EITC and Union Formation: The Impact of Expected Spouse Earnings

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Abstract: The earned income tax credit (EITC) has become the largest cash transfer program in the United States, distributing nearly $60 billion dollars in credits in 2010. Several studies have evaluated the impact of the EITC on various aspects of behavioral responses. Previous work analyzing the effect of the EITC on marriage and divorce do not consider the non-linear incentives to marry depending on the level of earnings of the spouse. Using the Survey of Income and Program Participation from 2001, 2004, and 2008, I investigate how the change in expected EITC benefits associated with marrying affect cohabitation and marriage behavior among low-income women. I first simulate a marriage market to predict potential spouse earnings for a sample of low-income women in order to estimate the potential losses or gains in EITC benefits upon marriage. Using multinomial logistic regressions, I then analyze how not only the value of the EITC, but also the anticipated loss in EITC benefits upon marriage affects the likelihood of marrying or cohabiting. Results suggest that the average EITC-eligible woman can expect to lose approximately $1,000 in EITC benefits in the year following marriage, or about half of her pre-marriage benefit. Further, I find that a $1,000 loss in expected EITC benefits upon marriage is associated with a 1.8-percentage point decline in the likelihood of marrying and a 1.1-percentage point increase in the likelihood of cohabiting.

Keywords: Earned Income Tax Credit, Marriage, Cohabitation, Marriage Penalties

The earned income tax credit (EITC) has become the largest cash transfer program in the United States, distributing nearly $60 billion dollars in benefits in 2010 (Tax Policy Center, 2013). The program has undergone several expansions and revisions since its inception in 1975, not only in absolute benefit level but also in the number of children included in the credit calculation and the income thresholds for married couples. In 2012, the maximum benefit for a household with three children was $5,891. Cohabitation rates have also increased sharply over the last couple of decades and have become less and less associated with marriage, particularly among the low-income population (Bumpass and Lu 2000; Kennedy and Bumpass 2011; Lichter, Qian, and Mellott 2006). The rise in cohabitation has also led to a larger share of births occurring outside of marriage (Martin et al 2011), raising much concern over the well being of children growing up in non-marital households (Brown 2004; Bumpass and Lu 2000; Fomby and Cherlin 2007; Manning and Lichter 1996). The expansion of the EITC over time may have played a role in these trends. Since the EITC is based on family earnings, it may discourage marriage for many dual-earner households, while encouraging traditional, single-breadwinner families.[2] In addition, the trapezoidal structure of the EITC benefit schedule may also create different incentives or disincentives to marry, depending on the level of household earnings. While efforts have been made in recent years to eliminate the marriage penalty from the EITC by increasing the earnings thresholds for married couples, the current policy retains elements that create distortive incentives for marriage.

Much of the early research on the EITC focused on the labor supply effects (e.g. Eissa and Hoynes 2006, Ellwood 2000, Meyer and Rosenbaum 2001), generally finding a steep increase in

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[2] Recent studies have found that marginal tax rates for a second earner approach nearly 70 percent, once accounting for the phase out of the EITC and other means-tested programs such as food stamps (Kearney and Turner 2013).

the labor supply of single mothers with the expansion of the EITC. In more recent years, the literature has expanded to analyze the non-financial impacts of the EITC such as child well-being (Dahl and Lochner 2012), health insurance coverage (Baughman 2012), and consumption patterns (Smeeding, Ross-Phillips, and O'Connor 2002; Tach and Halpern-Meekin 2013). Others have studied the impact of the EITC on marriage and divorce (Dickert-Conlin and Houser 2002; Ellwood 2000; Herbst 2011), generally finding small or no effects. Aside from a small supplementary analysis on cohabiting couples and recently married couples in Ellwood (2000), none of the previous work accounts for spouse earnings and expected EITC changes upon marriage for those not already cohabiting or married. Because of the benefit structure, the EITC may encourage marriage for some individuals, but discourage marriage for others; evaluating these different incentives is difficult without considering the impact of spouse earnings.

There has been a considerable amount of work looking at how welfare benefits affect marriage decisions (see Moffitt 1998 for a review), and how the tax structure, more broadly, incentivizes or discourages marriage (e.g. Alm, Dickert-Conlin, and Whittington 1999; Alm and Whittington 2003). Many of these papers find either no effect or only modest impacts of welfare benefits and tax penalties on marriage. Because the EITC provides much larger transfers than the welfare system, we might expect larger disincentives created by the EITC compared to those generated by welfare. Further, unlike the traditional welfare program in the United States, Temporary Aid to Needy Families (TANF), the EITC does not impose lifetime limits to receiving benefits and may therefore have much larger financial consequences to marriage than TANF. The take-up rate for the EITC is also much higher than that of TANF—around 80% for those eligible in 2008, compared to around 40% for TANF (Tax Policy Center, 2011).

In this analysis, I investigate how the EITC has impacted marriage and cohabitation patterns among low-income families, making the following contributions to the literature. First, this analysis adds to the literature on the impact of the EITC on family outcomes by quantifying the expected gains and losses in EITC benefits upon marriage. This paper is the first in the EITC literature to estimate a potential loss or gain in EITC benefits for individuals not currently cohabiting or married, providing the first descriptive picture of the distribution of expected gains or losses in EITC benefits associated with marriage. There are likely heterogeneous treatment effects of the EITC on marriage and cohabitation decisions depending on the expected change in EITC benefits upon marriage. Individuals who expect to gain benefits from the EITC through marriage should subsequently be more likely to marry, while individuals who expect to lose benefits upon marriage should be less likely to marry. Previous studies looking at the EITC and marriage have not considered the impact of spouse earnings when estimating the effect of the EITC on marriage, instead focusing only on the dollar value of the EITC. This analysis expands on prior work by simulating a marriage market to estimate potential gains or losses in EITC benefits associated with marriage for all single women. Finally, while there has been some research looking at the marriage disincentives associated with the EITC, this paper expands on that work to include an analysis of the impact of the EITC on cohabitation decisions. Cohabitation rates have increased sharply over the last few decades and are becoming an increasingly common family structure, particularly for low-income households (Kennedy and Bumpass 2011). In this analysis, I simulate what marriage and cohabitation rates would have been had there been no marriage penalty associated with the EITC.

To conduct this analysis, I first predict the earnings of potential spouses using data on single men from the 2001, 2004, and 2008 Survey of Income and Program Participation (SIPP) in order

to calculate an expected loss in EITC benefits upon marriage. Matching single men and women in the SIPP, I then use multinomial logistic regressions to analyze the effect of an expected loss or gain in EITC benefits upon marriage, on decisions for single women to cohabit or marry by the end of the SIPP survey period. Results from the simulated marriage market suggest that the average EITC-eligible woman can expect to lose approximately $1,000 in EITC benefits upon marriage, about 45% of her pre-marriage EITC benefits. From the multinomial logistic regression models, I find that every $1,000 in expected loss in EITC benefits is associated with a 1.8 percentage point decrease in the likelihood of marrying and 1.1 percentage point increase in the probability of cohabiting by the end of the SIPP survey. These effects represent a 10-12% change in marriage and cohabitation rates for this sample of women in the SIPP.

The rest of the paper is structured as follows: in Section 2, I discuss the details of the EITC; in Section 3 I review the current literature on the EITC and family structure. Section 4 discusses the relevant data; Section 5 discusses the simulated marriage market and empirical strategy. Section 6 presents results; Section 7 concludes.

2. Background on the EITC

The EITC benefit structure is made up of three segments—a phase-in region, plateau, and phase-out region. For a household with two children in the phase-in region, every dollar of earned income increases the EITC benefit by 40 cents. Once earnings reach a certain threshold, benefits remain constant until earned income reaches a second threshold, at which point benefits are taxed at a 20% phase-out rate. A similar pattern exists for households with one child or no children, but the phase-in and phase-out tax rates are lower. In addition, 24 states provide supplemental EITC benefits that are calculated based on the federal EITC. These state EITCs are

generally calculated as a fixed percentage of the federal EITC, ranging from 3-45% of the federal EITC.

Figure 1 illustrates the federal EITC benefit structure for the 2010 tax year. The solid lines indicate the benefit structure for a single tax payer, while the dotted lines illustrate the structure for a married couple. Beginning in 2002, the plateau region of the benefit structure was extended for married couples in an effort to reduce the marriage penalty associated with the EITC. In 2002, the plateau region was extended for an extra $1,000 for married couples and by 2010, married couples could earn an extra $5,000 before the phase-out took effect. This change in the benefit structure for married couples provides some variation for this analysis since there was no marriage allowance for the first year of observation in the 2001 SIPP, a $1,000 allowance for the first year of the 2004 SIPP, and a $5,000 allowance for the first year of the 2008 SIPP.

The trapezoidal structure of the EITC benefit schedule creates incentives for individuals on the phase-in portion of the schedule to increase their earnings because each dollar of earnings is associated with a larger EITC benefit, while those in the phase-out region may have incentives to reduce their earnings as each additional dollar of earnings is associated with a decline in EITC benefits. For individuals on the plateau, small changes in earnings will not affect EITC benefits. The methods for manipulating earnings may occur either through direct labor market behavior, such as increasing or reducing hours worked, or through marriage decisions.

Working single mothers may have an incentive to remain single if their potential spouses' earnings would reduce EITC benefits or render them ineligible entirely. In contrast, non-working single mothers may have increased incentives to marry working partners in order to receive benefits. To illustrate, a single mother with two children earning $14,000 in 2010 is eligible for the maximum EITC benefit of $5,036. A single, childless man earning $14,000 is

not eligible for the EITC. If she marries this single man, bringing their total family income to $28,000, their household benefit falls to $3,656—a loss of $1,379. Under this scenario, the couple might choose to remain unmarried in order to collect the higher benefit and still share income. It is worth noting here that this same hypothetical couple would be penalized to a much greater extent under the 2001 laws than the 2010 laws. In 2001, the benefit structure for a single head of household was the same for a married couple. This same single mother in 2001 would have earned an EITC of about $4,700 (2010$) if she remained single, but her EITC would fall to $1,060 were she to marry, a loss of approximately $3,600—nearly three times the loss she would experience under the 2010 laws.

Not all couples would lose their EITC benefits were they to marry—many could actually earn a larger EITC within marriage than if they were to remain unmarried. For example, a non-working single mother with two children would receive a $5,036 EITC by marrying a single man earning $14,000. In fact, many women located on the phase-in portion of the benefit structure could receive higher EITC benefits were they to marry their partners than if they remained unmarried. In this way, the EITC creates different incentives for individuals to marry or remain unmarried depending on where they lie on the benefit structure and what their potential spouses earn. Because of this, women of similar earnings levels may be eligible for very different EITC benefits within marriage based on the earnings of their potential spouses.

3. Previous Literature

The traditional economic framework for analyzing marriage behavior began with the Becker model in 1974. Under the Becker (1974) model, individuals choose to marry if their utility within marriage exceeds their utility outside of marriage. If two individuals are able to combine their resources and improve the total wellbeing of the household, then these two

individuals marry. Becker (1981) also suggests that couples who specialize in different markets—one spouse working in the labor market and one specializing in home production—are likely to be better matches. More recent evidence refutes this theory, showing that highly-educated women are more likely to marry (Oppenheimer 1997) and women are increasingly likely to marry partners with similar levels of educational attainment as themselves (Schwartz and Mare 2005). Coinciding with the increase in assortative mating among college-educated individuals in particular is a rise in the prevalence of cohabitation over the last couple of decades, particularly among the less-educated population (Bumpass and Lu 2000; Kennedy and Bumpass 2011; Lichter, Qian, and Mellott 2006; Lundberg and Pollak 2013).

The EITC may have played a role in these trends, particularly among low-income individuals. With the implementation and expansion of the EITC throughout the 1990s and early 2000s, some individuals may gain a large tax credit from marriage, while others are penalized through the same system. If two working individuals can enjoy the same benefits within cohabitation as in marriage, they may choose not to marry if marrying reduces their EITC benefits. This assumes that cohabitation can be viewed as a substitute for marriage—that individuals can enjoy similar benefits within cohabitation as in marriage. This may be true for couples that risk losing social benefits, such as the EITC, if they were to marry, but also depends on differences in how finances are shared within marriage versus cohabitation. The literature on this topic is somewhat mixed, but most studies find some degree of income or expense pooling within cohabiting couples, although generally lower levels of resource pooling than for married couples (DeLeire and Kalil 2005; Kenney 2004; Oropesa, Landale, and Kenkre 2003).[3] While cohabitation has become commonplace in recent years, the vast majority of individuals do wish

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[3] Many of these studies focus on cohabiting couples where both individuals are the biological parents of the children in the household. Due to data limitations, I am unable to distinguish between women cohabiting with the biological father of their children or an unrelated man.

to marry at some point in the future, when the necessary financial prerequisites have been met (Edin and Kefalas 2005; Smock, Manning, and Porter 2005; Gibson-Davis 2009), suggesting that marriage does serve a different purpose than cohabitation. Still, if couples are able to enjoy similar benefits within cohabitation as in marriage, particularly if they are able to maintain their welfare or EITC benefits, then the costs of losing those benefits may indeed influence whether or not couples choose to marry.

EITC and Marriage

Much of the early research on the EITC focused on its impact on labor supply (for a review, see Hotz and Scholz (2003) or Meyer (2010)), with less focus on how the expansion of the EITC has altered union formation decisions. Ellwood (2000) analyzed the effect of the expansion of the EITC and the welfare system on the labor supply of single mothers as well as the impacts on marriage and cohabitation. Using data from the Current Population Survey (CPS), he calculated the potential gain or loss in EITC benefits associated with marriage using a sample of cohabiting couples. He then analyzed the marriage and divorce rates among people who gain, lose, or experience no change in their EITC benefits upon marriage. His findings suggest little evidence of a response in marriage rates to the expansion of the EITC throughout the 1990s, but there is some evidence of an increase in marriage in the late 1990s among individuals who expect to gain EITC benefits from marriage. The EITC is distributed annually through the tax code, and may take multiple years to fully understand by the taxpayer. As taxpayers gain information over time, we might expect behavioral responses to occur several years after a reform has taken place. Now, as 24 states have their own EITCs in addition to a federal EITC reaching over $5,000 in 2012, individuals may have much more to lose (or gain) from marriage,

depending on their household income. Further, Ellwood's analysis focused only on cohabiting couples, when potential spouse earnings are known. While Ellwood also conducts a separate analysis for all single mothers, there is no calculation of potential spouse earnings and expected EITC losses or gains for single mothers who did not cohabit, the vast majority of the sample.

Other recent work has also explored the connection between EITC benefits and family structure (Dickert-Conlin and Houser 2002, Herbst 2011). Herbst (2011) used vital statistics data to analyze how the expansion of the EITC impacted marriage and divorce rates in states with more generous state EITCs over time. He found that increases in the EITC were associated with significant declines in new marriage rates and had virtually no impact on divorce rates. Herbst found that a $1,000 increase in the EITC led to a 4.9% decrease in the new marriage rate in a given state (Herbst, 2011). Despite having detailed information on marriage and divorce rates for all states from 1977-2004, the vital statistics data lack information about personal characteristics such as race, education, and income. Further, Herbst (2011) cannot distinguish between cohabiting couples and individuals not living with partners, which might be an important distinction in determining who is likely to respond to the incentives tied to the credit.

Dickert-Conlin and Houser (2002) used survey data to analyze the impact of the EITC on marriage and divorce rates in the early 1990s using the Survey of Income and Program Participation (SIPP). While these data capture more personal characteristics, many of the reforms made to the EITC have occurred throughout the 1990s and 2000s—increasing the overall value of the benefit, increasing the number of children eligible in calculating the EITC, and increasing the income threshold for married couples. In 2009, the EITC provided additional benefits for up to 3 children and was worth up to $5,666: a -45% tax rate on earnings up to $12,570. In 1993, the last year of the Dickert-Conlin and Houser data, the maximum benefit for

two children was $1,511: a -19.5% tax rate on earnings up to $7,750 (Tax Policy Center, 2011).

Further, Dickert-Conlin and Houser (2002) did not calculate a potential loss or gain in the EITC

upon marriage. Individuals with equal EITC benefits outside of marriage may have very different

EITC benefits within marriage; level differences in the EITC are not enough to assess the

potential costs and benefits associated with marriage.

The studies mentioned thus far have all found minor effects of the EITC on marriage

decisions. Many of them were based on somewhat older data, which often do not contain

information on cohabiting partners. As the credit has become more generous over time, expected

changes in EITC benefits associated with marriage may play an increasingly important role in

cohabitation and marriage decisions. Finally, none of the studies mentioned thus far have

attempted to account for the types of spouses these individuals marry and the potential losses or

gains in EITC benefits upon marriage.

4. Data

Survey of Income and Program Participation

Data come from a sample of single women between the ages of 18 and 50 from the 2001, 2004,

and 2008 Survey of Income and Program Participation, a nationally representative survey of

36,700 households in 2001, 46,500 households in 2004, and 52,000 households in 2008. The data

contain detailed information regarding income from various sources for each individual residing

in the household. The data are also longitudinal, following individuals for 36 months in 2001, 48

months in 2004, and 60 months in 2008. Its large sample size, coupled with detailed information

on earnings and household structure make the SIPP an ideal data source for analyzing marriage

and cohabitation behavior in the context of the EITC.

I focused on the sample of unmarried individuals at the beginning of the survey who were eligible for the EITC during the first year of the SIPP survey and identified as the main respondent in the household. I then observed whether these individuals cohabit or marry by the end of the survey window. I restricted the sample to female respondents between 18 and 50 to capture the sample most likely to experience a marriage or cohabitation transition. This yielded a sample of 6,745 individuals. I further restricted the analysis to individuals with a high school degree or less to best approximate the population of EITC recipients, 3,058 individuals. While eliminating individuals with at least some college experience reduced the sample by more than half, EITC recipients with college experience are likely to be more transient in their participation, as they typically have earnings well above the eligibility threshold for the EITC. [4]

Using information about family earnings in the first calendar year of the SIPP survey, I calculated the federal and state EITC the respondent expected to receive given the number of qualifying children residing in the household in the first month of the survey. A qualifying child is a biological child, adopted child, sibling, or descendent of any of these (such as grandchild or niece/nephew) who resides in the home for at least 6 months, or a foster child who lives in the house for the entire year. Further, all qualifying children must be under 19 years old, 24 years old and a full-time student, or any age and permanently disabled (Internal Revenue Service 2013).

The SIPP provides limited information on demographic characteristics; I control for age, race, number of children living in the household, whether the individual was previously married, whether the individual had any private health insurance during the first year of the SIPP survey, and whether their potential spouse had volatile income. Number of children living in the

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[4] As a falsification check, I also ran the analyses on individuals with some college or more to illustrate how higher-educated women are not likely to make marital or cohabitation decisions based on the EITC due to their transient eligibility.

household, marriage histories, health insurance status, and spouse income volatility are all included as potential indicators of marriage desirability. Women with children living in the household may be less desirable marriage partners because they come with extra responsibility and potential complications with previous partners. Women who have never been married before may have unobservable characteristics that make them less likely to marry at all. Women who lack private health insurance may be more likely to marry in order to gain health insurance coverage from a spouse. Finally, there has been increasing evidence that women look for financially-stable men when making marriage decisions (Edin and Kefalas 2005; Gibson-Davis 2005), so I control for whether the predicted spouse had 'volatile' income, as defined by a decline in income by more than 50% from year 1 to year 2 of the SIPP survey.

5. Empirical Strategy

Predicting Potential Spouse Income

Estimating the potential losses or gains in EITC benefits associated with marriage requires first estimating the earnings of the potential spouse. For the majority of the sample, spouse earnings are unobservable because individuals do not cohabit or marry during the survey window. For individuals who do cohabit or marry, there may be concern that couples adjust their labor force participation in response to the union formation, and thus any calculation of a loss or gain in EITC benefits will reflect these post-union formation labor force responses. To address both of these issues, I simulate a marriage market for all individuals in the sample, regardless of whether a partner is observed at any point in the survey. This reduces concerns of measuring spouse earnings after the marriage or cohabitation decision, and also allows for calculation of the loss or gain in EITC benefits upon marriage for individuals who are never observed living with a partner during the survey window.

I employ a strategy similar to that of Bertrand, Kamenica, and Pan (2013), where separate marriage markets are constructed based on the race, age and education of the individuals in the sample and couples are randomly matched based on these demographic characteristics. Rather than placing individuals in a specific marriage market based on these characteristics, I first observe the characteristics of couples that are already married in the CPS March Supplement and use these matches to construct probabilities that specific matches will occur among single individuals. Pooling data from the 2002-2011 CPS March supplements, there are 90,900 married women. I divided these women into four race categories—white, black, Hispanic, and Asian/all others; four education categories—less than high school degree, high school degree, some college, and college degree or more; and six age categories—19–24, 25–29, 30–34, 35–39, 40–49, and 50+. I then divided their spouses into the same categories and created a 96x96 matrix, resulting in 9,216 different age-race-education spouse match possibilities. I then calculated the percent of married women in each age-race-education cell married to a man in each age-race-education cell. A table summarizing these findings can be found in Appendix Table 1. As one might expect, there is considerable educational and racial homogamy—for example, roughly 90% of women are married to men of the same race. Similarly, women with less than a high school degree are more likely to marry men with less than a high school degree than men with a college degree. Finally, women in each age cell are much more likely to marry men of their age, or one age category older.

After calculating the probabilities of a woman of each type marrying each potential partner type, I then simulate a marriage market with the sample of women from the SIPP and a sample of single men aged 18-62 in the 2001, 2004, and 2008 SIPP panels, a sample of 30,718 men. For each single woman in the SIPP, I randomly drew 30,718 potential spouses with replacement

from the SIPP and created a 'successful' match once finding the first man with the highest probability of matching, according to the probabilities generated from the sample of marriages in the CPS. I then calculated a potential EITC benefit within marriage for each match and quantified the expected loss or gain in EITC benefits upon marriage.

A distribution of the expected change in EITC benefits upon marriage is shown in Figure 2. Figure 2 shows the difference between the household EITC benefit if the women remained single and the household EITC benefit if the women married their potential spouses. Positive numbers indicate that the EITC benefit remaining single is higher than the benefit under marriage. The average change in EITC benefits upon marriage is a $1,000 (2011$) loss in benefits, with some individuals in the sample losing over $6,000 in EITC benefits upon marriage. On the other hand, a few individuals in the sample actually *gain* $6,000 in EITC benefits upon marriage. It is clear from this figure though, that the majority of women would receive a lower EITC benefit upon marriage. In fact, approximately 65 percent of the sample would lose some of their EITC benefits upon marriage.

Validation of Spouse Match

Identifying whether individuals can expect to gain or lose EITC benefits upon marriage relies heavily on the quality of the spouse match. The average woman in the sample is matched to a potential spouse that earns approximately $24,000—$6,000 higher than the $18,000 observed for women who either cohabit or marry by the end of the SIPP survey. To check the quality of the matches made in the simulated marriage market, I compare the earnings distributions of the predicted spouses to the actual spouses or partners for the women in the sample who actually cohabit or marry. Appendix Figure 1 illustrates the distribution of predicted and observed spouse

earnings for individuals who either cohabit or marry by the end of the SIPP survey. 95% confidence intervals are illustrated with black bars.

Appendix figure 1 illustrates that the predicted spouse earnings are not statistically significantly different from the observed spouse earnings for the lower half of the distribution of spouse earnings. For individuals in the 60th percentile or higher, the predicted partner earnings are significantly higher than the actual spouse or partner earnings observed. This pattern is not entirely unexpected. The simulated marriage market only uses age, race, and education to evaluate the quality of matches and cannot take into account other characteristics of the individuals such as prior childbearing history or unobserved characteristics that might make individuals more or less desirable as marriage partners. As the sample of EITC-eligible women is predominantly low-income single mothers, there are likely unobserved characteristics that prevent them from marrying higher-earning spouses, but I am unable to observe these characteristics when matching them to potential spouses. Thus the simulated marriage market is likely to overestimate the quality of men that these single women marry.

Since the differences in the earnings distributions are evident only in the top half of the earnings distribution, this is unlikely to substantially affect the calculation of the expected loss in EITC benefits upon marriage. The earnings of men in the top half of the earnings distribution are likely to render all of these women ineligible for the EITC. Despite this, I take a number of steps to attempt to account for these differences in the earnings distribution of potential spouses compared to the observed spouses. I first top-code the earnings of single men in the marriage market to $75,000, since none of the women in this sample go on to marry men who earn more than $75,000 per year. This reduces the difference in the earnings between the predicted and observed spouses for individuals at the very top of the earnings distribution. Second, as a

robustness check, I conduct separate analyses on the sub-group of women who are matched to

men in the bottom half of the earnings distribution, since there are no significant differences

between the predicted and observed earnings of spouses for this group. It is likely that the

women marrying men in the bottom half of the earnings distribution are the ones most likely to

alter their marriage or cohabitation behavior based on the value of their EITCs because the lower

earnings of these potential spouses are less likely to offset the effect of losing EITC benefits

upon marriage.

Multinomial Logistic Regression

 After assessing the change in EITC benefits upon marriage, I next run a multinomial

logistic regression to estimate the likelihood of transitioning from single to cohabitation or

marriage by the end of the SIPP survey.[5] The conditional probability of marrying or cohabiting

is modeled as:

$$P(K = 1|x) = \frac{e^{\boldsymbol{\beta_{1k}}EITC + \boldsymbol{\beta_{2k}}\Delta EITC + \boldsymbol{\beta_{3k}}SPEARN + \delta_k x + \alpha_t + \varepsilon}}{\sum_{j=1}^{J} e^{\boldsymbol{\beta_{1j}}EITC + \boldsymbol{\beta_{2j}}\Delta EITC + \boldsymbol{\beta_{3j}}SPEARN + \delta_j x + \alpha_t + \varepsilon}}$$

Where k represents the outcomes of interest, cohabiting or married, $\boldsymbol{\beta_{ik}}$ are the outcome-specific

coefficients on the EITC variables of interest—the dollar value of the EITC before marriage, the

amount of expected change in EITC benefits, and a quadratic form of predicted spouse earnings.

X is a vector of personal characteristics including education, race, age, and number of children.

$\boldsymbol{\alpha_t}$ is a set of year-specific controls, which allows differences across SIPP surveys, $\boldsymbol{\varepsilon}$ is an

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[5] A few individuals experience a transition to both cohabitation and marriage over the time period, so I code these
individuals as married by the end of the survey. Approximately 4% of the sample experiences both a cohabitation
and a marriage within the 36-48 month surveys.

individual error term. I assume there are **j** states over which the individual can choose—single, cohabiting, or married.

As there are now 24 states that supplement the federal EITC, I also control for differences across states with their own EITCs. In one model, I include an indicator for whether the state of residence has its own EITC, and in another, I include state fixed effects. State EITC benefits are also included in the calculation of the total benefit amount and the expected change in benefits upon marriage.

Variation in the value of the expected loss in EITC benefits come from two primary sources. The first is through the spouse match, where respondents are randomly matched to single men based on the race, age, and education of both the respondent and the spouse. Because I also control for demographic characteristics in the analyses, the effect of the expected loss in EITC benefits is not due to differences in marriage or cohabitation patterns by race or education, but due to the random variation in earnings generated by the spouse match.

Second, as mentioned in the background section, there have been federal and state policy changes to the EITC benefit structure over the observed time period. Starting in 2002, the EITC benefit structure was expanded to allow married couples to earn more than single individuals and maintain the same EITC benefit. Because I calculate the expected EITC loss based on the first year of earnings observed in each of the three SIPP panels, some of the variation in these losses will be generated from the different policies. In 2001, there was no extra allowance for married couples, in 2004 there was a $1,000 allowance for married couples before benefits were phased out, and in 2009 married couples could earn $5,000 more than single filers before their benefits were phased out. Because these changes were implemented at the federal level, it is difficult to distinguish any effect of these policy changes from other general time trends that may have

occurred between 2001 and 2009. In general, marriage rates have declined in recent years, which would counteract any positive effect of these policy changes on marriage rates, but individuals were also followed for a longer duration in the 2008 SIPP than the 2001 SIPP, providing a longer window of opportunity for a marriage to occur.[6] In addition to the federal policy changes, several states have implemented their own supplemental EITCs over this time period, providing an additional source of variation in expected EITC losses. Because state EITCs are based on the federal EITC, if individuals expect to experience a reduction in their federal EITC upon marriage, they will also experience a reduction in their state EITC benefit.

Summary Statistics

Summary statistics are shown in Table 1, illustrating differences in characteristics between those who expect to lose benefits, gain benefits, or experience no change in benefits upon marriage. Among those who would lose EITC benefits upon marriage, the average loss in benefits was $2,130, or about 80% of the EITC benefits they would receive if they remained single. Those who would gain EITC benefits upon marriage tended to have lower earnings than those who would lose benefits ($3,500 in earnings compared to $14,000), which would likely place them on the phase-in portion of the EITC benefit schedule. These women would experience an approximate 70% increase in their EITC benefits were they to marry, increasing their EITC benefits from $1,903 to $3,309. Consistent with predictions that losses in EITC benefits upon marriage should deter marriage, marriage rates are lower among those who expect to lose EITC benefits upon marriage compared to those who would gain benefits (12% compared to 17%), and cohabitation rates are approximately equal across groups (11% of the sample).

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[6] Individuals were followed for 36 months for the 2001 SIPP, 48 months for the 2004 SIPP, and 60 months for the 2008 SIPP. Nearly 80% of all marriages observed in this sample from the 2004 and 2008 SIPP occurred within 36 months of the start of the panel.

Demographic differences are also apparent between individuals expecting to lose benefits and those expecting to gain benefits upon marriage. In general, these differences should operate *against* any effect of the expected loss in EITC benefits upon marriage as these individuals are more likely to be white, have a high school diploma, and have slightly fewer children—all characteristics that have been shown to be positively associated with marriage.

Table 2 shows patterns of EITC eligibility across the three SIPP panels used in this analysis. Policy changes to reduce the marriage penalty in the EITC between 2001 and 2008 were associated with a reduction in the likelihood that a single woman would experience a loss in EITC benefits upon marriage (71% in the 2001 SIPP compared to 53% in the 2008 SIPP), and a smaller loss for individuals who did experience a reduction in benefits ($1,800 in 2001 compared to $1,200 in 2008 SIPP (2011$)), despite similar levels of pre-marriage EITC benefits ($2,500 in both surveys (2011$)). Coinciding with this reduction in the marriage penalty associated with the EITC, marriage rates were also higher in the 2008 SIPP than in the 2001 SIPP, with 17% of the sample marrying in 2008 compared to 12% marrying in 2001.

6. Results

Table 3 presents results from the multinomial logistic regressions predicting decisions to remain single, cohabit, or marry as a function of EITC benefits. The multinomial logistic regression jointly models the probability of cohabiting and marrying, in comparison to remaining single throughout the survey. All models use the sample of women who remain single throughout the survey as the reference group; standard errors are clustered at the state level. All values reported are average marginal effects. For indicator variables, the coefficient represents the discrete change in the outcome when the indicator variable increases from 0 to 1. The first model uses

only a linear form of the expected change in EITC benefits upon marriage (measured in thousands of dollars), based on the predicted spouse's earnings. With no other controls, a $1,000 increase in expected EITC loss is associated with virtually no change in the likelihood of cohabiting, and a 0.7 of a percentage point decline in the likelihood of marrying over the course of the SIPP survey.

Model 2 includes controls for demographic characteristics and whether the individual lives in a state with its own EITC. Once adding these controls, the effect of a $1,000 loss in EITC benefits is associated with a slight, 0.3 of a percentage point increase in the likelihood of cohabiting, and a 0.9 of a percentage point decline in the likelihood of marrying. Controlling only for the change in EITC benefits upon marriage masks the large increase in household earnings associated with the expected loss in EITC benefits. In Model 3, I add a quadratic control for expected spouse earnings and an indicator for whether the spouse has volatile income— defined as a drop in income by more than 50% over two years. After controlling for spouse earnings and the total amount of EITC benefits received while single, a $1,000 loss in EITC benefits is associated with a 0.9 of a percentage point increase in the probability of cohabiting, and a 1.6 percentage point decline in the probability of marrying. Since about 11% of the sample experiences a cohabitation and 13% experience a marriage over the course of the survey, these results represent a 8-12% change in marriage and cohabitation rates associated with a $1,000 loss in EITC benefits.

Spouse earnings have a slight positive association with marriage—a $1,000 increase in spouse earnings increases one's likelihood of marrying by 0.1 of a percentage point. Not surprisingly, this suggests that women not only respond to expected changes in their EITC benefits upon marriage, but also to the overall increase in household income. Women seem to

have different criteria about the men they choose to cohabit with than the men they choose to marry: spouse earnings significantly increase the likelihood that a woman marries, but *decrease* the likelihood that she cohabits. This supports findings in the qualitative literature that low-income women look for men with stable jobs and financial stability when choosing marriage partners (Edin and Kefalas 2005) and that high earnings are not a necessary condition to cohabit with a partner (Edin 2000; Smock, Manning, and Porter 2005). In order to preserve traditional gender identities, men and women may also be more reluctant to marry in situations where the woman out-earns her husband (Bertrand et al. 2013).[7] I find no effect of volatile income on the likelihood of cohabiting or marrying, although the coefficients point in the expected direction—individuals matched to spouses with volatile income are slightly less likely to marry than those matched to spouses with more stable income. Finally, in Model 4, rather than including an indicator variable for whether the individual lives in a state with an EITC, I include a set of state fixed effects. The results are qualitatively very similar, with expected changes in EITC benefits yielding a 1.1 percentage point increase in the likelihood of cohabiting, and a 1.8 percentage point decline in the likelihood of marrying by the end of the SIPP survey.

Demographic controls perform as expected—black women are significantly less likely to marry and cohabit than white women, and Hispanic women are more likely to marry and less likely to cohabit than white women. Women without a high school degree are significantly more likely to cohabit and significantly less likely to marry compared to women with a high school degree. Surprisingly, the number of children in the household does not seem to have an effect on either cohabitation or marriage. I expected that children might deter women from marrying, or make them less attractive marriage partners than childless women. However, as most EITC-

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[7] In results not shown, I also found that modeling spouse earnings using an indicator for whether the respondent out-earned her potential spouse had a negative association with the likelihood of marrying.

recipients have children (85%), perhaps the actual number of children living in the household does not significantly alter one's likelihood of marrying or cohabiting.[8] As expected, women who have never been married before are 5 percentage points less likely to marry and 6 percentage points more likely to cohabit, compared to women who have been married before. Finally, I find evidence consistent with Herbst (2011) that states with EITCs have lower marriage rates. Women living in states with their own EITCs are 4 percentage points less likely to marry and 2 percentage points more likely to cohabit. Finally, individuals are more likely to marry in the 2008 SIPP panel than in the 2001 SIPP, which may either reflect the decline in the marriage penalty associated with the EITC, or the longer duration over which individuals are observed in the 2008 SIPP compared to the 2001 SIPP. In results not shown, I found no significant differences in marriage rates across surveys when limiting the survey window to 36 months, suggesting that the positive effect on marriage found here is due to the longer panel for the 2008 SIPP compared to the 2001 SIPP.

To put these result in the context of marriage and cohabitation rates, I next turn to a simulation exercise using results generated from Model 4 of the multinomial logistic regression in Table 3. Under the baseline model (expected EITC loss is about $1,060), about 11% of the sample cohabits during the survey, and about 14% marry. If no one experienced a loss in EITC benefits upon marriage, results from the multinomial logistic regression predict that the cohabitation rate would drop to 10% and the marriage rate would increase to 16%. This exercise suggests that the introduction of the marriage penalty in the EITC increased the cohabitation rate by about 1 percentage point on a base of 11 percent (a 9% increase), and decreased the marriage rate by 2 percentage points on a base of 14 percent (a 14% decrease).

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[8] Alternate measures of children in the household were also not significant such as whether the respondent had any children at all, or whether the respondent had two or more children.

Falsification and Robustness Checks

I next conduct an analogous analysis for women with some college experience or a college degree. Table 4 shows these results. The first two columns of Table 4 replicate the results from Model 3 in Table 3 for women with a high school degree or less who are eligible for the EITC. The next two columns show the same model for a sample of women with at least some college experience. All of these women were eligible for the EITC at the beginning of the SIPP survey, but the highly-educated women are likely to have higher earnings in subsequent years. Indeed, I find virtually no effect of the EITC and income on marriage and cohabitation decisions for women who have at least some college experience. While the earnings of potential spouses is positively associated with marriage for the low-educated sample, I find no statistically significant relationship between spouses' earnings and the likelihood of marriage for the highly-educated sample. This is consistent with some work suggesting that low-educated couples may be particularly averse to situations where the wife out-earns her husband (Bertrand et al. 2013). Further, the highly-educated sample is also less affected by whether the state has an EITC benefit of its own. While states with EITC benefits experienced a 4 percentage point decline in the marriage rate among women with a high school degree or less, there is no clear association between state EITCs and marriage and cohabitation patterns among the highly-educated sample.

As discussed throughout, the results of these analyses rely heavily on the assumptions made regarding potential spouse matches. Appendix figure 1 illustrated that the predicted earnings of spouses generated by the marriage market were generally higher than the actual earnings of spouses or partners observed by the sub-sample of women who marry or cohabit within the SIPP panel. This pattern is more pronounced among the top half of the spouse

earnings distribution, and also relies on the information from the relatively few respondents in this sample who experience a marriage or cohabitation during the SIPP panel. As a robustness check, I conducted the same analyses presented in Table 3 for the subsample of women whose potential spouses' earnings fall within the bottom half of the earnings distribution, where there are no significant differences between the actual and predicted spouse earnings. Results from this exercise are presented in Table 5. In each of the models, the magnitude of the effect of the expected loss in EITC benefits is similar or larger for the sub-sample of individuals in the bottom half of the spouses' earnings distribution than for the sample as a whole. This suggests that the results presented in Table 3 are not driven solely by individuals matched to high-earning spouses. Since the maximum household earnings threshold for EITC eligibility is around $45,000, relatively small changes in household income could have substantial consequences for EITC eligibility—spouses earning more than $25,000 are likely to render most EITC-eligible women in this sample ineligible for the EITC entirely. Relatively small differences between the actual and predicted earnings of spouses are unlikely to have an impact on the magnitude of the expected EITC loss upon marriage, particularly for spouses in the top half of the earnings distribution.

7. Conclusion

The EITC has been a widely popular program due to its success in lifting millions of households out of poverty. It has been shown to dramatically increase the labor supply of single mothers (Ellwood 2000, Meyer and Rosenbaum 2000) and evidence suggests positive outcomes for child wellbeing (Dahl and Lochner 2012) and maternal health (Evans and Garthwaite 2010). Previous evidence on the effect of the EITC on marriage and divorce suggests small, negative

impacts on marriage and virtually no impact on divorce (Dickert-Conlin and Houser 2000, Ellwood 2000, Herbst 2011). Previous studies, with the exception of a small analysis in Ellwood (2000) on cohabiting couples, have not attempted to account for potential spouse earnings in calculating the incentives or disincentives to marry. Further, none of these studies have considered the effects of the EITC on cohabitation rates.

Using a sample of single men from the SIPP, I predicted spouse earnings for a sample of single women in the SIPP who were eligible for the EITC. Results indicate that most women eligible for the EITC can expect to lose some of their EITC benefits were they to marry. I find an expected loss of about $2,100 for women who expect to lose benefits upon marriage, an 80% decline in their pre-marriage EITC benefits. I find that a $1,000 expected loss in EITC benefits upon marriage increases the likelihood of cohabiting by 1.1 percentage points and decreases the likelihood of marrying by 1.8 percentage points. Simulating changes in cohabitation and marriage rates using results from multinomial logistic regressions suggest that were there no marriage penalty in the EITC, the cohabitation rate among this sample would decline from 11 percent to 10 percent and the marriage rate would increase from 14 percent to 16 percent.

The results of this analysis rely heavily on the calculation of the expected EITC losses associated with marriage. As many of the women in this sample do not marry over the course of the SIPP survey, spouse earnings are unobservable for the majority of the sample. To address this problem, I rely on data from the CPS sample of married women to predict the types of men women marry. There are inherently some assumptions made when predicting these potential spouses, namely that the sample of married women have similar marriage prospects as the single women. This is unlikely to be true, particularly as many of the single women eligible for the EITC have children, which may alter their marriage prospects significantly (Graefe and Lichter

2007). Without having information on whether the married women in the CPS had children prior to the marriage, it is difficult to assess the impact of children on marriage matches. In addition, the CPS lacks information on the duration of the marriage, so a cross-section of existing marriages emphasizes more stable marriages. Despite these assumptions, the predicted spouse earnings distribution looks quite similar to the actual spouse earnings distribution for individuals for whom spouse earnings are observed in the SIPP, particularly for individuals in the bottom half of the earnings distribution. Results were consistent when excluding individuals predicted to marry spouses in the top half of the earnings distribution, where the predicted spouse earnings differed the most from the observed spouse earnings.

Beyond the impact of expected losses in EITC benefits, there are other findings that also indicate a relationship between marriage and EITC benefits. Women living in states that supplemented the federal EITC were nearly 4 percentage points less likely to marry than women living in states without EITCs, suggesting that larger EITC benefits (and thus larger potential losses in EITC benefits) may be discouraging women from marrying. Expected spouse earnings play a role in marriage and cohabitation decisions as well. A $1,000 increase in spouse earnings is associated with a 0.1 of a percentage point increase in the probability of marriage and a 0.2 of a percentage point decline in the probability of cohabiting by the end of the SIPP. This result fits in with literature analyzing the marriage patterns of low-income women, which suggests that women look for financial stability when looking for marriage partners (Blau, Kahn, and Waldfogel 2000; Edin and Kefalas 2005) but that the criteria for cohabitation is different from that of marriage (Smock, Manning, and Porter 2005).

When conducting the same analysis on a sample of EITC-eligible women with some college or more educational attainment, I find no effect of EITC benefits on marriage and

cohabitation decisions. This suggests that individuals who are likely more transient recipients of the EITC are less responsive to the marriage disincentives in the benefit structure, perhaps because they do not expect to receive the EITC for consecutive years.[9] I also found no relationship between potential spouse earnings and the likelihood of marriage for the highly-educated sample, which supports other findings that low-educated individuals may be more sensitive to intra-household divisions of earnings (Bertrand et al. 2013).

These results suggest that low-income single women with a high school degree or less are more likely to cohabit and less likely to marry their partners if they expect to lose EITC benefits upon marriage. If individuals could receive the same EITC benefit while married as they did when they were single, results from this analysis suggest that the cohabitation rate in this sample would drop by about 9%, and the marriage rate would increase by 14%. This suggests that EITC recipients do respond to financial incentives to marry or cohabit with their partners and the benefit structure of the EITC may be influencing these decisions. Further, as approximately 65 percent of this sample of unmarried women would lose EITC benefits upon marriage, eliminating the marriage disincentives in the EITC benefit structure would likely affect the marriage and cohabitation decisions of millions of low-income families.

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[9] While nearly 60% of the sample of individuals with a high school degree or less were eligible for the EITC in all three years of the SIPP survey, only 42% of EITC-eligible college graduates were eligible for all three years of the survey.

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Historical EITC parameters. Viewed on 4/30/11

Table 1. Descriptive statistics by expected loss or gain of EITC benefits upon marriage, 18-50 year old EITC-eligible women with a high school degree or less

	Smaller EITC upon marriage	No Change in EITC upon marriage	Larger EITC upon marriage	All
Married by the end of the survey	0.12	0.14	0.17	0.14
Cohabiting by the end of the survey	0.11	0.12	0.11	0.11
Race/Ethnicity				
White	0.45	0.38	0.42	0.43
Black	0.29	0.32	0.31	0.30
Hispanic	0.23	0.26	0.23	0.23
Asian/Native American	0.03	0.03	0.04	0.04
Education				
Less than a HS diploma	0.29	0.36	0.35	0.31
High school graduate	0.71	0.64	0.65	0.69
Household Characteristics				
Proportion with no private health insurance	0.45	0.57	0.67	0.51
Proportion never married	0.51	0.59	0.58	0.54
Has children	0.82	0.88	0.88	0.84
Number of children in household	1.52	1.59	1.73	1.58
Age	35.1	33.2	33.5	34.5
EITC (2011$)				
Proportion living in a state with EITC	0.32	0.33	0.32	0.32
EITC under marriage	580	2,669	3,309	1,462
EITC single	2,710	2,669	1,903	2,532
Expected difference between EITC while single and EITC married (EITC(single)-EITC(married))	2,130	-	-1,406	1,070
Actual difference in EITC benefits upon marriage (for those who marry or cohabit)	2,020		-597	190
Earnings (2011$)				
Individual earnings	13,884	12,516	3,516	12,398
Predicted spouse earnings	34,123	471	9,627	24,075
Actual spouse earnings (for those who marry or cohabit)	19,570	15,889	15,336	18,063
Spouse's income is volatile	0.26	0.02	0.19	0.21
Number of Observations	1,949	425	684	3,058

Source: 2001, 2004, and 2008 Survey of Income and Program Participation. Women with a high school degree or less eligible for the EITC in the first year of the survey, aged 18-50. All dollars are 2011$

Note: Volatile is defined as earnings drop by more than 50% of average earnings from year 1 to year 2

Table 2. Trends in EITC eligibility by SIPP survey, 18-50 year old women with less than college and positive EITC benefit in year 1 of survey

	2001 SIPP	2004 SIPP	2008 SIPP
EITC trends in year 1 of SIPP panel			
EITC benefit (unmarried 2011$)	2,513	2,579	2,512
EITC benefit (married 2011$)	1,154	1,375	1,956
Expect to lose EITC benefits upon marriage	0.72	0.66	0.53
Expected EITC loss (year 1 2011$)	1,360	1,204	551
Earnings in year 1 of SIPP panel			
Respondent earnings (2011$)	11,270	11,917	11,962
Respondent + potential spouse earnings (2011$)	33,649	34,022	32,585
Trends over the course of the SIPP panel			
Ever lose EITC benefits over course of panel	0.82	0.79	0.67
Number of years where loss is expected (out of 3)	1.75	1.64	1.28
Total expected loss in EITC benefits over 3 years (2011$)	3,282	3,006	1,626
Average annual expected loss in EITC benefits (2011$)	1,132	1,087	526
Union formation patterns			
Cohabited by end of survey	0.10	0.14	0.11
Married by end of survey	0.12	0.12	0.17
Number of Observations	988	1142	929

Table 3. Results from Multinomial Logistic Regressions: Unmarried 18-50 year old EITC-eligible women with a high school degree or less

	Model 1		Model 2		Model 3		Model 4	
	Cohabit	Marry	Cohabit	Marry	Cohabit	Marry	Cohabit	Marry
	vs. Remain Single		vs. Remain Single		vs. Remain Single		vs. Remain Single	
EITC								
Expected EITC loss upon marriage	0.002	-0.007 *	0.003 †	-0.009 ***	0.009 **	-0.016 ***	0.011 *	-0.018 ***
	(.001)	(.003)	(.002)	(.002)	(.003)	(.003)	(.005)	(.005)
EITC value (in thousands)			-0.003	0.007 **	-0.008 *	0.013 ***	-0.009 †	0.016 **
			(.003)	(.002)	(.004)	(.003)	(.005)	(.006)
Live in a state with an EITC			0.023 *	-0.039 *	0.023 **	-0.040 *		
			(.0091)	(.0156)	(.009)	(.016)		
Potential spouse earnings (in thousands)					-0.002 **	0.001 *	-0.002 *	0.001
					(.001)	(.001)	(.001)	(.001)
Spouse Earnings 'volatile'					0.011	-0.009	0.013	-0.012
					(.009)	(.0093)	(.0135)	(.0151)
Demographics								
Age			0.009 ***	0.004	0.009 **	0.004	0.009	0.005
			(.0032)	(.007)	(.003)	(.007)	(.006)	(.007)
Education (Ref= HS grad)								
Less than high school degree			0.025 **	-0.032 ***	0.025 *	-0.032 ***	0.029 *	-0.038 **
			(.0104)	(.007)	(.01)	(.007)	(.013)	(.015)
Race (ref = White)								
Black			-0.104 ***	-0.065 ***	-0.104 ***	-0.065 ***	-0.136 ***	-0.065 ***
			(.0099)	(.0102)	(.01)	(.01)	(.017)	(.017)
Hispanic			-0.018 **	0.023 ***	-0.018 *	0.024 ***	-0.027 †	0.032 *
			(.0077)	(.0059)	(.008)	(.006)	(.015)	(.016)
Household characteristics								
Number of children in household			-0.004	-0.001	-0.002	-0.005	-0.001	-0.007
			(.0058)	(.0041)	(.006)	(.004)	(.008)	(.008)
Respondent has never been married			0.060 ***	-0.056 ***	0.059 ***	-0.057 ***	0.065 **	-0.058
			(.0064)	(.013)	(.006)	(.013)	(.013)	(.014)
Respondent has no private health insurance			-0.031 **	-0.013	-0.029 *	-0.017	-0.034 ***	-0.011 ***
			(.0132)	(.0175)	(.013)	(.017)	(.012)	(.013)
SIPP Panel (ref=2001)								
2004			0.026 **	-0.010	0.027 *	-0.011	0.031 *	-0.016
			(.013)	(.008)	(.013)	(.008)	(.014)	(.015)
2008			0.014	0.041 **	0.018	0.036 *	0.020	0.030 †
			(.011)	(.014)	(.011)	(.015)	(.015)	(.015)
State Fixed Effects							X	X
Observations in each cell	349	421	349	421	349	421	349	421
Total number of observations		3,058		3,058		3,058		3,058

Source: 2001, 2004, and 2008 Survey of Income and Program Participation. Women with a high school degree or less eligible for the EITC in the first year of the survey, aged 18-50. All dollars are 2011$

Note: Analytical marginal effects shown, indicator variables evaluated as a change from 0 to 1. Standard errors clustered at state level. *** indicates significant difference at p<.001, ** p<.01, * p<.05,† p<.10

Table 4. Results from multinomial logistic regressions: Unmarried 18-50 year old EITC-eligible women. By level of educational attainment

	High school degree or less		Some college or more	
	Cohabit	Marry	Cohabit	Marry
	vs. Remain Single		vs. Remain Single	
Expected EITC loss upon marriage	0.009 **	-0.016 ***	-0.002	0.003
	(.003)	(.003)	(.002)	(.003)
EITC value (in thousands)	-0.008 *	0.013 ***	0.004	-0.005
	(.004)	(.003)	(.002)	(.004)
Potential spouse earnings (in thousands)	-0.002 **	0.001 *	0.000	-0.001
	(.001)	(.001)	(.)	(.001)
Spouse earnings 'volatile'	0.011	-0.009	0.005	-0.015
	(.009)	(.009)	(.008)	(.009)
Live in a state with an EITC	0.023 **	-0.040 *	-0.006	-0.009
	(.009)	(.016)	(.006)	(.007)
Demographics				
Age	0.009 **	0.004	0.004	0.012 ***
	(.003)	(.007)	(.003)	(.003)
Education (Ref= HS grad)				
Less than high school degree	0.025 *	-0.032 ***	n/a	n/a
	(.01)	(.007)		
Race (ref = White)				
Black	-0.104 ***	-0.065 ***	-0.056 ***	-0.083 ***
	(.01)	(.01)	(.005)	(.009)
Hispanic	-0.018 *	0.024 ***	0.007	-0.019 *
	(.008)	(.006)	(.015)	(.007)
Household characteristics				
Number of children in household	-0.002	-0.005	0.003	0.021 ***
	(.006)	(.004)	(.004)	(.004)
Respondent has never been married	0.059 ***	-0.057 ***	0.047 ***	-0.048 ***
	(.006)	(.013)	(.008)	(.013)
Respondent has no private health insurance	-0.029 *	-0.017	0.005	-0.040 ***
	(.013)	(.017)	(.006)	(.007)
SIPP Year Fixed Effects	X	X	X	X
Observations in each cell	349	421	856	1303
Number of observations	3058		9628	

Source: 2001, 2004, and 2008 Survey of Income and Program Participation. Women eligible for the EITC in the first year of the survey, aged 18-50.

Note: Analytical marginal effects shown, indicator variables evaluated as a change from 0 to 1. Standard errors clustered at state level. All values in 2011$.*** indicates significant difference at p<.001, ** p<.01, * p<.05,† p<.10

Table 5. Results from Multinomial Logistic Regressions: Unmarried 18-50 year old EITC-eligible women with a high school degree or less; individuals matched to spouses in bottom half of income distribution

	Model 1		Model 2		Model 3	
	Cohabit	Marry	Cohabit	Marry	Cohabit	Marry
	vs. Remain Single		vs. Remain Single		vs. Remain Single	
EITC						
Expected EITC loss upon marriage (bottom half of earnings sample)	0.004	-0.013 †	0.007 †	-0.015 *	0.008 *	-0.015 *
	(.003)	(.007)	(.004)	(.007)	(.004)	(.007)
Demographic controls			X	X	X	X
Spouse earnings					X	X
SIPP Year Fixed Effects			X	X	X	X
Observations in each cell	199	225	199	225	199	225
Total number of observations		1,680		1,680		1,680

Source: 2001, 2004, and 2008 Survey of Income and Program Participation. Women with a high school degree or less eligible for the EITC
Note: Analytical marginal effects shown, indicator variables evaluated as a change from 0 to 1. Standard errors clustered at state level. All values in 2011$.*** indicates significant difference at p<.001, ** p<.01, * p<.05,† p<.10

Figure 1. 2010 EITC benefit structure by number of children

3 Children

2 Children

1 Child

No Children

EITC benefit (2010$)

6000

5000

4000

3000

2000

1000

0

0   3   6   9   12   15   18   21   24   27   30   33   36   39   42   45   48

Pre-tax earnings in thousands of 2010$
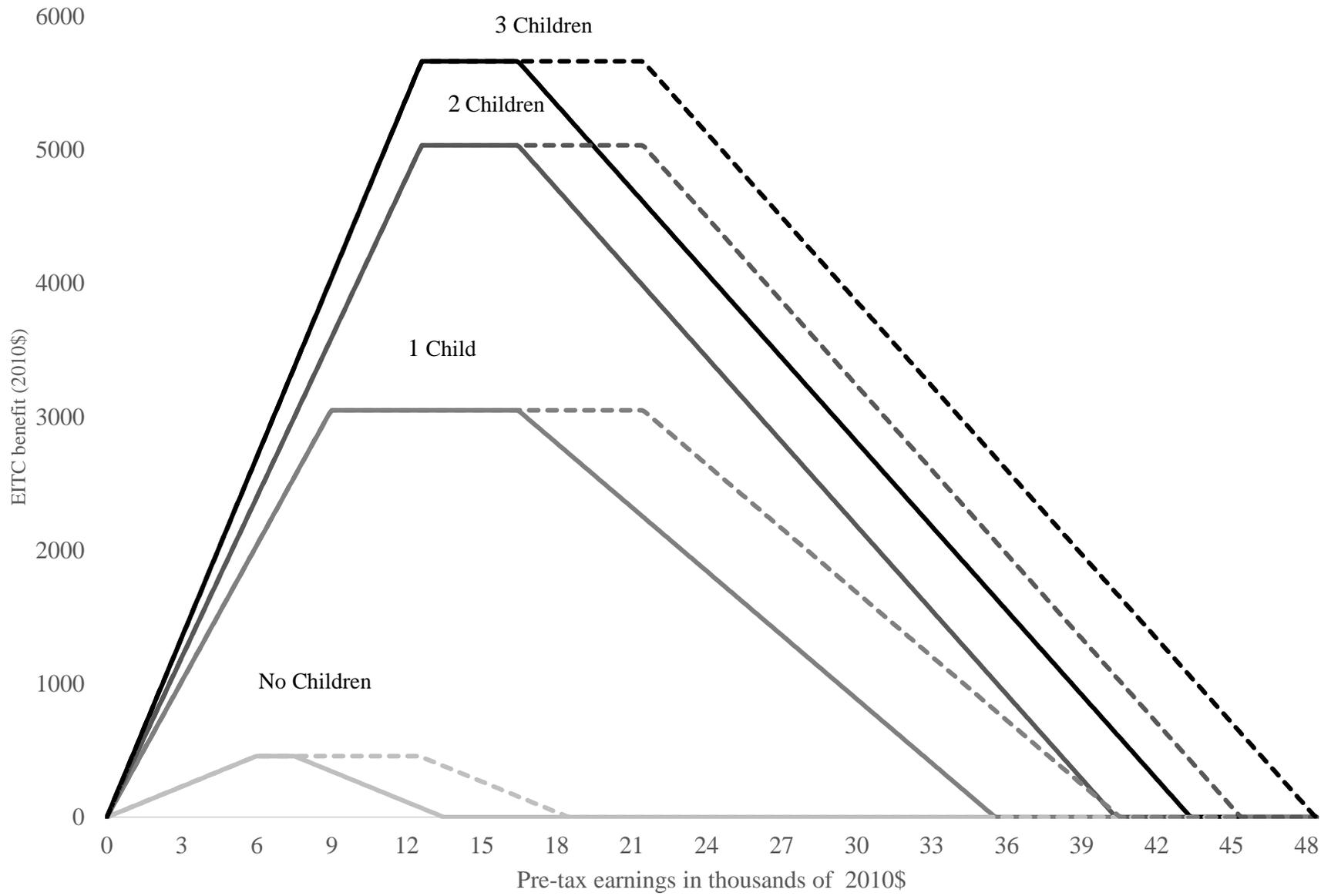
Figure 2, Distribution of expected EITC loss(in thousands of dollars) among EITC-eligible women
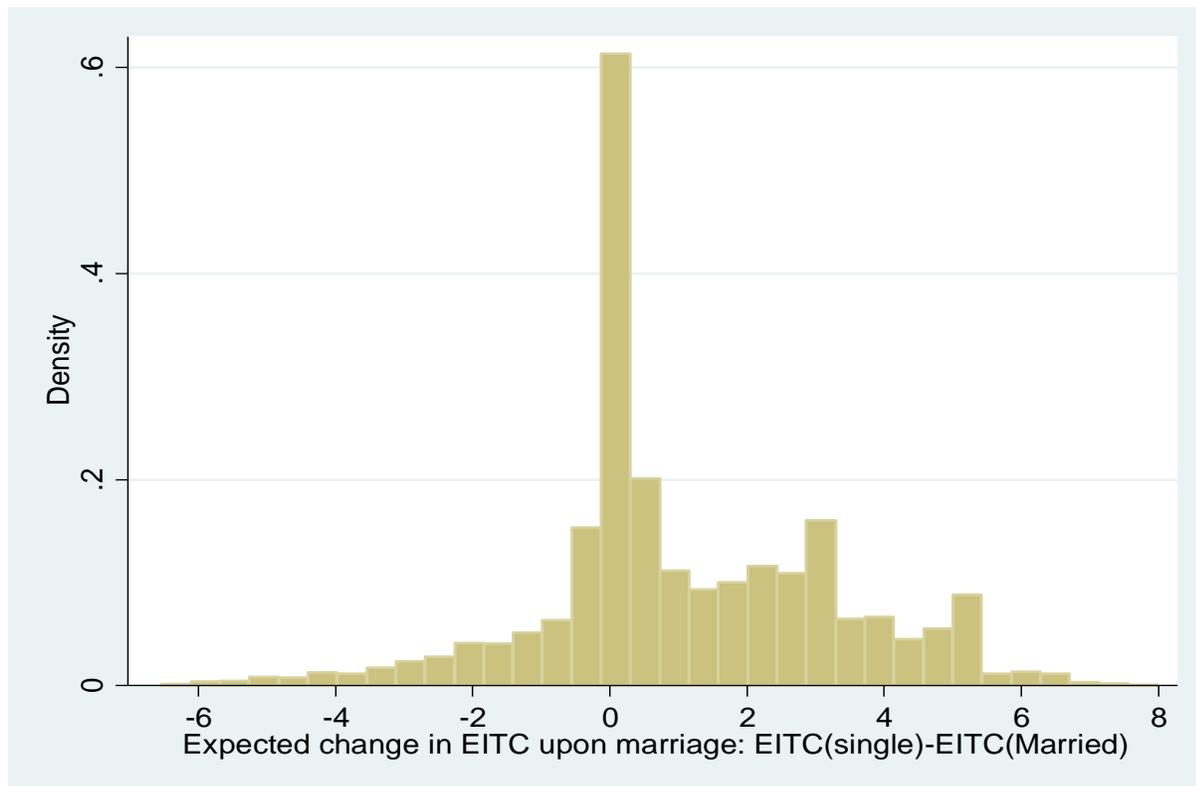
Note: Positive values correspond to higher benefits while single than while married (an expected loss in EITC benefits upon marriage). Negative values correspond to higher EITC benefits under marriage. Expected change in benefits measured in thousands of 2011$

Figure 3. Average predicted probability of cohabiting or marrying, generated from multinomial logistic regressions, simulating changes in expected EITC loss, EITC-eligible women ages 18-50 with a high school degree or less

- Current policy
- Simulation: no marrige penalty in EITC benefits

	Cohabiting	Married
Current policy	0.113	0.140
Simulation: no marrige penalty in EITC benefits	0.103	0.159
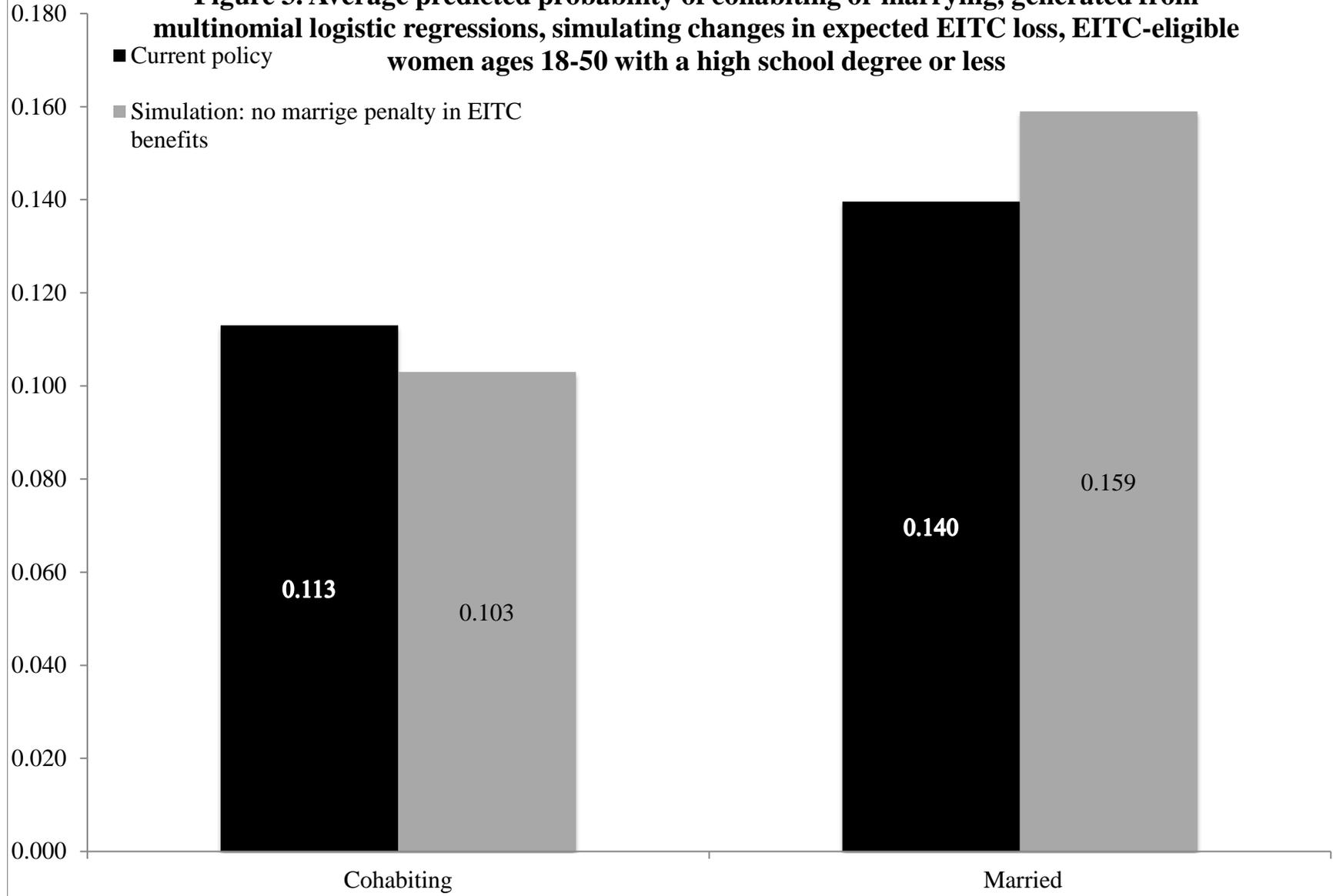
Table A1. Characteristics of Spouses of Married Women in 2001, 2004 and 2008 SIPP, by Race and Education

| | White, Non-Hispanic | | | | | | | | | | | |
| | <HS | | | | | | HS | | | | | |
	19-24	25-29	30-34	35-39	40-49	50+	19-24	25-29	30-34	35-39	40-49	50+
Observations	448	707	750	861	2,103	2,449	1,819	3,597	4,776	6,541	16,243	16,192
Spouse Characteristics												
Spouse's Age												
19-24	41.3%	5.1%	1.1%	0.6%	0.0%	0.0%	43.7%	4.2%	0.4%	0.2%	0.1%	0.0%
25-29	39.5%	41.0%	8.4%	2.0%	0.3%	0.3%	39.7%	43.9%	7.2%	1.0%	0.2%	0.1%
30-34	14.1%	33.1%	39.3%	5.0%	1.1%	0.4%	10.2%	36.3%	41.1%	7.9%	1.1%	0.2%
35-39	3.6%	11.2%	32.8%	37.9%	7.6%	0.7%	2.9%	10.1%	35.7%	41.7%	5.7%	0.5%
40-49	1.6%	7.4%	15.3%	46.8%	60.4%	8.4%	1.9%	4.7%	14.0%	44.6%	65.0%	8.0%
50+	0.0%	2.3%	3.1%	7.8%	30.5%	90.2%	1.5%	0.8%	1.7%	4.5%	27.9%	91.1%
Spouse's Race												
White	87.3%	88.3%	90.5%	93.4%	92.2%	95.0%	88.9%	90.7%	93.2%	93.6%	95.0%	95.6%
Black	1.8%	1.6%	1.5%	0.9%	0.9%	0.9%	1.6%	1.8%	1.1%	1.2%	0.9%	0.6%
Hispanic	8.5%	7.9%	6.1%	3.6%	4.4%	2.4%	7.2%	5.4%	3.8%	3.4%	2.6%	1.9%
Other	2.5%	2.3%	1.9%	2.1%	2.6%	1.6%	2.3%	2.1%	1.9%	1.7%	1.6%	1.9%
Spouse's Education												
Less than HS	43.8%	44.0%	47.2%	41.2%	41.2%	41.5%	10.4%	9.0%	8.9%	9.0%	8.0%	9.2%
High School Deg	44.2%	36.8%	37.5%	40.0%	40.0%	39.5%	62.7%	55.0%	58.2%	56.2%	55.3%	50.7%
Some College	9.6%	15.8%	12.5%	14.1%	13.4%	14.3%	21.5%	27.2%	23.3%	22.8%	23.4%	24.9%
College	2.5%	3.4%	2.8%	4.8%	5.5%	4.7%	5.3%	8.7%	9.6%	11.9%	13.3%	15.2%

Source: 2002-2011 CPS population of married women and their spouses, aged 18-65

	Black Non-Hispanic											
	<HS						HS					
	19-24	25-29	30-34	35-39	40-49	50+	19-24	25-29	30-34	35-39	40-49	50+
Observations	59	72	104	141	366	589	147	356	489	642	1,653	1,680
Spouse Characteristics												
Spouse's Age												
19-24	39.0%	5.6%	2.9%	0.7%	0.0%	0.0%	42.2%	5.1%	0.8%	0.5%	0.0%	0.1%
25-29	28.8%	26.4%	5.8%	1.4%	0.5%	0.0%	33.3%	39.0%	10.8%	1.9%	0.5%	0.2%
30-34	11.9%	40.3%	29.8%	5.7%	2.5%	0.3%	13.6%	27.2%	36.6%	12.0%	1.8%	0.5%
35-39	10.2%	9.7%	26.0%	27.7%	9.8%	1.0%	3.4%	17.1%	28.4%	37.9%	7.4%	1.0%
40-49	8.5%	13.9%	27.9%	55.3%	48.1%	9.0%	4.8%	8.1%	18.6%	40.2%	57.8%	10.1%
50+	1.7%	4.2%	7.7%	9.2%	39.1%	89.6%	2.7%	3.4%	4.7%	7.6%	32.6%	88.1%
Spouse's Race												
White	6.8%	5.6%	3.8%	5.7%	2.7%	1.7%	6.1%	5.9%	3.48%	4.05%	2.72%	2.26%
Black	91.5%	90.3%	92.3%	92.2%	95.1%	96.6%	88.4%	92.4%	92.84%	92.99%	95.40%	96.49%
Hispanic	1.7%	4.2%	2.9%	0.7%	1.4%	0.8%	2.0%	1.4%	2.66%	1.56%	1.33%	0.83%
Other	0.0%	0.0%	1.0%	1.4%	0.8%	0.8%	3.4%	0.3%	1.02%	1.40%	0.54%	0.42%
Spouse's Education												
Less than HS	44.1%	37.5%	39.4%	35.5%	43.7%	55.2%	8.8%	7.9%	7.98%	11.68%	10.28%	16.90%
High School Deg	44.1%	44.4%	47.1%	48.9%	34.7%	34.0%	65.3%	58.4%	65.24%	60.59%	59.04%	55.24%
Some College	6.8%	15.3%	11.5%	12.1%	14.8%	9.0%	20.4%	23.0%	16.97%	19.16%	22.69%	19.76%
College	5.1%	2.8%	1.9%	3.5%	6.8%	1.9%	5.4%	10.7%	9.82%	8.57%	7.99%	8.10%

Source: 2002-2011 CPS population of married women and their spouses, aged 18-65

	Hispanic											
	<HS						HS					
	19-24	25-29	30-34	35-39	40-49	50+	19-24	25-29	30-34	35-39	40-49	50+
Observations	834	1,560	2,160	2,100	3,140	2,253	793	1,403	1,669	1,627	2,551	1,878
Spouse Characteristics												
Spouse's Age												
19-24	30.2%	6.5%	1.2%	0.9%	0.3%	0.2%	39.8%	5.0%	1.1%	0.4%	0.1%	0.2%
25-29	44.8%	35.5%	9.3%	2.4%	0.6%	0.1%	40.2%	41.9%	9.3%	1.5%	0.4%	0.3%
30-34	15.7%	37.2%	37.8%	9.6%	3.3%	0.9%	14.2%	36.3%	42.8%	12.4%	2.8%	0.5%
35-39	4.9%	14.1%	34.3%	40.3%	7.6%	1.2%	3.3%	12.1%	30.9%	43.2%	8.5%	1.0%
40-49	2.9%	6.0%	15.5%	42.0%	59.5%	11.5%	1.6%	3.6%	14.4%	37.6%	64.1%	11.7%
50+	1.4%	0.7%	1.9%	4.9%	28.7%	86.0%	0.8%	1.1%	1.5%	5.0%	24.1%	86.4%
Spouse's Race												
White	3.36%	2.37%	1.99%	2.76%	3.22%	3.99%	10.47%	11.69%	11.74%	14.87%	20.27%	21.88%
Black	0.84%	0.38%	0.19%	0.19%	0.25%	0.18%	0.76%	0.93%	1.86%	1.48%	1.45%	1.22%
Hispanic	95.44%	96.79%	97.55%	96.71%	96.21%	95.47%	87.52%	86.10%	85.20%	82.48%	77.34%	74.60%
Other	0.36%	0.45%	0.28%	0.33%	0.32%	0.36%	1.26%	1.28%	1.20%	1.17%	0.94%	2.29%
Spouse's Education												
Less than HS	71.82%	74.42%	75.28%	77.05%	75.10%	74.43%	29.26%	26.51%	23.07%	21.63%	20.34%	20.29%
High School Deg	20.26%	18.65%	17.69%	15.29%	15.64%	15.31%	52.21%	53.60%	53.86%	54.33%	50.06%	47.02%
Some College	5.64%	5.58%	5.19%	5.24%	6.43%	7.63%	13.87%	14.40%	16.18%	17.09%	19.33%	20.29%
College	2.28%	1.35%	1.85%	2.43%	2.83%	2.62%	4.67%	5.49%	6.89%	6.95%	10.27%	12.41%

Source: 2002-2011 CPS population of married women and their spouses, aged 18-65

Appendix Figure 1. Observed versus predicted spouse earnings for women who cohabit or marry

■ Observed Spouse/Partner Earnings   ■ Predicted Partner earnings

Annual Earnings (2010$)

Spouse Earnings percentile