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The Economic Effects of Union Dissolution for Women

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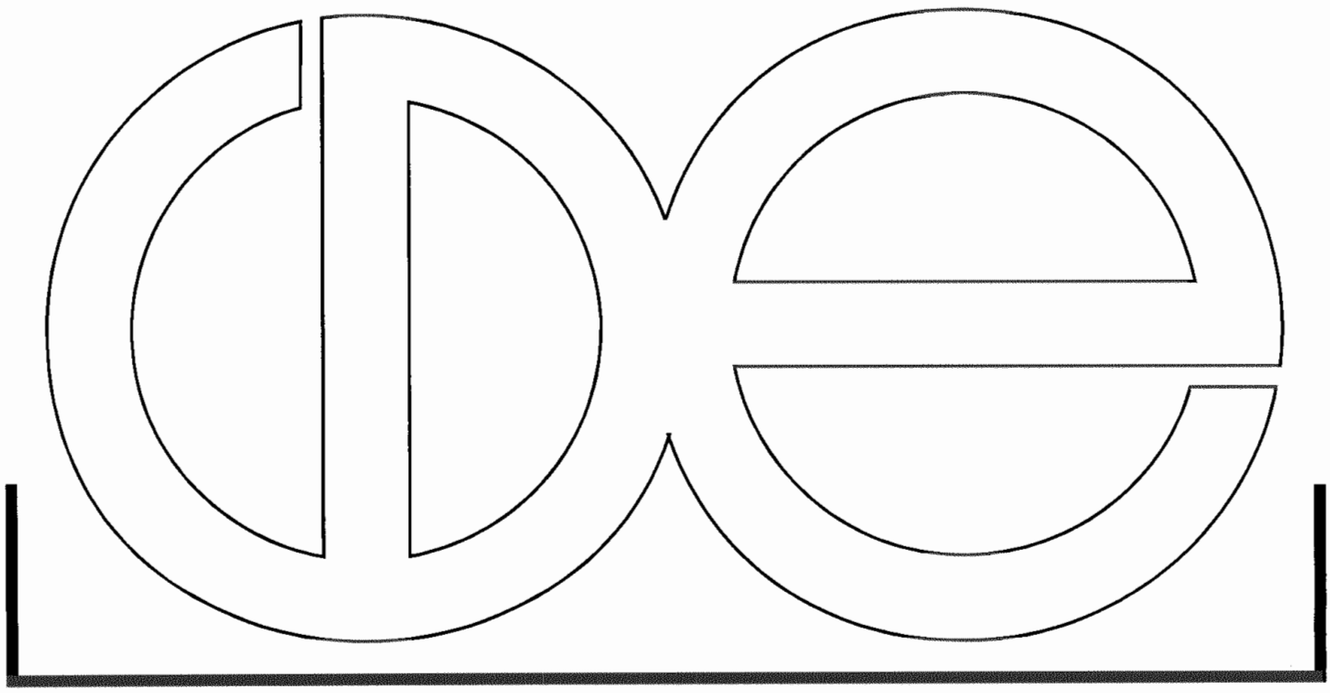

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Controversy surrounds the magnitude of income changes following divorce as well as the extent to which divorce is responsible for these income losses. We model women's economic effects of union dissolution for each of the three years following divorce. First, these economic consequences are measured as the ratio of income relative to needs expected in marriage to the level expected in divorce. These two streams of income-to-needs are estimated in separate equations and corrected for self-selection bias on the basis of Heckman's (1979) two stage procedure extended for mover-stayer models. With data from the Panel Study of Income Dynamics (1968-1987), these models demonstrate that marital dissolution lowers women's expected economic status for at least three years following divorce. Second, a single equation representing income relative to needs in a year is estimated on the basis of explanatory variables, one of which controls for whether or not the woman experiences marital dissolution. A two stage procedure outlined by Barnow, Cain and Goldberger (1981) is applied in the correction for the endogeneity of divorce. The results indicate that previous work experience and the presence of children are important determinants of the economic consequences of divorce.

INTRODUCTION

It is well documented that family income of most married women (both with or without adjustments for income needs) plummets after marital dissolution (Duncan and Hoffman 1985a, 1985b; Duncan and Morgan 1976; Hoffman 1977; Hoffman and Duncan 1988; Hoffman and Holmes 1976; Mott and Moore 1977, 1978; Nestel et al. 1982; Peterson 1989; Weiss 1984; Weitzman 1985). However, controversy continues to surround both the magnitude of the income changes (see Weitzman 1985 in contrast to Hoffman and Duncan 1988; Duncan and Hoffman 1985a, 1985b) and the extent to which divorce is responsible for these income losses.

Most studies of the economic effects of divorce use longitudinal data from either the Panel Study of Income Dynamics or the National Longitudinal Surveys of Labor Market Experience and focus on the changes in economic status following divorce. However, early attempts to quantify the economic consequences of divorce did not report the income changes at fixed intervals and therefore, the length of time after separation or divorce varied across individuals. Furthermore, some of the studies measured the pre-divorce income for a constant calendar year rather than standardizing the year according to time until divorce. Therefore it is unclear whether the divorce preceded the drop in income or the income drop preceded the divorce. Many of the early studies censored women who remarried thereby exaggerating the income changes. Other studies that avoided many of these problems concentrated on poverty transitions following divorce rather than the economic consequences and/or restricted the sample to women with children because of the emphasis on implications for welfare (e.g Bane and Weiss 1980). Duncan and Hoffman (1985a, 1985b) made significant contributions to the study of the economic consequences of divorce by eliminating the biases mentioned above and focusing on questions that were more far reaching. They demonstrated that women experiencing a divorce or separation suffer substantial drops in their economic status relative to their economic status immediately preceding the divorce and men do not. Their analyses were among the first to illustrate how women gradually recoup some of their losses and how remarriage is a critical determinant of the recovery. Furthermore, they drew comparisons between the income changes exhibited by a sample of intact marriages and the changes experienced by the divorced women, thereby establishing a baseline for interpreting the magnitude of change.

Despite innovations made by Duncan and Hoffman (1985a, 1985b), it is questionable whether comparisons

in income changes between women who divorce and those who remain married actually reflect the effect of divorce on income. These groups of women may be very different even before the divorce. For example, women who divorce are more likely to have experienced unstable family incomes than those women who do not divorce (see for example Becker et. al. 1977; Cherlin 1979; Ross and Sawhill 1975). Furthermore, even if the marital experiences are comparable, the divorce experiences of those who divorce may bear little resemblance to the divorce scenarios that confront women who choose to remain married. Indeed, in this paper we provide evidence that the economic effects of divorce are greater for women who remain married than for women who divorce because of observed and unobserved differences between the two groups.

This paper provides an alternative approach to measuring the economic effects of divorce for married women that controls for pre-existing observed and unobserved differences between married women who remain married and those who divorce. We present models of the economic effects of marital dissolution for women for the three years following divorce. Data are drawn from the Panel Study of Income Dynamics (1968-1987). In the first part of the paper we estimate separate models of income-to-needs in marriage and divorce and apply Heckman's (1976, 1979) two stage procedure to correct for bias in the estimates of income-to-needs in marriage and in divorce due to the self selection into divorce. Our findings suggest that Duncan and Hoffman's (1985a, 1985b) measures of the expected economic effect of divorce are somewhat understated in comparison to those that take into account preexisting differences between the sub-population of married women who divorce and the sub-population who do not.

In the second part of the paper we estimate one income-to-needs equation where divorce is a right hand side variable and a we apply a two stage procedure outlined by Barnow, Cain and Goldberger (1981) to correct for the endogeneity of divorce. We conduct hypothesis tests to determine the significance of divorce for economic well-being and we consider the determinants of the economic consequences of marital dissolution. We demonstrate that marital dissolution significantly lowers the economic status of women for each of the three years following divorce. The effect of divorce on economic well-being is particularly great among white non-hispanic women, women with children and non-employed women. The findings are robust to alternative measures of income (e.g. income adjusted for income needs and income not adjusted) and to estimation procedures (i.e. adjustments for self-

selection bias and no adjustments).

DATA AND ANALYTICAL DESIGN

This research utilizes the Panel Study of Income Dynamics (PSID) cross-year family-individual response and non-response files covering annual interviews over the period from 1968 to 1987. The initial population interviewed by the PSID consists of 4,802 families residing in over 40 states and is over-represented by the poor (Survey Research Center 1984).[1] The PSID continues to follow the original families sampled in 1968 by tracking those individuals who were members of these 4,802 families in 1968 or were born to original members of these families and moved out at a later date. As a result, the number and diversity of families has increased over time. However, the PSID is not representative of immigrants since 1968. Approximately ninety seven percent of each annual sample continue to participate from one year to the next.[2]

Individual data records from the PSID are converted into person years of observations. Women contribute multiple observations at varying durations of marriage. Following Duncan and Hoffman (1985), no distinction is made between marriage and "long-term" cohabitation and none is made between divorce and separation (see also Weiss 1984; Mott and Moore 1978). Therefore, the effect of marital dissolution on economic well-being represents the economic effect of experiencing a transition from the state of living with a spouse or long term partner to the state of not living with that same person. An important characteristic of the PSID is that annual income is reported in the interview in the following calendar year. Because the composition of the household may be different from one year to the next, the family income is typically pro-rated for individuals who moved out of or into the household in the inter-wave interval. However, the family income for the individuals who *split-off* from the main household excludes the income of other family members who remained in the *main-family* household. For these and other reasons, pre-divorce annual income is assessed in two calendar years preceding the potential divorce as in the Duncan and Hoffman (1985a and 1985b) analysis.

In any given wave (i.e. in a year t, prior to 1985), only original PSID sample women who are married/cohabiting at the time, living with their "husbands", continue to respond to the next four interviews and are less than 55 years old are eligible to enter into the sample. The population of women at risk of experiencing divorce during the interval between the interview in year t and year t+1 is limited to those less than age 55 so that the

divorce and income prediction models represent the working age population of husbands and wives. The population is also limited to original sample individuals since the PSID does not follow non-sample women who no longer live with their sample husbands. Remarriage among the "divorce" sample (i.e. those providing observations to estimate income in the event of divorce) or subsequent divorce or widowhood among the "non-divorce" sample (i.e. those providing observations to estimate income in the absence of divorce) is not cause for deliberate right censoring in the income models.[3] The 5243 married women in this restricted sample provide a total of 30943 person years of observations for the intact sub-sample and a total of 1084 person years of observations for the sub-sample of women who experience divorce. Dechter (1991) provides more detail about construction of the data.

The family income needs measure used in this analysis is provided by the PSID and differs somewhat from the Bureau of the Census definition.[4] I construct family income from the following sources received by all family members: labor income; alimony and child support; annual income from assets, transfer income; pension, worker's compensation, unemployment, and social security income.[5] Income paid to dependents not living in the family unit who are not included in the needs variable is subtracted from family income. In addition, "lump sum payments", which includes gifts, inheritances, legal settlements, insurance payments, capital gains, profit from sale of property, interest earned from the sale of bonds, and other one time payments are added to total family income. All variables represented by dollars are converted into 1983-1984 dollar equivalents by the consumer price index. All estimations were performed with LIMDEP version 5.1 (Greene 1989).

I. COMPARISON OF ALTERNATIVE MEASURES OF THE ECONOMIC CONSEQUENCES OF DIVORCE

In this first part of the paper we compare our measures of the economic effects of divorce for the population of married women with previous measures, in particular with those of Duncan and Hoffman (1985a, 1985b) and Weitzman (1985).

METHODS

Our population measures of the economic effects of marital dissolution are constructed from predictions of both income relative to needs in the event of divorce and income relative to needs in the counterfactual event, that is the absence of this hypothetical divorce, for all married women in our sample. Scanning each of the first 16 PSID

waves, we select appropriate married women from each interview in a year t and predict their log income-relative-to-needs ratios for the three years that follow (t+1, t+2 and t+3) in the event of a hypothetical divorce in the interval (τ) between the interview in year t and t+1, as well as in the absence of a hypothetical divorce.[6] Using these three predictions for each of the two hypothetical scenarios, we construct the discounted sum of the income relative to needs ratios across the three years, beginning with the year of the potential divorce (i.e. income in years t+1, t+2 and t+3).

The ratio of the discounted income relative to needs streams expected in marriage over the discounted income relative to needs streams expected in the event of divorce represents the expected overall economic impact of divorce for all married women. Correspondingly, the ratio of annual income relative to needs expected in the absence of divorce over the annual income relative to needs expected in the event of divorce represents the expected economic impact of divorce for any given year following the hypothetical divorce for all married women. We construct weighted averages of the overall and annual measures for various subpopulations (e.g. divorcing women, women in intact marriages, all married women).

The expected log income relative to needs in year t+i in the hypothetical event of divorce in τ is estimated on the basis of observations for those who actually divorce; however, the coefficients and standard errors have been adjusted for sample selection bias so that the estimates of the parameters are applicable to the entire set of married women in the year t interview. The converse is true for the estimate of the expected log income relative to needs in year t+i in the absence of a hypothetical divorce in τ.

The expected income relative to needs streams are predicted on the basis of socioeconomic, demographic and ecological characteristics pertaining to the woman in question. These predictions are based on the following regression equations:

$$\mathbf{ln(INCNEEDS^{M}_{i\,t+j})} = \mathbf{z'_{it}}\,\gamma_{1j} + \mathbf{w'_{it+j}}\,\gamma_{2j} + \mathbf{u^{M}_{i\,t+j}} \qquad (1)$$

$$\mathbf{ln(INCNEEDS^{D}_{i\,t+j})} = \mathbf{z'_{it}}\,\delta_{1j} + \mathbf{w'_{it+j}}\,\delta_{2j} + \mathbf{u^{D}_{i\,t+j}} \qquad (2)$$

for **j=1,2,3** where $\mathbf{INCNEEDS^{M}_{i\,t+j}}$ ($\mathbf{INCNEEDS^{D}_{i\,t+j}}$) is the expected ratio of family income to needs for the $\mathbf{i^{th}}$ woman in year **t+j** if she does not (does) experience a union dissolution in the interval $\boldsymbol{\tau}$. The unknown parameters are included in the vectors $\gamma'_j = (\gamma'_{1j}, \gamma'_{2j})$ and $\delta'_j = (\delta'_{1j}, \delta'_{2j})$; and $\mathbf{u^{M}_{i\,t+j}}$ and $\mathbf{u^{D}_{i\,t+j}}$ are unobserved error terms. The

vectors $\mathbf{z}_{it}$ and $\mathbf{w}_{it+j}$ include the observed values of explanatory variables. The variables in $\mathbf{z}_{it}$ include personal characteristics of the woman and her husband prior to **t+j** and those in $\mathbf{w}_{it+j}$ include macro-level information relevant to the woman in **t+j**, the year for which the prediction is being made. The values of the variables included in $\mathbf{w}_{it+j}$ vary across j, whereas the values of the variables included in $\mathbf{z}_{it}$ are invariant across j (i.e., $\mathbf{w}_{it+j}$ are time-varying covariates). Note that the parameter vectors $\boldsymbol{\gamma}'_j = (\boldsymbol{\gamma}'_{1j}, \boldsymbol{\gamma}'_{2j})$ and $\boldsymbol{\delta}'_j = (\boldsymbol{\delta}'_{1j}, \boldsymbol{\delta}'_{2j})$ are indexed by **j**. Therefore, the marginal impact of the variables in $\mathbf{z}_{it}$ and $\mathbf{w}_{it+j}$ on $\ln(\mathbf{INCNEEDS}^{M}_{it+j})$ and $\ln(\mathbf{INCNEEDS}^{D}_{it+j})$ are allowed to differ across all three years (i.e. time-dependent covariates) even though the values in $\mathbf{z}_{it}$ are constant across j = 1, 2 and 3.

The characteristics included in $\mathbf{z}_{it}$ in equations (1) and (2) are: husband's earnings in t-1; wife's earnings in t-1; all their transfer income in t-1, all their income from assets in t-1; total taxable income of other family members in t-1, total transfers of other family members in t-1; occupation of husband and wife in t; home-ownership status in t; value of house after subtracting out the principal remaining on mortgage in year t; race of husband; age of each spouse; (age of each spouse)^2; labor force participation status of each spouse; age and presence of children; population size. The variables in $\mathbf{w}_{it+j}$ include: region of residence in t+j; gross national product in t+j; county level unemployment rates; the maximum level of AFDC payments, conditional on the number of children the woman has as of the interview in year t, according to state regulations in year t+j; this maximum payment if the women earned more than 1.5 times it in year t-1 and 0 otherwise (for spline adjustment). The variables are discussed in greater detail in the Appendix.

If couples select themselves into divorce, the error terms in (1) and (2) may have nonzero conditional means and OLS estimates of (1) and (2) are inconsistent. I adjust for this possible self-selection bias according based on the two-stage procedure developed by Heckman (1979). This procedure is based on the fact that the error terms in (1) and (2) can be decomposed as follows:

$$\mathbf{u}^{M}_{i\,t+j} = \boldsymbol{\lambda}^{M}_{i\,t}\,\boldsymbol{\gamma}_{3j} + \mathbf{e}^{M}_{i\,t+j} \tag{3}$$

$$\mathbf{u}^{D}_{i\,t+j} = \boldsymbol{\lambda}^{D}_{i\,t}\,\boldsymbol{\delta}_{3j} + \mathbf{e}^{D}_{i\,t+j} \tag{4}$$

for **j=1,2,3** where $\mathbf{e}^{M}_{i\,t+j}$ and $\mathbf{e}^{D}_{i\,t+j}$ are random variables with a conditional mean of 0; $\boldsymbol{\lambda}^{M}_{i\,t}$ and $\boldsymbol{\lambda}^{D}_{i\,t}$--the inverses of the Mill's ratios--are estimates of the means of $\mathbf{u}^{M}_{i\,t+j}$ and $\mathbf{u}^{D}_{i\,t+j}$, respectively; and $\boldsymbol{\gamma}_{3j}$ ($\boldsymbol{\delta}_{3j}$) represents the covariance of $\mathbf{u}^{M}_{i\,t+j}$ ($\mathbf{u}^{D}_{i\,t+j}$) and the error term in the underlying response variable in the divorce model. First, the probability of

divorce is estimated with a reduced form probit function. Second, these results are used to estimate $\lambda_{i't}^{M}$ and $\lambda_{i't}^{D}$. Third, $\lambda_{i't}^{M}$ and $\lambda_{i't}^{D}$ are included as explicit regressors in equations (1) and (2), respectively. Heckman shows (1979) that one can test the null hypothesis of no sample selectivity using conventional t-statistics because the regression t-statistics have an asymptotic standard normal distribution under the null hypothesis.

The estimates of δ_{3j} and γ_{3j} tended to be significantly different from zero for most years and therefore the inverses of the Mill's ratios are not omitted from the income equations. The parameter estimates and standard errors from the income relative to needs equations are reported in Tables 1 and 2 and the predictions are compared to observed values in Table A1 in the Appendix. The income predictions are not very sensitive to whether the models are adjusted for self-selection bias; however, they are sensitive to the application of sampling weights (see Dechter 1991 for comparisons across models). Overall, the parameter estimates and standard errors in the analytical divorce model are identical within three significant digits when the economic independence measures are constructed from OLS estimates rather than the Heckman two-stage estimates.

Duncan and Hoffman's (1985a, 1985b) measures are not based on statistical estimates but rather on the contrast between the changes in income relative to needs observed for women who divorce with those of women who do not divorce and therefore do not take into account differences between the divorcing and non-divorcing women. They constructed two samples from the PSID. One is of intact couples who remained married continuously from 1971 to 1977 and the other is of individuals experiencing divorce between two interviews of the 1969 to 1976 PSID waves. The "divorced" sample includes 349 divorced or separated women and the "intact" sample includes 1,481 married women. The age range of women in either sample was restricted to 25 to 54 years old at time t-1. The first adjacent pair of interviews between which a divorce occurred was designated as year t. For the "intact" sample year t was designated as the 1972 calendar year. Note that this definition differs dramatically from ours because our counterpart of Duncan and Hoffman's "intact" sample is structured around person years of exposure and therefore represents many actual calendar years. Furthermore, our "intact" sample places no restrictions on marital transitions following year t.

RESULTS

First we address the controversy surrounding the magnitude of the income changes that follow divorce.

Row A1 in Table 3 represents the ratio of income relative to needs in year t+i over income relative to needs in year t-1. The results for Duncan and Hoffman's divorced and intact sample (based on their definitions of year t) are reported in the first two columns. The results for our divorced and married sample (based on our definitions of year t) are reported in the middle columns and the results for our joint divorced and intact sample are reported in the last two columns. Although the income to needs losses experienced by the divorced women in our sample are slightly more substantial than those found by Duncan and Hoffman, the losses are in line with their findings and much less severe than those reported by Weitzman (1985).[7] This further supports Hoffman and Duncan's (1988) contention that Weitzman's (1985) finding (i.e. that the economic status of women falls by an average of 73 percent after divorce) grossly exaggerates the deterioration in economic status experienced by divorced women in the U.S. population. Hoffman and Duncan (1985) were not provided access to her sample and so it remains unclear whether a 73 percent drop is representative of the economic experiences of divorced women in Los Angeles county.

In the remainder of this section we address the second controversy surrounding the extent to which findings regarding income losses following divorce reflect the effect of marital dissolution. Duncan and Hoffman presented the weighted mean change in income relative to needs between year t-1 and year t+1, t+2 ,..., t+4 for each of the two subsamples. Income changes experienced by the "intact" sample provided a baseline to evaluate the changes experienced by the "divorced" sample. The ratios of the income changes of the divorced women to those of the women remaining married are presented in row A2 of Table 3. Alternatively, we constructed two sets of income predictions for each woman married in year t, one set for the income expected in years t+1, t+2 and t+3 in the event of divorce and the other set for the income in the absence of divorce. The ratio of these two measures represents an indicator of the expected economic effect of divorce for a particular individual. The weighted sample means of these ratios for years t+1, t+2 and t+3 are presented in row C1 of Table 3.

Overall, comparing rows C1 and A2 demonstrates that measures of the changes in the ratio of income to needs of divorced women relative to those experienced by women in intact marriages tend to understate the potential economic effect of divorce for both women who do divorce and for women at risk of divorce who do not. Previous measures of the economic effects of divorce appear to understate the potential hardship because of compositional and unobserved differences between the divorcing and intact populations. Table 4 presents selected

differences between the composition of the population of women who remain married and the composition of the population who do divorce. Conditional on these and other characteristics (i.e. explanatory variables in the income models), women in the intact subsample are expected to have lower incomes in divorce than their counterparts who do divorce because of unobserved differences influencing the selection into divorce.

Tables 1 and 2 presents the coefficients and standard errors from the log income regressions and shows that the parameter estimates for λ in the estimation of the log of income relative to needs in all three years are positive in both the divorce and intact income models. Selection into divorce and into intact marriage is statistically significant at conventional levels of α for most of the years following divorce. The positive sign on both sets of λ coefficients implies that the selectivity bias is positive for log income relative to needs following divorce and negative for the log income relative to needs in the absence of divorce. The positive signs in the divorce log income relative to needs models provide evidence that, after controlling for husband's and wife's earnings in t-1 and all of the other covariates included in the log income relative to needs models, the expected log income relative to needs ratios in years t+1, t+2 and t+3 in the event of a divorce in interval τ are higher among the sub-population of women who do experience divorce than for the population of all married women at risk of divorce as of the interview in year t. The positive signs in the expected married log income relative to needs equations suggest that for a given set of control values, the expected income relative to needs ratios in years t+1, t+2 and t+3 in the absence of divorce in τ are lower among the sub-population of women who remain married than it is for the population of all married women at risk of divorce as of the interview in t.

Tables 3 and 4 show that the expected economic losses associated with divorce are greater for those who remain married. Across the three years following divorce, the married subgroup is expected to lose almost .63 income relative to needs dollars above and beyond what the divorced subgroup is expected to lose in the event of divorce (i.e. 3.158-2.533). The average ratio of expected income to needs in marriage over expected income to needs in divorce is roughly 1.05 times as great among the married sub-population than the divorced sub-population (i.e. 1.417/1.345). Alternatively, the difference between the ratios is .07 (i.e. 1.417-1.345).

The population means reported in Tables 3 demonstrate the implications of both using the population of women who remain married as a baseline for measuring the economic effect of divorce for women who do divorce

and using the experiences of the "divorced" sample as indicators of the changes the "intact" sample would potentially experience in the event of divorce. For those women who actually divorce, the economic effect appears to be greater in the regression based predictions than would be found in measures that use the intact population as the benchmark. Table 3 shows that predicted income to needs in the event of divorce is only .72 times as great as the predicted income to needs in the absence of divorce for those who divorce in year t+1. If we constructed indicators that compare the income changes observed for the divorcing group to those observed for the intact group with our data, the corresponding proportion is .76. The difference between these two ratios persists for year t+2 and year t+3. The expected economic effect of divorce is moderately greater for the women who do not divorce in τ than for those who do and so the previous measures are an even greater understatement of the economic effects of a potential divorce for married women who do not divorce.

To summarize, we have provided evidence that changes in the income to needs of the married population and the divorcing population are not appropriate benchmarks to determine the income in the counterfactual marital state. For the population represented by the PSID sample of wives between 1968-1985, our alternative measures indicate that a potential divorce would reduce a married woman's income relative to needs by .71, .75 and .77 in the first three years. The subject of the remainder of the paper is the importance of pre-divorce characteristics in determining the economic impact of divorce.

II. THE SIGNIFICANCE OF THE ECONOMIC IMPACT OF DIVORCE AND ITS DETERMINANTS

In this section we conduct hypotheses tests of the impact of divorce on income relative to needs. We also examine several factors believed to mediate the economic effects of divorce.

METHODS

In this second half of the paper, a statistical model is employed to conduct hypothesis tests concerning the economic effects of divorce as well as the determinants of the economic effects of divorce. A single equation representing the log of income relative to needs in year t+j for j=1,2,3 is estimated on the basis of explanatory variables, one of which controls for whether or not the woman experiences marital dissolution as follows:

$$\ln(INCNEEDS_{it+j}) = \Theta_{0j} + \Theta_{1j}DIV_{i\tau} + \mathbf{z}'_{it}\Theta_{2j} + \mathbf{w}'_{it+j}\Theta_{3j} + (\mathbf{z}_{it}DIV_{i\tau})'\Theta_{4j} + (\mathbf{w}_{it+j}DIV_{i\tau})'\Theta_{5j} + \mathbf{u}_{it+j} \quad (5)$$

where

$\mathbf{DIV}_{i\tau}$ = 1 if individual i divorces in the interval τ (between year t and t+1 interview)

= 0 else

and $INCNEEDS_{it+j}$ is the income relative to needs of the ith woman in year t+j; z_{it}, w_{it+j} are the vectors of explanatory variables described above and in detail in the Appendix. Variables in these two vectors interact with the divorce indicator. The unknown parameters are included in the vector $\Theta'=(\Theta'_{0j},\Theta'_{1j},\Theta'_{2j},\Theta'_{3j},\Theta'_{4j},\Theta'_{5j})$.

Barnow, Cain and Goldberger (1981) discuss the nature of self selectivity bias when there is only one equation and outline an extension of Heckman's two step procedure which can be applied to obtain consistent estimates of the unknown parameters. Their method is very similar to Heckman's procedure because it requires the estimation of a reduced form probit equation for divorce and then uses the results from this model to construct a correction factor analogous to the inverse of the Mill's Ratio (λ). When this correction factor is included as an additional regressor in the income equation (5) then OLS yields consistent estimates of the unknown parameters because the error term ($\mathbf{u}_{it+j}$) is as follows:

$$\mathbf{u}_{it+j} = \mathbf{DIV}_{i\tau}\,\mathbf{u}^{D}_{i\,t+j} + (\mathbf{1}-\mathbf{DIV}_{i\tau})\,\mathbf{u}^{M}_{i\,t+j} \qquad (6)$$

where $\mathbf{u}^{D}_{i\,t+j}$ and $\mathbf{u}^{M}_{i\,t+j}$ are defined in equations (3) and (4) respectively.

The results of these models are presented in Tables 6 through 9. The variables used in appraising the hypotheses regarding the economic effects of divorce are the same as those used in the income prediction equations and the reduced form divorce probit equations estimated in the first part of the paper and described in detail in the Appendix, with the addition of interactions with divorce. The coding scheme for the variables and their names are identical; however, it is important to note that the interactions between explanatory variables and the divorce indicator are assigned the name of the explanatory variable with the letter **D** preceding the name to indicate an interaction with divorce. The income models used to obtain predictions in the previous section contained 32 explanatory variables. To test the impact of divorce on income it would be desirable to include interactions of divorce with all 32 variables. However, computational restrictions in LIMDEP do not permit the estimation of sample selection models with more than 60 explanatory variables. Furthermore, LIMDEP 5.1 does not allow for tests of the joint significance of more than 20 coefficients. Therefore, we did not interact divorce with the

ecological variables indicating region of residence (i.e. **NORTHEAST, WEST, SOUTH**), level of unemployment (i.e. **BIGUNEM**) and size of population (i.e. **SMSA, LOWPOP**). These computational limitations also made it necessary to employ a separate income equation for each year.

In tables 1 and 2, the coefficients from the married Log income relative to needs equations can be compared to the results from the divorce Log income relative to needs equations to provide some empirical indication of how the variables may be affecting married income differently from divorce income. In this analysis, the divorce variable is interacted with the following: the intercept, wife's labor income relative to needs in year t-1 (i,e, **WLABTND**), the indicator of whether or not the wife's occupation is professional (**OCCPROFWIFE**), indicators of the husband's employment status in year t (**UNEMPHUSB, RETIREDH**), indicators of the wife's employment status in year t (**UNEMPWIFE**, **NOWORKWIFE**), whether or not the married couple owned their home in year t (**HOMEOWNER**), the net equity of the home or the actual amount of the value of the home the couple would receive if the house were sold (**HOUSEVAL1**), the racial background of the husband (**BLACK, HISPANIC**), the age of the wife (**WIFEAGE**), the age of the wife squared (**WIFEAGES**), whether or not the woman's youngest child is age five or younger (**YOUNGKID5**), whether or not the woman's youngest child is between 6 and 18 years old (**YOUNGKID18**), the number of children above parity one (**#OTHERKIDS**), the average potential AFDC payments relative to needs the woman would receive in year t+1 given her state of residence and the number of children she has in year t (**AFDCTND2**), the potential AFDC payments for women whose earnings relative to needs in year t-1 exceeds 1.5 times the potential payments relative to needs (**AFDCCHI2**).

MEDIATING FACTORS

Race

Most descriptive studies have shown that the relative drop in income following divorce is greater for whites than for African American women. This is not surprising because African American men face much worse prospects in the job market than do their white counterparts. Therefore, the African American women are believed to be less dependent on their husband's income and have less to lose financially following divorce.

Another mechanism, namely racial differentials in opportunities for remarriage, may confound with the

negative relationship between race and the economic effects of divorce. Duncan and Hoffman (1985a, 1985b) placed great emphasis on the importance of remarriage for improving income relative to needs in divorce. Not only do 50 percent of white divorced women remarry by year t+5 (Duncan and Hoffman 1985a), but most of these women marry husbands with earning capacities at least as high as the previous husband (Jacobs and Furstenberg, 1986). This is not the case for African American women (Duncan and Hoffman 1985a, 1985b).

The economic effect of divorce is expected to be lower among African American women than white women in the year immediately following the potential divorce (i.e. year t+1) because the earning differential between African American men and women is smaller than the differential between their whites counterparts and because the racial differentials in remarriage have not been given ample time to factor in. However, in years t+2 and t+3, the magnitude of the difference is expected to be smaller since sufficient time has elapsed for spousal search and remarriage. Racial differences in the marriage market assure white women of more prospects for remarriage which in turn afford the women with greater opportunities to compensate for the initial income losses.

Age

Age influences a woman's employability, her chances of remarriage and, possibly her likelihood of receiving spousal support. As a young woman ages her employability and earnings are expected to increase. However, by her fifties and sixties the slope on potential earnings either flattens or reverses. The coefficient on age interacted with divorce is expected to be positive, thereby increasing the level of income to needs in divorce. However, the coefficient on the interaction between divorce and age squared (**dwifeages**) is expected to be negative to adjust for the change in slope among older women.

Children

Children represent added expenses; their presence is reflected in the denominator of income relative to needs. In addition, children are expected to be negatively related to income because their care poses a constraint on the woman's employment alternatives, assuming she is the custodial parent in the event of divorce. When married, women with children may be more likely to compromise on the investment of human capital because of the day to day demands of maintaining their household and rearing their children. These demands are even greater after becoming a single parent. A lower accumulation of human capital translates into slower upward mobility.

Furthermore, earning power will be restricted for women with children if the mothers are both less able to work overtime and less geographically mobile.

Woman's Labor Earnings While Married

A woman's current earnings is expected to be a strong indicator of how well she would fare following a potential divorce. Whereas some of the other mediating variables discussed here determine how well a woman may adjust her earnings in reaction to a divorce, the woman's current earned income is expected to be the most powerful indicator of the necessity of adjustments in her labor force behavior in the event of divorce.

One countervailing effect of woman's earnings is the depression of alimony or child support payments. The higher the income of the wife at the time of divorce the less likely it is that she will be awarded alimony or generous child support. However, alimony and child support are not likely to be important factors for explaining variability in women's economic status following divorce. Only about 14 percent of ever divorced or separated women had a current agreement to receive alimony in the early 1980's and over 25 to 30 percent of those supposed to receive payments did not (U.S. Bureau of the Census 1989).

Woman's Employment Prospects

The degree of attachment to the labor force prior to the hypothetical divorce is expected to determine in part the ability of the woman to support herself and the ability to adjust her current earnings to the changing circumstances. Therefore, controlling for her own and her husband's income, the greater the woman's attachment to the labor force the better able she will be to compensate for the loss of her ex-husband's earnings.

Woman's Status as Professional

The previous hypothesis emphasized the woman's prospects for advancement in the labor market. Whether or not the woman is or recently was a professional, or proprietor, or manager is expected to influence her orientation to work and to reflect earlier investments in human capital. For example, whether or not a woman is a "proprietor, manager or professional" may indicate that the woman has an advanced degree or advanced training. Human capital investments may increase the woman's ability to respond to unexpected events because the woman may be able trade upon her education or professional status. For example, many jobs will substitute requirements for a given number of years of experience with an advanced degree or a particular quality (as opposed to time at the job)

reflected in past work experience. Therefore, professional women are expected to recoup their pre-divorce economic status more quickly than non professional women. Furthermore, professional women may have egalitarian gender attitudes which might make them more confident and aggressive in their job searches and demands for promotions and salaries.

Home Ownership

Home ownership is expected to inhibit the negative consequences of divorce. The equity can be converted into money following the divorce, thereby directly increasing available income in the following years. Lump sum payments, including those received from selling a house, are included in our income streams.

Husband's Earnings

Husband's earnings are an important determinant of the economic effect of divorce. Given the overwhelming absence of alimony and child support, husband's earnings are not likely to play a large role in cushioning the economic blow of divorce. Most indications are that there is very little transfer of income between ex-spouses and therefore, once separated/divorced from her husband, the wife is not likely to benefit from the husband's economic status. However, the larger the husband's earnings the more the wife has to lose in the event of divorce. Therefore the coefficient is expected to be negative.

Husband's Employment

Controlling for husband's income while married, husband's employment status while married is expected to influence the economic effects of divorce. The husband's employment status may be a better indicator of future changes in income. Income variables in time t-1 determine the level of income in t+1, t+2 and t+3 but factors such as employment stability determine the trend. For example, the income of a husband who is temporarily unemployed or in school is expected to improve over the next interval because there is the possibility the husband will secure a job and his income could double or triple. Alternatively, the possibilities for a retired or disabled husband are limited and the range for improvement is smaller than for an employed husband. Therefore, husband's employment status determines the economic effects of divorce by influencing projected marital income.

Expected AFDC Benefits

The literature examining whether public assistance programs, in particular AFDC, are incentives to divorce and marital decision making is enormous. The implication is that AFDC provides economic incentives to divorce because it improves the economic status of women and their children outside of marriage. Despite the fact that there is no consensus among policy makers and among researchers regarding the influence of AFDC on divorce and despite the widespread interest in AFDC incentives to divorce, few studies have been able to confirm whether or not AFDC is indeed an effective substitute for husband's earnings. We test the hypothesis that AFDC is an important determinant of the expected impact of divorce on income to needs. Holding all other explanatory variables constant, the expected benefit level received is expected to be inversely related to the economic devastation imposed by divorce. Furthermore the importance of AFDC is expected to diminish with the woman's current earnings.

RESULTS

Overall Tables 8 through 10 provide strong evidence of sample selection in all three years. In years t+1, t+2 and t+3 the parameter estimates for λ are -.179, -.137 and -.118, respectively. The corresponding t-statistics are -26.9, -18.03 and -14.16. Since all the p-values approach zero, we conclude that the correction for self selectivity bias is necessary and perform the remainder of the analysis according to the procedures discussed in the previous section.

Table 5 summarizes the findings from the hypotheses tests regarding what groups of variables alter the economic effect of divorce for each of the three years. The statistics are calculated using the Wald test principle which compares the coefficients from the saturated model with the hypothesized values under the null hypothesis. For example, the hypothesis that the economic effects of divorce differ with the age of the woman is tested by jointly comparing the coefficients on the interactions of divorce with **wifeage** and **wifeages** with the hypothesized value of zero. When we refer to the saturated model we mean the model that includes all the interactions of divorce, excluding the ecological variables other than welfare benefits (i.e. excluding region of residence -**NORTHEAST, WEST, SOUTH**, level of unemployment- **BIGUNEM** and size of population - **SMSA, LOWPOP**). This model is as saturated as LIMDEP restrictions allow. The statistical significance of interactions of divorce with individual explanatory variables can be assessed by examining the t-statistics which are provided in tables 7, 8 and 9 for years

t+1, t+2 and t+3 respectively. These tables also represent the coefficients and the p-values. Table 6 presents the coefficients from the reduced form probit employed in the selectivity adjustment.

The total impact of divorce as measured by these 18 interactions is very significant in all three years. In year t-1 the Wald test statistic is 168.282, with 18 degrees of freedom. In year t+1 the test statistic slightly falls, although it remains above 140 and in year t+3 the statistic is back up to 168 (See Table 5).

Race

The race interaction with divorce is very significant as are the restricted interactions of Black and divorce and Hispanic and divorce. The coefficients are positive in all cases providing empirical support to the hypothesis that the economic effects of divorce are smaller for African American women and hispanic women than for white women.[8]

In the first year, the coefficient associated with the interaction of divorce with being Black is .890 and the coefficient associated with the Hispanic interaction is .804. The former is significantly different from 0 at the .01 percent level and the latter is significant at the 5 percent level. The coefficient representing the African American/white differential in the effect of divorce on income to needs can be interpreted as follows. In t+1, the difference between the percent loss of income to needs among whites due to divorce and the percent loss of income to needs among African Americans due to divorce is .89.

The African American/white difference drops to only .64 in t+2 and .56 in t+3. Although the magnitude of the coefficients decreased somewhat by year t+2, the parameter estimates for African Americans remained significant at the one percent level and the estimates for Hispanics remained significant at the 10 percent level. The coefficient on Black continued to drop between the t+2 and t+3 intervals and the coefficient associated with Hispanic peaked in year t+3 at one. The coefficient on the interaction of divorce with both Hispanic and Black is significant at the .05 level.

The fact that the magnitude of the coefficients associated with being African American decline over time, provides evidence that the poorer marriage market among African American women reduces the African American-white differential in the later years.

Age

Table 5 shows that the effects of the woman's age on the consequences of divorce are significant at α=.01 in t+1 and t+2 and at α=.05 in t+3. As expected, the coefficient associated with age is positive, and the coefficient associated with age squared is negative for all years (See tables 7 through 9). According to the relative magnitudes of the parameter estimates for the two variables in year t+1, the economic losses due to divorce increase after age 50. This may reflect diminished prospects of either or both remarriage and employability.

Children

The interactions of divorce, with YOUNGKID5, YOUNGKID18 and #OTHERKIDS are significant at α=.01. As expected the coefficients associated with having children in the house (**YOUNGKID5** and **YOUNGKID18**) are negative, indicating that the economic effect of divorce is worse when there are children. The detrimental effect of a child in terms of relative economic status is greater when the child is less than five years old. In year y+1, the difference in the percent loss of income to needs due to divorce between a woman with a child under the age of five and a woman with no children is .72. The corresponding difference for a woman whose youngest child is between 5 and 18 is .57. The fact that the coefficient associated with the youngest child being under 5 (**YOUNGKID5**) is more negative than the coefficient associated with the youngest child being between 6 and 18 years old (**YOUNGKID18**) provides empirical support that the economic effects of divorce are worse when there are pre-school children. This is likely due to the added burden of pre-school children and the implications of that burden for career development and investments in human capital.

One surprising finding is that the coefficients become even more negative as time progresses, suggesting that women with children are not able to recover from the initial relative income to needs losses to the same extent as childless women. This may reflect the impact of children on remarriage possibilities.

Woman's Labor Earnings While Married

The wife's earnings (WLABTND and DWLAB) are powerful predictors of the economic losses suffered because of divorce. In year t+1, an increase of one in the wife's earnings relative to needs in year t-1 diminishes the log income relative to needs loss due to divorce by .89. In other words, an increase of one in the wife's earnings relative to needs in t-1 results in a difference of .89 between the percent increase in divorce income in year t+1 and percent increase in married income in year t+1. Keep in mind that although the effect of wife's earnings on the

economic effects of divorce is large in comparison to most of the other variables, the effect is not as large as it sounds at first. Recall that a unit increase in wife's earnings **relative to income needs** is typically greater than 8 thousand dollars.

In years t+1 and t+2 the effects are significant at α=.01 and in year t+3 the coefficients are significant at α=.05.

Woman's Employment Prospects

The degree of attachment to the labor force at the time of marriage is an important determinant of the woman's ability to support herself. Table 5 shows that the joint test of wife's employment status (**DUNEMPWIFE** and **DNOWORKWIFE**) finds their effects to be significant at levels at or above α=.05 for all three years. Both increase the economic losses due to divorce. However, only the not working status is significant at levels of α = .1 or below according to the individual level t tests. In year t+1, the p-value associated with the unemployed status is very large; however the p-value associated with the not working status is .04.

Woman's Status as Professional

The difference in the economic effect of divorce between woman who are professionals, proprietors or managers in comparison to those who are not is significant across all years, at most conventional levels of α. In year t+1, the difference between the percent loss of income to needs among "non-professionals" due to divorce and the percent loss of income to needs among "professionals" due to divorce is .74. The extent to which being a professional woman mediates the economic effects of divorce increases over time. In t+2, the difference between the percent loss of income to needs among "non-professionals" due to divorce and the percent loss of income to needs among "professionals" due to divorce is 1.24 and the corresponding difference in t+3 is 1.35.

Home Ownership

Home ownership significantly inhibits the detrimental economic consequences of divorce across all years, at α=.05 (see Table 5). The coefficients associated with the equity on the house and the dummy variable to indicate the ownership of a house are negative across all years. In year t+1, a ten thousand dollar increase in the value of the house diminishes the log income relative to needs loss due to divorce by .110. In year t+1, controlling for all other variables, someone who does not own a home is expected to lose .485 more log income to needs dollars because of

divorce than someone who owns a ten thousand dollar home.

Husband's Earnings

The effect of husband's earnings is only significant at conventional values of α in year t+1. It is very surprising that the coefficient in year t+1 is positive and therefore, indicates that the greater the husband's earned income in t-1, the less is the economic effect of divorce.

One possible explanation is that husbands with very high income relative to needs ratios at the upper end of the distribution are driving the relationship. Women with high earning husbands may do relatively better after divorce because of large income settlements. This would be consistent with the observation that the coefficient associated with husband's earnings is not significant in t+2 and in t+3 the coefficient reverses direction. Child support payments may also play a role in this relationship. Alternatively, this pattern is also consistent with the interpretation that if ex-wives of wealthy men remarried at a faster pace than other women, than the earning's of wealthy ex-husband's would be supplanted by a new spouse more quickly.

Further analyses that distinguish among a wide range of the husband's income are clearly necessary to explain this finding.

Husband's Employment

As expected, the economic effects are smaller when the husband is unemployed or retired. Table 5 shows that the joint effect of husband's employment status (i.e. **DUNEMPHUSB** and **DRETIREDH**) is significant at .01 in year t+1 and .05 thereafter.

Expected AFDC Benefits

The Wald Statistics presented in Table 5 indicate that the expected benefits from welfare do not significantly improve the explanatory power of the model in years t+1 and t+2. The interactions between divorce and both the maximum statewide AFDC payments and the slope adjustment for high wage earners are jointly significant in year t+3 at α=.10. Except for the positive coefficient associated with the interaction between divorce and the maximum statewide AFDC payments in t+3, individual t-tests do not find the interaction of divorce with either statewide AFDC benefits (**DAFDC**) or with the spline that adjusts for different slopes for high wage earners (**DAFDCHI**) to be significant.

These results suggest that variability across states in the maximum allowable AFDC payments is not an important explanation for differences in the expected impact of divorce on income relative to needs. AFDC does not appear to be an effective substitute for husband's earnings, even when the sample is restricted to wives with low earnings while married (i.e. **DAFDCHI**=0). The implication is that AFDC's role in minimizing the economic effects of divorce is weak and therefore, AFDC does not likely provide strong incentives to divorce.

Conclusion

One objective of this paper has been to improve upon previous estimates of the economic impact of divorce on women. The expected economic effects of marital dissolution for women is estimated in this paper on the basis of personal and ecological characteristics. Models were formulated that detected and corrected for possible self-selection bias.

The results suggest that measures from previous studies using similar nationally representative longitudinal data moderately understate the consequences of divorce by ignoring observed and un-observed differences between the divorcing and non-divorcing population. With regard to the determinants of the expected economic effects of divorce, children and race differences appear to be especially important. Children directly affect the denominator in the ratio of income over income needs and likely restrict the woman's ability to adjust her earned income. Racial differences are also very significant and likely reflect the importance of remarriage for diminishing the economic losses associated with divorce.

ENDNOTES

1. The initial sample of the PSID consisted of about 2,000 low-income non-elderly families that had been interviewed by the U.S. Bureau of the Census for the 1966-1967 Survey of Economic Opportunity (SEO) and an additional 2,930 households drawn from an equal probability sample by the Survey Research Center (Survey Research Center 1984). This study uses both subsamples.

2. The most dramatic attrition occurred between the sample selection interviews and the first wave of the study (Survey Research Center 1984). About 57.6 percent of the original sample of individuals known to be alive in 1987 participated in the study that year. Becketti et al. (1983) and Duncan and Hill (1989) provide detailed discussions of the representativeness of the recent PSID samples and the bias due to non-response.

3. In a society where divorce is not infrequent and where widowhood is always a risk, it would be unrealistic to censor women when they experience a subsequent divorce/separation from the estimation of the income streams in the event of no divorce. Similarly, in a society where nearly fifty percent of divorced white women and thirty two percent of divorced black women remarry within five years of divorce (Duncan and Hoffman 1985), it would be unrealistic to censor divorced women upon remarriage in the estimation of the income streams in the event of divorce.

4. The PSID income needs standard differs from that used in the Census statistics. The food portion of the needs are based on the "low-cost" food budget rather than the more stringent "economy" or "thrifty" budget used by the Census. The PSID standard is roughly 25 percent higher than the Census budget. In addition, unlike the pre-1980 official Census figures that reduce the needs of farmers to .8 the needs standard, the PSID needs standard is not adjusted for farmers. Furthermore, the needs of single women over the age of 65 are reduced proportionately to their lower estimated food needs whereas the Bureau of the Census takes 80 percent of the two person standard for both single elderly men and women (Survey Research Center 1987).

5. Labor income includes wages and dollar amount of estimated free or reduced rent received in compensation for work. Annual income from assets includes interest from savings and dividends, a portion of income received from boarders and garden farming. Transfer income includes AFDC, ADC, ADCU, SSI, income saved from food stamps and other welfare, help from relatives, G.I. Bill money for study, fellowships, grants, scholarships, strike pay, foster child allowance, certain types of maternity or sick leave payments and value of free if received for reason other than compensation for work.

6. The natural logarithm transformation of the income in divorce and marriage is estimated because income must be non-negative and may conceivably be close to the lower bound of zero. If income, rather than their logarithmic transformation, were estimated and were valued close to zero, then the errors would be constrained causing parameter estimates from ordinary least squares to be biased.

7. Except for year t+1, the differences in the change in income observed between year t-1 and t+i between Duncan and Hoffman's samples and our samples are small. The difference between the actual income to needs in year t+1 relative to t-1 for our divorced subsample and Duncan and Hoffman's is .05. However, our figure of .86 is much closer to their finding for the sample of divorced women restricted to those who remain unmarried, suggesting a discrepancy in the way separations were defined. One possible explanation for the greater change in year t+1 observed in our sample is that when detected, we did not include separations due to institutionalization (e.g. army, hospital, jail) in the divorce sample. Additionally, we excluded separations among those remarrying/recohabiting in the same year of the separation if we believed the new and previous "spouses" to be the same person. The largest differences between their intact sample and our married samples also occur in the year t+1 period. Several of the women in our intact sample may have been divorced for part of year t+1, with little opportunity for remarriage

within the remaining portion of the year since the only requirement for an original sample married woman to be included in our intact sample is that she remain married between the year t and t+1 interview, typically in the spring. Duncan and Hoffman (1985a, 1985b) on the other hand, excluded these women from their intact sample since their intact sample is restricted to continuously married women. Therefore, our measure of income relative to needs for married women includes the income of women who may be divorced, as long as they remained married between the two interview dates (i.e. t and t+1). Lastly, our sample covers post divorce income across the much longer period from 1970 to 1987 and it is possible the economic effects have changed over the period.

8. Recall, however, that the PSID is not representative of immigrants since 1968. The implications of this are greatest for the Hispanic sample.

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Table 1 Coefficients and Standard Errors From Divorce Log Income Relative to Needs Models.

	$LOG(INCTOND)_{t+1}$		$LOG(INCTOND)_{t+2}$		$LOG(INCTOND)_{t+3}$	
R - squared	.511		.447		.466	
Explanatory Variables*	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
Intercept	-.571	.413	.565	.522	-.074	.577
HLABINCTND1	.083	.015	.068	.017	.062	.017
WLABINCTND1	.378	.032	.307	.036	.268	.036
NETTINCTND1	.246	.043	.144	.048	.146	.048
NETAINCTND1	.048	.050	-.032	.056	.079	.056
OCCPROFWIFE	.098	.052	.100	.057	.109	.058
OCCPROFHUSB	.083	.043	.147	.048	.162	.049
OCCFARMHUSB	-.168	.176	-.066	.194	-.102	.196
UNEMPHUSB	-.041	.052	-.067	.057	-.095	.058
RETIREDHUSB	-.083	.087	-.088	.096	-.207	.098
UNEMPWIFE	.011	.043	-.015	.047	-.049	.048
NOWORKWIFE	-.079	.043	-.028	.047	-.056	.048
HOMEOWNER	-.003	.042	.159	.048	.114	.049
HOUSEVALUE1	.5e-06	.6e-06	-.4e-06	.6e-06	.5e-07	.6e-06
BLACK	-.183	.036	-.250	.040	-.266	.040
HISPANIC	-.075	.080	-.073	.088	-.221	.089
WIFEAGE	.012	.017	.018	.019	.050	.019
HUSBAGE	-.4e-03	.013	-.009	.014	-.018	.014
WIFEAGE(SQRD)	-.2e-03	.2e-03	-.3e-03	.3e-03	-.8e-03	.3e-03
HUSBAGE(SQRD)	-.3e-04	.2e-03	.1e-03	.2e-03	.3e-03	.2e-03
YOUNGKID3	.028	.038	.017	.041	.011	.042
NUMKID18	-.099	.013	-.083	.015	-.103	.015
NORTHEASTt+i	-.018	.053	.023	.059	.087	.060
WESTt+i	.089	.048	.148	.053	.190	.053
SOUTHt+i	.005	.042	-.041	.046	-.020	.046
SMSA	.084	.043	.087	.047	.060	.048
LOWPOP	.043	.056	.017	.061	.039	.062
BIGUNEMt+i	-.042	.032	-.064	.037	-.101	.036
AFDCTNDt+i	.302	.103	.013	.114	.080	.118
AFDCCHIt+i	-.021	.119	.027	.130	.095	.135
GNPt+i	.2e-06	.2e-04	-.4e-04	.3e-04	-.5e-05	.3e-04
LAMBDA	.244	.087	.099	.101	.074	.104

Table 2 Coefficients and Standard Errors From Married Log Income Relative to Needs Models.

	$LOG(INCTOND)_{t+1}$		$LOG(INCTOND)_{t+2}$		$LOG(INCTOND)_{t+3}$	
R - squared	0.651		0.603		0.567	
Explanatory Variables*	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
Intercept	-.160	.056	-.164	.061	-.174	.067
HLABINCTND1	.185	.002	.174	.002	.164	.002
WLABINCTND1	.191	.005	.190	.006	.183	.006
NETTINCTND1	.162	.005	.155	.005	.136	.006
NETAINCTND1	.092	.004	.080	.005	.072	.005
OCCPROFWIFE	.035	.008	.037	.009	.047	.009
OCCPROFHUSB	.106	.006	.120	.006	.131	.007
OCCFARMHUSB	-.107	.015	-.067	.016	-.055	.018
UNEMPHUSB	-.182	.013	-.092	.014	-.047	.014
RETIREDHUSB	-.290	.013	-.255	.013	-.228	.014
UNEMPWIFE	-.030	.007	-.013	.008	-.013	.008
NOWORKWIFE	-.067	.007	-.056	.007	-.060	.008
HOMEOWNER	.068	.007	.059	.007	.050	.008
HOUSEVALUE1	.1e-05	.9e-07	.1e-05	.1e-06	.1e-05	.102
BLACK	-.151	.006	-.168	.007	-.184	.007
HISPANIC	-.112	.013	-.127	.014	-.140	.015
WIFEAGE	.003	.003	-.001	.003	-.001	.003
HUSBAGE	.009	.002	.013	.002	.016	.003
WIFEAGE(SQRD)	-.3e-04	.4e-04	.5e-04	.4e-04	.6e-04	.4e-04
HUSBAGE(SQRD)	-.2e-03	.3e-04	-.2e-03	.3e-04	-.3e-03	.3e-04
YOUNGKID3	-.011	.006	-.029	.007	-.048	.007
NUMKID18	-.095	.002	-.092	.002	-.086	.002
NORTHEASTt+i	-.006	.007	-.005	.008	.007	.009
WESTt+i	.010	.008	.015	.008	.026	.009
SOUTHt+i	-.052	.006	-.047	.007	-.040	.007
SMSA	.074	.006	.079	.007	.089	.007
LOWPOP	-.038	.008	-.037	.009	-.026	.009
BIGUNEMt+i	-.042	.005	-.045	.005	-.046	.006
AFDCTNDt+i	.142	.015	.145	.017	.143	.018
AFDCCHIt+i	.094	.019	.100	.021	.106	.023
GNPt+i	.4e-04	.3e-05	.4e-04	.3e-05	.4e-04	.4e-05
LAMBDA	.167	.073	.324	.081	.483	.084

Table 3 Comparison of Alternative Measures of The Mean Economic Effect of Divorce on Women *

(t is the year of the Potential Divorce)

Method:		Duncan & Hoffman**		Heckman's Selectivity Adjustment					
Population:		Divorced Women	Married Couple	Divorced Subsample		Married Subsample		Entire Sample	
		Mean	Mean	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev.
A1) Mean (Observed Income to Needs in t+i Relative to Observed Income to Needs in t-1)									
Year	t+1	.91	1.19	.86	.57	1.13	.54	1.13	.54
	t+2	1.00	1.20	.99	.77	1.16	.60	1.16	.61
	t+3	1.05	1.17	1.05	.80	1.19	.65	1.19	.66
A2) Ratio of Divorced Women A1 to Married Women A1									
Year	t+1	.76		.76					
	t+2	.83		.85					
	t+3	.90		.88					
B1) Mean (Predicted Divorce Income to Needs in t+i Relative to Observed Income to Needs in t-1)									
Year	t+1	----	----	.88	.38	.83	.38	.83	.38
	t+2	----	----	1.00	.47	.91	.46	.91	.46
	t+3	----	----	1.06	.48	.96	.47	.97	.47
B2) Mean (Predicted Married Income to Needs in t+i Relative to Observed Income to Needs in t-1)									
Year	t+1	----	----	1.22	.45	1.16	.39	1.16	.39
	t+2	----	----	1.26	.48	1.20	.42	1.20	.42
	t+3	----	----	1.29	.51	1.24	.45	1.24	.45
B3) Ratio of B1 to B2									
Year	t+1	----	----	.72		.72		.72	
	t+2	----	----	.79		.76		.76	
	t+3	----	----	.82		.77		.78	
C1) Mean (Predicted Divorce Income to Needs in t+i Relative to Predicted Married Income to Needs in t+i) = "True Economic Effect of Divorce" when model is correctly specified									
Year	t+1	----	----	.72	.15	.71	.17	.71	.17
	t+2	----	----	.78	.16	.75	.17	.75	.17
	t+3	----	----	.81	.15	.77	.17	.77	.17
D1) Predicted Divorce Income to Needs Stream Relative to Predicted Married Income to Needs Stream									
t+1, t+2 and t+3 Stream		----	----	.77	.14	.74	.16	.74	.16

* The Means and Standard Deviations are weighted

** Taken from G. Duncan and S. Hoffman "Economic Consequences of Marital Instability" in David and Smeeding (ed). Horizontal Equity, Uncertainty, and Economic Well Being 1985 Table 14.A.8. p 458

4 Differences in Selected Characteristics Between the Divorced and the Intact Subpopulations (*, #)

	Intact Sample (py=30943)		Divorce Sample (py=1084)	
CHARACTERISTIC	**MEAN OR PROPORTION**	**VARIANCE**	**MEAN OR PROPORTION**	**VARIANCE**
Income				
Ratio of expected INC/NEEDS streams (marriage over divorce)	1.417	0.17	1.345	0.10
Difference between INC/NEEDS streams in marriage and divorce	3.158	25.40	2.533	11.93
Total family INCOME/NEEDS in year T-1	3.232	3.80	2.931	3.51
Total family income in year T-1	$36,645	459224729	$31,592	361159412
INCOME/NEEDS in year T-1 >=3.6	0.325	0.22	0.258	0.19
1.5<=INCOME/NEEDS in year T-1 <3.6	0.532	0.25	0.551	0.25
INCOME/NEEDS in year T-1 <1.5	0.143	0.12	0.191	0.15
Wife's income over total family income	0.192	0.05	0.260	0.06
Wive's labor income to needs in year T-1	0.548	0.55	0.699	0.62
Occupation				
Wife is a professional or manager	0.148	0.13	0.160	0.13
Wife has another occupation	0.481	0.25	0.614	0.24
Wife has no recent occupation	0.371	0.23	0.226	0.17
Husband is a professional or manager in year T	0.345	0.23	0.253	0.19
Husband is a farmer or farm manager in year T	0.029	0.03	0.012	0.01
Husband has another occupation in year T	0.599	0.24	0.700	0.21
Husband has no recent occupation in year T	0.027	0.03	0.036	0.03
Employment Status				
Husband is employed in year T	0.933	0.06	0.877	0.11
Husband is either unemployed or student or at home in year T	0.032	0.03	0.090	0.08
Husband is retired in year T	0.034	0.03	0.033	0.03
Wife worked 36 weeks or more in year T-1	0.377	0.23	0.442	0.25
Wife worked 5-35 weeks in year T-1	0.184	0.15	0.224	0.17
Wife worked 0-4 Weeks in year T-1	0.438	0.25	0.334	0.22
Homeownership				
1-respondent owns home 0-does not own home	0.748	0.19	0.508	0.25
Duration of Marriage				
Number of years married as of year T	14.213	103.87	7.056	52.45
Race/Ethnic Background				
Hispanic	0.029	0.03	0.037	0.04
African American-not Hispanic	0.077	0.07	0.127	0.11
Other-not Hispanic	0.893	0.10	0.836	0.14

Table 4 (continued) Differences in Selected Characteristics Between the Divorced and the Intact Subpopulations (*, #)

CHARACTERISTIC	Intact Sample (py=30943) MEAN OR PROPORTION	Intact Sample (py=30943) VARIANCE	Divorce Sample (py=1084) MEAN OR PROPORTION	Divorce Sample (py=1084) VARIANCE
Religious Preference				
Religious preference is Catholic	0.261	0.19	0.218	0.17
Other or no religious preference	0.739	0.19	0.782	0.17
Children				
The number of children under age 18	1.636	2.23	1.520	1.89
Youngest child is <= five years old	0.356	0.23	0.451	0.25
Youngest child is 6 to 18 years old	0.377	0.23	0.269	0.20
Has a child 18 years old or younger	0.733	0.20	0.720	0.20
Contextual Characteristics				
Residence is in a SMSA	0.659	0.22	0.682	0.22
Population of 10,000 to 49,999	0.189	0.15	0.176	0.14
Population of less than 10,000	0.153	0.13	0.142	0.12
Over 6% unemployment in county in year T	0.464	0.25	0.557	0.25
Under 6% unemployment in county in year T	0.536	0.25	0.443	0.25
Lives in the North Central U.S. in year T	0.300	0.21	0.227	0.18
Lives in the Northeast U.S. in year T	0.234	0.18	0.178	0.15
Lives in the West U.S. in year T	0.166	0.14	0.244	0.18
Lives in the South U.S. in year T	0.300	0.21	0.351	0.23
Maximum AFDC benefits in yr T Relative to needs in yr T	0.313	0.06	0.298	0.06

* Calculations are Based on Person Year Observations (py) Constructed From the Panel Study of Income Dynamics (1968-1987), data are weighted.
# Dollar values are standardized in 1983-1984 dollars

Table 5 Wald Test Statistics of the Hypotheses Regarding the Determinants of the Effect of Divorce on Income

Hypothesis	Variables interacting with divorce·	D.F.	TEST STATISTIC in Year: t+1	t+2	t+3
Divorce	Any Interaction with Divorce	18	168.3*	141.6*	168.6*
Race	(DBLACK & DHISPANIC) vs. *WHITE*	2	21.7*	9.7*	7.8+
Age	(DWIFEAGE & DWIFEAGE^2)	2	14.3*	9.8*	10.1*
Children	(DYOUNGKID5 & DYOUNGKID18 & DOTHERKIDS)	3	4.8	4.7	18.9*
A Child	(DYOUNGKID5 & DYOUNGKID18) vs. *NOKID*	2	4.8#	4.4	16.5*
Wife's Earnings in t-1	(DWLABTND)	1	22.1*	9.0*	4.8+
Employment Prospects	(DUNEMPWIFE & DNOWORKWIFE) vs. *WORKWIFE*	2	5.0#	9.4*	16.0*
Professional Status	(DOCCPROFWIFE)	1	5.3+	12.5*	11.6*
Home Ownership	(DHOMEOWNER & DHOUSEVAL1)	2	15.7*	19.6*	18.5*
Husband's Earnings in t-1	(DHLABTND)	1	4.4+	.2	- 0.5
Husband's Employment	(DUNEMPHUSB & DRETIREDH) vs. *WORKH*	2	12.4*	6.2+	6.8+
Expected AFDC	(DAFDC & DAFDCHI)	2	1.0	0.8	4.7#

* = significance at 1% level; + = significance at 5%; # = significance at 10%

· Italicized variables designate omitted categories

Table 6 **Parameter Estimates from Reduced From Probit Estimation of Un-Weighted Joint Income Models**

Maximum Likelihood Estimates

Log-Likelihood.....	-4247.0
Restricted (Slopes=0) Log-L.	-4735.8
Chi-Squared (44).....	977.55
Significance Level.....	0.322-13

Variable·	Coefficient	Std. Error	T-ratio	Prob:t:>x	Mean of X	Std.D.of X
ONE	-2.908	.437	-6.655	.000	1.000	0.000E+00
RELINC	0.410E-01	.133	0.307	.759	0.206	0.236
OCCPROFW	-0.880E-01	.515E-01	-1.709	.087	0.120	0.325
OCCPROFH	-0.914E-01	.407E-01	-2.247	.025	0.266	0.442
OCCFARMH	-0.216	.145	-1.488	.137	0.246E-01	0.155
LABDIV3	-0.145	.725E-01	-1.995	.046	0.565	0.386
WLOADDUM	-0.842E-01	.415E-01	-2.028	.043	0.197	0.397
HLOADDUM	0.606E-02	.464E-01	0.131	.896	0.129	0.335
WORKBURD	0.131E-02	.118E-02	1.111	.267	17.368	13.880
CATHOLIC	-0.900E-01	.422E-01	-2.131	.033	0.212	0.409
BLACK	0.537E-01	.371E-01	1.448	.148	0.279	0.449
HISPANIC	-0.412E-01	.831E-01	-0.495	.621	0.335E-01	0.180
SMSA	0.697E-01	.422E-01	1.650	.099	0.669	0.471
LOWPOP	-0.547E-01	.544E-01	-1.004	.315	0.165	0.371
AGEATMAR	-0.215E-01	.144E-01	-1.493	.135	21.905	6.040
AGEDIFF	0.119E-01	.138E-01	0.864	.388	3.318	4.468
AGEDIFFS	0.887E-03	.284E-03	3.125	.002	30.967	75.155
WIFEAGES	0.610E-03	.250E-03	2.442	.015	1358.800	733.53
HUSBAGES	-0.397E-03	.176E-03	-2.254	.024	1628.100	908.75
HOMEOWNER	-0.251	.370E-01	-6.793	.000	0.674	0.469
HOUSEVALUE	0.814E-06	.603E-06	1.351	.177	24262.000	33542.
YOUNGKID5	0.176	.677E-01	2.597	.009	0.391	0.488
YOUNGKID18	0.236	.681E-01	3.462	.001	0.371	0.483
#OTHERKIDS	0.254E-01	.137E-01	1.856	.063	1.111	1.477
DURATION	-0.463E-01	.145E-01	-3.190	.001	13.561	10.289
CROWDED	-0.220E-01	.119E-01	-1.845	.065	2.055	1.655
UNEMPHUSB	0.199	.574E-01	3.465	.001	0.408E-01	0.198
RETIREDHUSB	0.147	.947E-01	1.550	.121	0.457E-01	0.209
UNEMPWIFE	0.478E-01	.463E-01	1.032	.302	0.192	0.394
NOWORKWIFE	-0.230E-01	.534E-01	-0.430	.667	0.433	0.495
HLABTND1	-0.109E-01	.174E-01	-0.627	.530	1.932	1.445
WLABTND1	0.738E-01	.407E-01	1.813	.070	0.500	0.684
NETTTND1	-0.556E-02	.391E-01	-0.142	.887	0.228	0.497
NETATND1	-0.333E-01	.423E-01	-0.788	.431	0.140	0.539
NORTHEAST	-0.510E-01	.525E-01	-0.972	.331	0.169	0.375
WEST1	0.146	.477E-01	3.051	.003	0.152	0.359
SOUTH1	0.280E-01	.430E-01	0.650	.516	0.431	0.495
BIGUNEM2	0.403E-01	.378E-01	1.064	.287	0.496	0.500
BIGUNEM3	0.728E-01	.397E-01	1.833	.067	0.529	0.499
BIGUNEM4	0.577E-01	.369E-01	1.563	.118	0.556	0.497
AFDCTND2	-0.166	.123	-1.351	.177	0.287	0.225
AFDCCHI2	-0.783E-01	.129	-0.609	.543	0.712E-01	0.149
GNP3	-0.310E-04	.381E-04	-0.814	.416	14236.000	809.46
GNP4	0.906E-04	.536E-04	1.690	.091	14400.000	794.04
GNP5	0.599E-04	.386E-04	1.552	.121	14601.000	750.40

· See Appendix for variable name legend

Table 7 Parameter Estimates from Joint Estimation of Income to Needs in Year t+1, with Selectivity Adjustments (Un-Weighted)

Dependent Variable	LogINCTONEEDS	Number of Observations	32027
Mean of Dependent Variable	0.865	Std. Dev. of Dep. Var.	0.667
Sum of Sqrd. Residuals	7476.87		
R - squared	0.476	Adjusted R - Squared	0.475
Total Variation	14259.6	Regression Variation	6782.71
F(58,****)	500.001	Prob. Value for F	0.000

Standard error corrected for selection 0.488

Variable·	Coefficient	Std. Error	T-ratio	Prob:t:>x	Mean	Standard Dev
ONE	-0.188	0.106	-1.775	.076	1.000	0.151E-07
HLABTND1	0.177	0.326E-02	54.263	.000	1.932	1.445
WLABTND1	0.163	0.913E-02	17.890	.000	0.500	0.684
NETTTND1	0.171	0.766E-02	22.305	.000	0.228	0.497
NETATND1	0.814E-01	0.701E-02	11.617	.000	0.140	0.539
OCCPROFW	0.168E-01	0.140E-01	1.201	.230	0.120	0.325
OCCPROFH	0.109	0.984E-02	11.033	.000	0.266	0.442
OCCFARMH	-0.120	0.242E-01	-4.949	.000	0.246E-01	0.155
UNEMPHUSB	-0.198	0.267E-01	-7.406	.000	0.408E-01	0.198
RETIREDH	-0.310	0.199E-01	-15.550	.000	0.457E-01	0.209
UNEMPWIFE	-0.216E-01	0.125E-01	-1.726	.084	0.192	0.394
NOWORKWIFE	-0.562E-01	0.113E-01	-4.976	.000	0.433	0.496
HOMEOWNER	0.731E-01	0.121E-01	6.021	.000	0.674	0.469
HOUSEVALUE	0.134E-05	0.149E-06	8.996	.000	24262.	33542.
BLACK	-0.182	0.110E-01	-16.579	.000	0.279	0.449
HISPANIC	-0.132	0.218E-01	-6.032	.000	0.335E-01	0.180
WIFEAGE	0.342E-02	0.550E-02	0.622	.534	35.467	10.048
HUSBAGE	0.844E-02	0.427E-02	1.975	.048	38.785	11.129
WIFEAGES	-0.495E-05	0.670E-04	-0.074	.941	1358.8	733.53
HUSBAGES	-0.164E-03	0.452E-04	-3.630	.000	1628.1	908.75
YOUNGKID5	-0.111	0.185E-01	-6.022	.000	0.391	0.488
YOUNGKID18	-0.111	0.157E-01	-7.052	.000	0.371	0.483
#OTHERKIDS	-0.923E-01	0.344E-02	-26.822	.000	1.111	1.477
NORTHEAST	-0.144E-01	0.910E-02	-1.581	.114	0.169	0.375
WEST2	0.178E-01	0.952E-02	1.874	.061	0.152	0.359
SOUTH2	-0.406E-01	0.793E-02	-5.113	.000	0.431	0.495
SMSA	0.748E-01	0.771E-02	9.691	.000	0.669	0.471
LOWPOP	-0.363E-01	0.963E-02	-3.773	.000	0.165	0.371
BIGUNEM2	-0.367E-01	0.606E-02	-6.057	.000	0.496	0.500
AFDCTND2	0.181	0.308E-01	5.886	.000	0.287	0.225
AFDCCHI2	0.134	0.364E-01	3.688	.000	0.712E-01	0.149
GNP3	0.389E-04	0.508E-05	7.665	.000	14236.	809.46
DIVORCE	-2.285	2.088	-1.095	.274	0.350E-01	0.345E-01
DHLAB	0.192	0.923E-01	2.085	.037	0.540E-01	0.607E-01
DWLAB	0.891	0.191	4.660	.000	0.202E-01	0.400E-01
DNETT	-0.333	0.215	-1.548	.121	0.637E-02	0.189E-01
DNETA	0.757	0.384	1.969	.049	0.199E-02	0.927E-02

· See Appendix for variable name legend

Table 7 **(Continued) Parameter Estimates from Joint Estimation of Income to Needs in Year t+1, with Selectivity Adjustments (Un-Weighted)**

Variable·	Coefficient	Std. Error	T-ratio	Prob:t:>x	Mean	Standard Dev
DOCCPRW	0.742	0.321	2.310	.021	0.365E-02	0.137E-01
DOCCPRH	-0.353	0.255	-1.382	.167	0.595E-02	0.159E-01
DOCCFAH	-0.456	1.408	-0.324	.746	0.259E-03	0.254E-02
DUNEMPHUSB	0.621	0.274	2.271	.023	0.382E-02	0.219E-01
DRETIRHUSB	1.257	0.416	3.021	.003	0.143E-02	0.994E-02
DUNEMPWIFE	-0.841E-01	0.231	-0.365	.715	0.835E-02	0.240E-01
DNOWORWIFE	-0.501	0.245	-2.047	.041	0.114E-01	0.227E-01
DHOMEOWNER	-0.375	0.272	-1.382	.167	0.139E-01	0.186E-01
DHOUSEVAL	-0.110E-04	0.372E-05	-2.948	.003	415.49	1137.6
DBLACK	0.890	0.194	4.582	.000	0.138E-01	0.310E-01
DHISPANIC	0.804	0.399	2.015	.044	0.130E-02	0.102E-01
DWIFEAGE	0.130	0.936E-01	1.389	.165	1.000	0.937-
DHUSBAG	-0.831E-01	0.693E-01	-1.200	.230	1.097	1.009
DWIFEAGS	-0.260E-02	0.128E-02	-2.030	.042	32.083	33.114
DHUSBAGS	0.135E-02	0.858E-03	1.573	.116	38.694	38.410
DYOUNGKID5	-0.716	0.328	-2.180	.029	0.170E-01	0.308E-01
DYOUNGKID18	-0.573	0.336	-1.703	.088	0.857E-02	0.199E-01
D#OTHERKIDS	0.358E-01	0.754E-01	0.475	.635	0.355E-01	0.735E-01
DAFDC2	0.355	0.562	0.632	.527	0.951E-02	0.139E-01
DAFDCHI2	-0.576	0.691	-0.834	.404	0.300E-02	0.883E-02
DGNP3	0.385E-04	0.116E-03	0.332	.740	486.37	502.79
LAMBDA	-0.179	0.663E-02	-26.969	.000	-0.272E-07	0.388

· See Appendix for variable name legend

Table 8 Parameter Estimates from Joint Estimation of Income to Needs in Year t+2, with Selectivity Adjustments (Un-Weighted)

Dependent Variable	LogINCTONEEDS	Number of Observations	32027
Mean of Dependent Variable	0.879	Standard Dev of Dependent Var	0.678395
Sum of Sqrd. Residuals	9274.87		
R - squared	0.371	Adjusted R - Squared	0.369584
Total Variation	14739.0	Regression Variation	5464.12
F(58,****)	324.713	Probability Value for F	0.00000

Standard error corrected for selection 0.541

Variable·	Coefficient	Std. Error	T-ratio	Prob:t:>x	Mean of X	Std.D.of X
ONE	-0.378	0.120	-3.150	.002	1.000	0.151E-07
HLABTND1	0.169	0.362E-02	46.734	.000	1.932	1.445
WLABTND1	0.173	0.102E-01	17.033	.000	0.500	0.684
NETTTND1	0.159	0.851E-02	18.644	.000	0.228	0.497
NETATND1	0.654E-01	0.779E-02	8.406	.000	0.140	0.539
OCCPROFW	0.395E-02	0.155E-01	0.254	.799	0.120	0.325
OCCPROFH	0.125	0.109E-01	11.399	.000	0.266	0.442
OCCFARMH	-0.651E-01	0.268E-01	-2.427	.015	0.246E-01	0.155
UNEMPHUSB	-0.107	0.299E-01	-3.580	.000	0.408E-01	0.198
RETIREDH	-0.263	0.222E-01	-11.845	.000	0.457E-01	0.209
UNEMPWIFE	-0.142E-02	0.140E-01	-0.102	.919	0.192	0.394
NOWORKWIFE	-0.325E-01	0.127E-01	-2.561	.010	0.433	0.495
HOMEOWNER	0.703E-01	0.136E-01	5.183	.000	0.674	0.469
HOUSEVALUE	0.156E-05	0.165E-06	9.440	.000	24262.000	33542.000
BLACK	-0.188	0.123E-01	-15.379	.000	0.279	0.449
HISPANIC	-0.149	0.243E-01	-6.111	.000	0.335E-01	0.180
WIFEAGE	0.681E-03	0.615E-02	0.111	.91176	35.467	10.048
HUSBAGE	0.170E-01	0.476E-02	3.563	.00037	38.785	11.129
WIFEAGE^2	0.398E-04	0.747E-04	0.533	.59393	1358.800	733.530
HUSBAGE^2	-0.272E-03	0.504E-04	-5.390	.00000	1628.100	908.750
YOUNGKID5	-0.113	0.204E-01	-5.535	.00000	0.391	0.488
YOUNGKID18	-0.840E-01	0.173E-01	-4.849	.000	0.371	0.483
#OTHERKIDS	-0.863E-01	0.383E-02	-22.537	.000	1.111	1.477
NORTHEAST3	-0.100E-01	0.101E-01	-0.994	.320	0.169	0.374
WEST3	0.279E-01	0.106E-01	2.619	.009	0.152	0.359
SOUTH3	-0.386E-01	0.885E-02	-4.359	.000	0.433	0.495
SMSA	0.790E-01	0.860E-02	9.190	.000	0.669	0.471
LOWPOP	-0.355E-01	0.107E-01	-3.307	.001	0.165	0.371
BIGUNEM3	-0.400E-01	0.669E-02	-5.975	.000	0.529	0.499
AFDCTND3	0.158	0.344E-01	4.598	.000	0.279	0.221
AFDCCHI3	0.128	0.414E-01	3.100	.002	0.705E-01	0.146
GNP4	0.432E-04	0.576E-05	7.508	.000	14400.000	794.040
DIVORCE	2.456	2.461	0.998	.318	0.350E-01	0.345E-01
DHLAB	0.417E-01	0.103	0.404	.687	0.540E-01	0.607E-01
DWLAB	0.643	0.215	2.986	.003	0.202E-01	0.400E-01
DNETT	-0.179	0.241	-0.742	.458	0.637E-02	0.189E-01
DNETA	0.927	0.429	2.163	.031	0.199E-02	0.927E-02

· See Appendix for variable name legend

Table 8 (Continued) Parameter Estimates from Joint Estimation of Income to Needs in Year t+2, with Selectivity Adjustments and Instrumental Variables (Un-Weighted)

Variable·	Coefficient	Std. Error	T-ratio	Prob:t:>x	Mean of X	Std.D.of X
DOCCPRW	1.241	0.360	3.450	.001	0.365E-02	0.137E-01
DOCCPRH	-0.426	0.286	-1.490	.136	0.595E-02	0.159E-01
DOCCFAH	-1.478	1.571	-0.941	.347	0.259E-03	0.254E-02
DUNEMPHUSB	0.385	0.307	1.254	.210	0.382E-02	0.219E-01
DRETIRH	1.092	0.467	2.339	.019	0.143E-02	0.994E-02
DUNEMPWIFE	-0.229	0.260	-0.883	.377	0.835E-02	0.240E-01
DNOWORW	-0.809	0.276	-2.928	.003	0.114E-01	0.227E-01
DHOMEOWNER	-0.375	0.305	-1.231	.218	0.139E-01	0.186E-01
DHOUSEVALUE	-0.146E-04	0.418E-05	-3.499	.000	415.490	1137.600
DBLACK	0.641	0.217	2.946	.003	0.138E-01	0.310E-01
DHISPAN	0.776	0.447	1.737	.082	0.130E-02	0.102E-01
DWIFEAG	0.734E-01	0.105	0.700	.484	1.000	0.937
DHUSBAG	-0.178	0.776E-01	-2.289	.022	1.097	1.009
DWIFEAGS	-0.182E-02	0.144E-02	-1.268	.205	32.083	33.114
DHUSBAGS	0.233E-02	0.961E-03	2.430	.015	38.694	38.410
DYOUNGKID5	-0.734	0.366	-2.004	.045	0.170E-01	0.308E-01
DYOUNGKID18	-0.708	0.374	-1.896	.058	0.857E-02	0.199E-01
D#OTHERKIDS	-0.316E-01	0.844E-01	-0.374	.708	0.355E-01	0.735E-01
DAFDC3	0.527	0.633	0.832	.406	0.928E-02	0.137E-01
DAFDCHI3	-0.317	0.786	-0.404	.686	0.298E-02	0.871E-02
DGNP4	-0.591E-04	0.135E-03	-0.436	.662	493.34	512.43
LAMBDA	-0.137	0.758E-02	-18.035	.000	-0.272E-07	0.388

· See Appendix for variable name legend

Table 9 **Parameter Estimates from Joint Estimation of Income to Needs in Year t+3, with Selectivity Adjustments (Un-Weighted)**

Dependent Variable	LogINCTO	Number of Observations	32027
Mean of Dep. Var.	0.888	Std. Dev. of Dep. Var.	0.688
Sum of Sqrd. Residuals	10970.4		
R - squared	0.276	Adjusted R - Squared	0.275
Total Variation	15160.5	Regression Variation	4190.15
F(58,****)	210.521	Prob. Value for F	0.000

Standard error corrected for selection 0.587

Variable	Coefficient	Std. Error	T-ratio	Prob:t:>x	Mean of X	Std.D.of X
ONE	-0.498	0.134	-3.717	.000	1.000	0.151E-07
HLABTND1	0.163	0.393E-02	41.546	.000	1.932	1.445
WLABTND1	0.170	0.110E-01	15.449	.000	0.500	0.684
NETTTND1	0.139	0.925E-02	15.026	.000	0.228	0.497
NETATND1	0.557E-01	0.846E-02	6.589	.000	0.140	0.539
OCCPROFW	0.116E-01	0.169E-01	0.684	.494	0.120	0.325
OCCPROFH	0.130	0.119E-01	10.935	.000	0.266	0.442
OCCFARMH	-0.532E-01	0.292E-01	-1.824	.068	0.246E-01	0.155
UNEMPHUSB	-0.447E-01	0.326E-01	-1.369	.171	0.408E-01	0.198
RETIREDH	-0.248	0.241E-01	-10.270	.000	0.457E-01	0.209
UNEMPWIFE	-0.432E-02	0.152E-01	-0.284	.776	0.192	0.394
NOWORKWIFE	-0.277E-01	0.137E-01	-2.015	.044	0.433	0.495
HOMEOWNER	0.667E-01	0.148E-01	4.521	.000	0.674	0.469
HOUSEVAL1	0.170E-05	0.180E-06	9.465	.000	24262.000	33542.
BLACK	-0.200	0.133E-01	-14.988	.000	0.279	0.449
HISPANIC	-0.175	0.265E-01	-6.631	.000	0.335E-01	0.180
WIFEAGE	0.167E-02	0.668E-02	0.250	.803	35.467	10.048
HUSBAGE	0.205E-01	0.518E-02	3.957	.008	38.785	11.129
WIFEAGES	0.380E-04	0.812E-04	0.468	.640	1358.8	733.53
HUSBAGES	-0.322E-03	0.548E-04	-5.883	.000	1628.1	908.75
YOUNGKID5	-0.925E-01	0.221E-01	-4.182	.000	0.391	0.488
YOUNGKID18	-0.412E-01	0.188E-01	-2.197	.028	0.371	0.483
#OTHERKIDS	-0.798E-01	0.417E-02	-19.155	.000	1.111	1.477
NORTHEAST4	0.432E-02	0.109E-01	0.395	.693	0.168	0.374
WEST4	0.380E-01	0.116E-01	3.271	.001	0.152	0.359
SOUTH4	-0.321E-01	0.964E-02	-3.327	.001	0.433	0.496
SMSA	0.874E-01	0.935E-02	9.350	.000	0.669	0.471
LOWPOP	-0.245E-01	0.117E-01	-2.103	.035	0.165	0.371
BIGUNEM4	-0.437E-01	0.713E-02	-6.133	.000	0.556	0.497
AFDCTND4	0.122	0.379E-01	3.224	.001	0.272	0.215
AFDCCHI4	0.117	0.459E-01	2.547	.011	0.700E-01	0.143
GNP5	0.449E-04	0.665E-05	6.760	.000	14601.	750.40
DIVORCE	4.725	2.656	1.779	.075	0.350E-01	0.345E-01
DHLAB	-0.766E-01	0.112	-0.682	.495	0.540E-01	0.607E-01
DWLAB	0.516	0.234	2.208	.027	0.202E-01	0.400E-01
DNETT	-0.841E-01	0.263	-0.320	.749	0.637E-02	0.189E-01
DNETA	1.226	0.467	2.628	.009	0.199E-02	0.927E-02

· See Appendix for variable name legend

Table 9 **(Continued) Parameter Estimates from Joint Estimation of Income to Needs in Year t+3, with Selectivity Adjustments (Un-Weighted)**

Variable	Coefficient	Std. Error	T-ratio	Prob:t:>x	Mean of X	Std.D.of X
DOCCPRW	1.351	0.392	3.447	.001	0.365E-02	0.137E-01
DOCCPRH	-0.225	0.311	-0.723	.469	0.595E-02	0.159E-01
DOCCFAH	-1.408	1.709	-0.824	.410	0.259E-03	0.254E-02
DUNEMPHUSB	0.666E-01	0.335	0.199	.843	0.382E-02	0.219E-01
DRETIRH	1.325	0.509	2.604	.009	0.143E-02	0.994E-02
DUNEMPWIFE	-0.230	0.282	-0.814	.415	0.835E-02	0.240E-01
DNOWORW	-1.113	0.300	-3.710	.000	0.114E-01	0.227E-01
DHOMEOWNER	-0.495	0.332	-1.490	.136	0.139E-01	0.186E-01
DHOUSEVAL	-0.146E-04	0.455E-05	-3.211	.001	415.49	1137.6
DBLACK	0.559	0.237	2.358	.018	0.138E-01	0.310E-01
DHISPAN	1.000	0.487	2.052	.040	0.130E-02	0.102E-01
DWIFEAG	0.807E-01	0.114	0.706	.480	1.000	0.937
DHUSBAG	-0.216	0.846E-01	-2.552	.011	1.097	1.009
DWIFEAGES	-0.201E-02	0.157E-02	-1.282	.200	32.083	33.114
DHUSBAGES	0.291E-02	0.105E-02	2.777	.005	38.694	38.410
DYOUNGKID5	-1.543	0.398	-3.871	.000	0.171E-01	0.308E-01
DYOUNGKID18	-1.495	0.406	-3.680	.000	0.857E-02	0.199E-01
D#OTHERKIDS	-0.102	0.920E-01	-1.111	.266	0.355E-01	0.735E-01
DAFDC4	1.478	0.699	2.114	.034	0.905E-02	0.134E-01
DAFDCHI4	0.213	0.876	0.243	.808	0.295E-02	0.853E-02
DGNP5	-0.135E-03	0.144E-03	-0.934	.350	500.28	520.43
LAMBDA	-0.118	0.831E-02	-14.160	.000	-0.272E-07	0.388

· See Appendix for variable name legend

APPENDIX

DESCRIPTION OF SELECTED EXPLANATORY VARIABLES

The regressors (defined as elements of $\mathbf{z}_{it}$ and $\mathbf{w}_{it+j}$) included in the income equations (1), (2) and (5) are discussed in this section.

Income from labor includes wages, labor part of asset income, and value of free rent if related to employment. The husband's (wife's) income from labor divided by family needs in year t-1 is coded as **HLABINCTND**$_t$ (**WLABINCTND**$_t$). The couple's income earned on assets represents the difference between income earned from rental properties, interest, dividends, etc. and income lost from assets in calendar year t-1 divided by family income needs in year t-1 (**NETAINCTND**$_t$). Net transfer payments relative to family needs in year t-1 (**NETTINCTND**$_t$) is the sum of all income earned by family members other than the couple and transfer income received by the couple minus income provided to dependents outside of household divided by family needs in t-1. This includes unemployment payments, workers compensation, couple's AFDC, ADC, ADCU receipts, couple's other welfare receipts, value of food stamps, pension payments, couple's social security payments, lump sum payments (mostly insurance settlements), support from relatives, alimony, child support, value of free rent if not related to work, **net** of income provided to members outside of the household in calendar year t-1.

If the most recent occupation of the husband (wife) as of year t interview is professional or managerial or proprietor, then the variable, **OCCPROFHUSB**$_t$ (**OCCPROFWIFE**$_t$), is coded 1 and otherwise it is coded 0. The variable, **OCCFARMHUSB**$_t$, is coded 1 if the most recent occupation of the husband is farmer or farm manager and 0 otherwise. Employment status is also coded categorized. Women with husbands who are students or unemployed or minding the house and/or children, according to the interview in year t, are coded 1 for **UNEMPHUSB**$_t$ and 0 otherwise. The variable **RETIREDHUSB**$_t$ is coded 1 if the woman's husband is retired or disabled according to the interview in year t. The fully employed state is the omitted category. The employment status of the women is coded somewhat differently. Working 36 or more weeks in year t-1 is the omitted category. Woman who worked 5 to 35 weeks in year t-1 are coded 1 for the dichotomous variable - **UNEMPWIFE**$_{t-1}$. Those who worked 4 weeks or fewer in year t-1 are coded 1 for the dichotomous variable - **NOWORKWIFE**$_{t-1}$.

The number of children under 18 years of age in the woman's household at year t interview is coded as **NUMKID18**$_t$. The variable **YOUNGKID3**$_t$ indicates whether there are any young children (i.e. less than 4 years

old) in the woman's household at year t interview.

County-level unemployment rates at the time of the year t+j interview that are less than 4 percent are considered to be low and rates of 6 percent and above are considered to be high. The statewide maximum allowable AFDC benefits for the number of children reported in the year t interview are divided by the family income needs in year t and are coded as $\mathbf{AFDCTND_{t+j}}$. A second variable is included in the model so that the effect of AFDC can vary according to the income earned by the woman while married. The variable $\mathbf{AFDCHCHI_{t+j}}$ is a spline adjustment for high earning women: state maximum allowable welfare benefit in year t+j, according to the number of children reported in interview in year t, relative to needs in year t for those women with labor income in year t which exceeds 1.5 times the maximum allowable welfare benefit. A negative coefficient on this variable would reduce the impact a positive coefficient on $\mathbf{AFDCTND_{t+j}}$ has on the expected income.

INCOME PREDICTIONS MODELS

The predictions based on the parameter estimates and standard errors presented in Tables 1 and 2 are compared to the observed income streams in Table A1.

Table A1 Actual and Predicted Married and Divorce Income to Needs by Marital Status

Estimation is not based on Weighted Data

Divorce Group (1084 Observations)

	Actual		Predicted with Selectivity Adjustment		Predicted OLS Estimate	
	Mean	Std. Dev.	Mean	Std. Dev	Mean	Std. Dev
Income to Needs Stream - Divorce	5.800	4.265	5.957	3.975	5.919	3.943
- Marriage	....	....	7.944	5.873	7.921	5.838
Income to Needs in t+1 - Divorce	1.813	1.440	1.898	1.415	1.857	1.383
in t+2 - Divorce	2.018	1.550	2.067	1.319	2.067	1.319
in t+3 - Divorce	2.157	1.802	2.183	1.399	2.186	1.400
in t+1 - Marriage	....	....	2.682	2.045	2.684	2.042
in t+2 - Marriage	....	....	2.730	2.022	2.724	2.012
in t+3 - Marriage	....	....	2.779	1.992	2.757	1.969
Ratio of Married to Divorce Income to needs	....	....	1.331	0.247	1.337	0.245

Married Group (30943 Observations)

	Actual		Predicted with Selectivity Adjustment		Predicted OLS Estimate	
	Mean	Std. Dev.	Mean	Std. Dev	Mean	Std. Dev
Income to Needs Stream - Divorce	....	....	6.472	3.640	6.338	3.550
- Marriage	8.769	5.641	9.108	6.663	9.040	6.625
Income to Needs in t+1 - Divorce	....	....	2.105	1.334	2.004	1.261
in t+2 - Divorce	....	....	2.215	1.178	2.193	1.166
in t+3 - Divorce	....	....	2.358	1.298	2.345	1.289
in t+1 - Marriage	2.963	1.985	3.065	2.363	3.060	2.362
in t+2 - Marriage	3.013	2.066	3.127	2.278	3.106	2.267
in t+3 - Marriage	3.064	2.153	3.199	2.234	3.153	2.207
Ratio of Married to Divorce Income to needs	....	....	1.389	0.359	1.407	0.362

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