more time in paid work in order to finance direct costs (a common later life cycle strategy), or reducing savings and investment levels. Douthitt and Fedyk (1989) found that Canadian families finance as much as 43% of direct child-rearing costs through saving less and investing less (a strategy that includes debt accrual). Clearly if families spend more of their income to finance child-rearing costs, those costs as a percentage of income will be greater than costs as a percentage of income allocated by families who employ other strategies. Thus, to the extent that lower-middle-income families must finance child-rearing costs through greater debt accrual than their higher-middle-income counterparts, the percentage of current income that they allocate to child-rearing costs will be and is higher.

Economic theory (Becker, 1981) and empirical evidence (e.g., Douthitt and Fedyk, 1990; Espenshade, 1984) indicate both money and time are important inputs in raising children. Further, depending on the price ratio of parents' goods to time, they will substitute one input for the other. For example, parents with lower market-wage opportunities (thus a lower price of time) will substitute time for money to meet child-rearing costs. We would expect, then, to see families in which both parents are employed full time in the paid labor force spending more dollars, ceteris paribus, on child rearing than families in which only one parent is a full-time labor force participant.

Results reported in Table 6 indicate that among lower-middle-income families, mother's labor force status does influence child-related expenditures. However, such a trend does not emerge among higher-middle-income families. In fact, it would appear that higher-income families in

which mothers are full-time homemakers spend slightly more money on their children than their higher-income single-earner counterparts.

For comparative purposes, Espenshade's estimates inflated to 1984 dollars are also reported in Table 6. Both nonmetropolitan U.S. (outside a standard metropolitan sample area--SMSA) and specific North Central estimates provide upper and lower bounds on the Espenshade findings and provide a benchmark for assessing how child-related expenditures may have changed over time.

If we compare our direct dollar cost estimates with those of Espenshade's 1972-73 expenditure estimates inflated to 1984 dollars, we see that lower-income family expenditures on their children estimated with more recent data are similar to Espenshade's 1971 estimates inflated to 1984 dollars. Further, the trend continues to spend more on child-rearing costs for lower-income families in which both parents are employed full time in the paid labor force.

Although dollar investments that dual earner, higher-income families make in their children have remained relatively constant over time, there appears to be a trend for single-earner higher-income families to spend more on child rearing. Given that recent time budget studies do not indicate a trend for full-time homemakers to spend less time in either total household production (Douthitt, 1988) or child care activities (Douthitt, 1989), this resource reallocation by higher-income families would represent an increase their total child investments. Further, given the similar percentage of gross income allocated to child rearing by both single- and dual-earner families, it appears that unlike their lower-income counterparts, a trend is emerging for higher-income families to not substitute time for dollar outlays when both parents are employed.

CONCLUSIONS

Results from studying these micro-level data indicate that on average upper-middle-income parents spend a smaller percentage of their gross income on their children than their lower-middle-income counterparts. However, the percentages of income allocated by both income groups to child-rearing costs exceed the present PYS guidelines of 17%, 25%, 29%, 31%, or 34% of absent parent's gross income to be shared with one, two, three, four, or five or more children, respectively. Further, it appears that on average higher-income families are allocating a greater percentage of their income to meet child-rearing costs than they have in the past. Thus, although from an equity perspective, upper-middle-income absent parents are paying a larger share of their child's rearing costs than their lower-middle-income counterparts under the PYS, they are not paying the full cost. Thus, Wisconsin's flat PYS is not punitive to either upper-middle-income or lower-middle-income absent parents in the sense that neither group is being asked to pay more in child support than would have allocated to the child had the family remained intact. However, whether a progressively based child support award formula (like the flat PYS) that, when applied, effectively takes into account the absent parent's ability to pay, is inequitable deserves further consideration.

No significant differences exist between lower- and upper-middle-income families in terms of the average percentage of taxes paid. Thus the criticism that basing the PYS on gross rather than net income unfairly forces upper-middle-income absent parents to pay a larger portion of their net income to child support is not supported by these data. Although average taxes paid by lower-middle-income families when the mother is employed outside of the home prove slightly lower than their upper-middle-income counterparts, the differences are not significant, and if social security taxes and sales taxes had been accounted for, they quite possibly would disappear altogether.

Appendix A

Ernst Engel first posited that families who spend comparable portions of their income on food are equally well off. Espenshade applies this concept to derive child-rearing costs. Specifically he argues that the cost of raising a child can be measured by the amount of money needed to hold constant the proportion of income spent on food at home by a couple when a child is added to the family. In implementing these ideas Espenshade hypothesizes that expenditures for food at home (FDHM) are a nonlinear function of total current consumption (C), and a series of member age variables. To express the dependent variable as a share (PFDHM), he next divides both sides of the model by C. Finally, based on his analysis of the importance of per capita consumption, all right-hand-side occurrences of C are replaced with per capita consumption (C divided by family size (F)). This expression he refers to as a standard of living or SOL equation and is specified as:

PFDHM = h(Intercept, F/C, C/F, AGE1to2*F/C,...AGE55to65*F/C).

This equation is estimated using ordinary least squares regression, and parameters are used to predict share of expenditures allocated to food at home by families with children ($PFDHM_k$) given some level of total current consumption (C_k). Given $PFDHM_k$, the next step is to solve for C for a childless couple (C_0). The cost of raising a child is then defined as the difference between C_k and C_0. The SOL regression parameters by income level are presented in Table A.1.

Table A.1

SOL Regression Parameters

	HIGH INCOME	LOW INCOME
INTERCEPT	.057 (.015)	.133 (.020)
F/C	46.138 (58.103)	55.962 (32.543)
C/F	-.06(E-04) (.024(E-04))	-.021(E-03) (.052(E-04))
AGE1-2*F/C	-3.576 (10.102)	-8.350 (8.601)
AGE3-5*F/C	-15.938 (8.196)	-6.417 (6.735)
AGE6-8*F/C	-18.107 (8.058)	4.216 (6.173)
AGE9-11*F/C	1.446 (8.417)	2.751 (7.358)
AGE12-14*F/C	-10.484 (9.672)	-8.794 (7.183)
AGE15-17*F/C	-19.790 (12.475)	5.664 (9.264)
AGE18-24*F/C	21.653 (24.198)	5.126 (11.101)
AGE25-34*F/C	46.221 (26.841)	-4.939 (13.188)

(table continued)

Table A.1, continued

	HIGH INCOME	LOW INCOME
AGE35-44*F/C	58.683 (26.450)	5.417 (13.981)
AGE45-54*F/C	75.798 (26.656)	17.174 (15.980)
AGE55+*F/C	66.524 (76.141)	-83.040 (80.333)
F	22.458	12.979
Adjusted R^2	.444	.301
N	351	363

Note: Standard errors are in parentheses.

Appendix B

Total Income and Consumption Equation Parameters

Table B.1

Dependent Variable: ln Gross Annual Family Income

	HIGH	LOW
INTERCEPT	9.45 (.23)	8.60 (.27)
Spouse education	.16 (.06)	.05 (.06)
ln spouse age	.13 (.12)	.10 (.14)
Respondent education	.09 (.05)	.04 (.05)
ln respondent age	.13 (.12)	.25 (.13)
F	7.12	6.11
Adjusted R^2	.07	.05

Table B.2

Dependent Variable: ln Total Consumption

	HIGH	LOW
INTERCEPT	1.09 (0.91)	4.56 (0.63)
ln income	0.69 (0.08)	0.40 (0.06)
AGE 1-2	0.04 (0.06)	-0.07 (0.05)
AGE 3-5	0.05 (0.04)	-0.02(E-01) (0.04)
AGE 6-8	0.06 (0.04)	0.05 (0.04)
AGE 9-11	0.08 (0.05)	-0.04 (0.05)
AGE 12-14	-0.05(E-02) (0.05)	0.04(E-02) (0.05)
AGE 15-17	-0.08 (0.07)	-0.14 (0.06)
AGE 18-24	0.17 (0.12)	-0.05(E-01) (0.10)
AGE 25-34	0.25 (0.14)	0.02(E-01) (0.10)
AGE 35-44	0.28 (0.13)	0.09 (0.10)
AGE 45-54	0.18 (0.13)	-0.01 (0.11)
AGE 55+	0.13 (0.25)	-0.07 (0.26)

(table continued)

Table B.2, continued

	HIGH	LOW
Women employment:		
Full time	-0.04	0.12
	(0.05)	(0.06)
Part time	-0.05	0.06
	(0.06)	(0.05)
PSU size:		
<75,000	-0.19	-0.11
	(0.15)	(0.11)
75,000- 1.24 million	-0.06	-0.06
	(0.05)	(0.06)
1.25- 4 million	-0.10	-0.06
	(0.06)	(0.06)
F	7.52	4.46
Adjusted R^2	.24	.14

Note: Standard errors are in parentheses.

Appendix C

Table C.1

Nonlinear Seemingly Unrelated Regression (SUR) Parameter Estimates for FOOD Expenditures by Upper-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.347	.139	2.50	0.013
ln income	-.026	.012	-2.09	0.037
AGE 1-2	.013	.009	1.53	0.127
AGE 3-5	.009	.006	1.48	0.141
AGE 6-8	.004	.006	0.58	0.560
AGE 9-11	.007	.007	0.92	0.360
AGE 12-14	.022	.007	3.16	0.002
AGE 15-17	.016	.010	1.62	0.106
AGE 18-24	.016	.019	0.84	0.399
AGE 25-34	.022	.021	1.08	0.280
AGE 35-44	.027	.020	1.34	0.182
AGE 45-54	.036	.021	1.77	0.077
AGE 55+	.043	.038	1.12	0.263
Woman employed:				
Full time	.004	.008	0.56	0.579
Part time	-.008	.009	-0.94	0.348
PSU <75,000	-.010	.024	-0.40	0.687
PSU 75,000-1.24M	.001(E-01)	.008	0.02	0.986
PSU 1.25-4M	.002	.009	0.25	0.800

Table C.2

Nonlinear SUR Parameter Estimates for HOUSING Expenditures by Upper-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.234	.227	1.03	0.304
ln income	.016	.020	0.80	0.426
AGE 1-2	-.003	.015	-0.23	0.816
AGE 3-5	-.002	.010	-0.18	0.860
AGE 6-8	-0.007	.010	-0.66	0.510
AGE 9-11	-.013	.012	-1.11	0.268
AGE 12-14	-.001	.012	-0.12	0.906
AGE 15-17	-.025	.017	-1.51	0.133
AGE 18-24	-0.047	.031	-1.51	0.131
AGE 25-34	-.046	.034	-1.36	0.174
AGE 35-44	-.049	.033	-1.48	0.140
AGE 45-54	-.078	.034	-2.32	0.021
AGE 55+	-.069	.063	-1.08	0.279
Woman employed:				
Full time	-.025	.013	-2.01	0.045
Part time	.002	.014	0.17	0.868
PSU <75,000	.059	.039	1.50	0.134
PSU 75,000-1.24M	.003	.013	0.21	0.831
PSU 1.25-4M	.012	.015	0.80	0.425

Table C.3

Nonlinear SUR Parameter Estimates for CLOTHING Expenditures by Upper-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	-.104	.081	-1.28	0.203
ln income	.020	.007	2.81	0.005
AGE 1-2	-.005	.005	-1.06	0.289
AGE 3-5	.003	.004	0.94	0.348
AGE 6-8	.003	.004	0.75	0.455
AGE 9-11	.007	.004	1.70	0.089
AGE 12-14	.005	.004	1.16	0.248
AGE 15-17	.012	.006	1.95	0.052
AGE 18-24	-.016	.011	-1.42	0.158
AGE 25-34	-.030	.012	-2.46	0.015
AGE 35-44	-.036	.012	-3.01	0.003
AGE 45-54	-.037	.012	-3.04	0.003
AGE 55+	-.045	.022	-2.02	0.044
Woman employed:				
Full time	.764(E-03)	.004	0.17	0.862
Part time	.67(E-03)	.005	0.13	0.894
PSU <75,000	.011	.014	0.83	0.408
PSU 75,000-1.24M	-.014	.004	-3.21	0.001
PSU 1.25-4M	-8.38(E-05)	.005	-0.02	0.987

Table C.4

Nonlinear SUR Parameter Estimates for ADULT GOODS Expenditures by Upper-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.117	.050	2.35	0.019
ln income	-.008	.004	-1.81	0.071
AGE 1-2	.640(E-03)	.003	0.21	0.837
AGE 3-5	.002	.002	1.00	0.319
AGE 6-8	-.951(E-03)	.002	-0.44	0.658
AGE 9-11	-.427(E-03)	.003	-0.17	0.867
AGE 12-14	-.312(E-03)	.003	-0.12	0.902
AGE 15-17	.006	.004	1.81	0.071
AGE 18-24	-.005	.007	-0.77	0.445
AGE 25-34	-.005	.007	-0.61	0.540
AGE 35-44	-.006	.007	-0.88	0.381
AGE 45-54	-.002	.007	-0.26	0.797
AGE 55+	-.844(E-03)	.014	-0.06	0.951
Woman employed:				
Full time	-.369(E-04)	.003	-0.01	0.989
Part time	-.005	.003	-1.61	0.109
PSU <75,000	-.005	.008	-0.55	0.581
PSU 75,000-1.24M	-.004	.003	-1.57	0.118
PSU 1.25-4M	-.922(E-03)	.003	-0.29	0.772

Table C.5

Nonlinear SUR Parameter Estimates for HOUSEHOLD OPERATION
Expenditures by Upper-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.25	.090	2.79	0.006
ln income	-.020	.008	-2.48	0.014
AGE 1-2	.018	.006	3.17	0.002
AGE 3-5	.026	.004	6.37	0.01(E-02)
AGE 6-8	.013	.004	3.26	0.001
AGE 9-11	-.003	.005	-0.58	0.560
AGE 12-14	.002	.005	0.43	0.664
AGE 15-17	.017	.007	2.62	0.009
AGE 18-24	.006	.012	0.47	0.641
AGE 25-34	.004	.013	0.32	0.746
AGE 35-44	.007	.013	0.56	0.578
AGE 45-54	.01	.013	1.15	0.253
AGE 55+	-.002	.025	-0.10	0.924
Woman employed:				
Full time	.016	.005	3.20	0.002
Part time	.011	.006	1.98	0.048
PSU <75,000	.007	.015	0.45	0.655
PSU 75,000-1.24M	.012	.005	2.40	0.017
PSU 1.25-4M	.003	.006	0.55	0.585

Table C.6

Nonlinear SUR Parameter Estimates for HOUSEHOLD FURNISHING Expenditures by Upper-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.105	.145	0.72	0.469
ln income	.001	.013	0.10	0.920
AGE 1-2	-.014	.009	-1.46	0.144
AGE 3-5	-.010	.007	-1.48	0.140
AGE 6-8	-.005	.007	-0.84	0.399
AGE 9-11	.020	.008	2.54	0.012
AGE 12-14	.010	.008	1.25	0.213
AGE 15-17	-.017	.011	-1.56	0.121
AGE 18-24	-.030	.020	-1.52	0.130
AGE 25-34	-.033	.022	-1.52	0.129
AGE 35-44	-.033	.021	-1.54	0.124
AGE 45-54	-.041	.021	-1.90	0.058
AGE 55+	.062	.041	1.52	0.129
Woman employed:				
Full time	-.013	.008	-1.61	0.109
Part time	-.027	.009	-2.92	0.004
PSU <75,000	-.004	.026	-0.17	0.869
PSU 75,000-1.24M	.008	.008	1.02	0.309
PSU 1.25-4M	-.003	.010	-0.26	0.796

Table C.7

Nonlinear SUR Parameter Estimates for TRANSPORTATION Expenditures by Upper-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.157	.317	0.50	0.620
ln income	-.003	.028	-0.10	0.921
AGE 1-2	-.008	.021	-0.39	0.700
AGE 3-5	-.019	.015	-1.24	0.216
AGE 6-8	-.010	.015	-0.70	0.483
AGE 9-11	.009	.017	0.51	0.610
AGE 12-14	-.043	.017	-2.49	0.013
AGE 15-17	-.039	.024	-1.59	0.113
AGE 18-24	.019	.044	0.44	0.662
AGE 25-34	.025	.047	0.52	0.602
AGE 35-44	.029	.047	0.63	0.532
AGE 45-54	.029	.047	0.61	0.542
AGE 55+	-.044	.092	-0.48	0.629
Woman employed:				
Full time	.017	.018	0.96	0.339
Part time	.011	.021	0.53	0.597
PSU <75,000	-.073	.057	-1.27	0.207
PSU 75,000-1.24M	.013	.018	-0.73	0.468
PSU 1.25-4M	-.035	.022	-1.63	0.104

Table C.8

Nonlinear SUR Parameter Estimates for HEALTH Expenditures
by Upper-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.290	.080	3.61	0.03(E-02)
ln income	-.023	.007	-3.24	0.001
AGE 1-2	.686E-04	.005	0.01	0.989
AGE 3-5	.239(E-03)	.004	0.07	0.947
AGE 6-8	-.468(E-03)	.003	-0.13	0.893
AGE 9-11	-.009	.004	-2.30	0.022
AGE 12-14	-.001	.004	-0.31	0.760
AGE 15-17	.004	.006	0.61	0.544
AGE 18-24	-.016	.011	-1.43	0.154
AGE 25-34	-.014	.012	-1.20	0.231
AGE 35-44	-.009	.012	-0.76	0.448
AGE 45-54	-.014	.012	-1.20	0.230
AGE 55+	.040	.022	1.80	0.072
Woman employed:				
Full time	-.778(E-03)	.004	-0.18	0.858
Part time	.011	.005	2.16	0.031
PSU <75,000	.004	.014	0.30	0.766
PSU 75,000-1.24M	.006	.004	1.42	0.157
PSU 1.25-4M	.007	.005	1.44	0.150

Table C.9

Nonlinear SUR Parameter Estimates for EDUCATION Expenditures by Upper--Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.090	.056	1.61	0.108
ln income	-.007	.005	-1.51	0.133
AGE 1-2	-.001	.004	-0.40	0.690
AGE 3-5	-.258(E-03)	.002	-0.10	0.918
AGE 6-8	.006	.002	2.28	0.023
AGE 9-11	-.003	.003	-0.96	0.337
AGE 12-14	.007	.003	2.59	0.010
AGE 15-17	.002	.004	0.58	0.562
AGE 18-24	-.303(E-03)	.008	-0.04	0.968
AGE 25-34	-.973(E-03)	.008	-0.12	0.907
AGE 35-44	.001	.0082	0.14	0.886
AGE 45-54	-.894(E-03)	.0083	-0.11	0.914
AGE 55+	.013	.015	0.84	0.399
Woman employed:				
Full time	.001	.003	0.21	0.836
Part time	.003	.003	0.95	0.344
PSU <75,000	-.003	.010	-0.33	0.741
PSU 75,000-1.24M	-.005	.003	-1.48	0.140
PSU 1.25-4M	.004	.004	0.98	0.326

Table C.10

Nonlinear SUR Parameter Estimates for MISCELLANEOUS Expenditures for Upper-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant				
ln income				
AGE 1-2	.128(E-03)	.012	0.01	0.992
AGE 3-5	-.010	.008	-1.18	0.239
AGE 6-8	-.637(E-03)	.008	-0.08	0.939
AGE 9-11	-.014	.010	-1.40	0.164
AGE 12-14	-.317(E-03)	.010	-0.03	0.974
AGE 15-17	.024	.014	1.73	0.086
AGE 18-24	.073	.011	6.33	0.01(E-02)
AGE 25-34	.077	.007	10.47	0.01(E-02)
AGE 35-44	.068	.009	7.82	0.01(E-02)
AGE 45-54	.092	.009	10.47	0.01(E-02)
AGE 55+	.004	.048	0.08	0.939
Woman employed:				
Full time	.392(E-03)	.010	0.04	0.969
Part time	.956(E-03)	.011	0.08	0.934
PSU < 75,000	.013	.032	0.39	0.699
PSU < 75,000-1.24M	.007	.010	0.70	0.486
PSU 1.25-4M	.011	.012	0.87	0.387

Table C.11

Nonlinear SUR Summary of Residual Errors

Equation	SSE	MSE	ROOT MSE	R-SQUARE
FOOD	18827.99	56.37	7.51	0.10
HOUSING	52454.10	157.05	12.53	0.08
CLOTHING	6450.31	19.31	4.39	0.12
ADULT GOODS	2389.62	7.15	2.67	0.05
HH OPERATION	7971.32	23.87	4.89	0.21
HH FURNISHINGS	22057.83	66.04	8.13	0.12
TRANSPORTATION	111052.91	332.49	18.23	0.05
HEALTH	6275.67	18.79	4.33	0.10
EDUCATION	3060.49	9.16	3.03	0.08
MISCELLANEOUS	34650.71	106.29	10.31	0.11
NUMBER OF OBSERVATIONS		351		
Statistics for system				
OBJECTIVE	68.628			
OBJECTIVE*N	24088.580			

Table C.12

Nonlinear SUR Parameter Estimates for FOOD Expenditures
by Lower-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.546	.116	4.71	0.01(E-02)
ln income	-.038	.011	-3.38	0.08(E-02)
AGE 1-2	.012	.009	1.31	0.19
AGE 3-5	.017	.007	2.30	0.02
AGE 6-8	.007	.007	0.94	0.35
AGE 9-11	.038	.009	4.23	0.01(E-02)
AGE 12-14	.016	.009	1.76	0.08
AGE 15-17	.033	.012	2.83	0.01
AGE 18-24	.010	.018	0.57	0.57
AGE 25-34	.003	.019	0.18	0.86
AGE 35-44	.001	.019	0.07	0.94
AGE 45-54	.023	.020	1.18	0.24
AGE 55+	-.025	.048	-0.53	0.59
Woman employed:				
Full time	-.020	.010	-1.94	0.05
Part time	-.007	.009	-0.82	0.41
PSU <75,000	-.076	.021	-3.68	0.03(E-02)
PSU 75,000-1.24M	-.032	.010	-3.04	0.26(E-02)
PSU 1.25-4M	-.038	.011	-3.35	0.09(E-02)

Table C.13

Nonlinear SUR Parameter Estimates for HOUSING Expenditures by Lower-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.441	.15830	2.78	0.05(E-01)
ln income	-.004	.015	-0.28	0.78
AGE 1-2	.004	.013	0.30	0.77
AGE 3-5	-.010	.011	-0.99	0.32
AGE 6-8	-.026	.010	-2.52	0.01
AGE 9-11	-.017	.013	-1.35	0.18
AGE 12-14	-.411(E-05)	.013	-0.03	0.97
AGE 15-17	-.798(E-05)	.017	-0.05	0.96
AGE 18-24	-.041	.024	-1.68	0.09
AGE 25-34	-.030	.026	-1.15	0.25
AGE 35-44	-.032	.026	-1.23	0.22
AGE 45-54	-.077	.027	-2.84	0.05(E-01)
AGE 55+	-.044	.067	-0.65	0.52
Woman employed:				
Full time	-.001	.014	-0.10	0.92
Part time	.001	.012	0.10	0.92
PSU <75,000	.057	.029	1.96	0.05
PSU 75,000-1.24M	-.029	.015	-1.97	0.05
PSU 1.25-4M	-.022	.016	-1.39	0.17

Table C.14

Nonlinear SUR Parameter Estimates for CLOTHING Expenditures
by Lower-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.073	.060	1.21	0.23
ln income	-.169(E-05)	.006	-0.03	0.98
AGE 1-2	-.0043306	.005	-0.90	0.37
AGE 3-5	.003	.004	0.89	0.37
AGE 6-8	-.004	.004	-1.16	0.25
AGE 9-11	.004	.005	0.81	0.42
AGE 12-14	-.865(E-05)	.005	-0.19	0.85
AGE 15-17	-.002	.006	-0.36	0.72
AGE 18-24	-.015	.009	-1.59	0.11
AGE 25-34	-.011	.010	-1.17	0.24
AGE 35-44	-.015	.010	-1.50	0.14
AGE 45-54	-.016	.010	-1.57	0.12
AGE 55+	-.043	.025	-1.71	0.09
Woman employed:				
Full time	-.010	.005	-1.84	0.07
Part time	.008	.004	1.73	0.09
PSU <75,000	-.001	.011	-0.10	0.92
PSU 75,000-1.24M	-.004	.005	-0.77	0.44
PSU 1.25-4M	-.004	.006	-0.71	0.48

Table C.15

Nonlinear SUR Parameter Estimates for ADULT GOODS Expenditures by Lower-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.182	.050	3.67	0.030(E-02)
ln income	-.013	.005	-2.65	0.01
AGE 1-2	-.006	.004	-1.40	0.16
AGE 3-5	-.011	.003	-3.32	0.010(E-01)
AGE 6-8	-.002	.003	-0.76	0.45
AGE 9-11	.004	.004	1.17	0.24
AGE 12-14	.006	.004	1.56	0.12
AGE 15-17	-.005	.005	-0.96	0.34
AGE 18-24	-.011	.008	-1.50	0.13
AGE 25-34	-.009	.008	-1.11	0.27
AGE 35-44	-.013	.008	-1.64	0.10
AGE 45-54	-.012	.008	-1.44	0.15
AGE 55+	-.029	.020	-1.42	0.16
Woman employed:				
Full time	.002	.004	0.48	0.63
Part time	-.521(E-05)	.004	-0.14	0.89
PSU <75,000	-.002	.009	-0.19	0.85
PSU 75,000-1.24M	.019(E-02)	.004	0.04	0.97
PSU 1.25-4M	-.003	.005	-0.64	0.53

Table C.16

Nonlinear SUR Parameter Estimates for HOUSEHOLD OPERATION Expenditures by Lower-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.027	.074	0.36	0.72
ln income	.001	.007	0.15	0.88
AGE 1-2	.011	.006	1.86	0.06
AGE 3-5	.001	.005	0.25	0.80
AGE 6-8	-.004	.005	-0.80	0.42
AGE 9-11	-.002	.006	-0.30	0.77
AGE 12-14	.016	.006	2.73	0.01
AGE 15-17	.020	.008	2.64	0.01
AGE 18-24	.019	.011	1.63	0.10
AGE 25-34	.023	.012	1.88	0.06
AGE 35-44	.016	.012	1.30	0.19
AGE 45-54	.029	.013	2.32	0.02
AGE 55+	0.044	.031	1.43	0.15
Woman employed:				
Full time	.003	.007	0.44	0.66
Part time	.009	.005	1.67	0.09
PSU <75,000	.020	.013	1.52	0.13
PSU 75,000-1.24M	.008	.007	1.13	0.26
PSU 1.25-4M	.001	.007	0.09	0.93

Table C.17

Nonlinear SUR Parameter Estimates for HOUSEHOLD FURNISHING Expenditures by Lower-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	-.092	.075	-1.22	0.22
ln income	.013	.007	1.73	0.08
AGE 1-2	-.007	.006	-1.08	0.28
AGE 3-5	-.016	.005	-3.20	0.015(E-01)
AGE 6-8	-.006	.005	-1.26	0.21
AGE 9-11	-.008	.006	-1.41	0.16
AGE 12-14	.002	.006	0.31	0.76
AGE 15-17	-.025	.008	-3.15	0.017(E-01)
AGE 18-24	.002	.012	0.17	0.87
AGE 25-34	-.003	.012	-0.25	0.80
AGE 35-44	.007	.012	0.57	0.57
AGE 45-54	-.012	.013	-0.93	0.35
AGE 55+	-.030	.032	-0.96	0.34
Woman employed:				
Full time	-.004	.007	-0.61	0.55
Part time	-.009	.006	-1.60	0.11
PSU <75,000	.020	.014	1.46	0.15
PSU 75,000-1.24M	.016	.007	2.26	0.02
PSU 1.25-4M	.012	.008	1.53	0.13

Table C.18

Nonlinear SUR parameter Estimates for TRANSPORTATION Expenditures by Lower-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.323	.196	1.65	0.10
ln income	-.020	.019	-1.07	0.28
AGE 1-2	-.018	.016	-1.15	0.25
AGE 3-5	.018	.013	1.39	0.16
AGE 6-8	.027	.013	2.12	0.03
AGE 9-11	-.020	.015	-1.29	0.20
AGE 12-14	-.028	.015	-1.84	0.07
AGE 15-17	.005	.021	0.23	0.82
AGE 18-24	.016	.030	0.52	0.61
AGE 25-34	-.004	.032	-0.11	0.91
AGE 35-44	-.680(E-05)	.032	-0.02	0.98
AGE 45-54	-.004	.034	-0.12	0.90
AGE 55+	.034	.083	0.41	0.68
Woman employed:				
Full time	.049	.018	2.74	0.01
Part time	.003	.015	0.17	0.86
PSU <75,000	-.061	.036	-1.69	0.09
PSU 75,000-1.24M	.016	.018	0.88	0.38
PSU 1.25-4M	.041	.020	2.04	0.04

Table C.19

Nonlinear SUR Parameter Estimates for HEALTH Expenditures
by Lower-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	.067	.058	1.15	0.25
ln income	-.007	.0052	-1.29	0.20
AGE 1-2	.013	.005	2.78	0.01
AGE 3-5	.942(E-06)	.004	0.03	0.98
AGE 6-8	.010	.004	2.65	0.01
AGE 9-11	.001	.004	0.22	0.83
AGE 12-14	-.968(E-05)	.004	-0.22	0.83
AGE 15-17	-.008	.006	-1.38	0.17
AGE 18-24	0.007	.009	0.73	0.46
AGE 25-34	.009	.009	0.97	0.33
AGE 35-44	.015	.010	1.60	0.11
AGE 45-54	.017	.010	1.77	0.08
AGE 55+	.038	.024	1.59	0.11
Woman employed:				
Full time	-.003	.005	-0.61	0.54
Part time	.003	.004	0.67	0.50
PSU <75,000	.030	.010	2.92	0.00
PSU 75,000-1.24M	.011	.005	2.02	0.04
PSU 2.15-4M	.005	.006	0.96	0.34

Table C.20

Nonlinear SUR Parameter Estimates for EDUCATION Expenditures
by Lower-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant	-.074	.031	-2.38	0.02
ln income	.001	.003	0.48	0.63
AGE 1-2	-.003	.002	-1.24	0.21
AGE 3-5	.001	.002	0.31	0.75
AGE 6-8	.004	.002	1.91	0.06
AGE 9-11	.010	.002	4.17	0.010(E-02)
AGE 12-14	-.001	.002	-0.53	0.60
AGE 15-17	-.142(E-05)	.003	-0.04	0.96
AGE 18-24	.035	.005	7.29	0.010(E-02)
AGE 25-34	.035	.005	6.95	0.010(E-02)
AGE 35-44	.033	.005	6.46	0.010(E-02)
AGE 45-54	.038	.005	7.13	0.010(E-02)
AGE 55+	.030	.013	2.34	0.02
Woman employed:				
Full time	-.109(E-05)	.003	-0.04	0.97
Part time	-.781(E-05)	.002	-0.34	0.73
PSU <75,000	-.002	.006	-0.39	0.70
PSU 75,000-1.24M	-.005	.003	-1.67	0.10
PSU 1.25-4M	.001	.003	0.24	0.81

Table C.21

Nonlinear SUR Parameter Estimates for MISCELLANEOUS Expenditures by Lower-Middle-Income Families

Parameter	Estimate	Approx. Std. Error	'T' Ratio	Approx. Prob > |T|
Constant				
ln income				
AGE 1-2	-.002	.009	-0.21	0.83
AGE 3-5	-.004	.007	-0.49	0.62
AGE 6-8	-.005	.007	-0.65	0.52
AGE 9-11	-.010	.009	-1.11	0.27
AGE 12-14	-.007	.009	-0.79	0.43
AGE 15-17	-.017	.011	-1.50	0.14
AGE 18-24	-.020	.007	-2.70	0.01
AGE 25-34	-.013	.008	-1.76	0.08
AGE 35-44	-.011	.008	-1.45	0.15
AGE 45-54	.014	.009	1.54	0.13
AGE 55+	.026	.045	0.58	0.56
Woman employed: Full time	-.015	.010	-1.50	0.13
Part time	-.006	.009	-0.71	0.48
PSU <75,000	.014	.020	0.70	0.48
PSU 75,000-1.24M	.020	.010	1.97	0.05
PSU 1.25-4M	.009	.011	0.80	0.43

Table C.22

Nonlinear SUR Summary of Residual Errors

Equation	SSE	MSE	ROOT MSE	R-SQUARE
FOOD	25453.57	73.57	8.58	0.18
HOUSING	51007.22	147.42	12.14	0.11
CLOTHING	6929.28	20.03	4.48	0.06
ADULT GOODS	4686.38	13.54	3.68	0.09
HH OPERATION	10428.93	30.14	5.49	0.12
HH FURNISHINGS	11304.66	32.67	5.72	0.11
TRANSPORTATION	77543.42	224.11	14.97	0.09
HEALTH	6424.99	18.57	4.31	0.10
EDUCATION	1823.11	5.27	2.30	0.23
MISCELLANEOUS	24754.16	73.24	8.56	0.18
NUMBER OF OBSERVATIONS		363		
Statistics for system				
OBJECTIVE	30.08			
OBJECTIVE*N	10919.49			

Notes

[1]Section 46.25(9) (a) Stats. requires that the Wisconsin Department of Health and Social Services establish a standard to be used in determining child support obligations. That guideline, the percentage-of-income standard, is published in the Wisconsin Administrative code Chapter HSS 80.

[2]Absent parents for purposes of this discussion are defined as parents who share in the custody of their children less than 30% of the time. The standard is employed unless the judge deems that application of the standard in a particular case would be "unfair."

[3]For a more complete exposition of this controversy see Douthitt (1988).

[4]Williams (1986), for example, uses such consumption data analyzed and reported by Espenshade in his 1984 book, Investing in Children, to level such a criticism of the flat PYS.

[5]Although Espenshade excluded respondents who had not lived in their residence for a complete year, no such indicator was available in the latter data set thus no such selection procedure was used in this analysis.

[6]Because households with incomes below the poverty level may be eligible for a number of income-tested social assistance programs, they face nonlinear budget constraints. Since an underlying assumption behind this expenditure analysis is that budget constraints are linear, such families were removed from the sample.

[7]See HSS 80.01 (24).

[8]However, the reader should note that Espenshade's method has not been free of criticism. Deaton and Muellbauer (1986) have recently raised important policy questions regarding the reliably of various methodologies, including Espenshade's, that measure child-rearing costs.

[9]Early in his exposition Espenshade notes that transportation exhibited one of the largest price increases over the 10-year period 1971-81. However, he neglects to indicate any potential bias after finding that transportation is one of the highest categories of child-rearing expenditures.

[10]Throughout his analysis Espenshade uses the word "income" to refer to these different classes of families.

[11]BLS tax definitions were used in constructing this table. Total taxes include federal taxes, state and local taxes, property and any other taxes. From this is netted federal, state, local or other tax refunds. All taxes and refunds refer to amounts either received or paid during the previous 12 months. Income is defined in a similar accounting fashion. However, since both taxes and refunds paid out in one year may be partially based on income received prior to this 12-month-recall period, it is possible that taxes paid either exceed income (average tax rate > 1) or that refunds exceed taxes paid (average tax rate < 0). Alternative methods of calculating these means were explored and although the absolute value of the means changed, there was no difference noted in the means tests between income groups.

[12]The BLS includes sales tax in expenditure estimates. Thus, to the extent that lower-middle-income families allocate a larger share of their income to taxable goods, their consumption as a percentage of gross income will be overstated vis-à-vis their higher-middle-income counterparts. More discussion of this will be included later in the report.

[13]The 5% sales tax became effective May 1, 1982. Prior to that it was 4%.

[14]Social Security tax rates varied over the period. In 1982 the percentage withholding stood at 6.7% with a $32,400 earnings ceiling. In 1983 the percentage withholding stood at 6.7% with a $35,700 earnings ceiling. In 1984 the percentage withholding stood at 7% with a $37,800 earnings ceiling.

[15]See van der Gaag (1982) for a comparison of various child-cost estimates as a percentage of income.

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