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The White Picket Fence Dream: Effects of Assets on the Choice of Family Union

Arif Mamun *

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Abstract

In this paper we use data from the National Longitudinal Survey of Youth 1979 to examine whether there is a direct relationship between the individual's housing and financial assets and his/her transition into cohabitation or marriage. For both men and women, analysis using a proportional hazard model indicates a positive association of asset ownership with transition into marriage, but not with transition into cohabitation. Considering the potential endogeneity of asset ownership with respect to the choice of family status even in the time-to-event analysis, we implement instrumental variables estimation. Instrumental variables probit estimation either remove the statistical significance of the association between asset ownership and family union transitions, or indicate effects that are in the opposite direction to those derived from the time-to-event analysis.

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* Ph.D. Candidate, Department of Economics, University of Washington, Box 353330, Seattle, WA 98195-3330.
E-mail: aalmamun@u.washington.edu
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The White Picket Fence Dream:
Effects of Assets on the Choice of Family Union

I. Introduction

There have been dramatic changes in the family formation behavior of young American men and women over the last four decades. During this period, prevalence of cohabitation has been increasing sharply while age at first marriage has also been rising, and the percentage of marriages preceded by cohabitation has been growing substantially (Fields and Casper, 2001; Casper and Cohen, 2000; Bumpass and Sweet 1989). These demographic changes have prompted serious concerns from researchers as well as policy makers about the retreat from the traditional pattern of family formation. However, both quantitative and qualitative research (e.g., Tucker, 2000; Thornton and Young-DeMarco, 2001; Gibson, Edin and McLanahan, 2003) indicate that among the unmarried population there is not a large-scale lack of respect for marriage and the traditional ways of family. They do place a high value on marriage and consider it as part of their future. In fact, Gibson, Edin and McLanahan (2003) find that at least for some young unwed parents, high marital expectations may be precluding them from marrying. In a qualitative analysis of 75 unmarried young couples in the Fragile Families study, they identify that marriage signals the "arrival" of the couple, both financially and emotionally. Because marriage is valued so highly, it is perceived as a family status to be chosen after certain economic and relational preconditions are fulfilled – after they have achieved the so-called "white picket fence dream".[1] While these are interesting observations, there has not been any attempt to substantiate this qualitative evidence using quantitative methods in a large scale dataset. If people postpone their marriage until they can achieve the different level of living standard that they associate with marriage – a house, surplus income etc. – one may expect to

[1] For more recent cohorts of men and women in the U.S. (such as the NLSY79 cohort), such postponement of marriage apparently conforms with the "Easterlin hypothesis", which relates men's marriage and fertility decisions with his earnings relative to his 'desired style of life', the latter being determined by his adolescent experience (Easterlin, 1973). This hypothesis is not pursued further in the present study.

detect a direct relationship between the individual's housing and financial assets, and his/her transition into marriage. In this paper, we examine this intriguing issue using data from the National Longitudinal Survey of Youth 1979, and in addition to considering transition into marriage, we also analyze the effect of asset ownership on transition into cohabitation.

Since we are interested in identifying whether or not asset ownership status explains the time until the formation of a family union, we utilize the proportional hazard model – a natural estimation technique for analyzing the duration until a certain event occurs. The time-to-event analysis would ensure that asset ownership status prior to a family union transition is sequentially exogenous to such a transition decision. However, the individual's intension to form a family next period or period after may influence his/her asset accumulation behavior this period. As a result, the shocks that affect family status could be correlated with asset ownership status, and the proportional hazard model estimates would be potentially inconsistent. To address the potential endogeneity of assets we implement instrumental variables estimation.

In the following section we present a conceptual discussion of the determinants of family union decisions, and briefly review the relevant empirical literature. Section III describes the estimation procedures, and section IV delineates the NLSY data and summary statistics. Empirical results are presented in Section V. Summary and conclusions follow in section VI.

II. Economic Resources and Family Union Formation: Theoretical Perspectives and Empirical Research

Economic Resources and Marriage

Economic analysis of household formation, built on the foundation of Becker's (1973, 1974, 1991) seminal work, emphasizes the effects of economic resources on the likelihood of marriage. From a microeconomic perspective, the effect of a change in the individual's economic prospects,

such as a rise in the wage rate, on the timing of marriage can be analyzed as the effect of a change in the wage rate on the allocation of time among family, schooling, and market work. From this point of view, a rise in the wage rate tends to increase market work, and in turn has a negative substitution effect on the demand for family or schooling (Becker, 1973). However, rising wages also has an income effect which makes marriage and family more affordable and possibly increases the rate of return to schooling. Hence, the marriage effect of young men's or women's improved labor market conditions is an empirical question.

However, relevant discussions in the empirical studies usually indicate that from a theoretical perspective, the effect of improved labor market conditions for men unambiguously increase the likelihood of marriage, while similar improvement for women lower the likelihood of marriage. It should be noted that such unambiguous effects are based on the notion that gains from marriage ensue from intra-household specialization (as in Becker, 1973). Particularly for women, if gains from marriage are considered to come not only from specialization but also from joint consumption economies within the household, a priori the effect of improved women's labor market conditions on the likelihood of marriage will, once again, be ambiguous (Lam, 1988).

The measures of economic resource that have been used prominently in the empirical literature are current and potential earnings, educational attainment, work experience, employment and parental resources. Empirical results indicate that men's labor market opportunities are associated with significantly higher rates of marriage, although their quantitative effects may be small (see, for example, Xie et. al., 2003; Oppenheimer, Kalmijn and Lim, 1997; Schultz, 1994; Mare and Winship, 1991; Ellwood and Crane, 1990; MacDonald and Rindfuss, 1981). Studies focusing on women's labor market prospects have found mixed empirical evidence. Some of these studies have tended to find that better economic prospects are associated with declines in marriage (e.g., Aassve, 2003; Blau, Kahn and Waldfogel, 2000; McLanahan and Casper, 1995; Schultz, 1994; Mare and

Winship, 1991), while others find that the estimated relationship between indicators of women's economic status and incidence of marriage is either positive or insignificant. (e.g., Xie et. al. 2003; Oppenheimer and Lew, 1995; Mare and Winship, 1991).

One aspect of family union transitions that has been ignored until recently is the transition from cohabitation into marriage. Recent empirical endeavors in this regard find mixed evidence. Some studies have shown positive effects of men's earnings on the transition from cohabitation to marriage (Carlson, McLanahan and England, 2004; Brown, 2000; Sanchez, Manning and Smock, 1998; Smock and Manning, 1997), while others have reported that higher men's earnings significantly reduce the odds of marrying (Sassler and McNally, 2003, Wu and Pollard, 2000). Previous research mostly tended to indicate that there is no significant effect of women's economic opportunities on transition from cohabitation to marriage (Sassler and McNally, 2003; Sassler and Schoen, 1999; Clarkberg, 1999;), although a recent study showed that women's education encourage transition to marriage among young unwed mothers (Carlson, McLanahan and England, 2004).

Economic Resources and Cohabitation

With a handful of recent exceptions, the existing quantitative literature on the role of economic resources in family formation have focused exclusively on marriage, ignoring cohabitation. The studies that consider cohabitation include Xie et. al. (2003), Clarkberg (1999), Smock and Manning (1997), Raley (1996), and Thornton, Axinn and Teachman (1995). Two studies have indicated that improvement in men's economic opportunities encourage the formation of cohabiting unions (Clarkberg, 1999; Smock and Manning, 1997), another study found that men's school enrollment deters entrance into cohabitation (Thornton, Axinn and Teachman, 1995), while still others have reported no significant effect of several measures of men's economic potential (Xie et. al., 2003) on the rate of transition into cohabitation. With regard to women's economic potential,

previous studies indicate that enhancing women's economic potential discourages the formation of cohabiting unions (Thornton, Axinn and Teachman, 1995), while others found that women's economic status has no significant effect on transition into cohabitation (Xie et. al., 2003).

A persistent limitation of the studies analyzing family union transitions is that they are unable to address the issue of individual heterogeneity which can directly influence the likelihood of a transition into marriage or cohabitation, while at the same time being correlated with the individual's economic potential. As a result, most of the findings are indicative of an associative relationship between economic resources and family union transitions, rather than a causal one.

Asset Ownership and Family Union Formation

While income is certainly critical, wealth and assets are also important complementary measure of an individual's command over economic resources. The individual's assets give us an estimate of their economic readiness to marry in relation to their ideational value of marriage. A priori, individuals with higher exogenous endowments are more likely to marry because they have more to share and can provide greater access to credit and insurance (Lam, 1988). However, more realistically, assets are not exogenous and they reflect accumulated past income. In addition, the economic model of the determinants of marriage considers the concept of *potential* wage rates, instead of *actual* or *realized* wage rates. *Actual* wages is as much the result of the marriage decision as its cause, and hence is not regarded in the economic model as an independent determinant of marriage decisions (Moffitt, 2000). Therefore, the economic model suggests that instead of postponing the decision to marry until a certain level of assets are accumulated, the individual would rather be married, and strengthen the asset accumulation process by harvesting the benefits of marriage. In other words, while the individual's decision to marry may depend upon his or her

potential income, education, family background etc., it may not depend upon his/her accumulated past income, i.e., asset ownership status.

The discussion above alludes to the fact that accumulation of assets is endogenous to the family status. There is substantial empirical research on how family composition affect household wealth and savings (e.g., Aizcorbe, Kennickell and Moore 2003; Lupton and Smith 2003; Wolff, 2001; Browning and Lusardi 1996; Lusardi, Gossa and Krupka 2001; Avery and Kennickell 1991). Most of these empirical studies on savings are descriptive, and they generally identify that married couples have the highest levels of wealth and lone parents the lowest with singles in between (but with quite low levels of wealth). Taken together, these studies suggest that addressing the endogeneity of assets is the primary challenge in analyzing their effect of the choice of family form, and appropriate measures need to be taken to remove the potential bias in the estimated effects of asset ownership on family life transitions.

Finally, in our attempt to understand the determinants of family union choice, we consider cohabitation and marriage comparably. Thus, in addition to bridge the void in the literature on identifying the effects of assets on family union, this paper would enable us to better understand the differences and similarities between marriage and cohabitation.

III. Empirical Methodology

As we have already pointed out, the primary challenge in analyzing the effect of assets on the choice of family form is to address the issue of endogeneity of assets with respect to family status. We undertake a two-pronged approach to address the issue of endogeneity. First, we utilize a time-to-event analysis approach by using proportional hazard model. Second, we implement instrumental variables estimation.

Time-to-Event Analysis

The central question we are examining in this paper is whether the individual's asset ownership status explains his/her family union transition. The question could be put forward alternatively as whether asset ownership can explain the time elapsed until a family union transition occurs. A natural way to empirically estimate such effects is to apply a time-to-event analysis approach. The benefit of using a time-to-event analysis in our context is that it ensures 'sequential exogeneity' of assets with regard to family status. We are looking at the effect of asset ownership prior to the event of a family union marriage on the probability of a union in the next period. Hence, asset ownership is not sequentially dependent on family transition decision.

In our analysis we consider five sets of family union transitions: a) non-partnered to any partnered union (marriage or cohabitation); b) non-partnered to cohabitation; c) non-partnered to married; d) cohabitation to married; and e) unmarried (never-married or cohabiting) to married. To simplify our analysis, we consider only the transitions into the first marriage and first cohabitation. Since the individual's asset ownership status varies over time, for our purposes we utilized a Cox proportional hazard model with time-varying covariates (see Lancaster, 1990 for details) to analyze these transitions. In this model, the instantaneous hazard rate of transitions to family union is specified for individual *i*, *t* years until the family transition occurs, as:

$$h[t, x_i(t)] = h_0(t)\exp[\beta_x x_i(t)]$$

The baseline hazard, $h_0(t)$, is a nonparametric, time-varying function; $x_i(t)$ is a vector of regressors that includes time-varying asset ownership indicators; and β_x is the vector of coefficients to be estimated. We used the maximum-likelihood estimation procedure available in *Stata* to implement the model (Cleves, Gould and Gutierrez, 2004).

Instrumental Variables Estimation

Although the time-to-event analysis ensures 'sequential exogeneity' of asset ownership with respect to family status, the individual's intension to form a family in the future may influence his/her asset accumulation behavior in the current period. Therefore, the shocks that affect family status could be correlated with asset ownership status. In this sense, asset ownership status may not be strictly exogenous to the family transition decision, and hence, the proportional hazard estimates are potentially inconsistent. To deal with the potential endogeneity of assets we implement instrumental variables (IV) probit estimation (see Wooldridge, 2002 for details) in a discrete-time analogue of the (continuous time) proportional hazard model.

For the IV estimation, instead of having a standard pooled cross-sectional limited dependent variable, we define the dependent variable as a dichotomous indicator of whether or not a family union transition occurs in the next period.[2] The advantage of constructing the dependent variable in this fashion is that we are able to retain the sequential exogeneity of the asset ownership status in the time-to-event analysis while we address the concern about strict exogeneity of asset ownership by conducting instrumental variables estimation.

IV. NLSY79 Data and Summary Statistics

The National Longitudinal Survey of Youth 1979 (NLSY79) is a nationally representative US sample of young men and women who were 14-22 years old when they were first interviewed (CHRR, 2001). The respondents were interviewed annually until 1994, and biennially since then. Data from the first through the 19th (2000) round are used for this paper. We have used data from

[2] To use definitions from time-to-event analysis, we use the "failure indicator" in the hazard model as the dependent variable in our discrete time analysis.

the earliest round to determine the respondent's family life history. Detailed information on wealth and assets are, however, available only since the 7th round (i.e., 1985).[3]

We stratify the data by gender, and all our analyses are conducted separately for men and women. We observe the family life transitions of men and women in our sample during the period 1985 to 2000. Table 1 presents the sample size for the five categories of transitions we analyze in this paper. The table also shows the number of events we observe in our data for each category of transitions, along with the average duration prior to any transitions. During the period under analysis, there are 1525 transitions into marriage among women; 659 of these transitions are from cohabitation. For men, there are 1807 transitions into marriage of which 683 are from cohabitation. We also have 1304 transitions for women from a non-partnered (i.e., never-married non-cohabiting) status to a family union – either in marriage or in cohabitation; of which 422 are into cohabitation. Among men, we observe 1877 transitions from a non-partnered status to a family union, and 722 of these transitions are into cohabitation.

In Tables 2, 3, and 4, we present snapshots on the different characteristics of the respondents in our sample in three different points in time – in 1985, 1990, and 2000 respectively. These tables are intended to provide glimpses into the nature of the sample we consider for our empirical analysis. Summary statistics are presented for men and women in three different family statuses: non-partnered (never-married and non-cohabiting), cohabiting and married at each point in time. The three tables show that the proportions that are married increased over time for both men and women, although the fraction of men married converged to the fraction of women married only in the later years.

As we examine the effect of asset ownership on family union transitions in this study, we take three types of assets into consideration: home ownership; liquid financial assets as indicated by

[3] Due to budgetary restrictions, wealth questions were not administered in 1991 and 2002 rounds of NLSY79.

the availability of funds in savings account, certificates of deposit, money market instruments and IRA-Keoghs; and funds invested in stocks, bonds, and mutual funds. In our empirical analysis we include dichotomous indicators of ownership of these three types of assets. While data on home ownership and liquid financial assets are available since 1985, stocks-bonds-mutual funds data are available only from 1988.

Tables 2 through 4 reveals that both married men and married women are significantly more likely to be a home owner. On average, married men and women are also more likely to own liquid financial assets, as well as investments in stocks, bonds and mutual funds. This is all the more clear from Figures 1 through 6 showing the average asset ownership status of non-partnered, cohabiting and married men and women. These graphs show that over the years, the fraction of married men and women who are homeowners increased continuously (Figures 1 and 2). For the two other asset categories, the fraction of owners remained more or less stable, with the proportion owning financial investments remaining at a very low level. Interestingly, while the fraction of cohabiting men and women who are homeowners has been greater than that of non-partnered men and women, almost the opposite is true for the other two asset categories.

The other characteristics that are considered in our analysis and are summarized in Table 2 through 4 include age, race and ethnicity, own education, income (wage and business income) in the past calendar year, welfare recipiency in the past calendar year, religion, father's and mother's education, region of residence, whether or not the state of residence recognizes common law marriage, and local unemployment rate. Men and women in our sample are between 20 to 28 years old in 1985, the year since which we follow their family union transitions. On average, married men and women are older than their counterparts in the other two family statuses. Married men and women are also likely to be at least high school graduates than others. The numbers in Tables 2 through 4 also indicate that while women in general are more likely to be welfare recipients than

men, larger fraction of unmarried men and women received public assistance than their married counterparts.

V. Results

Results from Time-to-Event Analysis

Estimates from the Cox proportional hazard model with the asset ownership variables as time-varying covariates are presented in Table 5. As already noted, in analyzing the relationship between family union transitions and asset ownership, we are considering the ownership status of housing assets, of liquid financial assets, and of stocks, bonds and mutual funds. Since data on stocks and bonds ownership is available from a later period (from 1988, instead of 1985), in our analysis we estimate two sets of specifications – one that excludes stocks-bonds-mutual funds ownership indicator (Model 1), and another that includes it (Model 2). Table 5 presents the estimated hazard ratios only for the covariates of interest, and estimates for other control variables are available upon request. We discuss the estimated results for men and women separately.

Results in section (a) in Table 5 show that home ownership has no statistically significant effect on women's transition from never-married status into a partnered relationship (either in marriage or in cohabitation). Money in the savings account, on the other hand, is positively associated with women's transition into a family union. However, as the ownership of stocks and bonds is included in the specification, thereby reducing the period of analysis and the sample size, the estimated hazard rates on monetary assets no longer remain statistically significant. In the final specification, reported as Model 3 in Table 5, measures of wage and business income in the previous calendar year, and an indicator of the individual's public assistance (AFDC/TANF, food stamps, unemployment insurance benefits, supplementary support income etc.) recipiency in the previous calendar year is added to the specification in Model 1. As it appears, inclusion of these two variables

does not change the estimated effects of asset ownership on transition to a family union in any substantive way. In addition, welfare recipiency tends to be negatively correlated with transition into a family union, a result that resonates with a large existing literature (see Moffitt, 1998 for a recent review). While income and welfare recipiency are added to remove any reservation regarding the estimated effects of asset ownership, their potential endogeneity with respect to family union transitions convinced us for not including them in our initial specifications.

Next, we independently estimate the effect of asset ownership on the transitions to cohabitation and to marriage, from a non-partnered status. Estimated hazard ratios for transitions from non-partnered to cohabitation are reported in section (b) in Table 5. For women, while model 1 shows no significant effect, model 2 indicates that having liquid assets is negatively associated with forming a cohabiting relationship. Results from section (c) shows that ownership of liquid assets as well as stocks and bonds is positively associated with the rate of marriage for non-partnered women. As it appears, the positive association of liquid asset ownership and women's rate of forming any family union (in section a) is primarily driven by the positive association between ownership of these assets and transition into marriage. This result is further strengthened by the estimates in section (d) which indicate that women who have access to liquid assets are more likely to marry their cohabiting partners. Result in section (d) further show that home ownership has no significant relationship with the rate of marriage among cohabiting women. While the results in this section for liquid assets conform to the qualitative evidence that women would chose to marry their cohabiting partners when there is surplus income (Gibson, Edin and McLanahan, 2003), the relationship with home ownership and marital transition for cohabiting women does not correspond to a so-called 'white picket fence' explanation. As we consider women's transition into marriage from either a never-married or a cohabiting status (section e, Table 5), surprisingly we find that along with liquid assets, home ownership has a statistically significant positive correlation with such transitions.

Overall, results from Cox proportional hazard model estimates suggest that liquid assets are positively associated with women's rate of transition into marriage. For home ownership, there is weak evidence of such positive relationship. In the case of transition into cohabitation, asset ownership is negatively associated, if not uncorrelated, with women's choice of cohabitation.

For men, the overall evidence indicates that asset ownership is positively associated with rate of transition to marriage, but not to cohabitation. More specifically, the rate of marital transition by non-partnered men has a significant positive relationship with both home and liquid asset ownership, but no significant relationship exist for men's transition from non-partnered status to cohabitation (see sections a, b, c, and e for men in Table 5). More interestingly, cohabiting men's rate of transition to marriage has no significant relationship with home ownership, but there is positive significant association with ownership liquid assets and financial investments. These results give the impression that while ownership of all types of assets is positively correlated with the never-married men's decision to marry; only liquid assets are significantly correlated with cohabiting men's choice to marry. Moreover, men's rate of transition to cohabitation is not at all related to his asset ownership status.

It would appropriate to note that individual's race and ethnicity indicators have been included in all the specifications reported along with the other control variables. Overall, for all the transitions analyzed here, compared to non-black non-Hispanic women, black women are less likely to be in any type family union – in marriage or in cohabitation. Black men, on the other hand, are significantly more likely to transit to a cohabiting relationship, and less likely to transit into marriage in comparison with their non-black non-Hispanic counterparts. Our estimates for Hispanic women are similar to those for Black women, but somewhat weaker. For Hispanic men, we have some evidence that unlike black men, they are less likely either to marry or to cohabit than non-black non-Hispanic men.

The empirical estimates discussed so far provide some interesting new evidence. Taken together they show that home ownership as well as access to liquid assets is positively associated with rates of marital transition from a non-partnered status, particularly for men. However, home ownership is not associated with rates of marital transition among cohabiters in the sample, although access to liquid monetary assets is. In addition, both for men and women, asset ownership is not associated with the rate of transition into cohabitation. These results only partially agree with the previously discussed qualitative evidence suggesting a stronger relationship, particularly between home ownership and rates of transition from cohabitation to marriage.

Results from Instrumental Variables Estimation

We have discussed earlier that to address the potential endogeneity of assets we implement instrumental variables (IV) estimation. To operationalize the procedure, we convert the structure of analysis from a continuous time to a discrete time hazard model with the dependent variable being a dichotomous indicator of a family union transition in the next period. As we treat the asset ownership status as endogenous to family union transitions, the set of excluded instruments is constructed as follows. We use the interaction of monthly averages of the 30-year fixed-rate mortgages, the 1-year adjustable-rate mortgages,[4] the federal funds rate, and NASDAQ stock price index, with individual's age, ethnicity and region of residence as the set of excluded instruments.

Tests statistics on the joint-significance of the excluded instruments in the first-stage regressions are provided in Table 6. Although the F-statistics for ownership of stocks and bonds is quite small, the values of the F-statistic on the other two asset ownership indicators are sufficiently high to remove the potential bias in an analysis conducted without regard to the endogeneity of assets (Bound et. al., 1995). The validity of these instruments, particularly for the specifications that

[4] The monthly average mortgage rates are collected from the Freddie Mac Survey of Commitment Points and Rates.

includes only home and liquid asset ownership, is also underlined by the Hansen-Sagran J statistic for over-identification tests reported in Table 7 along with the IV-probit estimates.

Table 7 reports both probit and IV-probit estimates for specifications described earlier as Model 1 and Model 2. The sign and significance of the estimated coefficients on asset indicator variables in the probit model are highly comparable to those in the Cox proportional hazard model for every type of family union transitions considered, and for both men and women.

IV-probit estimates for women show that addressing the potential endogeneity of asset ownership removes the positive association between asset ownership and family union transitions. On the contrary, access to liquid assets has a negative influence on the rates of transition to marriage for non-partnered women (sections a, c and e in Table 7). Inclusion of income and welfare recipiency in the specification (not reported in the table) does not change these results in any important way. Section (b) in Table 7 indicates that asset ownership has no statistically significant influence on women's rate of transition to cohabitation as we account for the endogeneity of assets. IV probit estimates in section (d) of Table 7 show that home ownership reduces women's likelihood of marrying their cohabiting partner, although such negative effect does not remain statistically significant when we include ownership of stocks and bonds in our specification.

For men, IV probit estimates show that liquid asset ownership reduces the rate of transition to cohabitation. On the other hand, for men's transition to marriage, neither homeownership nor liquid assets has any significant effect.

All together, the IV probit estimates either remove the statistical significance of the association between asset ownership and family union transitions, or indicate effects that are in the opposite direction to those derived from the time-to-event analysis.

VI. Conclusion

Motivated by a recent set of findings by demographers, the paper presents two broad set of evidence on the relationship between asset ownership and the family union transition decisions by men and women. The first set of findings, coming out of estimations using Cox proportional hazard model with time varying covariates, reveal that home ownership as well as access to liquid assets is positively associated with rates of marital transition from a non-partnered status, particularly so for men. However, home ownership is not associated with rates of marital transition among cohabiting men and women in the sample, although access to liquid monetary assets is positively associated with rates of cohabiting men and women marrying their partners.

The second set of findings stem from instrumental variables probit estimation, implemented to remove the potential bias in the hazard model estimates. The bias is anticipated due to the endogeneity of assets with respect to the family union decisions. The IV probit estimates either remove the statistical significance of the association between asset ownership and family union transitions, or indicate effects that are in the opposite direction to those derived from the estimated hazard model.

Results from the time-to-event analysis indicate that at least as a behavioral regularity we observe a positive relationship between asset ownership and marital transitions. The IV estimates, however, suggest that such behavioral regularity does not indicate a causal relationship. In other words, those who are inherently more likely to marry are the ones who would accumulate asset, and hence asset ownership does not cause their transition into marriage. The IV results are also in line with a priori expectations suggested by the economic model of family formation about the effect of asset ownership on family union transitions. Moreover, these results have important policy implications. Based on the IV estimates, provision of housing subsidy or incentive to accumulate assets may not lead to any significant improvement in the rates of marriage.

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Table 1. Summary Statistics on the Family Union Transitions
NLSY79 Women and Men; 1985-2000

Transition	No. of Individuals	No. of Observations	No. of Transitions	Median Duration (Months)
Women				
Non-partnered to partnered	2056	11073	1304	136.8
Non-partnered to cohabitation **	2056	11073	422	136.8
Non-partnered to marriage **	2056	11073	882	136.8
Cohabiting to marriage	1458	3668	659	32.4
Unmarried to marriage	3045	14652	1525	116.5
Men				
Non-partnered to partnered	2875	14717	1877	136.6
Non-partnered to cohabitation **	2875	14717	722	136.6
Non-partnered to marriage **	2875	14717	1155	136.6
Cohabiting to marriage	1592	4076	683	34.0
Unmarried to marriage	3675	18665	1807	130.3

Note: ** The transitions from non-partnered to cohabitation and to marriage have been considered independent of each other. Hence, the number of individuals, the number of observations, and the average duration prior to transition is the same for these two transitions, while the number of transitions is still different.

Table 2: Summary of Key Variables by Family Status in 1985
Women and Men NLSY79

	1985 Status → / ↓ Variables	Women (N=4535)			Men (N=4350)		
		Never Partnered	Cohabit	Married	Never Partnered	Cohabit	Married
	Proportion in Status [a]	.40	.09	.43	0.57	.07	.30
Assets	Own house	0.02	0.07	0.38	0.03	0.10	0.33
	Have money asset	0.57	0.49	0.68	0.54	0.46	0.66
	Own stocks & bonds [b]						
Age	Age (years)	22.93	23.40	24.17	22.86	23.81	24.52
Ethnicity	Hispanic	0.15	0.14	0.18	0.15	0.23	0.18
	Black	0.38	0.22	0.15	0.31	0.30	0.15
Education	HS grad	0.37	0.47	0.50	0.41	0.46	0.48
	Some College	0.35	0.18	0.20	0.28	0.14	0.15
	College grad	0.16	0.07	0.10	0.12	0.05	0.12
Income	Annual income ($)	6347	6326	6256	8477	11202	14604
Welfare	Welfare recipiency	0.20	0.29	0.18	0.05	0.09	0.13
Religion	Protestant	0.07	0.08	0.08	0.08	0.04	0.08
	Baptist	0.28	0.23	0.19	0.22	0.23	0.17
	Catholic	0.25	0.25	0.26	0.24	0.28	0.26
	Other Christian	0.11	0.08	0.11	0.11	0.07	0.10
	Jew	0.01	0.00	0.00	0.01	0.00	0.00
Father education	HS grad	0.29	0.30	0.29	0.29	0.28	0.30
	Some College	0.08	0.07	0.07	0.09	0.07	0.07
	College grad	0.14	0.09	0.10	0.14	0.09	0.11
	Missing	0.13	0.18	0.10	0.13	0.14	0.11
Mother's education	HS grad	0.35	0.35	0.38	0.38	0.36	0.38
	Some College	0.10	0.09	0.07	0.09	0.07	0.08
	College grad	0.09	0.04	0.05	0.08	0.05	0.06
	Missing	0.05	0.05	0.05	0.07	0.10	0.06
Region of Residence	North Central	0.24	0.27	0.24	0.24	0.22	0.25
	South	0.40	0.33	0.41	0.35	0.29	0.39
	West	0.15	0.22	0.20	0.19	0.28	0.22
State	Common Law Marriage	0.34	0.28	0.35	0.33	0.32	0.37
Local	Unemployment rate	8.03	8.06	8.36	8.06	7.81	8.36

Note: a. The remaining sample include divorced or widowed, and those who are single after cohabiting.
b. Data on Stocks & Bonds, and Inheritance is available since the 1988 round of NLSY79.

Table 3: Summary of Key Variables by Family Status in 1990
Women and Men NLSY79

	1990 Status → / Variables ↓		Women (N=4386)		Men (N=4311)		
		Never Partnered	Cohabit	Married	Never Partnered	Cohabit	Married
	Proportion in Status [a]	.20	.08	.57	.28	.10	.50
Assets	Own house	0.11	0.18	0.57	0.11	0.17	0.55
	Have money asset	0.59	0.54	0.76	0.60	0.50	0.75
	Own stocks & bonds	0.10	0.05	0.16	0.11	0.06	0.17
Age	Age (years)	28.66	28.85	29.28	28.42	28.69	29.29
Ethnicity	Hispanic	0.13	0.20	0.16	0.15	0.17	0.18
	Black	0.48	0.21	0.18	0.36	0.37	0.17
Education	HS grad	0.34	0.45	0.45	0.38	0.49	0.44
	Some College	0.29	0.18	0.22	0.21	0.15	0.19
	College grad	0.25	0.13	0.19	0.23	0.09	0.19
Income	Annual income ($)	12622	10282	11448	16758	16821	25221
Welfare	Welfare recipiency	0.26	0.30	0.10	0.06	0.08	0.07
Religion	Protestant	0.08	0.09	0.07	0.07	0.08	0.08
	Baptist	0.33	0.20	0.21	0.23	0.28	0.18
	Catholic	0.20	0.28	0.28	0.25	0.26	0.28
	Other Christian	0.11	0.09	0.12	0.11	0.05	0.12
	Jew	0.00	0.00	0.00	0.01	0.00	0.01
Father education	HS grad	0.28	0.33	0.30	0.28	0.28	0.30
	Some College	0.06	0.07	0.07	0.09	0.07	0.08
	College grad	0.11	0.08	0.12	0.13	0.10	0.13
	Missing	0.17	0.14	0.10	0.14	0.15	0.10
Mother's education	HS grad	0.33	0.30	0.40	0.36	0.35	0.40
	Some College	0.09	0.08	0.08	0.10	0.09	0.08
	College grad	0.07	0.05	0.07	0.09	0.05	0.07
	Missing	0.06	0.05	0.05	0.07	0.06	0.07
Region of Residence	North Central	0.23	0.24	0.24	0.24	0.23	0.25
	South	0.41	0.30	0.39	0.36	0.37	0.38
	West	0.15	0.25	0.20	0.19	0.22	0.21
State	Common Law Marriage	0.37	0.30	0.33	0.32	0.34	0.34
Local	Unemployment rate	5.57	5.69	5.70	5.67	5.55	5.69

Note: a. The remaining sample include divorced or widowed, and those who are single after cohabiting.

Table 4: Summary of Key Variables by Family Status in 2000
Women and Men NLSY79

	2000 Status → / ↓ Variables	Women (N=3558)			Men (N=3440)		
		Never Partnered	Cohabit	Married	Never Partnered	Cohabit	Married
	Proportion in Status [a]	.12	.05	.61	.14	.07	.60
Assets	Own house	0.28	0.53	0.76	0.24	0.39	0.77
	Have money asset	0.58	0.59	0.74	0.55	0.55	0.80
	Own stocks & bonds	0.12	0.14	0.24	0.14	0.10	0.25
Age	Age (years)	38.87	38.87	39.05	38.58	38.59	38.95
Ethnicity	Hispanic	0.13	0.27	0.20	0.16	0.24	0.19
	Black	0.62	0.30	0.21	0.44	0.40	0.21
Education	HS grad	0.37	0.47	0.41	0.42	0.57	0.43
	Some College	0.28	0.23	0.26	0.23	0.15	0.21
	College grad	0.24	0.11	0.25	0.20	0.06	0.25
Income	Annual income ($)	20170	20770	22234	26483	26375	47425
Welfare	Welfare recipiency	0.20	0.18	0.06	0.08	0.11	0.03
Religion	Protestant	0.10	0.06	0.10	0.10	0.09	0.11
	Baptist	0.44	0.33	0.27	0.34	0.37	0.25
	Catholic	0.22	0.41	0.37	0.32	0.36	0.36
	Other Christian	0.15	0.11	0.15	0.11	0.08	0.17
	Jew	0.00	0.01	0.01	0.00	0.00	0.01
Father education	HS grad	0.27	0.31	0.30	0.28	0.27	0.30
	Some College	0.08	0.02	0.09	0.07	0.07	0.10
	College grad	0.09	0.07	0.13	0.10	0.03	0.15
	Missing	0.19	0.11	0.11	0.19	0.17	0.10
Mother's education	HS grad	0.31	0.33	0.39	0.35	0.34	0.41
	Some College	0.10	0.06	0.08	0.08	0.03	0.10
	College grad	0.07	0.03	0.08	0.07	0.02	0.08
	Missing	0.07	0.05	0.05	0.09	0.11	0.05
Region of Residence	North Central	0.21	0.22	0.24	0.23	0.18	0.26
	South	0.45	0.36	0.40	0.40	0.33	0.39
	West	0.15	0.24	0.20	0.18	0.28	0.20
State	Common Law Marriage	0.24	0.25	0.23	0.22	0.21	0.24
Local	Unemployment rate	4.42	4.80	4.58	4.42	4.82	4.43

Note: a. The remaining sample include divorced or widowed, and those who are single after cohabiting.

Figure 1

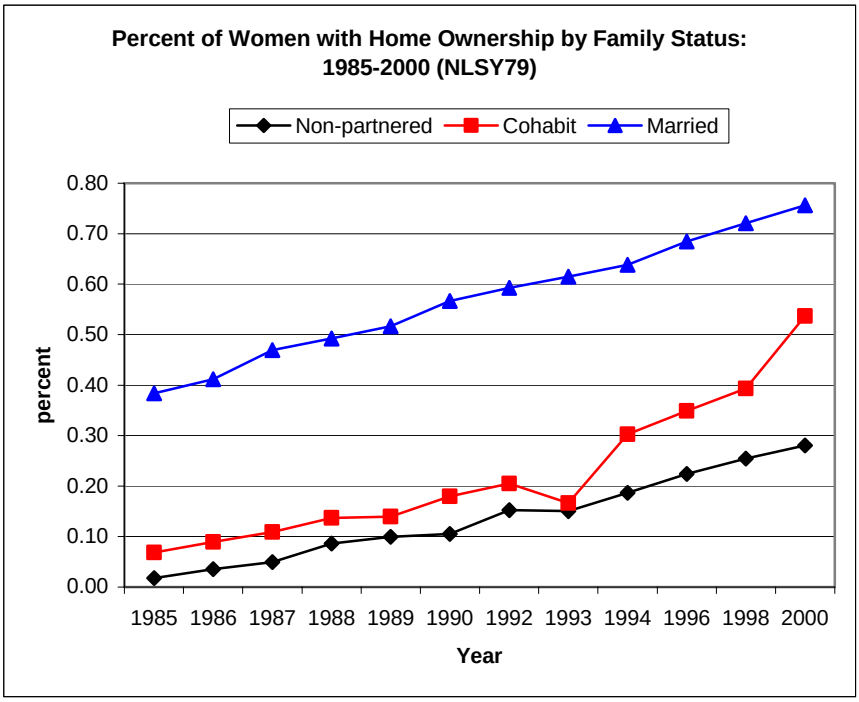

Figure 2

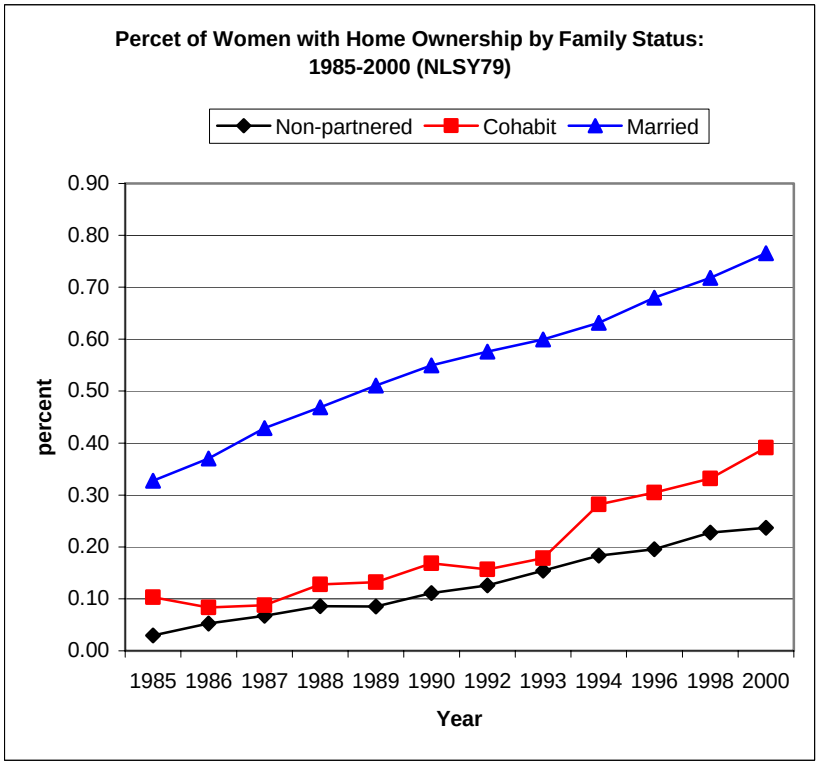

Figure 3

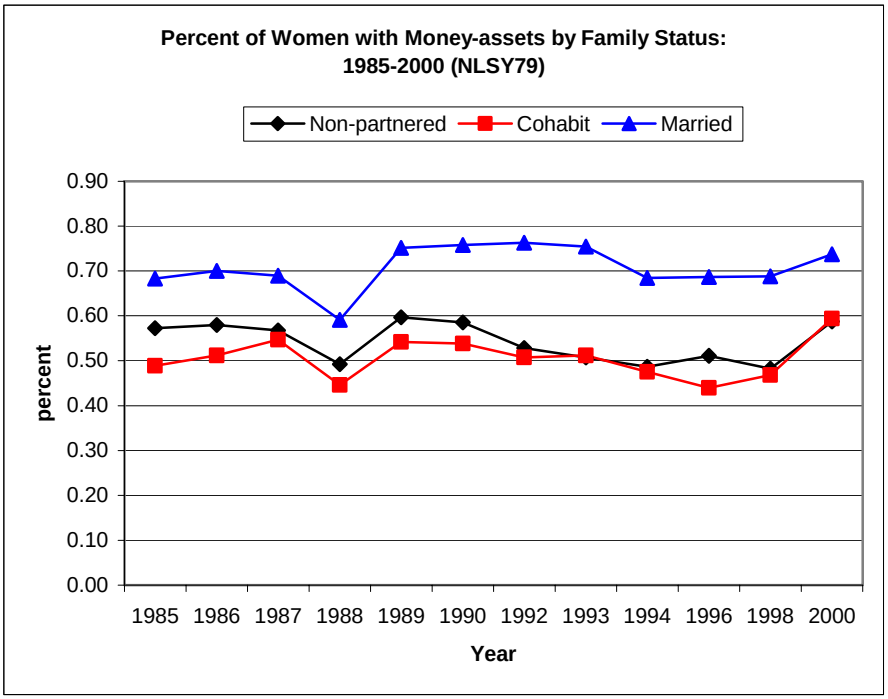

Figure 4

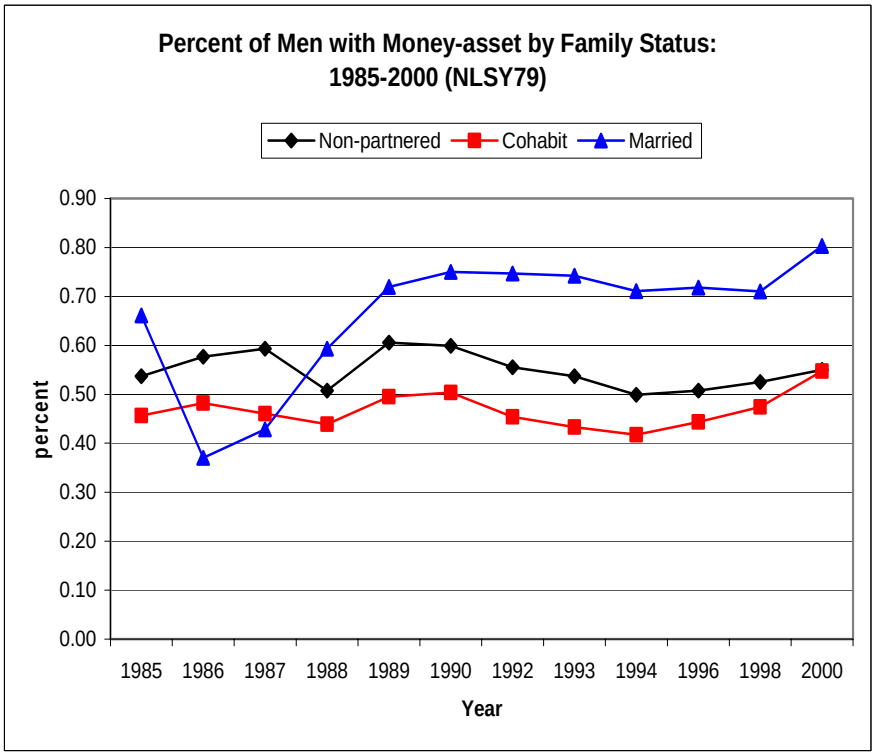

Figure 5

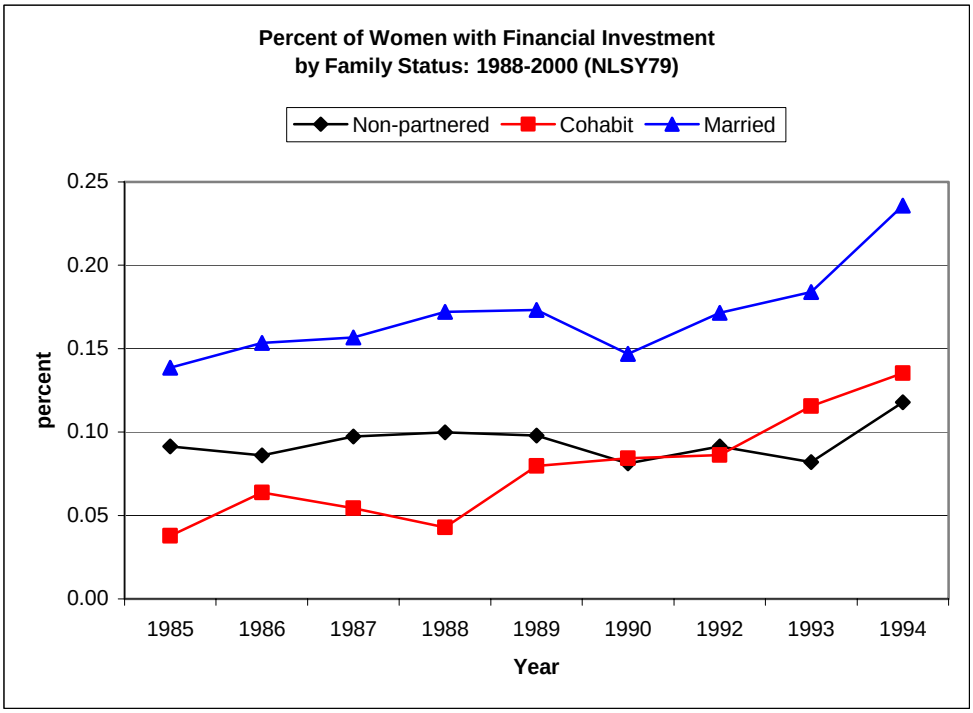

Figure 6

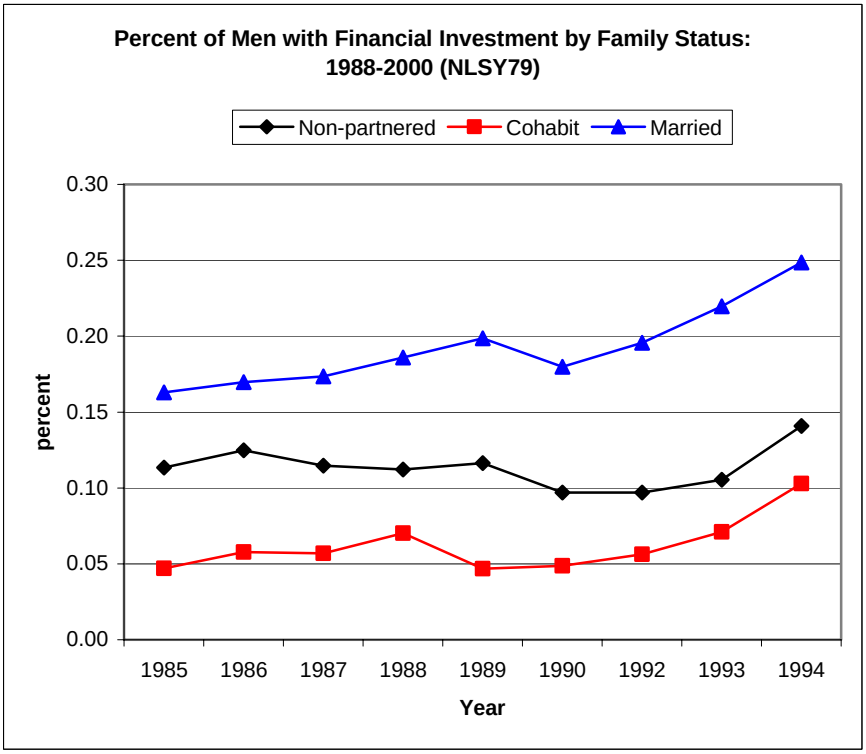

Table 5. Determinants of the Rate of Transitions
Hazard ratios from Cox Proportional Hazard Model

Specifications / Variables →	Women			Men		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
a. Transitions from Non-partnered to Partnered						
Own house	0.838	0.904	0.824	1.251	1.237	1.234
	(1.70)	(0.82)	(1.86)	(2.95)***	(2.14)**	(2.76)***
Have money asset	1.195	0.884	1.126	1.267	1.050	1.245
	(2.63)***	(1.12)	(1.75)	(4.11)***	(0.60)	(3.79)***
Own stocks & bonds		1.220			1.157	
		(1.58)			(1.45)	
Hispanic	0.897	0.834	0.893	0.835	0.905	0.833
	(1.05)	(1.15)	(1.09)	(1.98)**	(0.86)	(2.00)**
Black	0.517	0.438	0.543	0.825	0.765	0.829
	(7.16)***	(5.95)***	(6.61)***	(2.69)***	(2.48)**	(2.62)***
Annual income			1.000			1.000
			(0.05)			(1.16)
Welfare recipiency			0.723			0.735
			(3.34)***			(2.24)**
b. Transitions from Non-partnered to Cohabiting						
Own house	0.887	0.922	0.877	1.119	1.257	1.115
	(0.62)	(0.37)	(0.68)	(0.82)	(1.40)	(0.79)
Have money asset	0.832	0.610	0.805	0.980	0.884	0.968
	(1.50)	(2.58)***	(1.72)	(0.23)	(1.00)	(0.37)
Own stocks & bonds		0.977			1.019	
		(0.10)			(0.10)	
Hispanic	0.842	0.752	0.839	0.633	0.601	0.634
	(0.95)	(1.02)	(0.96)	(3.12)***	(2.68)***	(3.11)***
Black	0.532	0.500	0.549	1.250	1.151	1.260
	(4.16)***	(3.25)***	(3.88)***	(2.12)**	(0.91)	(2.18)**
Annual income			1.000			1.000
			(0.23)			(1.08)
Welfare recipiency			0.840			0.783
			(1.09)			(1.35)
c. Transitions from Non-partnered to Married						
Own house	0.822	0.896	0.805	1.321	1.209	1.296
	(1.57)	(0.73)	(1.74)	(2.93)***	(1.49)	(2.72)***
Have money asset	1.435	1.086	1.326	1.526	1.239	1.491
	(4.25)***	(0.60)	(3.38)***	(5.56)***	(1.87)	(5.23)***
Own stocks & bonds		1.349			1.225	
		(1.97)**			(1.62)	
Hispanic	0.916	0.848	0.911	0.960	1.130	0.955
	(0.72)	(0.87)	(0.76)	(0.39)	(0.84)	(0.45)
Black	0.513	0.414	0.544	0.601	0.548	0.604
	(6.27)***	(5.34)***	(5.72)***	(5.39)***	(4.12)***	(5.33)***
Annual income			1.000			1.000
			(0.17)			(1.67)
Welfare recipiency			0.645			0.643
			(3.53)***			(2.07)**

Table 5 (Cont'd). Determinants of the Rate of Transitions
Hazard ratios from Cox Proportional Hazard Model

Specifications → / Variables ↓	Women			Men		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
d. Transitions from Cohabiting to Married						
Own house	1.047	1.093	0.995	0.945	0.967	0.921
	(0.46)	(0.77)	(0.05)	(0.58)	(0.32)	(0.85)
Have money asset	1.448	1.394	1.331	1.841	1.681	1.765
	(4.21)***	(3.02)***	(3.00)***	(7.03)***	(4.94)***	(6.52)***
Own stocks & bonds		1.315			1.448	
		(1.64)			(2.90)***	
Hispanic	0.714	0.767	0.710	0.512	0.479	0.520
	(2.59)***	(1.69)	(2.63)***	(4.94)***	(4.50)***	(4.83)***
Black	0.577	0.563	0.578	0.432	0.473	0.433
	(4.27)***	(3.71)***	(4.24)***	(7.19)***	(5.48)***	(7.11)***
Annual income			1.000			1.000
			(2.45)**			(9.60)***
Welfare recipiency			0.913			0.619
			(0.81)			(2.67)***
e. Transitions from Unmarried (Never Married/Cohabiting) to Married						
Own house	1.237	1.129	1.222	1.404	1.348	1.381
	(2.56)**	(1.30)	(2.41)**	(4.93)***	(3.58)***	(4.68)***
Have money asset	1.347	1.230	1.283	1.586	1.435	1.547
	(4.65)***	(2.33)**	(3.84)***	(7.87)***	(4.40)***	(7.39)***
Own stocks & bonds		1.160			1.114	
		(1.30)			(1.12)	
Hispanic	0.738	0.730	0.740	0.814	0.841	0.811
	(3.47)***	(2.67)***	(3.45)***	(2.56)**	(1.56)	(2.60)***
Black	0.395	0.427	0.409	0.539	0.541	0.540
	(11.51)***	(7.54)***	(10.95)***	(8.52)***	(6.00)***	(8.47)***
Annual income			1.000			1.000
			(0.16)			(2.55)**
Welfare recipiency			0.792			0.701
			(2.69)***			(2.49)**

Note:
a. Robust z statistics in parentheses
b. ** significant at 5%; *** significant at 1%
c. In each specification, control variables include Age, age-squared, ethnicity, education, religion, father's and mother's education, region of residence, whether or not state recognizes common law marriage, and local unemployment rate. Estimated hazard ratios for these variables are available upon request.

Table 6. Joint Significance of the Instrumental Variables
F-Statistics from the First Stage Regressions

Variables	Women		Men	
	Model 1	Model 2	Model 1	Model 2
Transition from non-partnered				
Own home	4.33	3.10	3.28	2.15
Have money assets	4.28	3.79	4.24	3.37
Own stocks, bonds		1.76		1.37
No. of excluded instruments	18	21	18	21
Transition from cohabiting				
Own home	1.36	2.14	1.62	2.15
Have money assets	1.48	1.84	1.82	1.92
Own stocks, bonds		1.22		0.99
No. of excluded instruments	18	21	18	21
Transitions from unmarried (never-married/cohabiting)				
Own home	5.53	4.29	4.62	3.09
Have money assets	4.62	4.37	5.79	4.49
Own stocks, bonds		2.06		1.58
No. of excluded instruments	18	21	18	21

Note: F-statistic is for a hypothesis that the instrumental variables jointly have no effect.

Table 7. Determinants of the Rate of Transitions
Probit and IV Probit Coefficients

Variables	Women				Men			
	Model 1		Model 2		Model 1		Model 2	
	Probit	IV Probit	Probit	IV Probit	Probit	IV Probit	Probit	IV Probit
a. Transitions from Non-partnered to Partnered								
Own home	-0.052	-0.156	-0.017	-0.085	0.112	0.027	0.131	1.217
	(0.89)	(0.32)	(0.26)	(0.10)	(2.36)**	(0.05)	(2.31)**	(1.30)
Have money assets	0.085	-0.910	0.019	-1.023	0.129	-1.250	0.066	-0.630
	(2.14)**	(2.02)**	(0.33)	(1.49)	(4.01)***	(2.54)**	(1.45)	(0.74)
Own stocks, bonds			0.101	-2.248			0.097	-3.764
			(1.34)	(1.77)			(1.56)	(1.81)
Hispanic	-0.081	-0.231	-0.152	-0.439	-0.064	-0.195	0.006	-0.281
	(1.46)	(2.51)**	(1.88)	(3.17)***	(1.42)	(2.89)***	(0.10)	(2.10)**
Black	-0.387	-0.660	-0.391	-0.803	-0.156	-0.404	-0.160	-0.423
	(8.32)***	(4.80)***	(6.02)***	(4.42)***	(4.11)***	(4.12)***	(2.92)***	(2.66)***
N	11073	11073	6342	6342	14717	14717	8280	8280
J Statistic (Overidentification test) [d]		9.078		18.600		18.467		27.092
P-value for the J statistic		(.910)		(.417)		(.297)		(.077)
b. Transitions from Non-partnered to Cohabiting								
Own home	-0.015	0.121	-0.005	0.829	0.043	0.646	0.121	1.407
	(0.18)	(0.18)	(0.05)	(0.73)	(0.65)	(0.86)	(1.58)	(1.32)
Have money assets	-0.101	0.238	-0.132	0.541	-0.014	-1.705	-0.026	0.373
	(1.77)	(0.39)	(1.63)	(0.62)	(0.35)	(2.54)**	(0.45)	(0.38)
Own stocks, bonds			-0.005	-2.197			0.006	-2.549
			(0.04)	(1.25)			(0.07)	(1.08)
Hispanic	-0.076	-0.019	-0.149	-0.162	-0.157	-0.295	-0.178	-0.265
	(0.92)	(0.15)	(1.20)	(0.91)	(2.51)**	(3.25)***	(2.04)**	(1.74)
Black	-0.268	-0.168	-0.235	-0.123	0.069	-0.180	0.061	0.106
	(4.10)***	(0.91)	(2.65)***	(0.53)	(1.42)	(1.39)	(0.88)	(0.60)
N	11073	11073	6342	6342	14717	14717	8280	8280
J Statistic (Overidentification test) [d]		8.329		13.563		20.950		19.573
P-value for the J statistic		(.938)		(.757)		(.181)		(.357)

Table 7 (Cont'd). Determinants of the Rate of Transitions
Probit and IV Probit Coefficients

Variables	Women				Men			
	Model 1		Model 2		Model 1		Model 2	
	Probit	IV Probit	Probit	IV Probit	Probit	IV Probit	Probit	IV Probit
c. Transitions from Non-partnered to Married								
Own home	-0.057	-0.309	-0.019	-0.617	0.129	-0.379	0.107	0.334
	(0.87)	(0.56)	(0.26)	(0.64)	(2.41)**	(0.61)	(1.62)	(0.30)
Have money assets	0.175	-1.332	0.112	-1.760	0.205	-0.647	0.129	-1.088
	(3.92)***	(2.55)**	(1.73)	(2.14)**	(5.34)***	(1.19)	(2.35)**	(1.11)
Own stocks, bonds			0.130	-1.930			0.122	-3.879
			(1.57)	(1.33)			(1.77)	(1.55)
Hispanic	-0.063	-0.295	-0.123	-0.522	0.008	-0.083	0.120	-0.253
	(1.01)	(2.78)***	(1.36)	(3.20)***	(0.16)	(1.11)	(1.62)	(1.60)
Black	-0.367	-0.785	-0.397	-1.049	-0.295	-0.482	-0.310	-0.772
	(7.16)***	(4.93)***	(5.45)***	(4.79)***	(6.49)***	(4.37)***	(4.61)***	(4.06)***
N	11073	11073	6342	6342	14717	14717	8280	8280
J Statistic (Overidentification test) [d]		12.207		15.222		24.53		30.90
P-value for the J statistic		(.730)		(.647)		(.079)		(.030)
d. Transitions from Cohabiting to Married								
Own home	0.111	-1.809	0.086	-1.146	0.003	-0.093	0.011	-1.032
	(1.58)	(2.51)**	(1.05)	(1.37)	(0.04)	(0.13)	(0.15)	(1.35)
Have money assets	0.226	0.858	0.224	-0.737	0.388	-1.094	0.318	-0.156
	(3.93)***	(1.28)	(3.11)***	(0.97)	(7.09)***	(1.67)	(4.82)***	(0.17)
Own stocks, bonds			0.170	0.218			0.312	-3.039
			(1.25)	(0.14)			(2.97)***	(1.32)
Hispanic	-0.229	-0.262	-0.158	-0.223	-0.420	-0.558	-0.469	-0.739
	(2.87)***	(2.87)***	(1.67)	(1.69)	(5.00)***	(4.83)***	(4.67)***	(4.23)***
Black	-0.324	-0.483	-0.317	-0.693	-0.493	-0.692	-0.428	-0.752
	(4.05)***	(3.65)***	(3.24)***	(3.21)***	(6.90)***	(4.92)***	(5.09)***	(3.84)***
N	3668	3668	2496	2496	4076	4076	3053	3053
J Statistic (Overidentification test) [d]		15.908		18.026		13.41		21.887
P-value for the J statistic		(.459)		(.454)		(.642)		(.237)

Table 7 (Cont'd). Determinants of the Rate of Transitions
Probit and IV Probit Coefficients

Variables	Women				Men			
	Model 1		Model 2		Model 1		Model 2	
	Probit	IV Probit	Probit	IV Probit	Probit	IV Probit	Probit	IV Probit
e. Transitions from Unmarried (Never-Married/Cohabiting) to Married								
Own home	0.099	0.108	0.100	-0.127	0.166	-0.129	0.161	0.802
	(2.12)**	(0.25)	(1.84)	(0.17)	(3.99)***	(0.28)	(3.29)***	(0.83)
Have money assets	0.179	-0.917	0.151	-1.081	0.251	-0.706	0.197	0.184
	(5.12)***	(2.11)**	(3.15)***	(1.74)	(7.91)***	(1.67)	(4.61)***	(0.18)
Own stocks, bonds			0.095	-2.093			0.120	-7.713
			(1.39)	(1.57)			(2.10)**	(2.43)**
Hispanic	-0.150	-0.267	-0.164	-0.410	-0.112	-0.208	-0.085	-0.473
	(3.04)***	(3.74)***	(2.51)**	(3.72)***	(2.52)**	(3.42)***	(1.40)	(3.14)***
Black	-0.443	-0.697	-0.476	-0.909	-0.337	-0.528	-0.339	-0.657
	(10.42)***	(5.86)***	(8.41)***	(5.79)***	(8.85)***	(5.92)***	(6.54)***	(3.50)***
	14652	14652	8750	8750	18665	18665	11206	11206
J Statistic (Overidentification test) [d]		16.844		21.424		21.904		19.764
P-value for the J statistic		(.396)		(.259)		(.146)		(.346)

Note:
a. z statistics in parentheses
b. ** significant at 5%; *** significant at 1%
c. In each specification, control variables include Age, age-squared, ethnicity, education, religion, father's and mother's education, region of residence, whether or not state recognizes common law marriage, and local unemployment rate.
d. The Hansen-Sargan J Statistic is derived from a linear estimate of the binary dependent variable model.