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Predicting the Divorce Decisions of Young Women Using the National Longitudinal Survey of Youth

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Abstract

Over recent decades, we have witnessed drastic changes in American family structure. This has been due in large part to the rapid rise in divorce rates. Previous studies, such as those performed by Gary Becker (1991) and Manser and Brown (1980) have applied economic models to divorce and other family structure decisions. Building on the utility maximization analysis of Manser and Brown, as adapted by John Ermisch (1993), this study uses a logit regression analysis to predict divorce decisions for an all female sample of respondents, ages 28 to 36. Data are extracted from the National Longitudinal Survey of Youth for this analysis. Economic theory predicts that the probability of divorce is directly related to one's opportunity cost to being married. Using a woman's estimated wage rate as a proxy for the economic portion of this opportunity cost, this study hypothesizes that the probability of a woman seeking divorce will increase with increases in her potential wage rate, holding total family income constant. The empirical results of the study support this hypothesis.

I. Introduction

What factors contribute to marital instability? At one time this was not a question that concerned many economists. However, the established link between poverty rates and family structure decisions in the literature, has justified marital instability as a relevant economic concern [Heath, 1992; Kneiser et al., 1988; and Peters, 1993]. Thanks to the work of economist Gary Becker, one of the first to apply economics to the study of the family, economic models are now being used to analyze family structure decisions. Treating the family as a miniature production unit, Becker's efficient household theories have shaped much of the literature on the family.

The framework developed by Marilyn Manser and Murray Brown (1980), which makes use of the concept of utilities to analyze marital stability, is one such study. The present study applies this framework as adapted by John Ermisch (1993) along with Becker's (1991) work, concerning household divisions of labor, to the divorce decision.

This study is carried out with the expectation that income levels and labor participation rates of the wife will be important determinants of the divorce decision. Income in the form of actual earnings, as well as wages foregone due to marriage, are predicted to be significant predictors of the divorce decision.

The utility possibility frontier and underlying theory is detailed in Section II of the paper. Section III provides an account of the data that are used in the empirical analysis. In section IV, the logit models instrumental to the study are outlined. Section V provides a discussion of the results of those models. Finally, Section VI summarizes the major conclusions of the study and suggests possible policy implications.

II. Theoretical Framework

Gary Becker's 1991 work, which provides an economic analysis of the family, emphasizes the importance of household division of labor in creating and maintaining an efficient household that maximizes gains for both partners. This result is due, in part, to the allocation of time between home production and market work on the part of each spouse. Becker argues that each partner should specialize in the type of production in which he or she has a comparative advantage. Based on the facts that men historically have possessed higher earnings power and that women possess the ability to bear children, he comes to the conclusion that husbands more often have a comparative advantage in market production, while wives have a comparative advantage in home production, in a married-couple household (Becker, pp. 38-39).

Gains from forming a joint household through marriage may also be reaped in the form of "joint consumption economies" realized in the purchasing of household goods that characteristically resemble public goods. These goods include the house itself, but also other household goods that can be shared jointly without a decline in consumption per consumer (Ermisch, p.354).

The decision to form a married household or to dissolve one's present marriage should in part depend on the perceived and actual gains from time allocation and/or joint consumption. The stability of one's marriage, and hence the probability of divorce, is also influenced by the way in which the gains to marriage are allocated between spouses. The allocation of time between household and labor market production, according to some studies is not only influenced by the comparative advantage each partner possesses in an area of production but may be determined by a

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dominant partner based on individualistic objectives (Manser & Brown, 1980; John Ermisch, 1993).

To examine marital instability we must first look at the divorce decision. This study attempts to analyze the decision to dissolve a marriage from the position of the female partner. In other words, what exogenous shocks to a married couple household cause a woman to be more likely to end the marriage? The data which are provided by the National Longitudinal Survey of Youth (NLSY) do not allow one to determine which partner initiates the divorce in the cases where divorce does in fact occur. For the purpose of carrying out this study, I make the simplifying assumption that the divorce decision is made by the wife.

A framework for analyzing marriage decisions is found in the model first developed by Manser and Brown (1980) and adapted by John Ermisch (1993). The model assumes utility maximization for a given married couple household and is summarized in Figure 1 below. The model is best explained by the authors who begin their analysis by--

> examining the marriage decision in a world inhabited by two individuals who may possess different utility functions defined over a vector of private goods, shared goods and own leisure. Gains to marriage exist if the point representing the maximum possible utility for each individual if single, lies inside the utility possibility frontier. If that occurs, the individuals must decide on an allocation of resources and distribution of gains (Manser & Brown, p. 32).

Hence, two individuals can maximize their utilities by forming a joint household through marriage and allocating household resources, in other words by choosing to operate at a point on the resulting utility possibility frontier. The exact point (point A) along this curve at which a couple will choose to exist depends on the shape of the couple's joint preference (V) curve and the bargaining position of each spouse.[1]

Figure 1: Utility Possibilities Frontier for a Married-Couple Household*
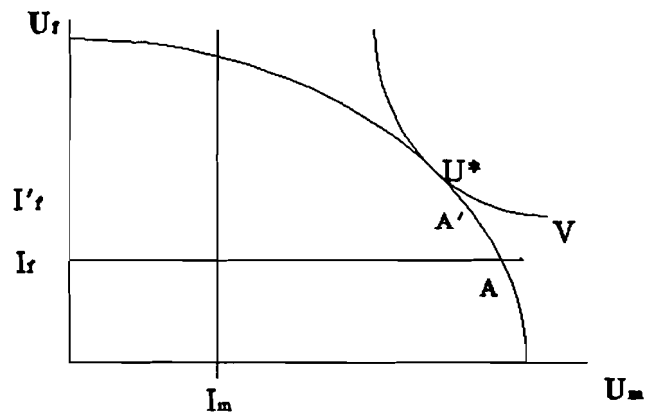
U   = couple's joint utility
U* = couple's optimal utility
V   = couple's joint prefence curve
I   = spouse's alternate utility

*Adapted from Ermisch (1993).

For the couple to determine at what point on the utility possibility curve they will exist, a compromise must be reached as to how resources will be allocated. The range of solutions is narrowed by the alternative levels of utility, or 'single state utility' that could be reached if either spouse chose not to form the household. These points are represented by I_f and I_m in Figure 1. I_f is the utility the female partner would experience from choosing to live independently or choosing to form a household with someone else, while I_m refers to the male partner's alternative utility.

Consequently, the divorce decision will be influenced by factors that affect the shape or position of the joint utility curve or the alternative utilities of either partner. As Ermisch points out, any change in the prices of consumer goods or change in the wages or salary of either spouse will cause the frontier to shift (Ermisch, p.355).

In any choice-theoretic model, opportunity cost plays an important role in the decision-making process. In this analysis, potential income is evaluated as an opportunity cost to staying married. Income is divided into three components for the purposes of this study, potential or predicted wage of the respondent, actual hourly wage of the respondent, and other income. Other income would include spouse's earnings, government income transfers, inheritance or other non-earned income.

An increase in a woman's potential earnings (i.e. what she could earn if the marriage imposed no constraints on her earnings potential or if she were not married) relative to her actual income is expected to influence marital stability. The effect can be depicted graphically as a shift upward in I_f, which narrows the bargaining range, thereby increasing the probability of divorce. Thus, when holding actual income constant, predicted wages are directly related to the probability of divorce. This is the case since a woman's earnings potential outside of marriage is part of the

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opportunity cost to staying married, given that the women is unable to realize her full earnings potential within marriage.

A woman's actual earnings are also expected to influence her likelihood of divorce. The reason being that, as Becker explains, "women with higher earnings gain less from marriage than other women do because higher earnings reduce the demand for children and the advantages of the sexual division of labor in marriage" (Becker, p. 336). The increase in the wife's actual earnings can also be represented in the diagram in Figure 1 as a shift upward in I_f (from I_f to I'_f), since higher earnings increases the wife's next best alternative to marriage. The reasoning here is that higher earnings allow a woman to be more sufficient as a single household and also make her more marketable for remarriage. However, the positive shock to total family income as a result of her earnings increase causes the couple's utility frontier to shift outward (see Figure 1), either partially or completely off-setting the rise in I_f by widening the bargaining range and reducing the likelihood of divorce.

Recall that I_m and I_f represent the next best alternative to marriage for the male and female partner, respectively. This alternative may be forming an independent household, or forming a household with someone else. If there are gains to be made from forming another household, then the difference in relative utilities can be perceived as part of the opportunity cost to staying married. This being the case, the wage of the husband relative to other men in the marriage pool should influence the probability of a woman seeking divorce. If a husband's wages fall relative to other men in the labor market the probability of his wife divorcing him should increase, holding all else constant.

For example, in a relationship where the husband is specializing in market production and

the wife in home production, a drastic drop in the husband's earnings, will greatly impact the efficiency of the household and the gains to staying married will be largely reduced. (Graphically, this can be depicted as an inward shift of the utility possibilities frontier pictured in Figure 1). This scenario also depends on the market for marriageable males available to the wife. If the husband's drop in earnings is due to a general decline in the economy and many other men in the area are affected, the wife's alternatives are reduced (I_f falls along with the joint utility curve) and the opportunity cost to staying married lowered. Given this scenario, a drop in the husband's income would not increase the probability of the respondent seeking divorce. It is the relative change in income, not the absolute change, that should affect the opportunity cost to staying married.

While the income of a woman's husband relative to other men in the marriage market represents one component of the opportunity cost to marriage, the advent of programs such as Aid to Families with Dependent Children (AFDC) has created an alternative source of income for unmarried or divorced mothers. AFDC as well as other forms of income transfers from the government add an additional component to the opportunity cost to staying married. Under the scenario described above, if a couple was to experience an unexpected loss in income due to the husband's unemployed status, even if the wife's prospects for remarriage are poor the woman may do better by divorcing her husband and collecting AFDC than by staying married. The opportunity to remarry or to receive income transfers, both of which "raise the welfare available outside the household, also affect allocation and distribution within the household" and could cause the gains from marriage to disappear altogether (Ermisch, p. 356). The effect of AFDC on a woman's alternate utility can be seen as a shift from I_f to I'_f in Figure 1.

Given the utility framework described above and Becker's theory relating to divisions of labor, the exogenous factors that are most likely to have an impact on marital dissolution are those factors "which reduce the incentives to specialize," and therefore "increase the risk of dissolution by reducing the gains from the household division of labour" (Ermisch, p.357). The amount of time spent in labor market production and the number of children a couple has are two such exogenous factors.

Becker's assertion that a married household operates most efficiently when the wife specializes in home production and the husband in market production, implies that any deviation from this would lead to a less stable household (Becker, pp. 37-48). This being the case, an additional hour spent in labor market production by a woman whose husband specializes fully in labor market production will increase the probability of divorce.

Since rearing a family together is one of the incentives for a couple to marry, it is reasonable to expect the number of children a couple has to affect whether or not that couple stays together. Some findings even indicate that divorce rates are higher among couples without children. As Ermisch asserts, one reason for this is that the "efficiency loss associated with divorce provides an incentive to continue the marriage for couples with children, but this added incentive does not exist for childless couples" (Ermisch, p. 361).

An increase in the wife's human capital, either in the form of additional years of schooling, or increases in work experience should increase her single state utility (i.e., I_f shifts upward), by raising her potential earnings power and thereby increasing her ability to support an independent household. Since education is already reflected in the predicted and actual earnings of each respondent in the model, we are controlling for the effect of increases in education on potential

and actual earnings. However, education is also expected to influence the tastes and preferences of a woman regarding marriage. Evidence of this is the finding by Bennet, Bloom and Craig (1989) that black women with more education are more likely to marry than black women with less education, while white women with more education are less likely to marry than white women with less education. This finding supports the notion that one's level of education can affect one's tastes for being married and/or staying married.

Other factors may influence the divorce decision by affecting one's taste and preferences for staying married. These preferences certainly vary from person to person, but may also be affected by ones family background, race, religion, community, and age.

In short, theory from Becker and Ermisch suggests that the probability of a woman seeking divorce is influenced by her opportunity cost to being married, the amount of time she spends in the labor market, individual wages, and total family income. The above discussion of these theories lead to the following research hypotheses: 1.) An increase in a married woman's earnings potential (or predicted earnings) will increase the probability of a woman seeking divorce when holding actual earnings and other family income constant. 2.) An increase in the amount of time a woman spends in labor market production will lead to an increase in the probability of divorce, when holding total income and potential earnings constant. 3.) An increase in other income (income in excess of the wife's earnings) will lead to a decrease in the probability of divorce, holding other things constant.

Other literature suggests that additional factors are important determinants of divorce. These factors and their proposed effects on divorce are summarized in the following hypotheses: 4.) The more dependent children a couple has, the less likely the wife is to seek divorce. 5.) The

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more years of education a woman has the more likely she is to seek divorce. 6.) The higher the unemployment rate (and therefore the fewer eligible men available for remarriage) in the respondent's community, the less likely a woman is to seek divorce.

The respondent's culture, family background, region of residence, age and religion are also hypothesized to affect her preference for marriage and thus her probability of seeking divorce. For this reason proxies for these characteristics are included as controls for preferences in the third empirical model.

III. Data

To test these hypotheses, data are used from the National Longitudinal Survey of Youth[2] (NLSY), which surveys young people (ages 14 to 22 in 1979) annually, from 1979 to 1993. The advantage of using NLSY data is that it allows the researcher to follow the decision making patterns of each respondent over time. I selected a sample of 6,283 women from the 12,686 total respondents included in the sample. Of this group, 1,447 were included in the empirical analysis, while the other cases were discarded due to missing responses.

It is also important to note that the NLSY samples include supplementary samples that provide an over-representation of poor respondents and of black and Hispanic respondents (1994 NLS Handbook). For this reason the findings of the analysis carried out in this study may not be reflective of the national population as a whole. However, these supplementary samples allow one to observe more closely the effects of culture and poverty on marital decisions.

IV. Empirical Model

A logistic regression model[3] is used to predict the probability of 1993 divorce decisions for the female sample of respondents, based on 1992 conditions, when controlling for family background and demographic characteristics. Table 1 below summarizes the variables included in the models, their definitions and expected signs.

The base model for this study, Model I, includes only the variables central to the above hypotheses. These variables and are those relating to earnings (*PREDWAGE* and *ACTLWAGE*), family income *(OTHER_Y* and *TOTAL_Y)* and labor market participation (*LABOR*). Models II and III contain additional variables whose inclusion is dictated by the theory discussed above and drawn from the relevant literature.

To Model II, *DIVPARNT*, *#CHILD*, and *EDUCATE* were added. Finally, Model III contains all of the explanatory variables (excluding *TOTAL_Y*) and all of the control variables listed above, excluding *WORKEXP*, which is used only in the wage regression. Note also that two versions of Model I are presented in the results section. Version A of the model contains ACTLWAGE and OTHER_Y, while in version B of the model these variables are replaced by TOTAL_Y, which has as a component each respondent's annual contribution to family income for 1992.

Table 1: Variable Definitions

(Expected Sign) Independent Variables

(N/A) DIVORCED	1 if married in 1992 but divorced or separated from spouse by 1993; 0 otherwise
(+) PREDWAGE	The hourly wage that the married women are predicted to be making if not married for 1992
(+) ACTLWAGE	The actual wage rate that the married women are working for
(-) TOTAL_Y	Potential annual income if not married divided by the respondents actual 1992 annual income while married
(-) OTHER_Y	Total income less annual income of the respondent from wages and salary 1992
(+) LABOR	Labor participation of the respondent, proxied by the number of hours the respondent works per week as of 1992
(-) #CHILD	The number of children the respondent has that are under the age of six in 1992
(+) EDUCATE	respondent's highest grade completed as of May 1992
(-) UNEMPLOY	The unemployment rate of the respondent's county in 1992
(+) URBAN	1 if respondent's residence is in an urban area; 0 if residence is rural
(?) NEAST	1 if respondent lives in the north eastern region of the U.S.; 0 otherwise
(?) SOUTH	1 if respondent lives in the southern region of the U.S.; 0 otherwise
(?) WEST	1 if respondent lives in the western region of the U.S.; 0 otherwise
(+) POOR78	1 if respondent or respondent's family was living below the poverty line in 1978; 0 otherwise
(+) DIVPARNT	1 if respondent's parents were divorced before the respondent was age 18; 0 otherwise
(+) BLACK	1 if respondent is Black; 0 otherwise
(?) HISPANIC	1 if respondent is Hispanic; 0 otherwise
(+) WORKEXP	The average number of weeks the respondent worked per year for the years worked from 1979 to 1992
(-) AGE	respondents age at 1992 interview date
(-) CHURCH	1 if the respondent attends religious services several times a year or more; 0 if the respondent does not attend at all

The key variables in the model are those relating to wages and income. This is the case, since it is this study's hypothesis that the way in which a married couple chooses to allocate resources is influenced by each partner's income contribution and by the opportunity cost to forming the household. Analyzing the divorce decision from the wife's perspective we proxy the opportunity cost to forming the household with *PREDWAGE*, the predicted wage of the female spouse had she chosen to remain single or to divorce her husband. This variable is estimated by performing Ordinary Least Squares on the following regression equation:

$$PREDWAGE = \alpha_0 + \alpha_1(URBAN) + \alpha_2(POOR78) + \alpha_3(BLACK) + \alpha_4(HISPANIC) + \alpha_5(NEAST)$$
$$+ \alpha_6(SOUTH) + \alpha_7(WEST) + \beta_1(WORKEXP) + \beta_2(EDUCATE) + \beta_3(\#CHILD) + \varepsilon.$$

PREDWAGE is estimated for all 1,043 non-married women in the sample based on 1992 hourly wages. The resulting estimated coefficients are then used to compute *PREDWAGE* for each of the married women in the sample.

Since *PREDWAGE* represents, in part, the opportunity cost of a woman getting married, or staying married, one would expect the probability of divorce to increase with increases in *PREDWAGE*, when actual wages (*ACTLWAGE*) or total family income (*TOTAL_Y*), which contains actual annual wages and spouse's income, are held constant. We hold income constant when analyzing the effect of predicted wages on *DIVORCE*, because increases (decreases) in family income work against the effect of increases (decreases) in *PREDWAGE* by widening (narrowing) the bargaining range and thereby reducing (increasing) the probability of divorce. Other income (*OTHER_Y*) which contains the husbands income and non-earned income for the household, but which excludes the

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respondent's contribution to household income may also be included in the model in place of

TOTAL_Y.

Both *TOTAL_Y* and *OTHER_Y* are expected to have a negative effect on the divorce decision.

Increases in income should shift the couple's joint utility curve out and increase the couple's bargaining

range for allocating benefits, thus making divorce less likely (recall Figure 1).

The woman's participation in labor market production, *LABOR,* is also an important factor in

the divorce decision. Recall from the theoretical discussion that strict divisions of labor within

marriage increase the gains from marriage and the probability that a couple will stay together. If this

theory holds, then increases (decreases) in *LABOR,* particularly for women with husbands working

full-time, should increase (decrease) the probability of divorce. The logic here lies in the assumption

that divisions of labor are one of the primary economic incentives for couples to form a marriage. By

not choosing the most efficient way to divide labor, each spouse specializing in the area in which he or

she has a comparative advantage, the couple has less incentive to stay married.

The theory also suggests that the number of children a couple has will increase the gains to

marriage. Economies of scale, in terms of sharing household goods, and divisions of labor become

more important for large families. Consequently, one expects an inverse relationship to exist between

the number of children a couple has (*#CHILD*) and the probability of the wife seeking divorce.[4]

Recall from the utility possibility framework discussed previously, that the effects of these

variables on the probability of divorce relate to each variable's influence on the gains to marriage.

Those factors for which increases reduce the gains to marriage (e.g. *PREDWAGE, LABOR*) increase

the probability of divorce, while those that increase the gains to marriage (e.g. *TOTAL_Y, #CHILD*)

decrease the probability of divorce.

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The proxy for the respondent's education, *EDUCATE,* is the highest grade completed by the respondent as of May 1992. The respondent's level of education is hypothesized to act on divorce primarily through its effect on her tastes/preferences for marriage. In which direction marital stability is influenced, however, may depend on other characteristics of the respondent. A positive prediction is made, since in general, increases in education should increase a woman's opportunities in the marriage market, thereby making remarriage a more viable option and increasing her alternative utility (I_f from Figure 1). *EDUCATE* is included in Models II and III.

The variable *UNEMPLOY,* which does not come into the analysis until Model III, is the unemployment rate of the respondent's county as of 1992. Since Ermisch argues that part of the alternative to not forming a married household is to form a household with someone else, the market of marriageable men available to the wife represents part of the opportunity cost to divorce. Hence, marital stability from the wife's perspective may be partly influenced by how well the husband is doing relative to other men in the market. *UNEMPLOY* serves as a rough proxy for this opportunity cost.

William Julius Wilson (1987) also documents the importance of community effects on marriage rates. He finds that in communities where there are higher levels of unemployment and hence fewer "marriageable" men, single motherhood is high and marriage rates low. Holding all else constant, particularly the husband's income, increases in *UNEMPLOY,* will decrease the likelihood of divorce.

Controls for family background, *DIVPARNT* and *POOR78,* are added to the analysis in Models II and III, respectively. *DIVPARNT* is a binary variable for if the respondent's parents became separated or divorce before the respondent reached age 18. The inter-generational effect of divorce (i.e., the fact that children of divorce are more likely themselves to be divorced), leads one to expect a positive sign on the coefficient for *DIVPARNT.*

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POOR78 is a binary variable that proxies whether or not the respondents family was poor in 1978. The instability that often exists in poor families may lead to early marriage among children of poor parents and poorer decision regarding marriage may result. Consequently, one would expect the coefficient on POOR78 to have a positive sign.

Controls for region are included in the final model (Model III) also as a control for variance in preferences toward marriage across region of the United States. The dummy variables, *NEAST*, *SOUTH*, and *WEST* (North Central being the omitted region) may also serve as a rough proxy for variance in divorce laws across states. The expected signs for these variables are undetermined.

URBAN, is also a dummy variable whose value is determined by the location of the respondent's residence in an urban or rural area of the United States. This variable is included as a rough proxy for community or neighborhood effects that may influence attitudes toward marriage or divorce. For example, there may be more social stigma attached to divorce in a small-town where members of a community tend to be more well known, than in a large city. Marriage markets are likely to differ with an urban or rural location. For instance, the alternatives to marriage may be restricted for those living in a rural area where populations are lower. Both conditions would result in a positive coefficient on *URBAN* (Model III), with divorce being more likely for those living in urban environments.

Controls for race, *BLACK* and *HISPANIC* are also included in Model III. These variables were created as dummy variables with whites being the omitted group. The variables are included to pick up any cultural difference that may influence preferences toward being married. According to Becker, any differences in marital instability between Blacks and Whites would be due to the fact that the earnings gap between men and women is smaller among blacks than it is for whites (Becker,

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p.336). This leads to higher divorce rates among Blacks. This would lead one to expect a positive sign for the coefficient on *BLACK*, while *HISPANIC* is uncertain.

The variable *CHURCH* is included in Model III also in an attempt to proxy cultural differences among respondents, or to serve as a crude proxy for levels of morality. Although earlier models not reported here used dummy variables for Catholic and Protestant to proxy religious differences, in an attempt to simplify the model, these were replaced by *CHURCH*. It takes the value of one if the respondent attends religious services several times a year or more versus not at all. The church may also serve as a mechanism for increasing marital stability among married couples by providing free counseling services or my imposing its own sanctions on divorce (e.g. the practice of excommunication by the Catholic church against couples who divorce).

Finally, each respondent's age as of the 1992 survey date (*AGE*), is included as a control for changes in individual preferences toward marriage that may occur with age and or increased levels of maturity. Since increases in age also lower a woman's prospects in the marriage market and reduce the amount of time left to reap the benefits of forming a new household (Becker, p.335), the probability of divorce should lessen over time. This relationship should hold more strongly for more mature samples.

Table 2, below, provides summary statistics on the sample of 1,447 women respondents. The mean values are all based on 1992 data, while the sub-samples, Divorced and Married are based on the respondent's marital status as surveyed in 1993. Although, theory suggests that families with lower incomes should be more prone to instability, such a large gap in the income between the families in which couples seek divorce and those families which remain intact indicates a possible problem.

I suspect that there may be a problem in the data such that the model is not a perfectly

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recursive model. Ideally, the dependent variable, *DIVORCED*, would only take on non-zero values for those respondents who got divorced in 1993. But since the exact dates for when divorce occurred were not provided in the survey one can not be certain as to the time of divorce. In actuality, some of the divorces may have occurred during 1992, the year for which annual income is reported. Given the relatively small number of divorcees in the sample (62 women) even if this occurred with only a few cases, the effect may be large enough to bias the regression results somewhat. Consequently, the income data for divorced respondents may be biased downward, causing an upward bias in the significance levels of the income coefficients in the regression results.

Table 2: Summary Statistics on Sample

	DIVORCED	MARRIED	COMBINED
mean values			
TOTAL_Y	$23,658	$51,891	$50,681
OTHER_Y	$2,752	$33,455	$32,139
PREDWAGE	$9.76	$10.57	$10.54
ACTLWAGE	$11.53	$10.84	$10.87
LABOR (hrs/week)	36	35	35
#CHILD	1.4	1.6	1.6
EDUCATE (years)	13.0	13.3	13.3
AGE	30.4	31.0	31.0
% of sample			
BLACK	25.8	17.7	18.0
HISPANIC	17.7	19.0	19.0
DIVPARNT	41.9	31.0	31.4
POOR78	24.2	16.4	16.7
CHURCH	85.5	83.0	83.1
URBAN	79.2	79.0	79.2
sample size	62	1,385	1,447

Table 2 also includes the racial make-up of the sample. Note that about one quarter of the divorced women in the sample are black compared to only about 18 percent of the complete sample. It is also interesting to note that the condition of coming from a divorced household is more prevalent among the divorced sub-sample than among those who remain married.

V. Results[5]

The Ordinary Least Squares regression on *PREDWAGE*, resulted in the parameter estimates that are used to compute predicted wages for the sample of married women. The 1,043 women used in the sample to estimate predicted wages were single women who were employed during 1992. The resulting equation is as follows:

$PREDWAGE$ = -2.17928 + 1.08261*(URBAN)* - 0.87317*(POOR78)* - 0.04926 *(BLACK)* +

0.4075*(HISPANIC)* + 4.06752*(NEAST)* - 0.00545115*(SOUTH)* + 0.92745*(WEST)* +

+ 0.08038*(WORKEXP)* + 0.65639*(EDUCATE)* - 0.43784*(#CHILD)* .

Sample size = 1,043   *Adjusted R-square = 0.14*

According to the model adjusted R-square, however, this model explains about 14 percent of the variation in wages for the unmarried female sample. Thus, *PREDWAGE* is by no means a perfect proxy for the potential earnings of married women.

The results of Model I are presented in Table 3, below. Recall that Model I contains only the variables related to this study's central hypotheses that income (both actual and potential) and the amount of time devoted to labor market production by the wife will have a significant effect on marital

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stability. It is evident from the results reported in Table 3 that version A of the base model is a much

better predictor of divorce, predicting almost 70 percent of the divorce decisions in our sample

correctly, compared with only a 3 percent success rate for version B of the model. However, on

marital decisions, overall, the models were more comparable, both predicting more than 95 percent of

marital decisions. This is also evident from the fact that the -2 log likelihood[6] value is much lower for

Model I-A, then for version B of the base model.

Table 3: Logit Regression Results for Base Model

Independent Variable	Expected Sign	Estimated Coefficient (standard error)	
		MODEL I-A	MODEL I-B
LABOR	+	-0.011 (0.015)	0.025*** (0.011)
PREDWAGE	+	0.092* (0.063)	0.171*** (0.051)
ACTLWAGE	+	-0.002 (0.010)	N/A
OTHER_Y	-	-0.0003*** (0.00003)	N/A
TOTAL_Y	-	N/A	-0.0001*** (0.00002)
Constant	N/A	-0.196 (0.806)	-2.19 (0.610)
% Correct		97.7%	95.7%
-2 Log Likelihood		230.4	392.5
Sample Size		1447	1447

* significant at the 0.10 level
** significant at the 0.05 level
***significant at the 0.01 level

It is interesting to note that in Model I-A the coefficients on the explanatory variables, *LABOR* and *ACTLWAGE* do not display the expected signs, although neither of the variables are statistically significant predictors of divorce in this model. Notice, however, that when *ACTLWAGE* and *OTHER_Y* are replaced by *TOTAL_Y* in Model I-B, *LABOR* becomes significant at the 0.01 level and positive, as predicted. In other words, when holding total family income (TOTAL_Y) and potential wages constant, additional hours worked by the wife contribute to the instability of the marriage by making divorce more likely.

This result is consistent with Becker's theory concerning divisions of labor in the household. Recall Becker's assertion that marriages are more stable when one partner fully specializes in labor market production and the other in household production. However, the adverse effect of an increase in hours worked on marital stability will be offset by the favorable effect of the addition to total family income. If total income is allowed to increase with an increase in the wife's labor participation rate, then marital stability should improve. Recall also from the utilities possibilities framework discussed in Section II, that the frontier shifts outward due to an increase in earnings and may offset the upward shift of I_f. But by not allowing the frontier to shift, the upward shift of I_f narrows the bargaining range and makes divorce more likely.

Both versions of the model were estimated for Models II and III, as well. The discrepancies between the two versions of the model persisted across all three models. Although version A of the models performs better at predicting divorce within the sample, version B produces significant parameter estimates for the key coefficients. Consequently, one can conclude that version B does a better job at explaining the occurrence of divorce. Since this study is primarily concerned with determining the factors that explain the divorce decision, the remaining discussion will focus on

version B of the models. Also note that only the results of version B are presented for Models II and III in Table 4, below.

The results of Model II are presented in the first column of Table 4. Notice that additional explanatory variables have been added to the analysis. The utility maximizing framework discussed earlier provides theoretical support for adding #CHILD, DIVPARNT, and EDUCATE to the base model to form Model II. All three of the newly added variables perform well in Model II. Each of the three coefficients also displays the correct signs. Recall from the utility possibilities frontier discussion, that increases in the number of children in a family reduce the probability of divorce by adding to the gains from marriage. This is confirmed by the negative coefficient on #CHILD. And since a woman with a higher level of education should have more options available to her outside of marriage (and thus a higher alternate utility), the sign on the coefficient for EDUCATE is positive as expected. Finally, because a child of divorced parents, tends to have a higher probability of having a marriage end in divorce, the sign on DIVPARNT is positive as expected.

PREDWAGE losses its significance, however, when the latter three variables (#CHILD, DIVPARNT, and EDUCATE) are added to the model. This is probably due to the fact that much of the effect of the respondents level of education and number of children on marital stability is through PREDWAGE, especially since both variables are also used in the estimation of PREDWAGE for this study.

The final regression analysis (see column 2 of Table 4) measures the effect of LABOR, PREDWAGE, and TOTAL_Y on the probability of divorce, when controlling for region, race, religion, age and community effects. While, this more complete model does improve the fit of the model (the -2 log likelihood falls to 375.5) none of the control variables prove statistically significant.

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Table 4: Logit Regression Results for Expanded Models

Independent Variable	Expected Sign	Estimated Coefficient (standard error)	
		MODEL II	**MODEL III**
LABOR	+	0.020** (0.012)	0.020** (0.012)
PREDWAGE	+	0.079 (0.070)	0.149* (0.097)
TOTAL_Y	-	-0.0001*** (0.00001)	-0.0001*** (0.00001)
#CHILD	-	-0.243** (0.142)	-0.195 (0.156)
DIVPARNT	+	0.479* (0.294)	0.524** (0.304)
EDUCATE	+	0.185** (0.090)	0.135* (0.104)
POOR78	+	N/A	0.368 (0.380)
UNEMPLOY	-	N/A	-0.180 (0.169)
CHURCH	-	N/A	0.396 (0.410)
BLACK	+	N/A	-0.288 (0.394)
HISPANIC	?	N/A	-0.079 (0.450)
AGE	-	N/A	-0.040 (0.068)
URBAN	+	N/A	0.287 (0.374)
NEAST	?	N/A	-0.931 (0.746)
SOUTH	?	N/A	-0.302 (0.359)
WEST	?	N/A	-0.323 (0.499)
Constant	N/A	-3.264 (1.094)	-1.827 (2.524)
% Correct		95.8 %	95.6%
-2 Log Likelihood		383.0	375.5
Sample Size		1,447	1,447

*significant at the 0.10 level   ** 0.05 level   *** 0.01 level

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Model III also predicts that blacks, Hispanics, those from poor families, and those respondents who live in urban areas, as expected, have less stable marriages than their respective counterparts. Unexpectedly, however, church-goers are more likely to divorce, according to the model. Again these findings are not statistically significant. Meanwhile, those women who live in communities with higher rates of unemployment and are older in age have lower probabilities of divorcing their husbands, as was expected.

VI. Conclusions

In summary, the results of this study confirm the principal hypotheses that a woman's earnings potential and the amount of time she spends in labor market production do contribute to marital instability. However, an even more interesting result is that these relationships hold only when total family income is held constant. One possible explanation may be that the effect of additional work by a wife on marital stability is more than offset by the increase in income that results. If this is the case, an increase in labor production by the wife (*LABOR*) will add to the stability of the marriage. This finding would then counter Becker's theory that strict divisions of labor are necessary for maintaining an efficient and stable household. The magnitude of these offsetting effects is an interesting area for future research.

Another interesting finding of the study, although not the primary focus of this paper, is that there do not seem to be any cultural or racial divisions in divorce decisions with all of the controls in place. Regressing the controls for race against divorce without any other independent variables does reveal that there are differences along racial lines in black and white divorce rates in the sample (*BLACK* is significant at the 0.1 level).[7] However, as soon as income and hours worked are factored

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into the equation *BLACK* is no longer significant. This suggests that most of the disparity in family structure is due to the income gap between black and white families.

The possibilities for future research in this area are varied. The present study was based on a neoclassical framework which posits the decisions to specialize in home production and to remain in a marriage as choices based on relative gains. However, Julia Heath (1990) presents an alternative way of looking at the relationship. She argues that "based on the historical and traditional power distribution of the patriarchal family structure," the woman's alternatives are often limited to the point where they can not be considered rational choices (Heath, p. 107).

Other future research, as Elizabeth Peters (1993) explores might isolate income from welfare, alimony, and child support as alternative income variables influencing divorce decisions.

Previous research indicates that keeping families intact is key to fighting poverty, particularly among women and children. However, the findings of the present study indicate that lower-income families are in fact more prone to marital instability. The circularity here suggests that for any policy to be effective it must attack the problem from both sides. This means implementing policy to create greater incentives for married couples to stay together, while fighting poverty at the same time.

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Notes

1. It is interesting to note that marital stability may also be influenced by whether or not the couple allocates resources in an egalitarian manner (e.g. Nash-bargained solution) or in a dictatorial manner in which one partner dominates. The effect of the couple's bargaining solution on their joint utility is a concept discussed more at length in Manser and Brown (1980) and Ermisch (1991). It is not included in the empirical analysis here because the power relationship between spouses is difficult to model. It is an area that I must leave for future research.

2. The NLSY database is available on CD-ROM from The Center for Human Resource Research at The Ohio State University.

3. A logit model is used here since the dependent variable in the model, *DIVORCED*, is binary taking only values of zero and one. The logit model works better in estimating a dichotomous dependent variable than a linear model such as OLS since it restricts predicted values to be between zero and one. The model has the functional form $\ln[P/(1-P)] = \alpha + \beta X + u$, where P is the probability of the event (e.g. divorce) occurring. [For a more detailed discussion of logits see Gujarati, pp. 481-491 or Ramanthan, pp. 279-280].

4. A potential flaw in this argument is that the data do not allow us to determine if the wife or the husband is the spouse seeking divorce. Thus, while a women with dependent children may be less likely to seek divorce, the opposite is likely to be true for her husband. Although we assume that in the case of abandonment by her husband, a women that receives higher utility from being married would quickly seek remarriage, for a woman with young children one's prospects in the marriage market are limited.

5. The significance levels for all of the logit regression results are based on the Wald statistic, which is calculated by dividing each coefficient by its standard error and squaring the quantity.

6. Since a perfect likelihood value would be one, the -2 log likelihood value should be close to zero for a model with a high goodness of fit. Although, the -2 log likelihood values are very far from zero for all of the regression equations in this study, this is expected since there are obviously many factors that affect divorce that can not be modeled. However, since lower -2 log likelihood values are preferred we can use this statistic to evaluate the relative effectiveness of each model with respect to the others.

7. Results not presented in the paper.