Female-Headed Families: Why Are They So Poor?

by

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ABSTRACT

Over the last few decades in the United States, the poverty rate for female-headed families (with no husband present) has been about three times the poverty rate for male-headed families (with no wife present) and about six times the poverty rate for married-couple families. This paper addresses the question of why, in general, female-headed families are so much poorer than other families. A decomposition of poverty rates and a set of probit models are used to identify the factors which determine the poverty rates for the three family types. The following control variables are found to be important determinants of poverty for all three family types: education of family members; age, race, disability, and unemployment of the family head; geographical location, size and age composition of the family. Both married-couple families and male-headed families are found to be less poor than female-headed families mainly because additional units of those control variables which reduce (increase) poverty have a larger (smaller) impact in the case of the former two family types than in the case of female-headed families. Of lesser importance is the fact that female-headed families, on average, have less (more) of those control variables which reduce (increase) poverty.

1. INTRODUCTION

Throughout the 1980s more than 10 percent of all families in the United States were poor (see column 1 of Table 1). In contrast, during the period from 1972 through 1979, the poverty rate among families was fairly stable and in the range of 8.8 to 9.7 percent. Earlier, from 1959 to 1971, family poverty underwent a steady decline. A comparison of poverty rates for married-couple families (see column 2 of Table 1), male-headed families with no wife present (see column 3 of Table 1), and female-headed families with no husband present (see column 4 of Table 1) reveals that the poverty rate for female-headed families consistently has been about three times that of male-headed families and about six times that of married-couple families.

This paper asks why poverty rates for female-headed families are so much higher than those for married-couple families and male-headed families. The method of analysis is to identify the factors which determine the poverty rates for the three family types. These factors fall into two groups: those which measure the size and age composition of the family and those which measure personal characteristics of family members. Family size affects poverty because, ceteris paribus, there is a direct relationship between a family's size and its needs. Family composition is important because adults can contribute to a family's income whereas children cannot. Furthermore, families with two or more adults are less likely than families headed by a single adult to fall into poverty if the head of the family leaves the workforce. So perhaps female-headed families are poor in part because they have fewer adults and more children than other family types. On the other hand, single adults who head families may possess personal characteristics, such as low levels of human capital, which make it likely that they would be poor even if they lived in married-couple families. If so, society's resources would be better allocated towards modifying those personal characteristics (for example, increasing the human capital of poor persons) rather than encouraging individuals to live in traditional family units.

Section 2 decomposes the poverty rate for each family type (married-couple, male-headed and female-headed) according to a number of variables which reflect family size and composition and certain personal characteristics of family members. The decompositions help reveal the impacts of both the variables and the structure of the population on the poverty rate for each family type. Section 3 presents a probit model for each family type, the coefficients of which can be used to measure the impact of the variables on the probability that a family of the given type is poor. The probit models are used to decompose poverty rate differentials between female-headed families and other family types in a way which helps us understand why poverty rates for female-headed families are so high. Section 4 reports the estimated probit models and Section 5 gives the results of the decompositions. Concluding comments are offered in Section 6.

2. POVERTY RATES AND THE STRUCTURE OF THE POPULATION

The poverty rate for a given family type is a weighted average of the poverty rates for various groups within the population of families of that type. Groups may be defined in terms of variables which are believed to be related to poverty, for example, race, education, degree of participation in the workforce, etc. The weights are the proportions of families of that type in the various groups. Formally, the poverty rate among families of a given type, T, can be written as:

$$(1) \qquad Pr(poor)_T = \sum_{j=1}^{J} Pr(poor \mid group\ j)_T \ Pr(group\ j)_T$$

where "Pr" stands for "probability", "|" for "conditional upon", and J is the number of groups into which families of type T are partitioned. It is clear from Equation (1) that the poverty rate for families of a given type is determined partially by the poverty rates for the various groups of families of that type, and partially by the way in which the population of families of that type is distributed among the groups.

Three types of family are considered: married-couple families (with or without children), male-headed families and female-headed families. If poverty can be explained by the variables which define the groups, without reference to family type, then the conditional poverty rate for group j (j=1,2,...,J), $Pr(poor \mid group\ j)_T$, will be the same for all family types. In this case the difference between the poverty rates of any two family types must be due to differences across family types in the proportions of families falling into the various groups, $Pr(group\ j)_T$. The more poverty is related to family type the more the conditional poverty rates will differ among the various groups.

The data used throughout this paper are the Public Use Microdata Sample (C Sample) for the state of California, collected by the U.S. Department of Commerce, Bureau of the Census.[1] This is a one percent random sample of households from the 1980 United States Census of Population and Housing. For the purpose of this study, vacant households, people living in group quarters or nonfamily households, unrelated individuals living alone or in family households, and families with a head who is over 65 years old and not in the workforce were excluded from the data set. This left a sample of 53,914 Californian families with heads who were either in the workforce or of working age. Of these 43,392 were married-couple families, 2,418 were male-headed families, and 8,104 were female-headed families. California was chosen over other states partially because it has large numbers of nonwhites.

A family is poor if its 1979 before-tax family income is less than the poverty line for a family of its size and age composition. Family income includes wages and salaries, self-employment income, interest, dividends and net rental income. This paper analyses pre-transfer poverty so before-tax income, rather than after-tax income, is employed and public assistance and social security are excluded. For the same reason other government transfers (in cash or in kind) are not included in family income. It would be appropriate to include non-cash components of income such as fringe benefits, home-produced goods and services etc., but the necessary data are not available. Using data from a single state has the advantage that incentive effects of federal and state welfare programs are the same for all families in the sample. It is recognized, however, that observed pre-transfer family income, and family size and age composition, are not necessarily those which would be observed in the absence of these welfare programs. The effects of the latter on behavior are ignored in this paper.[2]

The poverty lines used are those of the U.S. Department of Commerce, Bureau of the Census.[3] These official poverty thresholds vary according to the size and age composition of the family but not according to geographical location, despite the fact that the cost of living varies considerably from one region of the country to another. Unfortunately, price indices suitable for adjusting 1979 poverty thresholds for regional differences in the cost of living are not available in the United States.[4] This problem is mitigated by using data for a restricted geographical area such as a single state.

Column 1, row 1 of Table 2 gives the poverty rates for the three family types. Female-headed families have the highest poverty rate and married-couple families have the lowest. Columns 2 through 7 of Table 2 contain conditional poverty rates for groups formed on the basis of race and the degree of participation in the workforce of the family head, as well as family size, age composition and type. In reference to Table 2, a full-time worker is one who usually works 35 or more hours per week, while a part-time worker works between zero and 35 hours per week. Family size and composition are measured by the number of nondependent adults in the family and the number of dependents. Nondependent adults are the head of the family and any able-bodied persons who are not in school and who are aged between 18 and 65 years. All persons other than nondependent adults are dependents. Note that married-couple families can have only one nondependent adult. This occurs only if the spouse is disabled, in school, younger than 18 or older than 65. Despite a sample of almost 54,000 families, not many variables can be used to define the groups otherwise there will be too few observations for conditional poverty rates to be estimated reliably. Unreliable estimates are flagged with an asterisk in Table 2.

The influence on poverty of the variables used in Table 2 is evident. In 47 out of 48 reliable comparisons nonwhite families have higher poverty rates than white families, ceteris paribus. Families whose heads did not work have consistently higher poverty rates than families whose head worked part-time, ceteris paribus, and the latter have consistently higher poverty rates than those whose head worked full-time, ceteris paribus. In the vast majority of cases the poverty rate increases with the number of dependents, ceteris paribus, and decreases with the number of nondependent adults, ceteris paribus.

The distributions of the three populations of families among the various groups are shown in columns 8 through 13 of Table 2. The most populous groups of married-couple families are those consisting of two adults, with or without dependents, where the head is white and works full time. Male-headed families predominantly consist of a single adult with one or more dependents, or two adults, with a head who is white and works full time. Female-headed families mostly consist of single adults, with one or more dependents, where the head is white and works full time. The proportion of female-headed families with one nondependent adult who works part time exceeds the proportions of both male-headed families and married-couple families with one nondependent adult who works part time, ceteris paribus. Also, the proportion of female-headed families with one nondependent adult who does not work exceeds the proportions of both male-headed families and married-couple families with one nondependent adult who does not work, ceteris paribus.

Ceteris paribus, poverty rates vary considerably across the three family types. In 20 of the 48 cases there are sufficient observations for all three family types to be compared. In all but one of these cases married-couple families have the lowest poverty rate. The exception is the set of families consisting of more than two nondependent adults and more than one dependent, with a nonwhite head who works full time (row 9, column 2). Here, male-headed families have the lowest poverty rate. In 14 of these same 20 cases female-headed families have the highest poverty rate, often by a substantial amount. There are sixteen cases in which only married-couple and female-headed families can be reliably compared. In all but one of these cases female-headed families have the higher poverty rate and in the exceptional case (families with more than two nondependent adults and one dependent where the head is white and works full time) the poverty rate differential is very small. In the remaining 12 of the 48 cases no reliable comparisons can be made.

The degree of similarity between male-headed families and female-headed families in both population structure the conditional poverty rates can be measured by decomposing the aggregate poverty rate differential between the two family types (labelled m and f, respectively) as follows:

$$(2) \quad \Pr(\text{poor})_f - \Pr(\text{poor})_m =$$

$$\sum_{j=1}^{J} [\Pr(\text{poor} \mid \text{group } j)_f - \Pr(\text{poor} \mid \text{group } j)_m] \Pr(\text{group } j)_f + \quad \text{(component 1)}$$

$$\sum_{j=1}^{J} [\Pr(\text{group } j)_f - \Pr(\text{group } j)_m] \Pr(\text{poor} \mid \text{group } j)_m \quad \text{(component 2)}$$

Component 1 is the poverty rate differential which would occur if male-headed families had a population structure equal to that of female-headed families. Component 2 is the poverty rate differential which would occur if female-headed families had poverty rates for the J groups equal to those observed for male-headed families. The more poverty can be explained in terms of the variables which define the groups the smaller will be component 1 compared with component 2. The poverty rate differential between female-headed families and male-headed families equals 0.21. Component 1 equals 0.104 (49.5 percent of the total) and component 2 equals 0.106 (51.5 percent of the total), so about half of the differential is due to differences in the conditional poverty rates and half to differences in the structure of the two populations of families.

However, an alternative decomposition gives a somewhat different picture:

(3) $Pr(poor)_f - Pr(poor)_m =$

$$\sum_{j=1}^{J} [Pr(poor \mid group\ j)_f - Pr(poor \mid group\ j)_m]\ Pr(group\ j)_m +$$
(component 1)

$$\sum_{j=1}^{J} [Pr(group\ j)_f - Pr(group\ j)_m]\ Pr(poor \mid group\ j)_f$$
(component 2)

Component 1 in Equation (3) is the poverty rate differential which would occur if female-headed families had the same population structure as that observed for male-headed families. Component 2 in Equation (3) is the poverty rate differential which would occur if male-headed families had poverty rates for the J groups equal to those of female-headed families. Component 1 in this alternative decomposition equals 0.064 (30.5 percent of the total) and component 2 equals 0.146 (69.5 percent of the total), indicating that most of the differential is due to differences in the structure of the populations rather than the conditional poverty rates of two populations of families.

The same decompositions of the poverty rate differential of 0.279 between female-headed families and married-couple families can be performed.[5] Component 1 equals 0.175 (62.7 percent of the total) and component 2 equals 0.105 (37.3 percent of the total) according to Equation 2, indicating that most of the differential is due to differences in conditional poverty rates. By Equation 3 component 1 equals 0.078 (30.0 percent of the total) and component 2 equals 0.202 (70.0 percent of the total), indicating that most of the differential is due to differences in the structure of the populations.

Whichever decomposition is used it is clear that when race, workforce participation, family size and composition are held constant there are still considerable differences among the poverty rates of the three family types. This suggests either that the variables in Table 2 have been measured too crudely, or that other factors are important in explaining poverty rates, or both. In the next section a methodology is used which better deals with both of these problems.

3. POVERTY AND FAMILY TYPE - A PROBIT MODEL

In this section we investigate the relationship between poverty and family type using a reduced form probit model:[6]

$$\text{(4)} \qquad \Pr(Y_{ij} = 1) = \Phi(\beta_j{}'X_{ij})$$

where: $Y_{ij} = 1$ if the ith family of type j is poor;

$Y_{ij} = 0$ if the ith family of type j is not poor;

X_{ij} is a vector of control variables for the ith family of type j;

β_j is a vector of parameters for all families of type j.

If poverty is independent of family type then β_j will be the same for all family types and, according to Equation (4), any difference between two family types in the probability of being poor is due to differences in the levels of the control variables. Conversely, if poverty is related to family type then at least one element of β_j will differ across family types.

The assumption underlying the analysis is that the heads of each of the three types of family constitute a random sample from the population at large. In other words, family type is exogenous. This is a reasonable assumption concerning the sex of family heads but not necessarily in regard to marital status since individuals have some control over their own marital status. Thus the potential exists for self-selection bias in the estimated coefficients of equation (4). The problem of self-selection bias is ignored in this paper because of a lack of models available for explaining family formation.[7]

The poverty status differential between any two family types, m and f, computed at mean levels of the control variables, can be decomposed in ways which helps us understand why one family type is poorer than the other:[8]

$$(5) \quad \Phi(b_f'\bar{X}_f) - \Phi(b_m'\bar{X}_m) = \underbrace{[\ \Phi(b_f'\bar{X}_f) - \Phi(b_f'\bar{X}_m)\ ]}_{\text{component 1}} + \underbrace{[\ \Phi(b_f'\bar{X}_m) - \Phi(b_m'\bar{X}_m)\ ]}_{\text{component 2}}$$

or

$$(6) \quad \Phi(b_f'\bar{X}_f) - \Phi(b_m'\bar{X}_m) = \underbrace{[\ \Phi(b_m'\bar{X}_f) - \Phi(b_m'\bar{X}_m)\ ]}_{\text{component 1}} + \underbrace{[\ \Phi(b_f'\bar{X}_f) - \Phi(b_m'\bar{X}_f)\ ]}_{\text{component 2}}$$

where b is a vector of estimates of β. From equations (5) and (6) we can estimate how much of the poverty differential between family types m and f is due to: (a) differences in the average levels of the control variables (component 1), and (b) differences in the coefficients of the control variables (component 2). If poverty is unrelated to family type, the poverty differential being explainable in terms of differences in the mean levels of the control variables, then component 2 will be close to zero. The more important is family type the larger component 2 will be in absolute terms.

The control variables can be divided into two groups: (1) those which describe certain personal characteristics of the members of the family and the location of the family, and (2) those which measure the size and composition of the family. Each control variable affects either family income, the poverty line, or both.[9]

<u>Characteristics of the Family</u>

DEDUC1 = 1 if the family head has a high school diploma but no college education; DEDUC1 = 0 otherwise.

DEDUC2 = 1 if the family head has some college education but no more than a four year college degree; DEDUC2 = 0 otherwise.

DEDUC3 = 1 if the family head has more than a four year college degree; DEDUC3 = 0 otherwise.

HUMCAP: aggregate number of years of schooling completed by all able-bodied adults in the family, who are 65 years or younger and not in school, other than the head of the family.[10]

HAGE: age of the head of the family.

HAGE2: HAGE2 = HAGE*HAGE.

HWKSU79: number of weeks in 1979 during which the head of the family was unemployed.

DHDIS1 = 1 if the head of the family has a limited work disability; DHDIS1 = 0 otherwise.

DHDIS2 = 1 if the head of the family is prevented from working because of a disability; DHDIS2 = 0 otherwise.

DHRACE1 = 1 if the head of the family is black; DHRACE1 = 0 otherwise.

DHRACE2 = 1 if the head of the family is neither black nor white; DHRACE2 = 0 otherwise.

DAREA1 = 1 if the family is located in an urban fringe area;
DAREA1 = 0 otherwise.

DAREA2 = 1 if the family is located in an urban area which is not central city nor urban fringe; DAREA2 = 0 otherwise.

DAREA3 = 1 if the family is located in a rural area; DAREA3 = 0 otherwise.

The variables DEDUC1, DEDUC2, DEDUC3, HUMCAP, HAGE, HAGE2, HWKSU79, DHDIS1 and DHDIS2 are included in the analysis because they measure productivity differences across families. DHRACE1 and DHRACE2 capture any racial discrimination in the labor market, while DAREA1, DAREA2 and DAREA3 take account of geographical differences across labor markets caused by immobility of labor.

Size and Composition of the Family

ADULTS: number of able-bodied adults in the family, 65 years or younger and not in school, including the head of the family and his or her spouse, if present.

INFANTS: number of children, five years or younger, in the family.

DEPEND: number of other dependents in the family, calculated as number of people in the family minus ADULTS, minus INFANTS.

The variables ADULTS, DEPEND and INFANTS reflect differences in the size and composition of families. These variables may be related to the gender and marital status of the family head. For example, female-headed families are expected to have fewer ADULTS but more INFANTS than other families.

Poverty is expected to be inversely related to DEDUC1, DEDUC2, DEDUC3, HUMCAP, and HAGE, and directly related to HAGE2, HWKSU79, DHDIS1, DHDIS2, DHRACE1, DHRACE2, DEPEND and INFANTS. The relationship between relative income and ADULTS, DAREA1 and DAREA2 is not clear, a priori. The coefficient of DAREA3 is expected to be negative because labor immobility suggests lower incomes for people living in rural areas.

4. POVERTY AND FAMILY TYPE - RESULTS[11]

Means and standard deviations of the variables in the probit models, by family type, are presented in Table 3. Section 5 will estimate the proportion of each poverty-rate differential involving female-headed families which is attributable to differences across family types in the mean levels of the independent variables.

Heads of married-couple families are more likely to have a four year college degree, and are more likely to have education beyond the four year college level, than heads of other families. They also reside with nondependents who have more education than single adult heads of families. These married people are a little older on average, and were unemployed for fewer weeks during 1979, than single heads of families. They are less likely to be seriously disabled, are more likely to be white, and less likely to be black. They are less likely to reside in a central city area, and are more likely to reside in an urban fringe, an urban area other than a central city or urban fringe, and a rural area. They reside in families with more nondependent adults, and more children under the age of five, than single heads of families.

A larger percentage of single female heads of families have not graduated from high school than other heads of families. Although these women are more likely to have a high school diploma (but no higher education) than other family heads, they are less likely to have any college education, four year or beyond.

They also reside with nondependents who have less education than heads of other families. These single women are more likely to be seriously disabled, and are more likely to be black than heads of other families. They are more likely to live in a central city area, and less likely to live in an urban fringe or rural area. They live in families with fewer nondependent adults and more dependents over the age of five than heads of other families.

Single male heads of families are younger, and were unemployed for longer during 1979, than other family heads. They also and have fewer dependents older than five and fewer children younger than five than female heads of families or heads of married-couple families.

Probit equations for the three family types are given in Table 4. All coefficients have the expected signs and in most cases the coefficients are highly significant.[12] The exceptions are families headed by single males, in which case an additional adult, an additional unit of human capital, and geographical location are not significant. Living in an urban area which is not a central city nor an urban fringe is not significant for married-couple families. Poverty rates for the three family types, with control variables equal to the mean values listed in Table 3, are 4.6 percent, 10.9 percent and 32.3 percent, respectively. Considering the large samples employed, each of the three equations fits the data quite well as indicated by the proportion of correct predictions it makes. The equation for married couples correctly predicts 92.7 percent of cases. The equations for male-headed families and female-headed families make correct predictions in 87.1 and 76.7 percent of cases, respectively. To put these predictions in some perspective, a naive model which predicted all families of a given type to be poor would be correct in 92.5, 85.6

and 64.6 percent of cases for married-couple, male-headed and female-headed families, respectively.

Poverty decreases at an increasing rate with the education level of the head of the family. Age also has a nonlinear effect. For a married-couple family, with control variables other than age equal to their mean values, the probability of being poor falls to a minimum when the family head is about 44 years old. Similarly, male-headed families minimize their probability of being poor by age 51, while for female-headed families the minimum occurs at age 53 approximately.[13]

If the head of the family is disabled then, ceteris paribus, the probability of being poor is higher than for families with an able-bodied head and the greater the disability, the higher is the probability of being poor. Families with heads who are black are more likely to be poor than families with heads who are neither black nor white, and the latter are more likely to be poor than families with heads who are white. Geographical location influences the probability of married-couple and female-headed families being poor, ceteris paribus, poverty being least likely in urban fringe areas of California.

The influence on the probability of being poor of the three variables which measure family size and composition is of particular interest because when people think of the typical family headed by a single woman they usually have in mind a family with more young children and fewer adults than the typical married-couple family. Table 4 shows that, ceteris paribus, an additional child of five years or younger increased each family type's chances of being poor more than each additional dependent who is older than five. An additional adult, other things are equal, decreases the probability of a male-headed family being poor but increases the probability of a married-couple family, or a female-headed family, being poor. However, other things are unlikely to be equal because each nondependent adult will likely contribute some human capital to the family. For example, with control variables set at mean levels, the probit models predict that an additional, nondependent adult, with a high-school diploma but no higher education, would reduce the probability of a married-couple, male-headed and female-headed family being poor by about two, four and thirteen percent, respectively. As a second example consider a married-couple family with two adults, a male-headed family with one adult and a female-headed family with one adult. Suppose each family has two children under the age of five but no other dependents. Each family is located in a central city area, has a family head who is white, able-bodied and who has a high-school diploma only. Let the family head be of average age and be unemployed for the average time of families of his or her type. Let the spouse in the married-couple family have an average amount of human capital. The probit models predict that an additional adult with a high-school diploma would reduce the probability of the married-couple, male-headed and female-headed family being poor by about three, four and sixteen percent, respectively. The benefit of an additional adult with a high-school diploma to female-headed families is apparent from both these examples.

5. POVERTY RATE DIFFERENTIALS

Table 5 decomposes the poverty rate differentials between female-headed families and other family types in a way which helps us understand why poverty rates for female-headed families are so high. The poverty rate for each family type is computed at mean values of the control variables and the differentials are decomposed into the two components on the right hand sides of equations (5) and (6). Recall that components 1 and 2 measure the amount of the differential which is due to differences between family types in the mean levels of the control variables and the impacts of the control variables, respectively.

Female-Headed Families versus Male-Headed Families

Equation 5, Component 1: If male-headed families had coefficients equal to those of female-headed families (and each family type had control variables equal to their own mean values) then the poverty rate for female-headed families is predicted to be 6.4 percent (rather than 21.3 percent) higher than that of male-headed families.

Equation 5, Component 2: If female-headed families had mean levels of the control variables equal to those of male-headed families (and each family type had its own coefficients) then the poverty rate for female-headed families is predicted to be 14.9 percent (rather than 21.3 percent) higher than that of male-headed families.

Equation 6, Component 1: If female-headed families had coefficients equal to those of male-headed families (and each family type had control variables equal to their own mean values) then the poverty rate for female-headed families is predicted to be 1.6 percent (rather than 21.3 percent) higher than that of male-headed families.

Equation 6, Component 2: If male-headed families had mean levels of the control variables as equal to those of female-headed families (and each family type had its own coefficients) then the poverty rate for female-headed families is predicted to be 19.8 percent (rather than 21.3 percent) higher than that of male-headed families.

No matter whether the poverty rate differential between female-headed families and male-headed families is decomposed accordingly to Equation 5 or Equation 6 it is clear that the differential is overwhelmingly due to more "favorable" coefficients in the probit equation for male-headed families rather than to more "favorable" mean levels of control variables for male-headed families.[14]

<u>Female-Headed Families versus Married-Couple Families</u>

<u>Equation 5, Component 1:</u> If married-couple families had coefficients equal to those of female-headed families (and each family type had control variables equal to their own mean values) then the poverty rate for female-headed families is predicted to be 15.6 percent (rather than 27.6 percent) higher than that of married-couple families.

<u>Equation 5, Component 2:</u> If female-headed families had mean levels of the control variables equal to those of married-couple families (and each family type had its own coefficients) then the poverty rate for female-headed families is predicted to be 12.0 percent (rather than 27.6 percent) higher than that of married-couple families.

<u>Equation 6, Component 1:</u> If female-headed families had coefficients equal to those of married-couple families (and each family type had control variables equal to their own mean values) then the poverty rate for female-headed families is predicted to be 4.0 percent (rather than 27.6 percent) higher than that of married-couple families.

Equation 6, Component 2: If married-couple families had mean levels of the control variables as equal to those of female-headed families (and each family type had its own coefficients) then the poverty rate for female-headed families is predicted to be 23.6 percent (rather than 27.6 percent) higher than that of married-couple families.

The decomposition of the poverty rate differential between female-headed families and married-couple families given by Equation (5) is quite different to that given by Equation (6). Equation (5) indicates that the differential is about equally attributable to more "favorable" levels of the control variables and to more "favorable" coefficients of married-couple families. In contrast, Equation (6) attributes the differential primarily to more "favorable" coefficients of married-couple families. Both decompositions, however, signal that more "favorable" coefficients is an important explanation of why married-couple families are less poor than female-headed families.

6. CONCLUSIONS

This paper has investigated the relationship between poverty and family type, in an attempt to gain some insight into why the poverty rate for female-headed families is so much higher than that of other families. A number of control variables have been identified as important determinants of poverty for all family types: education of family members; age, race, disability, and unemployment of the family head; geographical location, size and composition of the family.

Differences between the poverty rates of (a) married-couple families, and female-headed families (with no husband present), and (b) male-headed families and female-headed families (each with no spouse present) can be partially explained by differences in the average levels of the control variables. Families headed by females have "inferior" levels of the control variables (taken as a group) compared with both male-headed families and married-couple families. In particular, female-headed families, on average, have less education, have more dependents, are more likely to have a work disability, and are more likely to be black than other family types. All of these factors contribute to the high poverty rate among people living in female-headed families. Government policy cannot affect one's race, can have little effect on a disability, and can have only limited effect on the number of dependents in the family. This leaves education as the most feasible target for government policy.

Even more important than mean levels of the control variables in explaining the difference between the poverty rates of female-headed and male-headed families, and to a lesser extent female-headed and married-couple families, are differences in the marginal effects of the control variables on poverty. The marginal effects of control variables (in aggregate) favor both male-headed families and married-couple families over female-headed families. This suggests that the poverty experienced by female-headed families is related more to social factors, such as wages and the structure of job markets, than to the size and composition of these families and the personal characteristics of family members.

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FOOTNOTES

1. These data were made available on magnetic tape by the Inter-university Consortium for Political and Social Research. Neither the Bureau, nor the Consortium, bear any responsibility for the analyses or interpretations presented here.

2. It seems that welfare programs do not have large effects on behavior. Ellwood (1989, p.12) in reviewing the evidence concluded "neither for long-term welfare use nor for changes in family structure was there much evidence that moderate changes in policy make very large differences ... even large changes in benefit levels and tax rates are found to create only limited changes in behavior." According to Wilson (1987) "A number of studies have attempted to measure the effects of Aid to Families with Dependent Children (AFDC) on the supply of labor; ... all found that AFDC payments had small but significant negative effects on labor-force participation. However, Danziger, Haveman, and Plotnick uncovered a variety of methodological problems that plague this body of research." (p.184)

3. See the 1980 Census of Population, Volume 1, Chapter C, Appendix B.

4. Recently the U.S. Department of Commerce, Bureau of the Census began publishing a cost of living index which measures relative price levels for selected metropolitan areas (see Statistical Abstract of the United States, 1990, Table 767). This index compares prices across metropolitan areas in the first quarter of 1989. It is suitable for adjusting poverty thresholds for 1989 but not 1979.

5. For decompositions of the poverty rate differential between female-headed families (f) and married-couple families (mc) substitute mc for m in Equations 2 and 3.

6. Assume there is an underlying variable, Y^*, measuring poverty status, defined by the regression relationship: $Y^* = \beta'X + u$, where u is normally distributed. Although Y^* is unobservable, we observe $Y = 1$ if $Y^* > 0$ and $Y = 0$ if $Y^* \leq 0$. Therefore, $Pr(Y = 1) = Pr(u > -\beta'X) = Pr(u < \beta'X) = \Phi(\beta'X)$.

7. Ellwood (1989, p.9) concludes "Decisions to marry are contingent on expectations regarding child bearing, market work, and divorce, each of which is extremely complex ... Thus determining what the relevant choices are and modelling them accurately is an almost impossible task."

8. Decompositions with a linear regression model were first performed by Blinder (1973).

9. See Hagenaars (1986, chapter 3) for a review of theories concerning the determinants of family income.

10. The number of years of schooling includes nursery school and kindergarten. Therefore, someone with a high school diploma, but no higher education, is recorded as having 14 years of schooling.

11. The results reported in Sections 4 and 5 are, for the most part, consistent with those obtained by the author using different data sets and different methodologies. See Rodgers (1990 and 1991).

12. Although the coefficients in Table 4 do not equal marginal effects, the sign of each coefficient indicates the direction of the marginal effect.

13. $\delta Pr(Y=1)/\delta Age = \phi(\beta'X)\ [\ \beta_{age}\ Age + 2\ \beta_{age2}\ Age\ ]$

so $\delta Pr(Y=1)/\delta Age = 0$ implies $Age = -\ \beta_{age}\ /\ (2\ \beta_{age2}\ )$.

And $\delta^2 Pr(Y=1)/\delta Age^2 = \phi(\beta'X)(2\ \beta_{age2}) + \delta\phi(\beta'X)/\delta Age\ [\ \beta_{age}\ Age + 2\ \beta_{age2}\ Age\ ]$

$= \phi(\beta'X)(2\ \beta_{age2})$ when $\delta Pr(Y=1)/\delta Age = 0$

> 0 when $\beta_{age2} > 0$.

In all three probit models the estimate of β_{age2} is positive so the probability of being poor falls to a minimum and then begins to rise again.

14. A large (small) value of a control variable is "favorable" if its coefficient is negative (positive), in which case its marginal effect is to reduce (increase) poverty. If the marginal effect of a control variable is to reduce (increase) poverty, as reflected in a negative (positive) coefficient, then the more (less) it does so the more "favorable" is the marginal effect.

TABLE 1

POST-TRANSFER POVERTY AMONG FAMILIES IN THE U.S.A., 1959-89

YEAR	% OF ALL FAMILIES IN POVERTY (1)	% OF MARRIED-COUPLE FAMILIES IN POVERTY (2)	% OF MALE-HD FAMILIES IN POVERTY (3)	% OF FEMALE-HD FAMILIES IN POVERTY (4)
1959	18.5	NA	NA	42.6
1960	18.1	NA	NA	42.4
1961	18.1	NA	NA	42.1
1962	17.2	NA	NA	42.9
1963	15.9	NA	NA	40.4
1964	15.0	NA	NA	36.4
1965	13.9	NA	NA	38.4
1966	11.8	NA	NA	33.1
1967	11.4	NA	NA	33.3
1968	10.0	NA	NA	32.3
1969	9.7	NA	NA	32.7
1970	10.1	NA	NA	32.5
1971	10.0	NA	NA	33.9
1972	9.3	NA	NA	32.7
1973	8.8	5.3	10.7	32.2
1974	8.8	5.3	8.9	32.1
1975	9.7	6.1	8.0	32.5
1976	9.4	5.5	10.8	33.0
1977	9.3	5.3	11.1	31.7
1978	9.1	5.2	9.2	31.4
1979	9.2	5.4	10.2	30.4
1980	10.3	6.2	11.0	32.7
1981	11.2	6.8	10.3	34.6
1982	12.2	7.6	14.4	36.3
1983	12.3	7.6	13.2	36.0
1984	11.6	6.9	13.1	34.5
1985	11.4	6.7	12.9	34.0
1986	10.9	6.1	11.4	34.6
1987	10.7	5.8	12.0	34.2
1988	10.4	5.6	11.8	33.4
1989	10.3	5.6	12.1	32.2

Source: Money Income and Poverty Status in the United States: 1989. U.S. Dept of Commerce, Bureau of the Census, Current Population Reports, Consumer Income, Series P-60, No. 168, Table 21.

TABLE 2

PRE-TRANSFER POVERTY RATES AND POPULATION PROPORTIONS BY RACE, WORK, FAMILY SIZE, AND FAMILY TYPE

(California, 1979)

		POVERTY RATES							POPULATION PROPORTIONS					
		TOTAL	FULL-TIME		PART-TIME		DID NOT WORK		FULL-TIME		PART-TIME		DID NOT WORK	
			WHITE	OTHER	WHITE	OTHER	WHITE	OTHER	WHITE	OTHER	WHITE	OTHER	WHITE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13
	TOTAL													
1a	MARRIED-COUPLE	0.075												
1b	MALE-HEADED	0.144												
1c	FEMALE-HEADED	0.354												
	1 NONDEPENDENT ADULT													
	1 DEPENDENT													
2a	MARRIED-COUPLE		0.030	0.059	0.137	0.195	0.461	0.629	0.035	0.004	0.010	0.001	0.014	0.001
2b	MALE-HEADED		0.066	0.117	0.183	0.217*	0.677	0.906	0.201	0.071	0.029	0.010*	0.027	0.013
2c	FEMALE-HEADED		0.124	0.167	0.384	0.478	0.782	0.894	0.154	0.050	0.046	0.011	0.047	0.027
	>1 DEPENDENT													
3a	MARRIED-COUPLE		0.037	0.067	0.136	0.159	0.522	0.691	0.032	0.009	0.003	0.001	0.003	0.002
3b	MALE-HEADED		0.055	0.159	0.348*	0.500*	0.588	0.765*	0.106	0.044	0.010*	0.005*	0.014	0.007*
3c	FEMALE-HEADED		0.209	0.312	0.540	0.585	0.864	0.945	0.127	0.059	0.045	0.017	0.053	0.054
	2 NONDEPENDENT ADULTS													
	0 DEPENDENTS													
4a	MARRIED-COUPLE		0.018	0.037	0.052	0.115	0.210	0.381	0.185	0.024	0.024	0.003	0.029	0.004
4b	MALE-HEADED		0.050	0.071	0.083	0.111*	0.471	0.517	0.133	0.041	0.025	0.004*	0.021	0.012
4c	FEMALE-HEADED		0.031	0.062	0.113	0.310*	0.331	0.563	0.051	0.014	0.015	0.004*	0.016	0.008
	1 DEPENDENT													
5a	MARRIED-COUPLE		0.026	0.051	0.082	0.135	0.321	0.546	0.120	0.026	0.010	0.003	0.009	0.002
5b	MALE-HEADED		0.033	0.079	0.000*	1.000*	0.417*	0.333*	0.038	0.016	0.003*	0.001*	0.005*	0.002*
5c	FEMALE-HEADED		0.071	0.108	0.276	0.233	0.415	0.587	0.029	0.011	0.007	0.004	0.008	0.006
	>1 DEPENDENT													
6a	MARRIED-COUPLE		0.048	0.104	0.148	0.199	0.446	0.616	0.217	0.063	0.014	0.005	0.009	0.006
6b	MALE-HEADED		0.053	0.179	0.100*	0.500*	0.667*	0.556*	0.016	0.016	0.004*	0.001*	0.002*	0.004*
6c	FEMALE-HEADED		0.116	0.250	0.302	0.500	0.643	0.765	0.018	0.012	0.005	0.004	0.007	0.012
	>2 NONDEPENDENT ADULTS													
	0 DEPENDENTS													
7a	MARRIED-COUPLE		0.007	0.013	0.032	0.097	0.118	0.342	0.031	0.005	0.003	0.001	0.004	0.001
7b	MALE-HEADED		0.036	0.073	0.100*	0.143*	0.143*	0.333*	0.034	0.023	0.004*	0.003*	0.003*	0.004*
7c	FEMALE-HEADED		0.021	0.065	0.143*	0.250*	0.150*	0.455*	0.012	0.006	0.002*	0.001*	0.002*	0.003*
	1 DEPENDENT													
8a	MARRIED-COUPLE		0.020	0.060	0.039	0.071*	0.189	0.477	0.024	0.007	0.002	0.001*	0.002	0.001
8b	MALE-HEADED		0.000*	0.133*	0.000*	0.000*	0.000*	0.333*	0.009*	0.006*	0.002*	0.001*	0.001*	0.002*
8c	FEMALE-HEADED		0.000	0.098	0.000*	0.273*	0.364*	0.538*	0.008	0.005	0.001*	0.001*	0.003*	0.003*
	>1 DEPENDENT													
9a	MARRIED-COUPLE		0.055	0.111	0.037	0.210	0.340	0.482	0.028	0.017	0.002	0.001	0.002	0.003
9b	MALE-HEADED		0.038*	0.067	0.000*	0.000*	0.375*	0.500*	0.011*	0.012	0.000*	0.000*	0.003*	0.002*
9c	FEMALE-HEADED		0.085	0.258	0.294*	0.467*	0.364*	0.672	0.009	0.008	0.002*	0.002*	0.003*	0.008

Source: Public Use Microdata Sample (Sample C), 1980 U.S. Census of Population and Housing.
*. means sample size too small (<30 observations) for a reliable estimate. All figures have been rounded to three decimal places.

TABLE 3

MEANS AND STANDARD DEVIATIONS OF VARIABLES

(Various Household Types, California, 1979)

		MARRIED-COUPLE FAMILIES (1)	MALE-HEADED FAMILIES (2)	FEMALE HEADED FAMILIES (3)
Pr(Y=1):	mean	0.075	0.144	0.354
	s.d.	(0.263)	(0.352)	(0.478)
DEDUC1:	mean	0.28	0.29	0.35
	s.d.	(0.45)	(0.45)	(0.48)
DEDUC2:	mean	0.35	0.33	0.30
	s.d.	(0.48)	(0.47)	(0.46)
DEDUC3:	mean	0.14	0.11	0.07
	s.d.	(0.35)	(0.31)	(0.25)
HUMCAP:	mean	14.90	7.82	5.47
	s.d.	(8.86)	(10.42)	(9.62)
HAGE:	mean	42.88	38.11	39.37
	s.d.	(13.08)	(12.97)	(12.04)
HWKSU79:	mean	1.63	2.90	2.42
	s.d.	(6.12)	(8.38)	(7.66)
DHDIS1:	mean	0.06	0.06	0.05
	s.d.	(0.23)	(0.25)	(0.22)
DHDIS2:	mean	0.04	0.05	0.06
	s.d.	(0.20)	(0.21)	(0.24)
DHRACE1:	mean	0.05	0.11	0.18
	s.d.	(0.22)	(0.31)	(0.39)
DHRACE2:	mean	0.14	0.19	0.15
	s.d.	(0.34)	(0.39)	(0.35)
DAREA1:	mean	0.52	0.48	0.47
	s.d.	(0.50)	(0.50)	(0.50)
DAREA2:	mean	0.08	0.06	0.07
	s.d.	(0.27)	(0.24)	(0.25)
DAREA3:	mean	0.10	0.07	0.05
	s.d.	(0.30)	(0.25)	(0.22)
ADULTS:	mean	2.02	1.60	1.36
	s.d.	(0.69)	(0.88)	(0.75)
DEPEND:	mean	1.06	0.86	1.30
	s.d.	(1.22)	(0.99)	(1.15)
INFANTS:	mean	0.38	0.27	0.36
	s.d.	(0.70)	(0.57)	(0.65)
Sample Size		43392	2418	8104

Source: Public Use Microdata Sample (Sample C), 1980 U.S. Census of Population and Housing.

TABLE 4

PROBIT COEFFICIENTS WITH P-VALUES* IN PARENTHESES

(California, 1979)

VARIABLE	MARRIED-COUPLE FAMILIES (1)	MALE-HEADED FAMILIES (2)	FEMALE-HEADED FAMILIES (3)
ONE	-0.2954 (0.0094)	1.1497 (0.0006)	1.2124 (0.0000)
DEDUC1	-0.2817 (0.0000)	-0.3776 (0.0001)	-0.5511 (0.0000)
DEDUC2	-0.4580 (0.0000)	-0.4480 (0.0000)	-0.7991 (0.0000)
DEDUC3	-0.5814 (0.0000)	-0.6722 (0.0000)	-0.9196 (0.0000)
HUMCAP	-0.0397 (0.0000)	-0.0076 (0.4054)	0.0418 (0.0000)
HAGE	-0.0707 (0.0000)	-0.0961 (0.0000)	-0.0786 (0.0000)
HAGE2	0.0008 (0.0000)	0.0009 (0.0000)	0.0007 (0.0000)
HWKSU79	0.0256 (0.0000)	0.0254 (0.0000)	0.0230 (0.0000)
DHDIS1	0.3245 (0.0000)	0.2593 (0.0589)	0.4906 (0.0000)
DHDIS2	1.3908 (0.0000)	1.1175 (0.0000)	1.1877 (0.0000)
DHRACE1	0.2973 (0.0000)	0.3446 (0.0012)	0.3049 (0.0000)
DHRACE2	0.1813 (0.0000)	0.2353 (0.0079)	0.1894 (0.0001)
DAREA1	-0.1079 (0.0000)	0.1168 (0.1263)	-0.0924 (0.0086)
DAREA2	-0.0070 (0.8531)	0.0361 (0.8065)	0.1347 (0.0398)
DAREA3	0.1089 (0.0015)	-0.0467 (0.7558)	0.2252 (0.0029)
ADULTS	0.3076 (0.0000)	-0.1479 (0.1824)	0.1709 (0.0425)
DEPEND	0.1053 (0.0000)	0.0710 (0.0540)	0.2164 (0.0000)
INFANTS	0.2703 (0.0000)	0.1585 (0.0062)	0.4758 (0.0000)
N	43392	2418	8104
CHI-SQUARE (17)	4468.6	346.9	2482.6
P-VALUE	0.32E-13	0.32E-13	0.32E-13
% CORRECT PREDNS	92.7	87.1	76.7
Pr(Y=1)**	0.046	0.109	0.322

* P-values are for a 2-tailed test.
** Probability computed at mean values of all control variables.

TABLE 5

POVERTY DIFFERENTIAL BETWEEN VARIOUS FAMILY TYPES*

(California, 1979)

	FEMALE-HEADED & MALE-HEADED FAMILIES	FEMALE-HEADED & MARRIED-COUPLE FAMILIES
Equation 5:		
Component 1	0.06418	0.15611
Component 2	0.14886	0.11956
Equation 6:		
Component 1	0.01554	0.03966
Component 2	0.19750	0.23601
Total Poverty Differential	0.21304	0.27567

* Poverty has been computed at the mean levels of the control variables.