Marriage and Career: The Dynamic Decisions of Young Men

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Abstract

This paper estimates the returns to career decisions in the marriage market and the returns to marital choices in the labor market. Theoretically, investments in the labor market could affect the chances of receiving a marriage offer, the type of offer, and the probability of getting divorced. Also, marital status could affect one's outcomes in the labor market, most notably the "marriage premium" in wages. To untangle this simultaneous decision-making process, I develop a dynamic programming model of the joint career and marital decisions of young men between the ages of 16 and 39. The results show that labor market decisions are strongly influenced by their returns in the marriage market. If there were no returns to career choices in the marriage market, men would tend to work less, study less, and choose blue-collar jobs over white-collar jobs. These results suggest that the existing literature underestimates the true returns to human capital investments by ignoring their returns in the marriage market. In addition, the results show that the "marriage premium" is much lower than traditional OLS estimates, and is virtually non-existent for higher wage men. This result suggests that while marriage may make low wage men more serious about their careers, marriage has little effect on high wage men who are already highly motivated.

Keywords: marriage, divorce, return to education, occupational choice

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1 Introduction

This paper estimates the returns to career decisions in the marriage market and the returns to marital choices in the labor market. To do this, I develop a dynamic programming model of the joint career and marital decisions of young men over time, using panel data from the NLSY. The model traces out the sequential and joint schooling, work, occupation, and marital decisions of white males between the ages of 16 and 39. During this time period, young men have to make critical decisions regarding their careers and their marital status, and these decisions often interact with one another. For example, it is well known that marital status is correlated with a man's wage, education level, and occupation. Divorce rates, age at first marriage, and length of marriage are also highly correlated with wages, education, and occupational status. These relationships may represent a causal connection between marriage and career choices, or they all may be correlated with unobservable characteristics of the individual which are determining his joint success in the marriage and labor markets. One of the goals of this paper is to estimate the structural parameters underlying the interaction of career and marriage decisions, while controlling for the endogenous selection of individuals into their chosen career and marriage paths.

Theoretically, the direction of causality between career and marital decisions could be in both directions. Marriage could make men more motivated, and thereby, increase their wages or human capital investments. Or, a higher wage or advanced schooling could increase one's prospects in the marriage market, thus increasing the chances of attracting a suitable partner for marriage. In addition, labor market outcomes after marriage could affect the stability and duration of a marriage, and also the prospects for re-marriage. Therefore, it is reasonable to conjecture that labor market outcomes are affected not only by marital status, but also that marital status is affected by labor market outcomes. The goal of this paper is to sort out the magnitude of these causal effects, while controlling for self-selection and unobserved heterogeneity.

The vast literature on human capital has thus far ignored the idea that men may be motivated to succeed in the labor market as a way of improving their prospects in the marriage market. However, this notion is consistent with an evolutionary process whereby men who are more successful in providing for their partners are more likely to procreate. To the extent that men are motivated to increase their schooling and work harder in the labor market only for the extra benefits they receive in the marriage market, estimates of the returns to schooling and work experience in a typical wage regression could underestimate the true private returns to such activities. This is the first paper to try to estimate the extent to which men are motivated to succeed in the labor market in order to enhance their marriage prospects and/or to reduce the chances of divorce. After estimating the structural parameters of the joint marriage and career decision process, I construct the counterfactual career path of individuals when there is no return to career decisions in the marriage market. The results of this experiment reveal a strong influence of marriage considerations on the career choices of men – if it were not for the returns in the marriage market, men would work much less, go to school less, and choose the blue-collar sector over the white-collar sector more often. These results suggest that traditional estimates of the returns to human capital investments are underestimated by looking simply at their returns on the labor market, and demonstrate the importance of considering the joint nature of marriage and career decisions.

In addition, estimates of the structural model produce unbiased estimates of the "marriage premium", which are approximately 10% for lower ability men but virtually non-existent for higher ability men. In contrast, the OLS estimate of the marriage premium with the same sample is 18%. Thus, typical OLS estimates of the marriage premium appear to be severely biased upwards due to a correlation between marital status and unobserved ability. In addition, the results show that there is heterogeneity in the marriage premium: about 10% for low wage men, but essentially zero for higher wage men. One interpretation of these findings is that marriage may make low wage men more motivated or serious about their careers, while marriage has little effect on men with higher wages because they are already highly motivated.

The estimation of the structural parameters also allows for a number of interesting counterfactual experiments. For example, the estimates show how an increasing variation of transitory shocks can lead to many of the broad labor market and marriage market patterns exhibited over the last few decades: increasing non-employment, more schooling, an occupational shift from blue-collar to white-collar, declining wages in both occupations, delays in marriage, and increasing divorce rates. Many of these patterns also are shown to result from a decrease in the demand for blue-collar labor and/or increasing inequality of potential wives.

To implement the model, the analysis follows 2,155 white men from ages 16 to 39 using data from the NLSY79. In each year of the sample, individuals are categorized into one of four "career sectors": schooling, white-collar, blue-collar, and "home." The latter category includes all workers whose main activity during the school year was not going to school or working. In each year, an individual's marital status is recorded as one of the following: never married, first marriage, divorced once (not re-married), second marriage, second divorce, third marriage, and third divorce. In each period, individuals are presented with options in each career sector and potential marriage offers in the marriage market. The probability of receiving a marriage offer in any period is conditional on current and previous marriage and career decisions and personal characteristics (AFQT score, unobserved "type", etc.). Wage offers in each occupation are also conditional on current and previous marriage and career decisions and personal characteristics. In each period, individuals maximize their expected lifetime utility by deciding whether or not to change their current marital status (conditional on receiving an offer), and whether to work in one of the occupations, go to school, or stay at "home".

Estimation of the model involves the numerical solution of a finite-horizon, discrete-choice dynamic programming problem, nested within an algorithm that maximizes a likelihood function. The dynamic program is solved by backward recursion, and the likelihood function is constructed by simulating the solution of the optimization problem for a set of artificial agents, and then maximizing the probability that the simulated agents match the decisions of individuals in the data. This method is particularly suitable for data sets with missing endogenous state variables as is the case when using the NLSY, especially since the NLSY was conducted only every other year after 1992.

Although there is considerable research on female marriage and labor supply decisions (Heckman and MaCurdy (1980), Hotz and Miller (1988), Eckstein and Wolpin (1989), van der Klaauw (1996), and many others), the interaction of marriage and career decisions for men has received scant attention. A few recent papers have developed structural models of two-sided matching in the marriage market (Brien, Lillard, and Stern (2002), Seitz (2002), and Wong (2002)), but have primarily focussed on the role of the endogenous sex ratio in determining matches and how cohabitation interacts with divorce and match quality. These papers do not address the dynamic marriage and career decisions of men, or estimate the returns to career decisions in the marriage market and the returns to marriage decisions in the labor market.

A few of the issues addressed in this paper have been examined in isolation within a non-dynamic framework. In particular, the marriage premium has received considerable attention, as the literature has tried to sort out whether married men earn more because of any causal relation or whether the premium represents a high degree of positive sorting into marriage (see Korenman and Neumark (1991), Cohen and Haberfeld (1991), Gray (1997), and Hersch and Stratton (2000)). However, the literature has never modeled the decision to get married in order to control for endogeneity and individual heterogeneity. There is also significant work on the issues of divorce and re-marriage. Becker, Landes, and Michael (1977) examined marital "turnover" and suggested two general causes: (1) search is costly and meetings occur randomly, therefore, a marriage offer which was accepted in the past may be discarded when a better match is offered in the future; and (2) traits that determine the gains from the marriage match can change in unpredictable ways, such as changes in labor market prospects. Becker, Landes, and Michael (1977) use cross-sectional data to examine these issues, and Weiss and Willis (1997) build on their analysis by using longitudinal data to try and separate "changes in match quality" from "initially bad matches." However, Weiss and Willis (1997) focus on the determinants of the dissolution of the first marriage only. This paper builds on this literature by explicitly modeling the dynamic search process in the marriage market, while embedding a model of marital turnover in a model of career decisions. The model of career decisions closely parallels the framework developed by Keane and

Wolpin (1997). This paper enriches their model of occupational choice by seeing how occupational choice interacts with marriage decisions.

2 The Data

The data are taken from the National Longitudinal Survey of the Labor Market Experience (NLSY 1979) from 1979 until 1998. The sample consists of a random sample of white men ages 14-21 in 1979 taken from the "core" NLSY sample. We follow each individual from the time that they are at least 16 years old until the end of the sample period (up to 39 years old), and record the individual's marriage, education, work, and occupational status for every calendar year available. The main analysis consists of a sample of 2,155 men who report their joint career and marital status for at least three years. Individuals appear in the sample for an average of 15.4 years.[1] In addition, the analysis uses data on weekly wages for individuals who work, as well as measures for each respondent's mental ability (AFQT score adjusted for age at which the test was taken) and parental background (whether both parents were living with the respondent at age 14 and the education level of each parent).[2]

The estimation method used in the analysis does not require each individual to have complete retrospective data for any given age to be included in our sample, as is done in many previous dynamic models such as Keane and Wolpin (1997). Therefore, the estimation strategy will be able to use information on each individual at each point in time, regardless if the person's wage, marital or career status is unknown at any given time period.

I now describe how individuals were categorized into one "marriage" category and one "occupation" sector for every year where sufficient information was non-missing.

[1] Ninety percent of the men in the sample report for at least for 10 years, and sixty-three percent for at least 15 years.

[2] The wages for self-employed workers were treated as missing. The sample was restricted to those with non-missing AFQT scores and family background characteristics (whether both parents were living with the respondent at age 14 and the education level of each parent).

2.1 Marriage Sectors

Each individual in the NLSY was asked about their marital status each sample year and were asked retrospective questions about when each of their marriages started and ended. When sufficient marriage information was available, individuals were classified into one of seven marriage sectors in each year: (1) "single" (never married), (2) "first marriage" (currently married for the first time), (3) "first divorce" (married once, divorced, and currently single), (4) "second marriage" (divorced once and remarried), (5) "second divorce" (divorced twice and currently single), and (6) "third marriage" (re-married for the second time), and (7) "third divorce" (divorced for the third time and currently single). Table 1 displays the marriage sector distribution for the sample over time. As expected, individuals gradually get married, divorced, re-married, etc. The median individual waits until the age of 25 to get married, but there are significant differences according to the person's AFQT score. For those in the bottom 20 percent of the AFQT distribution, the median age at first marriage is 24 while the those at the top 20 percent marry at the median age of 27. Overall, 71 percent of first marriages last at least 10 years, but again, there are sharp differences in the marriage survival rate according to AFQT scores: 84 percent of first marriages survive at least 10 years for men at the top 20 percent of the AFQT distribution, while only 59 percent are still active for those at the bottom 20 percent. Clearly, AFQT score is positively associated with age-at-first marriage and more durable marriages.

2.2 Career Sectors

Individuals were classified in each period into one of the following four mutually exclusive career sectors: schooling, blue-collar, white-collar, and "home". These classifications are similar to those used by Keane and Wolpin (1997). To be considered working in either the white-collar or blue-collar sector, the individual had to work at least 30 weeks out of the calendar year for at least 20 hours per working week. To be classified as being in school, the individual had to complete a year of schooling during the calendar year.[3] Respondents with non-missing information about weeks worked and schooling status who were not classified into one of the other three sectors were placed into the "home" sector.

Table 2 reveals the expected pattern of career choices as the cohort ages over time. At first, most of the sample attends school and gradually they move into the blue-collar and white-collar occupations over time. Interestingly, the data displays a cross-over pattern as workers who start out in blue-collar tend to move over to the white-collar sector over time – a pattern not picked up by Keane and Wolpin's (1997) study of career choices since their study stopped at the age of 26. There are also very stark differences in career patterns across levels of AFQT: men with lower AFQT scores typically work less (the "home" sector), study less, and tend to work in the blue-collar sector more than the white-collar sector.

2.3 The Interaction of Marriage and Career

A first pass through the data reveals a strong and complex relationship between marriage and career outcomes. The first column of Table 3 presents the results of a standard wage regression for the core sample of male workers in 1992. After controlling for a wealth of personal characteristics (AFQT, mother's education, etc.), wages are shown to be very significantly related to the occupational choice of workers and their marital status. White-collar workers earn a 17% premium while married workers earn 19% more than blue-collar workers. Interestingly, divorced workers earn less than married workers, and are not significantly different than single workers. These patterns persist if wage regressions are run separately for white-collar and blue-collar wages, as shown

[3] Specifically, the individual had to satisfy three requirments to be in the schooling sector in any given calendar year. First, the respondent must report that "Highest Grade Completed as of May 1" has increased by one since the previous calendar year (using the *created "Highest Grade Completed by May 1 of Survey Year" variable). Second, the respondent must satisfy at least one of the following two items: (a) report to be enrolled in school as of May 1 of the calendar year (using the *created "Enrollment Status as of May 1 of Survey Year" variable) or (b) report that the main activity during the interview week in the calendar year as "going to school" (using the *created "Employment Status" variable). Third, the respondent must satisfy at least one of the following two: (a) worked less than 24 weeks during the calendar year, or (b) worked more than 24 weeks but less than an average of 20 hours per working week. In addition, for the year 1979, individuals who were currently in the grade appropriate for someone who went continually to school were classified retrospectively as being in school from the age of 16 to the current age.

in the last two columns of Table 3. Surprisingly, married workers earn more in blue-collar (22%) than white-collar (14%) compared to non-married men. Again, divorced men are not significantly different from single men. These findings, however, are just correlations and do not establish any causal relationships. In particular, the large "marriage premium", which is a common result, may not be due to the effect of marriage on wages, but rather may result from a non-random selection of men who choose to get married.

Table 4 shows how marital status is strongly correlated with career choices. Conditional on wages, blue-collar workers are significantly less likely to be married than white-collar workers and more likely to get divorced if they do get married. Again, the direction of causality is not clear. Blue-collar workers may have more trouble finding a good match in the marriage market, thus lowering their probability of being married. When they do find a match, the quality of their match may be lower, thus increasing the likelihood of getting divorced. On the other hand, a non-random selection of less able and less stable men into the blue-collar sector could also account for these correlations. A similar story can be told about individuals in the "home" sector, who are also less likely to be married and more likely to get divorced. In contrast, white-collar workers, conditional on wages, take longer to get married but are more likely to stay married. This pattern may result from the idea that these workers can afford to wait until they find a high quality match, which in turn, produces a more durable match in the long run (see Bergstrom and Bagnoli (1993), Weiss (1997), and Weiss and Willis (1997) for similar explanations). Higher wages, on the other hand, increase the chance of being married and staying married. But, again, this correlation may result from unobserved characteristics which may make men earn more and attract higher quality matches in the marriage market.

In general, it is not clear whether the characteristics of each sector cause people to behave in certain ways, or whether the "self-selection" of certain types of people into certain sectors is responsible for the strong correlations between marriage and career choices in the data. The model described in the next section will enable us to untangle these complicated relationships by estimating the underlying structural parameters of the decision making process which generates the observed marital and career outcomes in the data. Although many of the issues raised above have been addressed in the existing literature, they have generally been analyzed in isolation. There is no study that formulates and estimates a model that can explain labor market and marital outcomes for men within a single unified framework.

3 The Model

This section presents the basic structure of the model and the parameterizations of each structural equation. The solution to the model and the estimation method is also discussed. The model corresponds to the decision problem of a single individual choosing his career and marital status in each time period t ($t = 1, ..., T$) in order to maximize his expected present discounted value of available alternatives which are based upon previous decisions. Each period is associated with a certain age (ages 16-39). In addition, each individual enters the first period with initial background variables consisting of: being single, $afqt$ (corresponding to quintile of the individual's age-adjusted AFQT score, so that $afqt \in 1, 2, 3, 4, 5$), and $family$ (family background characteristics – based on whether both parents lived with the respondent at age 14 and the schooling levels of each parent).[4] There is also unobserved heterogeneity in men, characterized by three different types of men ($type \in 1, 2, 3$).

3.1 Marriage and Career Choice Set

In each period, individuals choose one of four broadly defined career sectors: "home" (nonemployment) ($k_t = 0$), school ($k_t = 1$), "blue-collar" employment ($k_t = 2$) and "white-collar" employment ($k_t = 3$). The number of years accumulated in each career

[4] This paper follows Taber (2001) by assuming that AFQT (adjusted by the age at which the test was taken) is an exogenous variable. This does not mean that AFQT is equivalent to IQ or that it is inherited genetically. AFQT is simply regarded as a measure of ability at the time the test was taken. In addition, I do not find that the AFQT score is endogenous to education level at the time of the test – which suggests that AFQT is comparable across all ages in the sample. I tested this by regressing the age-adjusted AFQT score on the eventual highest grade completed and found that the relationship between AFQT and eventual schooling was stable across all age levels. Also, in order to use AFQT (which is a continuous variable) in the state space, the score was discretized into quintiles and the score associated with each quintile is the value of a standard normally distributed variable in the middle of the quintile.

choice k at the end of year t is represented by x_{kt} (i.e. $\sum_{\tau=1}^{t}\sum_{k=0}^{3} x_{k\tau} = t$). Initial conditions for the experience levels in each sector are normalized to zero: $x_{10} = x_{20} = x_{30} = 0$. Individuals are free to choose any career sector in any given period.

In order to capture the logical sequence of marriage possibilities, the marital choice set contains ten options m_t:

Single, Never Married	$m_t = 0$
First Marriage, Type 1 wife	$m_t = 1$
First Marriage, Type 2 wife	$m_t = 2$
Divorced Once, Single	$m_t = 3$
Second Marriage, Type 1 wife	$m_t = 4$
Second Marriage, Type 2 wife	$m_t = 5$
Divorced Twice, Single	$m_t = 6$
Third Marriage, Type 1 wife	$m_t = 7$
Third Marriage, Type 2 wife	$m_t = 8$
Divorced Three Times, Single	$m_t = 9$

The initial condition for marital status is never being married ($m_0 = 0$). However, unlike career choices, marriage decisions are restricted to choosing among the available options in each period. The set of potential options includes keeping the same marital status from one period to the next:

$$m_t = m_{t-1} \text{ if } m_{t-1} \in (0, 1, 2, 3, 4, 5, 6, 7, 8, 9)$$

Or, individuals can potentially change their marital status according to the following logical sequence of marriages:

$$\begin{array}{ll} m_t \in (1,2) & \text{if } m_{t-1} = 0 \\ m_t \in (3,4,5) & \text{if } m_{t-1} \in (1,2) \\ m_t \in (4,5) & \text{if } m_{t-1} = 3 \\ m_t \in (6,7,8) & \text{if } m_{t-1} \in (4,5) \\ m_t \in (7,8) & \text{if } m_{t-1} = 6 \\ m_t = 9 & \text{if } m_{t-1} \in (7,8) \end{array}$$

In this manner, marital options are restricted so that marriages must occur in sequential order (i.e. they cannot go directly from their first marriage to their third marriage). In addition, individuals are potentially free to go from one marriage to the next marriage without spending a period being divorced and single, and individuals are allowed to marry one type of wife in one marriage and a different type in a future marriage (i.e. $m_{t-1} = 4$ and $m_t = 8$).

Within the set of potential options described above, the only option that is always available is the option to be single. That is, single men can always remain single ($m_t = m_{t-1} \in (0, 3, 6, 9)$), and married men always have the option to divorce their current wife and become single again.

However, available marital options are restricted in two further ways: (1) marriages can only occur if a man receives an offer, and (2) marriages may be terminated by the wife (i.e. the man does not have the option to continue with his current marriage). Formally, a married man will have his current marriage terminated exogenously by his wife with probability π_t^D, in which case the man has to be single in the next period or get re-married if a new marriage offer was forthcoming. Marriage offers arrive with probability π_t^μ, which is the probability of receiving an offer to marry a woman of type μ ($\mu = 1$ or 2). Marriage offers can be received by single or married men, and men are always free to reject the offer in the hope of getting a better offer in the future. If no marriage offer is forthcoming, a single man must remain single and a married man can remain married (if his wife did not terminate the marriage) or become divorced and single again.

Therefore, the set of available marital options at each time t, denoted by M_t, are a function of the marital status in the previous period, m_{t-1}, and are conditional on whether a new marriage offer is received, the type of marriage offer, and whether the wife terminates the current marriage (if he was married).

The full choice set thus contains four career and ten potential marriage options, all of which are assumed to be mutually exclusive and exhaustive. However, not all of the options in the choice set have observable counterparts in the data. The four career choices are observable as well as the marital status of each man in our sample, including whether he is divorced or on his first, second, or third marriage. In contrast, the wife's "type" is not observable in the data, but one can think of heterogeneous wife "types" as representing variation in the quality of marriage matches, which is partially observable in the data because we do observe that certain types of marriages are more successful (endure longer) and are able to withstand certain types of observable shocks (i.e. wage shocks).[5] Also, heterogeneity in wife "types" allows for a non-trivial search process in the marriage market. Without variation in the quality of wives, the search process for wives in the marriage market would simply degenerate into each man marrying the first woman he meets. With heterogeneity in wives (or "match offers"), the model allows for the possibility that a man would turn down an offer to marry a certain type of woman in the hope of receiving an offer to marry a different type of woman in the future, and thus captures the complex, forward-looking decision-making process inherent in the choice of marital status. As described later, this strategic decision process in the marriage market will interact with strategic career choices.

3.2 Parameterizations

3.2.1 Marriage Utility

The single-period utility associated with marital status m_t is a function of whether the person is married, the type of wife (if he is married), and how many divorces the person went through. The latter element is intended to capture the alimony (monetary costs) and psychological costs that accompany a divorce. After each divorce, the individual is assumed to pay an additional monetary cost each period thereafter. Thus, divorce costs in period t can be characterized by the following:

$$\begin{aligned} div(m_t) &= 0 && if \quad m_t \leq 2 \\ &= \delta_1^d && if \quad 3 \leq m_t \leq 5 \\ &= \delta_1^d + \delta_2^d && if \quad 6 \leq m_t \leq 8 \\ &= \delta_1^d + \delta_2^d + \delta_3^d && if \quad m_t = 9 \end{aligned} \tag{1}$$

The current utility of being married also depends on whether the person is married to a type 1 wife ($m_t \in 1,4,7$) or type 2 wife ($m_t \in 2,5,7$). Thus, the model will allow for the pecuniary returns (the wife's income) and the monetary equivalent of the utility of being married to each type of wife to differ. Formally, this is represented by:

$$\begin{aligned} marr(m_t) &= \delta_1^m + \varepsilon_t^m \quad \text{if} \;\; m_t \in 1,4,7 \\ &= \delta_2^m + \varepsilon_t^m \quad \text{if} \;\; m_t \in 2,5,8 \end{aligned} \tag{2}$$

[5] It does not necessarily have to be the case that all men agree who are the good types of potential wives (matches) and who are the less-good types of potential wives. All that is necessary is that people do believe that their marriage quality will be different with different women.

$$= 0 \qquad \text{otherwise (single)}$$

where ε_t^m is an identically distributed random utility shock to the current marriage, which is uncorrelated over time, and is only experienced by individuals who choose to be married. This specification allows for variation in the utility of marriage across types of wives (variation in match quality), and also for the utility of the marriage itself to be stochastic, since as pointed out in Mortensen (1988), the quality of the marriage match is revealed and can change over time.[6] Therefore, if the marriage match deteriorates by the individual receiving a sufficiently bad shock to the marriage, he may decide to terminate the marriage and become single or marry someone else if a new marriage offer was received.

The net current-period utility associated with marital status m_t is the combined marriage utility and divorce costs:

$$u^m(m_t) = marr(m_t,\ \varepsilon_t^m) + div(m_t) \tag{3}$$

3.2.2 Career Utility

The current period utility associated with each of the four career sectors is dependent on the marital status of the individual (m_t), the accumulated levels of experience in each career sector as of year t (x_{0t}, x_{1t}, x_{2t}, and x_{3t}), .the individual's *type* ($type = 1, 2$, or 3), and the individual's $afqt$ quintile. To ease the notation, the vector of experience levels in all four career sectors is represented by X_t. In general, the one period utility of choosing career sector j is represented by $u_t^k(k_t, m_t)$,which are specified for each of the four career sectors.

Home Sector Utility ($k_t = 0$):

$$u_t^k(0, m_t) = b^0\,(type,\ afqt,\ t) + \varepsilon_t^{k0} \tag{4}$$

where b^0 is the one-period non-monetary value of leisure, which depends linearly on a quartic of the individual's age t, *type*, and $afqt$ score. The ε_t^{k0} term is a stochastic

[6] Another source of "wife" heterogeneity could stem from heterogeneity in bargaining power (Chiappori, Fortin, and Lacroix (2002)).

shock to the value of leisure in period t which is uncorrelated over time. The structure of all the shocks in the model will be discussed later.

Schooling Sector Utility ($k_t = 1$):

$$u_t^k(1, m_t) = b^1(t) + tuition(x_{1t}) + entry^1(x_{1t},\ k_{t-1}) + \varepsilon_t^{k1} \tag{5}$$

where b^1 is the one-period net utility of being in school, taking into consideration both the direct monetary costs of schooling and the potential consumption value of schooling. The total net utility b^1 varies according to the individual's age, represented by t. The *tuition* function allows for the costs of schooling to change with levels of schooling and is parameterized as a step function with steps for high school ($x_{1t} \leq 2$), college ($x_{1t} \leq 6$), and graduate school ($x_{1t} > 6$). The $entry^1$ function allows for the one-time costs of returning to school from a different sector (i.e. $k_{t-1} \neq 1$) to vary with the amount of schooling. That is, the costs of returning to high school are γ_1^1,while returning to college or graduate school costs γ_2^1.

Blue-Collar Sector Utility ($k_t = 2$) :

$$u_t^k(2, m_t) = wage^2(X_t,\ m_t,\ type,\ afqt,\ k_{t-1},\ \varepsilon_t^{k2}) + entry^2(X_t,\ k_{t-1}) \tag{6}$$

where $wage^2$ is the blue-collar wage offer, and $entry^2$ is the one-time (non-wage) cost of entering the blue-collar sector if the individual was not working in the blue-collar sector in the previous period ($k_{t-1} \neq 2$). This non-wage entry cost captures the idea that there may be search costs in finding the blue-collar offer or starting to work in the blue-collar sector (transportation, clothing, etc.). The wage offer in the blue-collar sector is a Mincer-like wage function which depends on the accumulated experience in each career choice X_t (completed schooling, blue-collar experience, and white-collar experience), the individual's $afqt$ score, the individual's *type*, and the individual's age t. Inclusion of a return to white-collar experience in the blue-collar sector allows for the full or partial transferability of occupation-specific experience in the other occupation. Some of these variables are interacted with each other in a typical log wage specification.

In addition, the wage offer is a function of marital status, where the state of being married affects the intercept of the wage offer, and it does so differentially depending on the type of current wife. The state of being married is also allowed to affect the returns to accumulated experience in the sector, thus allowing for marital status to affect not only the intercept but also the experience profile of the wage function. Furthermore, the specification allows for changes in the intercept and experience profile for individuals who decide to divorce, so any "returns" to being married could dissipate upon the transition into divorce.

There is also a return to continuing to work in the blue-collar sector ($k_{t-1} = 2$) which, along with the entry cost function, is designed to capture the persistence of career choices across time periods (see Keane and Wolpin 1997). Also, including a return to staying in the same sector is equivalent to incorporating a human capital depreciation effect. The log wage offer is also subject to a linear stochastic component ε_t^{k2}, which is uncorrelated across time.

White-Collar Sector Utility ($k_t = 3$) :

$$u_t^k(3, m_t) = wage^3(X_t,\ m_t,\ type,\ afqt,\ k_{t-1},\ \varepsilon_t^{k3}) + entry^3(X_t,\ k_{t-1}) \tag{7}$$

where each component is defined analogously to the utility components in the blue-sector, although the parameters differ for each sector.

3.2.3 Correlation of Marriage and Career Shocks

In each period t, an individual receives four separate shocks (as shown above) to each career sector (ε_t^{kj}, $j = 0, 1, 2, 3$), and if they are married, a marriage shock ε_t^m. All of these shocks are presumed to normally distributed (with mean zero) and contemporaneously correlated, but mutually serially independent over time (Keane and Wolpin (1994)).

3.2.4 Marriage Offer Functions

In each period t, individuals may receive a new marriage offer with a type 1 or type 2 wife. The probability of receiving an offer of either type is specified as a tri-variate logit where the three outcomes are: (1) no offer, (2) an offer from a type 1 female, or (3) an offer from a type 2 female. The probability of receiving an offer from a type μ woman is:

$$\pi_t^{\mu} = \pi^{\mu}(X_{t-1},\ k_{t-1},\ m_{t-1},\ type,\ afqt,\ t),\quad \mu = 1, 2$$

where the base (suppressed) state is not receiving an offer at all. The probability of receiving an offer from either type of female depends on the individual's historical and current career and marital choices, as well as the individual's age, *type*, and $afqt$ score. Note that married people are allowed to receive new offers, but the probability of receiving an offer is likely to be affected by marital status. Individuals can only get married if they receive an offer, and their choices are restricted to the type of woman who is giving the offer.

3.2.5 Exogenous Divorce (Involuntary Termination of the Marriage by the Wife)

Individuals who are currently married may have their marriages terminated unilaterally by their wives. The probability of an exogenous divorce at time t is specified as:

$$\pi_t^d = \pi^d(k_{t-1},\ x_{1t-1},\ afqt,\ type)$$

Thus, the exogenous termination of marriages is modelled as a function of the last period's career choice, accumulated levels of schooling x_{1t-1}, $afqt$ score, and *type*. These variables capture the extent to which divorce probabilities depend on permanent elements of the person's potential wage earnings (occupation, education level, AFQT, and type). Although the person's $afqt$ and *type* are assumed to be exogenously determined for each individual, each person can affect his divorce probabilities through the choice of occupation and schooling investments over time.

3.2.6 Type Probabilities for Men

Each man is assumed to be one of three discrete types corresponding to three mass points in a non-parametric distribution of permanent unobserved heterogeneity (Heckman and

Singer (1984)). The probability of being a certain *type* ($type = 1, 2, 3$) of male is modeled as a tri-variate logit:

$$\pi^{type} = \pi^{type}(afqt,\ family),\ \ type = 1, 2, 3 \tag{8}$$

where the probability of being certain type depends on the individual's $afqt$ score and $family$ background, all of which are assumed to be exogenously determined for each individual.

3.2.7 Objective Function

The individual is assumed to maximize the present discounted value of lifetime utility from age 16 ($t = 1$) to age 39 ($t = T$). Let Ω_t represent the relevant information set with which the individual enters period t. Ω_t includes the individual's history of career decisions (denoted by X_{t-1}), marriage decisions (inferred from m_{t-1}) and the individual's *type*, $afqt$ score, and $family$ background. Given this set of relevant information, the one-period utility associated with any combination of marriage status m_t and career choice k_t is denoted by $U(m_t, k_t \mid \Omega_t)$, and is determined by equations (3) and (4)-(7) above:

$$U(m_t, k_t \mid \ \Omega_t) = u_t^k(k_t, m_t) + u_t^m(m_t) \tag{9}$$

This specification clearly shows the interaction between marriage and career: current and historical marital decisions affect the utility of career choices by affecting the wages in each occupation, while current and historical career choices affect marriage opportunities by affecting the chances of getting a marriage offer, the type of offer, and the probability of receiving an exogenous divorce in the current and future periods. Thus, the interaction of marriage and career choices demands a maximization decision based on the joint and forward-looking marriage and career choice path.

Although all four career choices are available each period, marriage options are restricted to the available set of marital options defined by M_t above. Therefore, the available choice set in period t is given by the Cartesian product of the four career sectors multiplied by the marriage options contained in M_t. We denote the choice of element j in this feasible set of joint marriage and career choices in period t as $d_t^j = 1$ $(j = 1, ..., J_t)$, and the utility associated with that choice as U_t^j (specified in equation (9)). The individual's objective function is then represented as:

$$V_t(\Omega_\tau) = \max_{\{d_t^j\}} E\left[\sum_{\tau=t}^{T}\sum_{j=1}^{J_\tau} \delta^{T-\tau} U_\tau^j d_\tau^j | \quad \Omega_\tau\right] \tag{10}$$

where δ is the discount factor (fixed at 0.95) and E is the expectation operator taken over the joint distribution of utility and marriage shocks $(\varepsilon_t^{k0}, \varepsilon_t^{k1}, \varepsilon_t^{k2}, \varepsilon_t^{k3}, \varepsilon_t^{m})$, as well as the distribution of marriage offer probabilities (π_t^1 and π_t^2) and exogenous divorce probabilities π_t^d. The solution to this problem yields the optimal stream of joint marriage and career decision over time.

3.3 Model Solution and Estimation

3.3.1 Solution

The solution of the model is not analytic, and therefore, is solved numerically using backward recursion starting from a terminal age T. The maximization problem in equation (10) can be re-written as the maximization over the value functions of the available set of joint marriage and career states j $(j = 1, ..., J_t)$ at time t, denoted as $V_t^j(\Omega_\tau)$, which satisfy the Bellman (1957) equation:

$$V_t(\Omega_t) = \max\left[V_t^1(\Omega_t), . \ . \ . \ , V_t^J(\Omega_t)\right]$$

$$V_t^j(\Omega_t) = U_{t.}^j + \delta E\left[V_{t+1}(\Omega_{t+1}) \quad | \quad (d_t^j = 1), \quad \Omega_t\right] \tag{11}$$

Therefore, given any set of parameters, solving the model consists of simulating all of the stochastic components of the model at each point in the state space (every possible combination of historical marriage and career decisions for every *type* and $afqt$ score up to period t), and using backwards recursion to calculate U_t^j and $E\left[V_{t+1}(\Omega_{t+1})\right]$ (see Keane and Wolpin (1994, 1997)). The latter term is called the $Emax_{t+1}$ function for convenience. At each iteration in the estimation, 30 draws of the entire set of stochastic components were taken according to the current set of parameters to estimate the $Emax_t$ at every point in the state space. The value of $Emax_T$ for the terminal period T is parameterized as function of the individual's $afqt$ and historical and terminal state choices: $Emax_T(X_T, m_T, k_T, afqt)$.

3.3.2 Estimation

To estimate the model, the numerical solution of the dynamic programming problem described in the previous section is nested within an algorithm that maximizes a likelihood function. The likelihood function is constructed by simulating a set of choice histories and matching these choice histories with observed choices in the data. The estimation strategy deals effectively deals with the problem of unobserved initial conditions (see Heckman (1981)) and state variables. These problems can be quite severe when constructing marriage and employment histories from NLSY data, since the relevant information is frequently missing for some respondents in various years, especially after 1992 when the NLSY survey was conducted every other year. Therefore, this technique allows us to use all the marriage and career choice information contained in the data whenever the data is available, without having to worry about constructing the complete marriage and career history for each respondent.[7] Consequently, the sample size in this analysis is much larger than the samples used in many previous dynamic programming studies using the NLSY (such as Keane and Wolpin (1997)).

The estimation algorithm is based on simulating the complete marriage and career histories of a set of artificial agents ($n = 1, . . ., N$). Given a set of parameter values, the simulation for agent n is performed as follows:

1. Draw agent n's parental background ($family$) and $afqt$ according to the actual proportions in the data (and according to the actual correlations of these variables to each other in the data - which were estimated by logits and multivariate logits outside the estimation algorithm using the NLSY sample).

2. Using the simulated background variables ($family$) and $afqt$, draw the agent's $type$ ($type = 1, 2, 3$).

[7] The estimation uses techniques developed by a long list of papers. A partial list includes Heckman (1981), Heckman and Singer (1984), Rust (1987), Hotz and Miller (1988), Keane and Wolpin (1994, 1997, 2001), and Hotz, Miller, Sanders, and Smith (1994).

3. Draw from all the stochastic elements in the model ($\varepsilon_t^{k0}, \varepsilon_t^{k1}, \varepsilon_t^{k2}, \varepsilon_t^{k3}, \varepsilon_t^{m}$), as well as from the marriage offer functions (π_t^1 and π_t^2) and exogenous divorce probability function (π_t^d) to determine the available marriage options and career offers (conditional on n's $afqt$ and $type$).

4. According to the agent's $type$, $afqt$, and realizations of the stochastic elements in step (3), the agent considers the $Emax_{t+1}$ term for each option, which was already constructed at the current parameterization, and evaluates each current marriage and career option using equation (11). The agent chooses the joint marriage and career option with the highest expected value over the current set of J options: $\max\left[V_t^1(\Omega_t), . . . , V_t^J(\Omega_t)\right]$

5. The state variables (X_t, m_t, k_t) are updated according to the choice in step (4).

6. Repeat steps (3)-(5) until $t = T$.

Doing this N times produces N artificial agents with a complete set of marriage and career outcomes over T periods ($N = 80,000$ in the actual estimation). The likelihood function is then built using a frequency simulator, although as Lerman and Manski (1981) point out, the probability that the entire career and marriage choices of a simulated agent (including wages) matches someone in the data is very infinitely small. Instead, the likelihood is built on the simulated frequencies of period-by-period choices.

In particular, there are 28 possible joint career and marriage choices (four career choices and seven marriage states) observed for every individual in the data at time t. Denote the probability that individual i, given his exogenously determined $type$ and $afqt$ score, chooses the joint marriage and career sector j ($j = 1, ..., 28$) and earns log wage w_{ijt} at time t:

$$P^{it}_{type,afqt}(choice_{it} = j,\ lnwage{=}w_{ijt} \mid type,\ afqt) =$$

$$prob(choice_{it} = j \mid type,\ afqt) * \varphi\left(\left(\frac{w_{ijt} - \mu_{jt}}{\sigma_{jt}}\right) \mid choice_{it} = j,\ type,\ afqt\right) \quad (12)$$

where $\varphi(\cdot)$ is a standard normal pdf and μ_{jt} and σ_{jt} are the mean and standard deviation of log wages conditional on choosing the joint marriage-career state j at time t and given the individual's *type* and $afqt$. The first component can be estimated by the proportion of simulated agents with the same *type* and $afqt$ who choose j at time t. The mean and variance of the conditional wage distribution can be estimated similarly by computing the mean and variance of log wages for simulated agents with the same *type* and $afqt$ who choose j in time t. Substituting these estimates into equation (12) yields the simulated probability $\widehat{P}^{it}_{type,afqt}$. The probability of the sequence of person i's choices and wages over time, given *type* and $afqt$,is then estimated as:

$$prob(choices\ _i \mid type,\ afqt) = \prod_{t=1}^{T} \widehat{P}^{it}_{type,afqt} \tag{13}$$

If the person's *type* were known, equation (13) would be the likelihood contribution of person i. However, a person's *type* is unknown, but can be estimated as a function of observable initial characteristics ($family$ and $afqt$). Therefore, the likelihood contribution for person i is simply the weighted sum of equation (13) over the three possible types using the probability of person i being each type as the weight:

$$L_i = \sum_{type=1}^{3} prob(choices\ _i \mid type,\ afqt) * \pi^{type}(i = type \mid family,\ afqt) \tag{14}$$

where π^{type} is defined above in equations (8) as the probability of person i being a certain *type* ($type$ $=$ $1, 2, 3$) conditional on $afqt$ and $family$. Thus, we have derived the contribution of each person in the data to the likelihood function conditional on his $afqt$ score and $family$ background characteristics.[8] In practice, the simulated likelihood function was optimized using a simplex algorithm since the likelihood function is not smooth, and standard errors were computed by estimating the derivatives of the log

[8]Although it is not obvious, the above estimation strategy is a special case of Keane and Wolpin (2001) when their classification error rates are set to zero. This is true only if there were no wages to estimate.

likelihood function with respect to each parameter at the maximum.[9]

The likelihood in equation (14) is composed only of elements when there is a recorded choice for person i in the data. In periods where person i does not report a choice or wage, this element is simply dropped in the process of building the likelihood. In this manner, we simply match whatever choices are reported in the data, conditional on exogenous initial conditions ($family$ and $afqt$), to simulated moments (which are also conditioned on the same initial conditions as state in step (1) above) based on the current set of parameters in the iteration process. In theory, we could match person i's choices in each period t to simulated moments conditional on person i's previous choices. However, this would force us to throw out any observation in the sample where the previous period's choice is unobserved. As a consequence, the sample size would be dramatically reduced, in particular, because the NLSY was sampled only every other year from 1992 onward. Thus, even if we conditioned on the previous period's choice, the sample used in the analysis would contain few people beyond the age of 29 and no one beyond the age of 33. Since many important career and marriage decisions are taken by men in their 30's, I decided to build the likelihood in such as way as to be able to explain and fit the marriage and career paths of men well into their 30's.

4 Results

4.1 Fit of the Model

Before discussing the results, I first present the fit of the model. Figures 1a and 1b show that the model produces patterns of career choices very similar to those reported in the NLSY sample. In particular, the model captures the sharp drop in schooling and the eventual overtaking of the blue-collar sector by the white-collar sector. Figure 2 displays a close fit of the model to blue-collar and white-collar wages as well, in particular during the prime ages of working. The model fit of the marriage categories

[9] Standard errors were estimated as follows. Let g_i be the vector of derivatives of the log contribution to the log likelihood of person i with respect to the set of parameters $\theta : g_i = \frac{\partial \ln L_i}{\partial \theta}$. This derivative was approximated by taking small steps in the estimated parameters $\theta : \widehat{g}_i = \frac{\ln L_i(\theta) - \ln L_i(\theta + h)}{h}$ where $h = \theta * 10^{-3}$. The covariance matrix is then estimated by: $\left(\sum_i \widehat{g}_i \widehat{g}_i^{\theta} \right)^{-1}$.

is shown in Figures 3a to 3d. The model picks up the general patterns in marriage behavior quite well. Figure 3a shows a very close fit to the age-at-first marriage and the stock of men who are currently on their first marriage. Concerning second and third marriages, the model picks up the broad patterns and magnitudes, but the fit is clearly not exact (the very small scale on these graphs exaggerate the appearance of rather small differences).. In Figure 3d, the model is shown to estimate the survival rates of first marriages quite well, although marital success is somewhat overestimated beyond six years of marriage.

The model fit according to AFQT levels are depicted in Figures 4a to 4d. The model captures very closely all of the differences in the marriage and career patterns across levels of AFQT scores. In particular, the model shows how AFQT scores are positively related to schooling, working in white-collar, higher wages, delays in marriage, and higher survival rates of the first marriage. Most notably, the model estimates that 42% of marriages fail by the tenth year for men in the lower quintile of the AFQT distribution, while the actual number in the NLSY is 41% (Table 4b). In stark contrast, the model predicts that a much lower 12% of marriages will fail in the first ten years for men in the upper AFQT quintile while the actual number is 16% in the NLSY. Therefore, the model captures not only the broad marriage and career patterns for all men over time, but also matches the cross-sectional variation in these patterns across men with different AFQT scores.

The fact that the model picks up the survival rates of marriage well indicates that the model is able to fit moments in the data that the likelihood is not explicitly trying to fit. The likelihood is built to fit the proportions of men who choose each state in each period, but information concerning transitions across sectors is not entered directly into the likelihood function. Therefore, a good test of the model is to see how the model fits moments which the likelihood function is not explicitly trying to match. The model appears to do this quite well by fitting the survival rates of marriage (Tables 3d and 4b), and by fitting the transitions into and out of the various marriage and career sectors. These transitions are displayed in Tables 5 and 6, which show a very close match to the transitions into and out of almost every marriage and career sector. Not surprisingly, the transitions into and out of the states with the most observations (never married, first marriage, school sector, blue-collar, white-collar, etc.) are matched very well, while the transitions from states with much less data (second divorce, third marriage, home sector) are matched less well.

Overall, the model picks up the marriage and career patterns for the overall sample over time, and the cross-sectional variation according to levels of AFQT. The model also produces a close match to the transitions into and out of marriage and career states, which indicates that the estimation procedure is able to fit moments that the likelihood is not explicitly trying to fit – which should increase our confidence in the model's predictions. However, it is left to the reader to decide whether the fit is good enough to draw credible inferences from the results and counterfactual experiments presented in the rest of the paper.

4.2 Discussion of the Estimates

There are too many (155 to be exact) coefficients to discuss individually, but several overall patterns emerge in the estimates presented in the Appendix. First, there are three *types* of men which are distinctly characterized by increasing quality of the parental background (parental education and whether the person lived with both parents at age 14). Type 1 men have the most troubled family background, while Types 2 and 3 have increasingly better backgrounds. Not unsurprisingly, Type 3 men typically earn higher wages in both the white and blue collar sectors, while Types 2 and 1 lag behind in that order (although Type 2 men actually have a slightly higher blue-collar intercept than Type 3 men). Types 1 and 3 work predominantly in the white-collar sector while Type 2 men tend to pursue their comparative advantage in the blue-collar sector.

The estimates also show a broadly consistent pattern whereby higher investments in human capital (in education or work experience) increase the probability of getting a marriage offer and decreasing the chance of suffering an exogenous divorce. In addition, these same variables increase the chances of receiving a "better" marriage offer with a Type 2 wife – the utility of Type 2 wives is roughly double that of Type 1 wives. In particular, men who go to college significantly increase their chances of marrying a Type 2 woman. Figures 5a and 5b illustrate the patterns of marriage types in the aggregate and according to AFQT levels. Most notably, marriages to Type 2 wives (the "better" type) occur only after the age of 21 while marriages to Type 1 wives occur earlier, thus suggesting that Type 2 wives are likely to be college educated or high ability women. Also, Type 2 wives seem to be in the minority, with twenty percent of the men married to Type 2 wives and fifty percent to Type 1 wives – although higher levels of AFQT are associated with more marriages to the "better" Type 2 wives (a form of high assortative mating as found by Fernandez, Guner, and Knowles (2001) in many advanced countries).

Estimates for the exogenous divorce probabilities also show that higher levels of ability and education reduce the probability of an exogenous marriage termination. Interestingly, divorce probabilities are noticeably higher in the "home" sector than the other three career sectors.

Overall, the estimates show that higher levels of ability and education increase the chances of getting married, finding a higher quality match, and staying married longer. These patterns demonstrate the interactive, joint, and forward-looking nature of the marriage and career decision-making process for men.

Marriage Premium

The estimates of the marriage premiums contrast sharply with those using OLS in Table 3, which were 22% for blue-collar and 14% for white-collar. The marriage premiums for the model are displayed in Figures 5c and 5d for both types of wives in both working sectors. The model allows for marriage (and divorce) to affect both the intercept and slope, so the figures display the marriage premiums for workers who work continually in the same occupation over 18 years of marriage. Most notably, the results show that the marriage premium is practically non-existent for men married to Type 2 wives, and perhaps might even be a little negative in the white-collar sector (around -4%). The marriage premium with a Type 1 wife is bigger (roughly 10% in white-collar and increasing from 9% to 13% in blue-collar over 18 years of marriage). Clearly, these results suggest that the OLS marriage premium is biased upwards due to the correlation of unobserved ability and marital status. This is particularly true since the marriage premium appears to be close to zero for men who marry Type 2 wives, which are typically men with higher ability and education levels. However, the results are similar to OLS in the sense that the marriage premium is higher in the blue-collar sector.

Table 5e and 5d demonstrate the impact of divorce on wages in both sectors. Divorce virtually wipes out the "marriage premium" for men who typically earn lower wages (those that work in blue-collar and/or marry Type 1 wives), while divorce seems to have a short-run positive impact on high wage men (men who tend to marry Type 2 wives), but this effect dissipates over time.

Overall, the model suggests that the marriage premium is much smaller than OLS, and is roughly 10% for men who typically have low wages (those married to Type 1 wives) and virtually non-existent for men who typically earn high wages. One possible interpretation is that marriage changes the behavior of low wage men more than high wage men – marriage makes low wage men get serious about their careers while high wage men are already highly motivated regardless of their martial status.

4.3 Counterfactual Experiments

The estimation of the structural parameters of the model allow for countless counterfactual experiments. The following experiments were chosen to demonstrate and quantify the importance of the interaction between marriage and career decisions, while trying to highlight some of the factors which may have contributed heavily to many of the trends over the last few decades in marriage and labor market outcomes.

EXPERIMENT 1: No Return to Career Decisions in the Marriage Market

This experiment is designed to see how much career decisions are governed by their returns in the marriage market. To examine this question, the model is simulated after turning off the possibility of marriage.[10] In other words, I estimate how men would react if there were no possibility that their actions would affect their chances of getting

[10] Technically, this was done by setting the probability of getting married infinitely small. In the simulations, no one gets married.

a marriage offer, the type of marriage offer, and the chances for divorce. Figures 6a-6c compare the differences in career decisions from the full simulated model and from the experimental simulations. The results suggest that marriage plays a significant role in the career decisions of men. Without the possibility to marry, men would work less, study less, and if they do work, they would work more in blue-collar relative to white-collar. For example, at age 25, the percent of men at "home" increases from 9% to 14%, the percent of men in white-collar drops from 32.8% to 21.6%, and average years of schooling drops from 13.7 to 13.2.

These differences show that there is a significant payoff in the marriage market to working, studying, and working in the white-collar sector. Without the returns to these activities in the marriage market, men would make career decisions in a distinctly different manner. Furthermore, these results show that traditional estimates of the returns to labor market decisions underestimate the true private returns without considering their impact in the marriage market.

EXPERIMENT 2: No Exogenous Divorce

The previous experiment demonstrated the extent to which career decisions are dominated by increasing one's chances in the marriage market. This experiment is designed to measure the extent to which people's decisions are determined solely by considerations of increasing the chances of a successful marriage. To do this, I shut off entirely the possibility of exogenous divorces in order to see whether people change their behavior in the situation where nothing they can do will cause their wife to leave them exogenously. (Men are still free to leave their wives in this experiment.) The results are displayed in Figures 7a-7b.

The figures show that without the possibility of exogenous divorce, men work a little more in blue-collar and go to school somewhat less. For example, at age 30 when significant numbers of men are getting old enough to worry about divorce, the percent of men in blue-collar increases from 42.6% to 44.7% and average years of schooling drops from 13.92 to 13.75. These effects are not huge, and clearly the process of avoiding an exogenous divorce is not the major factor in career decisions. But, a change of 0.17 years of schooling due only to the prospect of reducing the chances of an exogenous divorce is not entirely insignificant in magnitude.

EXPERIMENT 3: Increasing Transitory Shocks

Over the past few decades, the United States and other developed countries have experienced large increases in wage inequality, and a large part of that increase is due to increasing transitory shocks (see Gottschalk and Moffitt (1994) and Gould, Moav, and Weinberg (2001)). This experiment is intended to see how increasing transitory shocks affect the marriage and career decisions of young men. The experiment is conducted by increasing the realizations of all shocks (home utility, school utility, blue-collar wage, white-collar wage, marriage utility) by 30%, and also increasing the probability of an exogenous divorce (given the state variables) by 30% (not 30 percentage points).

The results of this experiment capture many phenomena during the last few decades and are presented in Figures 8a-8e. Increasing the variance of shocks causes men to leave blue-collar work for primarily the home sector, since the amount of white-collar workers remains roughly the same over time. At the age of 30, the percent of men in the home sector increases from 11.0 to 15.4, while blue-collar workers fall from 42.6% to 35.6%. Interestingly, more men also seem to be going back to school in their late 20's and early 30's, perhaps in order to deal with the increasing size of transitory shocks and frequency of layoffs.

Also, Figure 8d shows that the average blue-collar wage increases when the variance of shocks is higher. This result is most likely due to two factors: higher shocks produces higher wages for those who get a positive shock, and also those who received a bad shock are now more likely to drop out of the workforce altogether, thus skimming off the very low end of the blue-collar worker pool. In addition, Figure 8e shows that the increasing variability of shocks leads to delays in marriage and lower survival rates of marriage. For example, by the age of 25 (t=9 on the graph), the percent of never-married men increases from 47.9 to 52.6, while the marriage survival rate at 10 years drops from 74.0% to 64.2%. These results are most likely inter-related: men are delaying marriage in the hope of finding a higher quality wife in order to avoid the higher rate of divorce.

Overall, an increasing variability of shocks produces many of the major patterns in the marriage and labor markets over the past few decades: delays in marriage, higher rates of divorce, increasing non-employment of white men, a shift away from blue-collar, and increasing investments in education, particularly in later stages in life.

EXPERIMENT 4: Decreasing the Demand for Blue-Collar Work

This experiment is intended to describe the extent to which marriage and career decisions have been affected by the declining demand for blue-collar work in the economy. To examine this issue, the experiment is performed by decreasing the log wage intercept in the blue-collar sector for all types of men by 0.1. Again, the results pick up many of the changes in the wage structure over the last few decades, as shown in Figures 9a-9d.

Due to the declining demand for blue-collar work, workers shift in droves out of blue-collar and into schooling and white-collar. Blue-collar wages decrease (by 11.7% at age 30) as is expected since the demand for blue-collar work falls, but so do the wages of white-collar workers as workers who formally worked in the blue-collar sector now move to the bottom tail of the white-collar distribution, thus dragging down the average white-collar wage (by 7.0% at the age of 30). There are no big changes in marriage behavior as seen in Figure 9d, except for slightly increasing delays in marriage.

In many respects, the results from this experiment produce many of the same patterns in the structure of the labor market that we saw from the increasing variability of shocks in the previous experiment. The notable exception is the declining average wage of blue-collar workers, since the previous experiment worked to increase the average wage of those observed in the blue-collar sector. However, in contrast to the previous experiment, the falling demand for blue-collar work had little effect on marriage market outcomes, most likely because men started to invest more in education and white-collar work which offset the effects of the decreasing demand for their blue-collar skill.

EXPERIMENT 5: Increasing Inequality of Wives

Since there have been large increases in male inequality, it is reasonable to ask whether increasing variation in the quality of wives has affected the marriage and career patterns of men. This experiment is also motivated by the strong evidence that women delay their age-at-first marriage in response to higher levels of male inequality (Gould and Paserman (2003) and Loughran (2002)). To examine the behavior of men in response to an increasing variety of women, this experiment simulates the model after increasing the value of the higher quality type wives (Type 2 wives) by 50 percent.

The results in Figures 10a-10d show large changes in labor market behavior in response to increasing the variance of wife quality: workers leave in droves from blue-collar to white-collar, while education levels surge. At the age of 30, the blue-collar sector shrinks from 42.6 to 33.8 percent, while white-collar increases from 44.1 to 53.2 percent and education levels increase by 1.45 years. In addition, Figure 10c shows dramatic changes in marriage behavior: men delay marriage and experience more successful marriages (higher survival rates). For example, at the age of 25, the percent of men who are never-married increases from 47.9 to 55.5.

The reason for these changes in marriage patterns is shown in Figure 10d, where men are now more likely to marry a Type 2 wife (the type that was increased in value).[11] Overall, the increasing variation in women causes men to invest more in human capital and white-collar experience, and delay their marriage, in order to increase the chances of receiving a high quality offer. Therefore, this experiment also works in the direction of many of the patterns exhibited over the past few decades: more schooling, an occupational shift towards white-collar, and delays in marriage.

EXPERIMENT 6: Increasing Divorce Costs

A natural policy instrument which affects marriage market decisions is divorce costs. This experiment traces out the effects of doubling the costs of divorce.[12] As a result of this experiment, there were no noticeable changes in labor market decisions. Somewhat surprisingly, men did not respond by delaying marriage to any significant degree, however, increasing divorce costs did lower the rate of divorce (Figure 11a): the survival rate of first marriages at ten years increases from 74.0 to 78.1 percent –

[11] In a general equilibrium setting, it would be impossible for more men to marry more Type 2 women if the supply of Type 2 women is fixed. Therefore, we should think of these experiments as being the effect of manipulating the marginal person.

[12] Technically, the current-period costs of divorce were doubled and the terminal value of divorce was doubled.

which is a 15.8% reduction in the divorce rate at ten years of marriage.

EXPERIMENT 7: No Possibility for Re-Marriage

This experiment examines the extent to which men's decisions are influenced by the option of re-marriage. Consequently, the probability of receiving a marriage offer in this experiment is set to zero if you are or ever have been married. Although not shown, there were no noticeable changes in career decisions in response to this experiment, except for a small increase in education levels (about 0.07 of a year at age 30), as seen in Figure 12a. However, Figure 12b shows that the percent of first marriages which survive at least 10 years increases from 74.0 to 77.5. This increase represents a 13.5% reduction in the divorce rate at ten years of marriage. One possible inference from this result is that a declining stigma of being divorced, which affects the chances of re-marrying, may have contributed in a significant way to the increasing incidence of divorce over time.

5 Conclusion

The existing literature on human capital and occupational decisions assume that individuals maximize their returns to various labor market opportunities, but this literature ignores the evolutionary instinct in men to achieve material success in order to attract female partners. This paper demonstrates that this instinct is alive and well even in today's modern economy. If there were no "returns" to career outcomes in the marriage market, the results suggest that men would work less, study less, and if they did work, they would work more in the blue-collar sector than the white-collar sector. Overlooking these factors, as is done in the large literature estimating the returns to labor market decisions, underestimates the true private returns to career decisions.

Beyond showing the importance of the interaction between career choices and marriage outcomes and vice versa, this paper also sheds light on many of the labor market and marriage patterns in the data over the last few decades. In particular, the results indicate that the increasing variation of transitory shocks, coupled with the declining demand for blue-collar wages, led to increasing non-employment, more schooling, an occupational shift from blue-collar to white-collar, declining wages in both sectors, delays in marriage, and increasing divorce rates. In addition, increasing inequality of females may also have contributed to many of these trends. In particular, increasing inequality of women was shown to cause men to delay marriage while searching and competing more heavily for high quality women, by increasing their education levels and by working more in white-collar as opposed to blue-collar.

In addition, the parameter estimates indicate that traditional OLS estimates of the "marriage premium" are biased upwards and stem largely from unobserved heterogeneity. After controlling for unobserved heterogeneity and endogenous choices, the "marriage premium" is estimated to be zero for men who typically earn high wages and roughly 11% for those men who earn lower wages. One possible interpretation for these results is that marriage makes lower wage men more motivated and serious about their responsibilities, while marriage has little effect on high wage men since they are already highly motivated.

All of these results point to the importance of considering the interactive nature of the joint career and marriage decisions of men, a process which has been overlooked thus far in the existing empirical literature.

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Table 1: Marriage Choices Over Time

Age	Never Married (Single)	First Marriage	First Divorce (Single)	Second Marriage	Second Divorce (Single)	Third Marriage	Sample Size
16	1.0	0.00	0.00	0.00	0.00	0.00	1756
17	0.99	0.01	0.00	0.00	0.00	0.00	1756
18	0.96	0.04	0.00	0.00	0.00	0.00	1754
19	0.91	0.09	0.00	0.00	0.00	0.00	1753
20	0.85	0.15	0.01	0.00	0.00	0.00	1751
21	0.78	0.21	0.01	0.00	0.00	0.00	1745
22	0.70	0.27	0.02	0.01	0.00	0.00	1741
23	0.63	0.33	0.03	0.01	0.00	0.00	1734
24	0.56	0.38	0.04	0.02	0.00	0.00	1732
25	0.48	0.44	0.05	0.03	0.00	0.00	1734
26	0.43	0.47	0.06	0.03	0.00	0.00	1732
27	0.38	0.50	0.07	0.04	0.01	0.00	1731
28	0.34	0.53	0.08	0.05	0.01	0.00	1726
29	0.31	0.54	0.08	0.06	0.01	0.01	1725
30	0.28	0.55	0.09	0.07	0.01	0.01	1711
31	0.26	0.56	0.09	0.08	0.01	0.01	1703
32	0.23	0.57	0.09	0.09	0.01	0.01	1684
33	0.21	0.58	0.09	0.09	0.01	0.01	1684
34	0.19	0.59	0.10	0.09	0.02	0.01	1440
35	0.17	0.60	0.10	0.09	0.02	0.02	1213
36	0.16	0.60	0.09	0.10	0.03	0.02	949
37	0.14	0.60	0.10	0.11	0.03	0.02	736
38	0.14	0.59	0.10	0.11	0.03	0.03	519
39	0.11	0.64	0.10	0.11	0.04	0.02	332

The numbers represent the percent of the sample of men in each marital status. The suppressed category is for those who are divorced three times and single, which is never above one percent of the sample.

Table 2: Career Choices Over Time

Age	Home	School	Blue Collar	White Collar	Sample Size
16	0.06	0.91	0.03	0.00	923
17	0.08	0.86	0.06	0.00	1145
18	0.12	0.59	0.24	0.04	1370
19	0.13	0.40	0.38	0.09	1579
20	0.14	0.33	0.42	0.11	1761
21	0.13	0.28	0.45	0.15	1762
22	0.12	0.17	0.48	0.22	1778
23	0.12	0.11	0.49	0.28	1750
24	0.10	0.07	0.49	0.34	1733
25	0.09	0.06	0.48	0.37	1711
26	0.08	0.04	0.49	0.39	1692
27	0.08	0.03	0.49	0.41	1682
28	0.08	0.02	0.48	0.42	1676
29	0.07	0.03	0.47	0.43	1468
30	0.08	0.02	0.48	0.42	1469
31	0.08	0.03	0.45	0.44	1221
32	0.08	0.02	0.44	0.45	1243
33	0.08	0.03	0.43	0.46	974
34	0.08	0.03	0.43	0.46	838
35	0.08	0.03	0.42	0.47	571
36	0.06	0.03	0.42	0.49	389
37	0.11	0.03	0.40	0.47	361
38	0.09	0.04	0.42	0.46	171
39	0.08	0.03	0.38	0.51	170

Each number represents the percent of the sample of men in each of the mutually exclusive and exhaustive career categories.

Table 3: Log Wage Regressions for NLSY79 Sample of Workers in 1992

	All Workers	Blue-Collar Workers	White Collar Workers
Intercept	4.35 (0.35)	4.07 (0.63)	4.29 (0.46)
Education	0.06 (0.01)	0.04 (0.02)	0.07 (0.01)
Experience	0.05 (0.03)	0.09 (0.06)	0.03 (0.05)
Experience Squared	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
South	-0.05 (0.03)	-0.06 (0.04)	-0.04 (0.04)
SMSA	0.15 (0.03)	0.15 (0.04)	0.15 (0.05)
AFQT	0.07 (0.02)	0.08 (0.02)	0.07 (0.03)
# Children Household	0.03 (0.01)	0.01 (0.02)	0.06 (0.03)
Both Parents at 14	0.06 (0.04)	0.08 (0.05)	0.03 (0.06)
Mother HS Grad	-0.01 (0.04)	-0.01 (0.04)	0.02 (0.06)
Mother College Grad	0.08 (0.06)	0.05 (0.09)	0.09 (0.08)
Father HS Graduate	0.08 (0.03)	0.09 (0.04)	0.09 (0.06)
Father College Grad	0.05 (0.05)	0.01 (0.07)	0.09 (0.07)
Blue-Collar	-0.17 (0.03)		
Married	0.18 (0.03)	0.22 (0.05)	0.14 (0.05)
Divorced	0.04 (0.05)	0.05 (0.06)	0.05 (0.10)
# Observations	1410	711	699
R-square	0.26	0.15	0.16

Standard errors in parentheses. Wages are defined as weekly wages. Experience is equal to age minus education minus six. High school graduates for mothers and fathers include those who started college but did not finish. SMSA is a dummy variable for living in a SMSA.

Table 4: Probit Regressions on Marital Status for NLSY79 Sample in 1992

	Probability of Being Married		Probability of Being Divorced	
Intercept	-1.59 (0.51)	-4.56 (0.68)	-1.01 (0.77)	0.94 (0.99)
Home	-0.76 (0.13)		0.87 (0.18)	
School	-0.27 (0.22)		-0.10 (0.50)	
Blue-Collar	-0.33 (0.08)	-0.26 (0.09)	0.41 (0.12)	0.39 (0.12)
Education	-0.01 (0.02)	-0.04 (0.02)	-0.12 (0.03)	-0.09 (0.03)
Age	0.08 (0.01)	0.08 (0.02)	0.05 (0.02)	0.05 (0.02)
South	0.08 (0.07)	0.11 (0.08)	0.21 (0.09)	0.19 (0.11)
SMSA	-0.18 (0.07)	-0.27 (0.08)	0.13 (0.10)	0.12 (0,11)
AFQT	0.05 (0.04)	-0.00 (0.00)	0.02 (0.06)	0.06 (0.07)
Both Parents at 14	0.24 (0.08)	0.30 (0.10)	-0.19 (0.12)	-0.25 (0.14)
Mother HS Grad	0.05 (0.09)	0.03 (0.10)	-0.13 (0.12)	0.09 (0.13)
Mother College Grad	-0.27 (0.14)	-0.24 (0.16)	0.31 (0.22)	0.31 (0.24)
Father HS Graduate	-0.16 (0.08)	-0.20 (0.09)	0.22 (0.12)	0.27 (0.13)
Father College Grad	-0.14 (0.11)	-0.12 (0.12)	0.02 (0.18)	0.02 (0.20)
# Children Born			-0.17 (0.04)	-0.15 (0.05)
Log Weekly Wage		0.55 (0.07)		-0.40 (0.11)
# Observations	1689	1410	1223	1044
Sample	Full Sample	Workers Only	Married and/or Divorced Sample	Only Workers who are Married and/or Divorced

Standard errors in parentheses.

Table 5: Actual and Model Predicted Marriage Transition Matrix

	Status in Period t+1							
Status in Period t	Never Married (single)	First Marriage	First Divorce (single)	Second Marriage	Second Divorce (single)	Third Marriage	Third Divorce (single)	Row Sample Size in NLSY
Never Married (single)	0.92 0.93	0.08 0.07						18,429
First Marriage		0.97 0.97	0.03 0.03	0.0 0.0				12,729
First Divorce (single)			0.86 0.87	0.14 0.13				1,680
Second Marriage				0.94 0.88	0.05 0.09	0.0 0.0		1,284
Second Divorce (single)					0.85 0.81	0.15 0.19		204
Third Marriage						0.93 0.85	0.07 0.15	122

The number in the upper left side of each box represents the actual transitions in the NLSY data (percent of persons in the row's marriage category which move to the category in the column), while the numbers in the lower right hand side of each box represent the model predictions. The empty boxes represent transitions which defy a logical order of marriage situations, so they are by definition empty. Persons who transition into the "third marriage" are not allowed to transition out of this category in the analysis.

Table 6: Actual and Model Predicted Career Choices Transition Matrix

	Choice in Period t+1				
Choice in Period t	School	Blue Collar	White Collar	Home	Row Sample Size in NLSY
School	0.64 0.60	0.14 0.15	0.14 0.16	0.09 0.09	5,143
Blue Collar	0.02 0.02	0.80 0.79	0.12 0.09	0.06 0.10	9,864
White Collar	0.04 0.04	0.16 0.10	0.78 0.80	0.03 0.06	6,414
Home	0.11 0.09	0.31 0.38	0.11 0.26	0.47 0.28	2,272

The number in the upper left side of each box represents the actual transitions in the NLSY data (percent of persons in the row's career category which move to the category in the column), while the numbers in the lower right hand side of each box represent the model predictions.

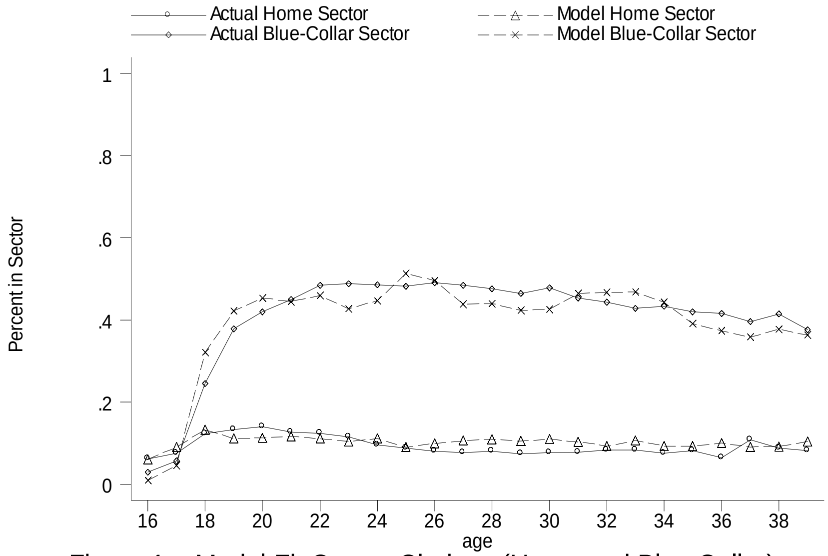

Figure 1a: Model Fit Career Choices (Home and Blue Collar)

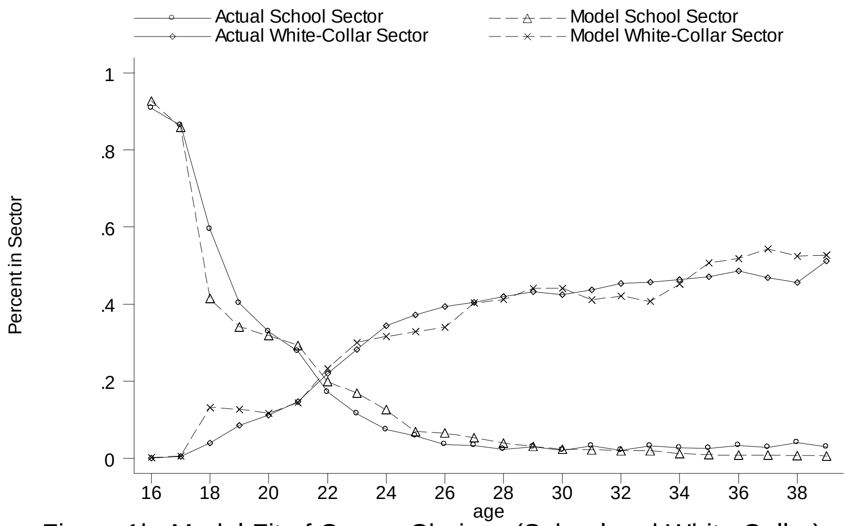

Figure 1b: Model Fit of Career Choices (School and White Collar)

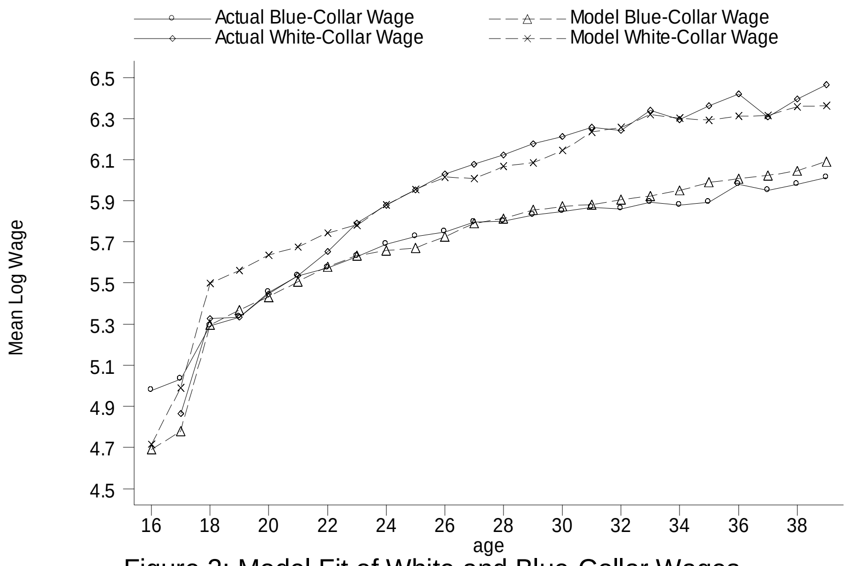

Figure 2: Model Fit of White and Blue-Collar Wages

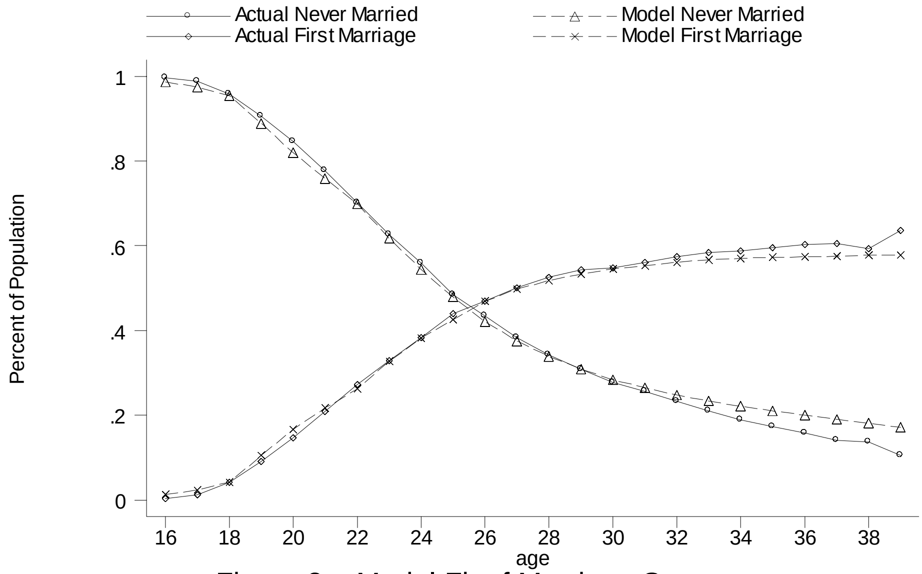

Figure 3a: Model Fit of Marriage Status

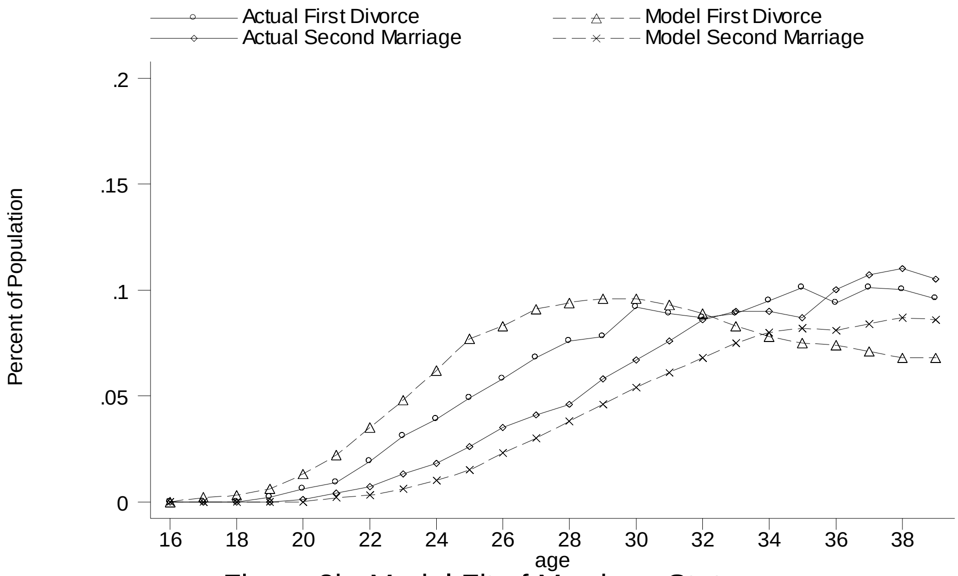

Figure 3b: Model Fit of Marriage Status

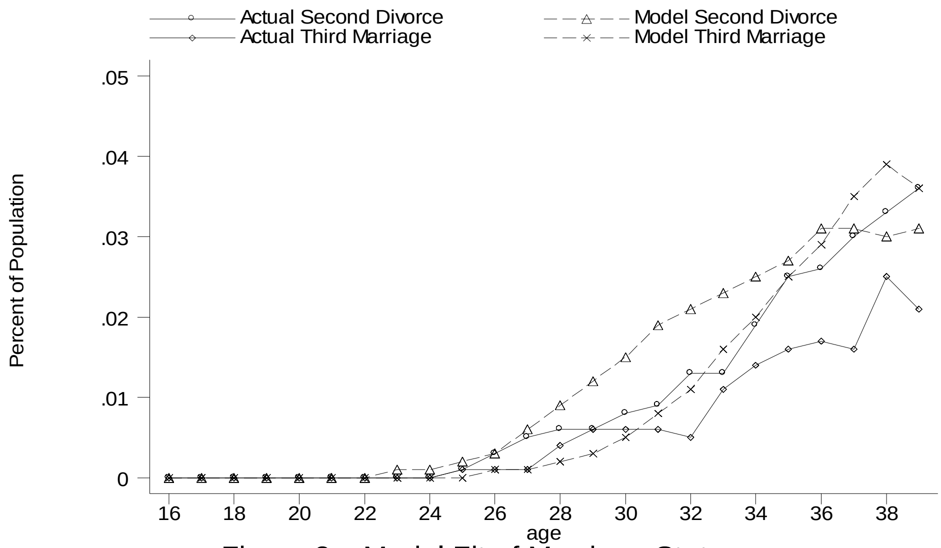

Figure 3c: Model Fit of Marriage Status

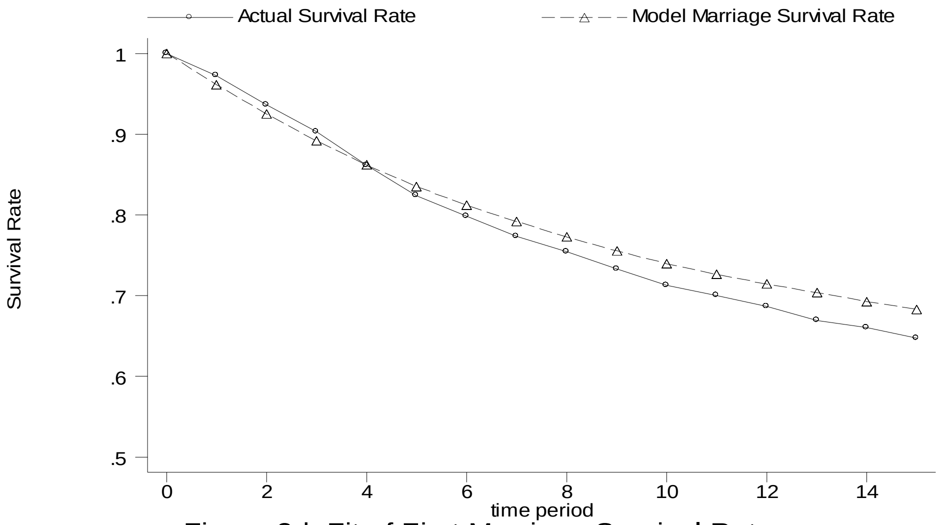

Figure 3d: Fit of First Marriage Survival Rate

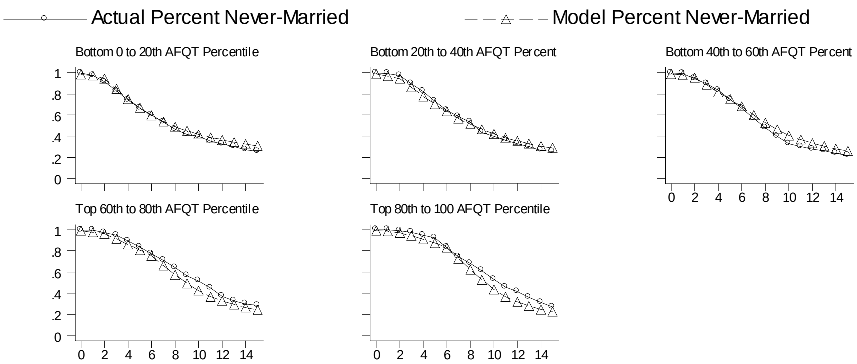

Figure 4a: Model Fit of Percent Never-Married by AFQT

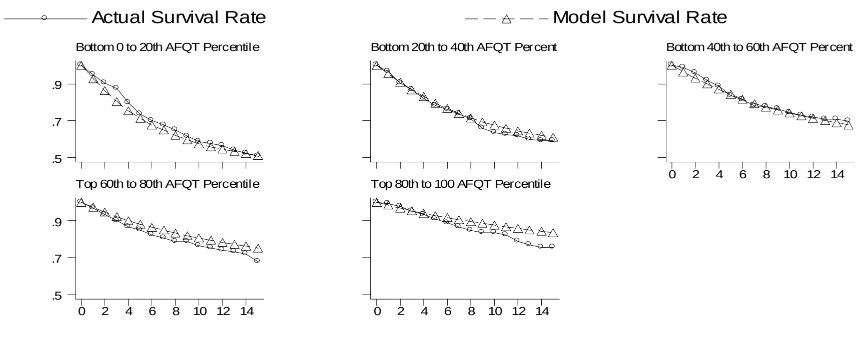

Figure 4b: Model Fit of First Marriage Survival Rates by AFQT

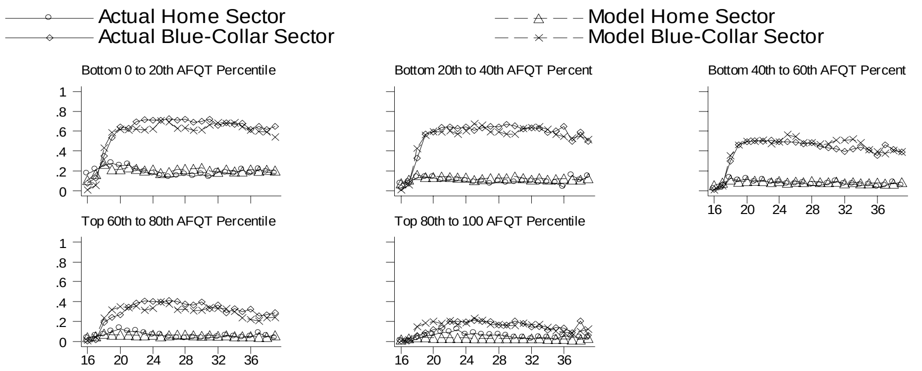

Figure 4c: Model Fit of Career Choices by AFQT

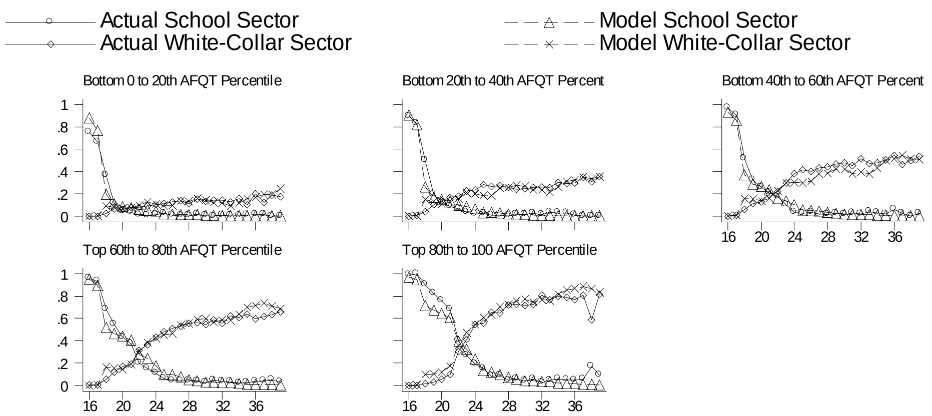

Figure 4d: Model Fit of Career Choices by AFQT

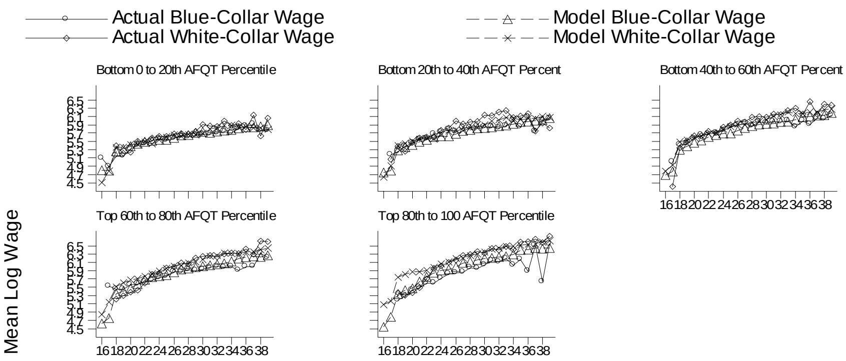

Figure 4e: Model Fit of Wages by AFQT

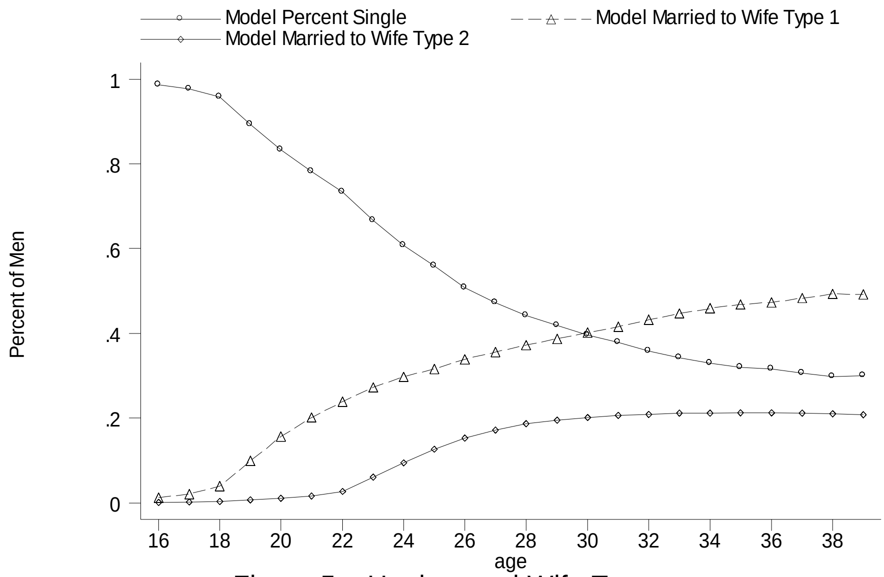

Figure 5a: Unobserved Wife Types

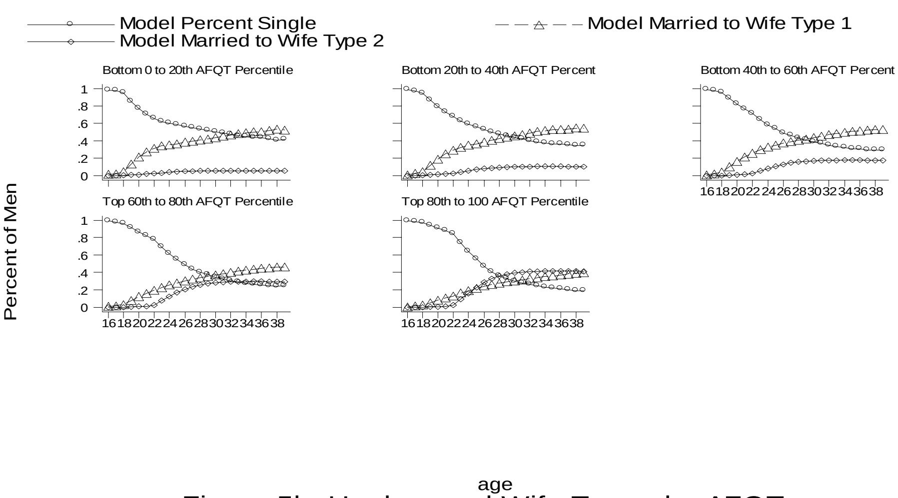

Figure 5b: Unobserved Wife Types by AFQT

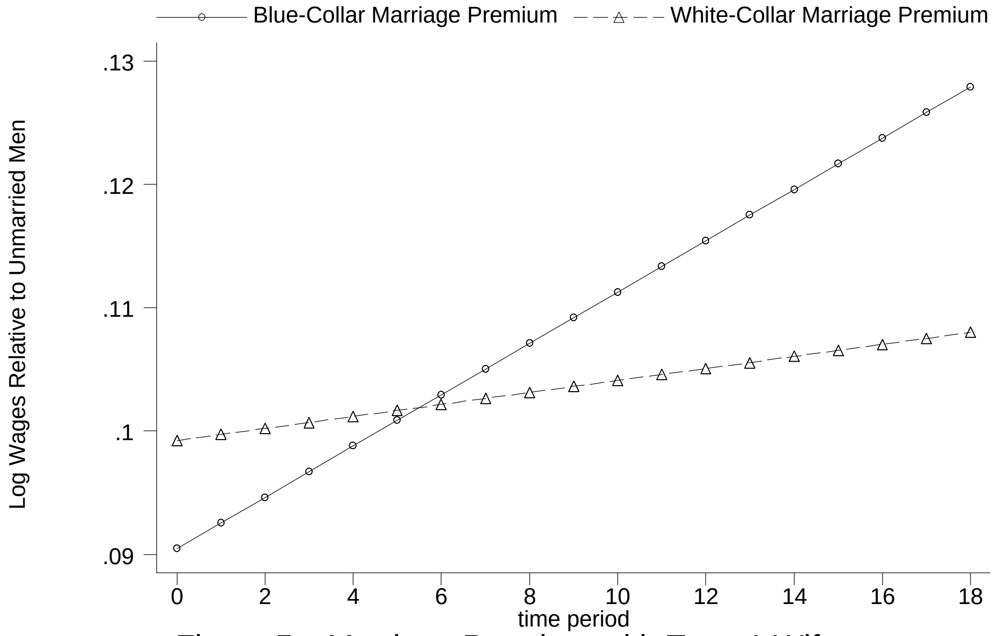

Figure 5c: Marriage Premium with Type 1 Wife

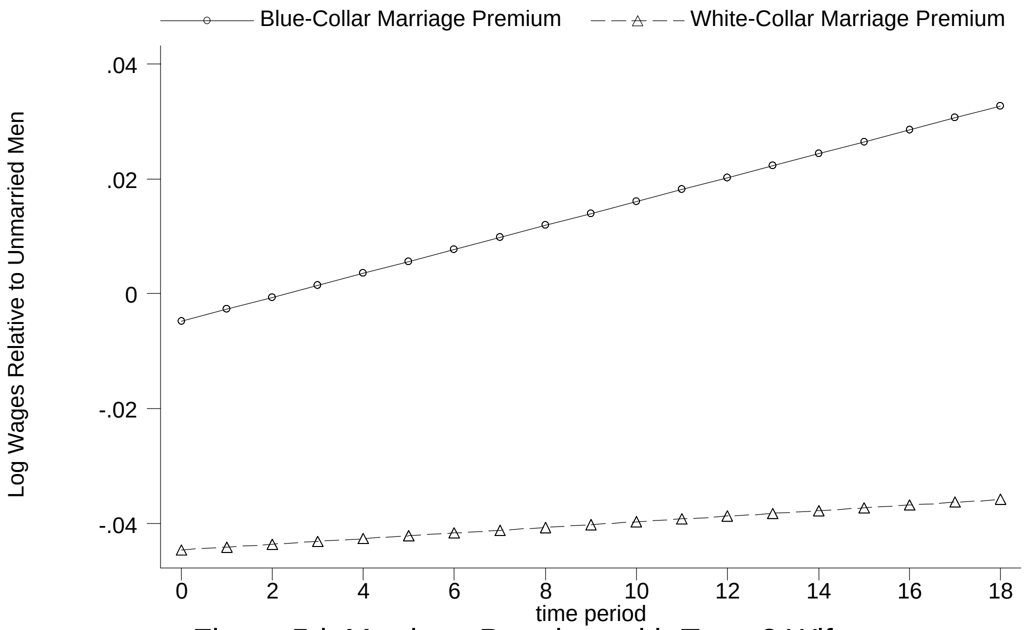

Figure 5d: Marriage Premium with Type 2 Wife

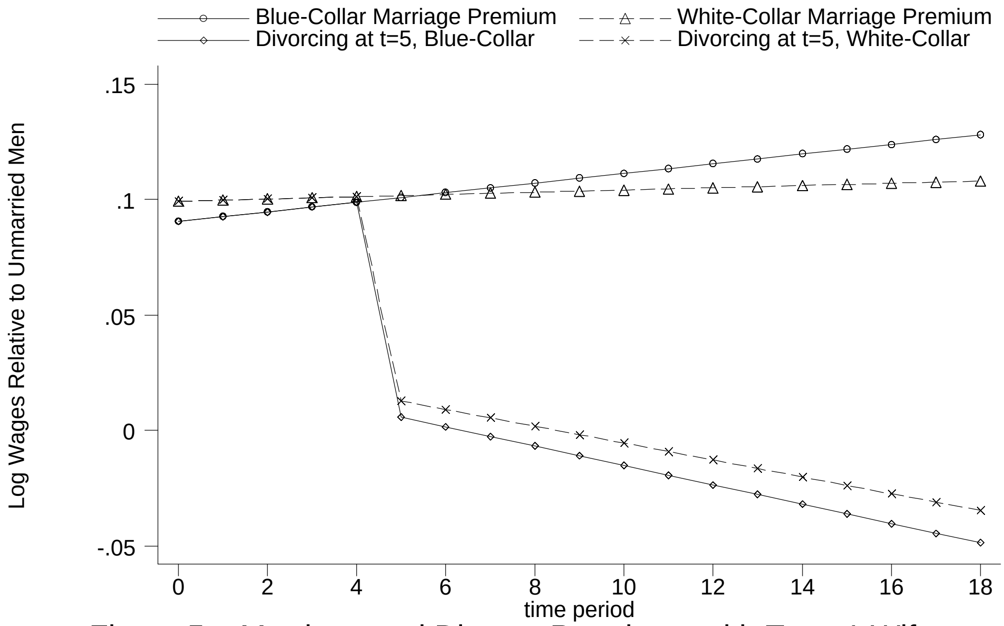

Figure 5e: Marriage and Divorce Premiums with Type 1 Wife

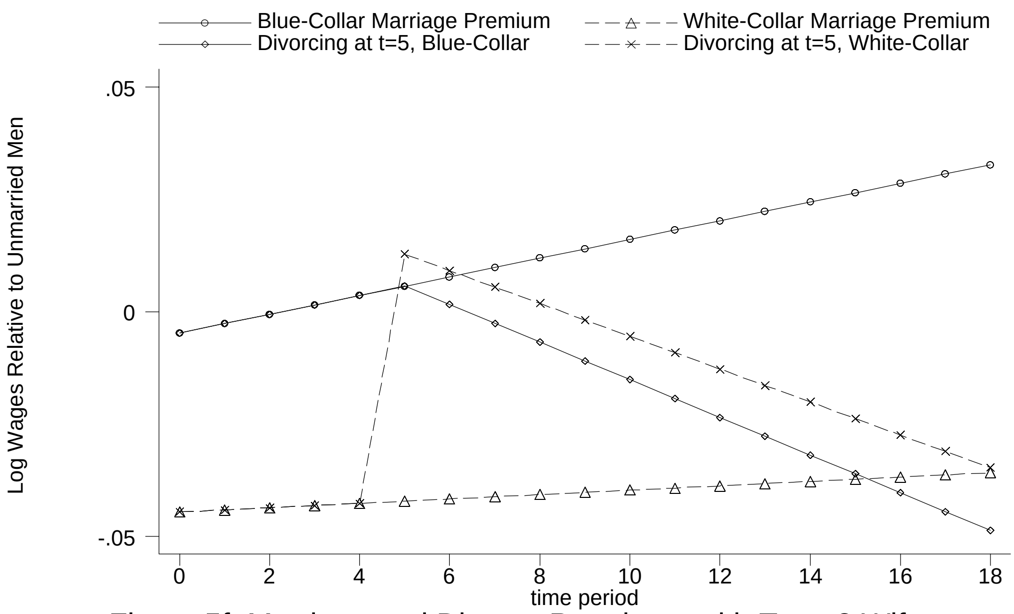

Figure 5f: Marriage and Divorce Premiums with Type 2 Wife

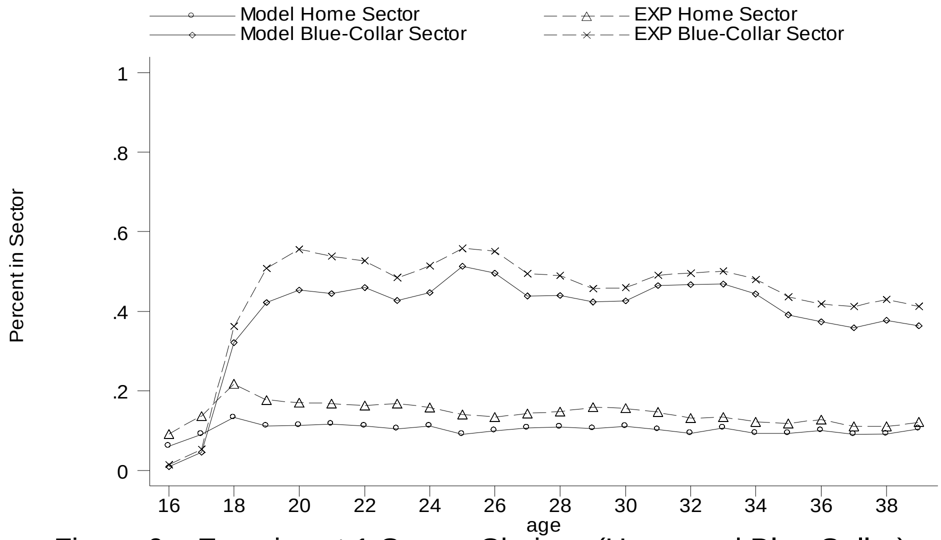

Figure 6a: Experiment 1 Career Choices (Home and Blue Collar)

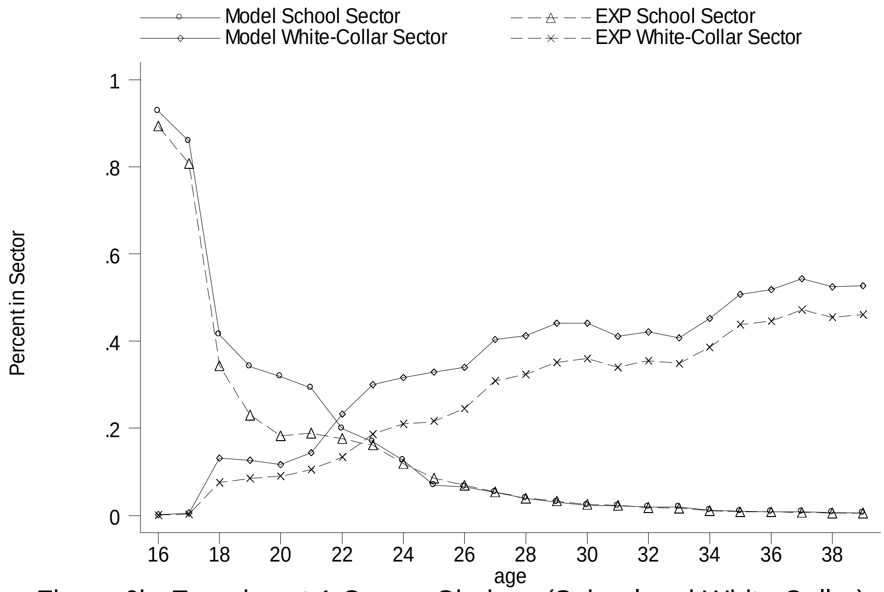

Figure 6b: Experiment 1 Career Choices (School and White Collar)

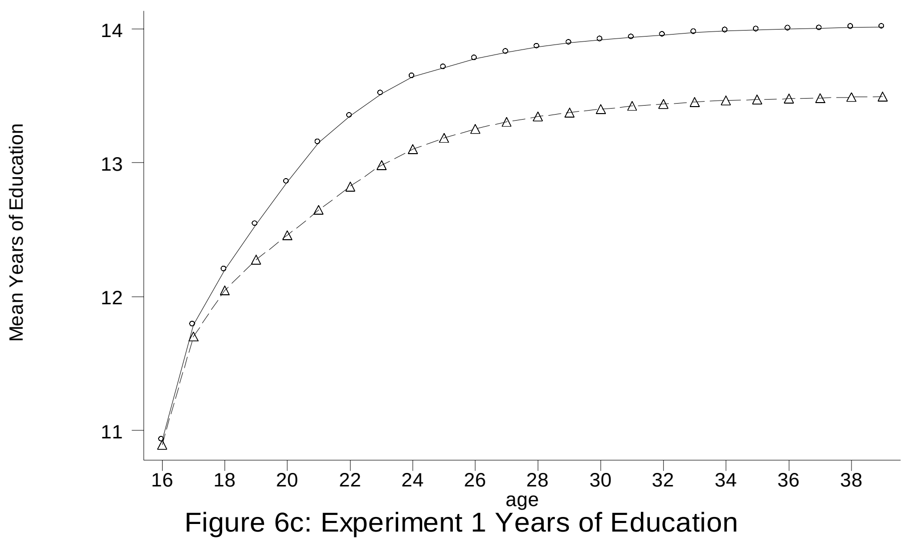

Figure 6c: Experiment 1 Years of Education

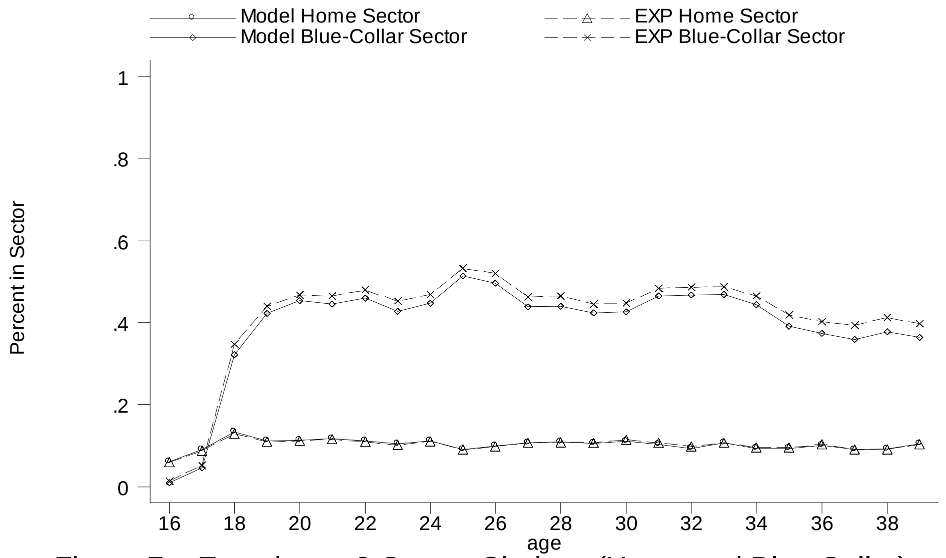

Figure 7a: Experiment 2 Career Choices (Home and Blue Collar)

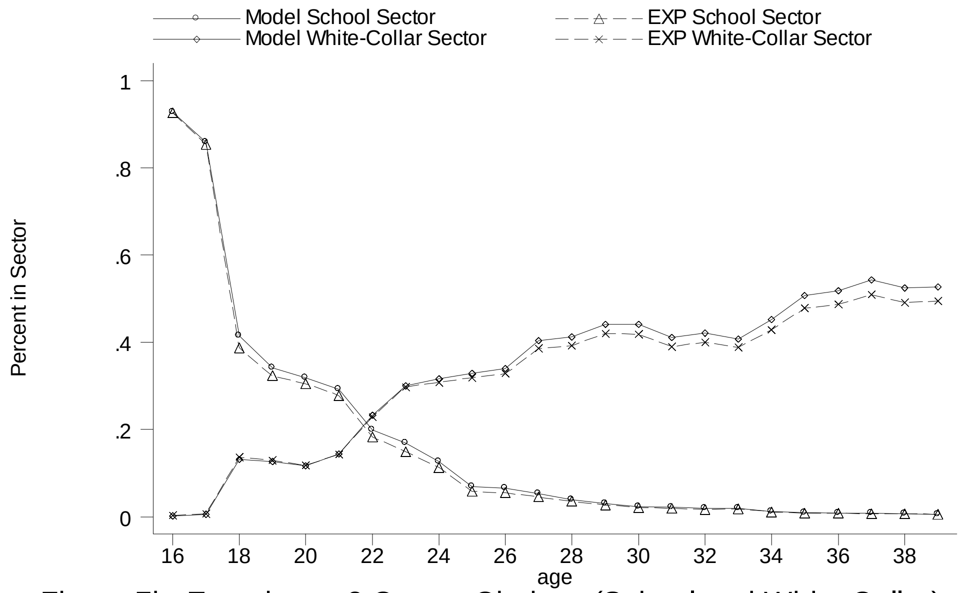

Figure 7b: Experiment 2 Career Choices (School and White Collar)

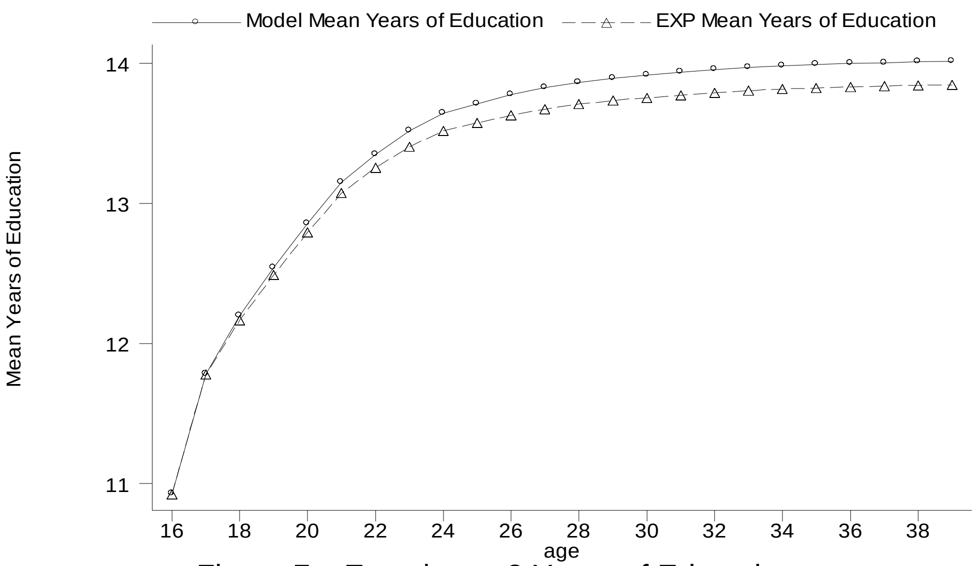

Figure 7c: Experiment 2 Years of Education

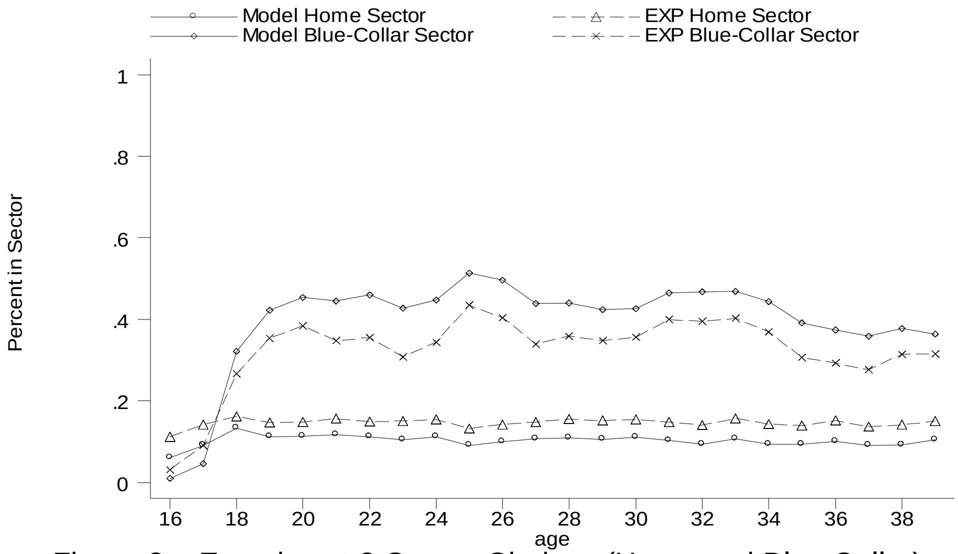

Figure 8a: Experiment 3 Career Choices (Home and Blue Collar)

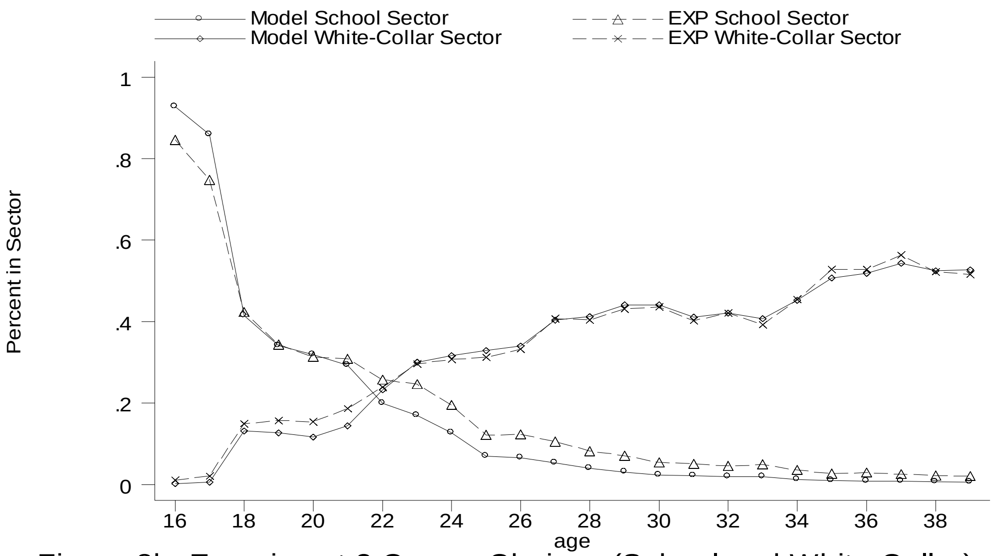

Figure 8b: Experiment 3 Career Choices (School and White Collar)

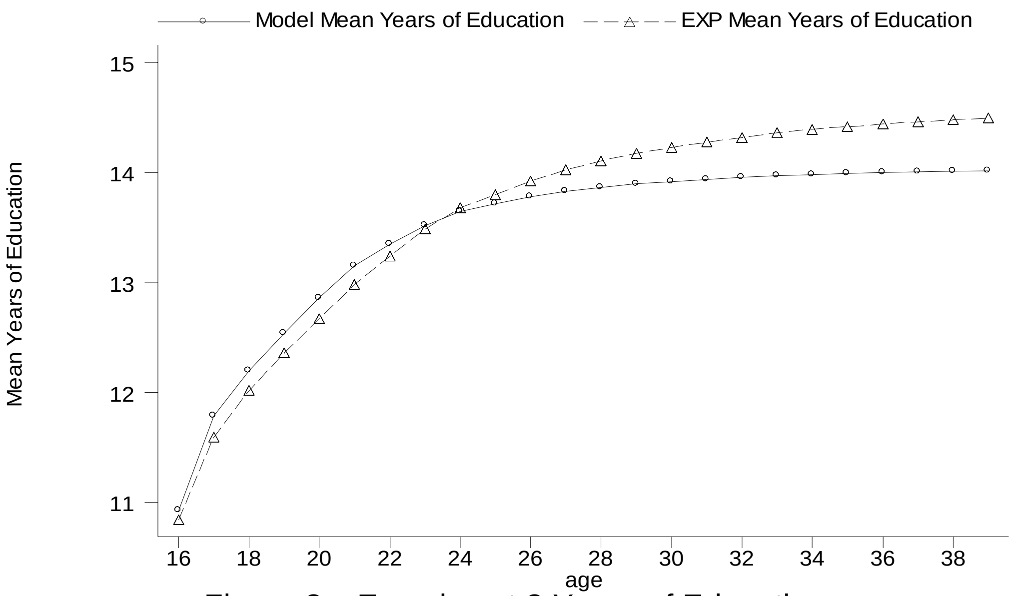

Figure 8c: Experiment 3 Years of Education

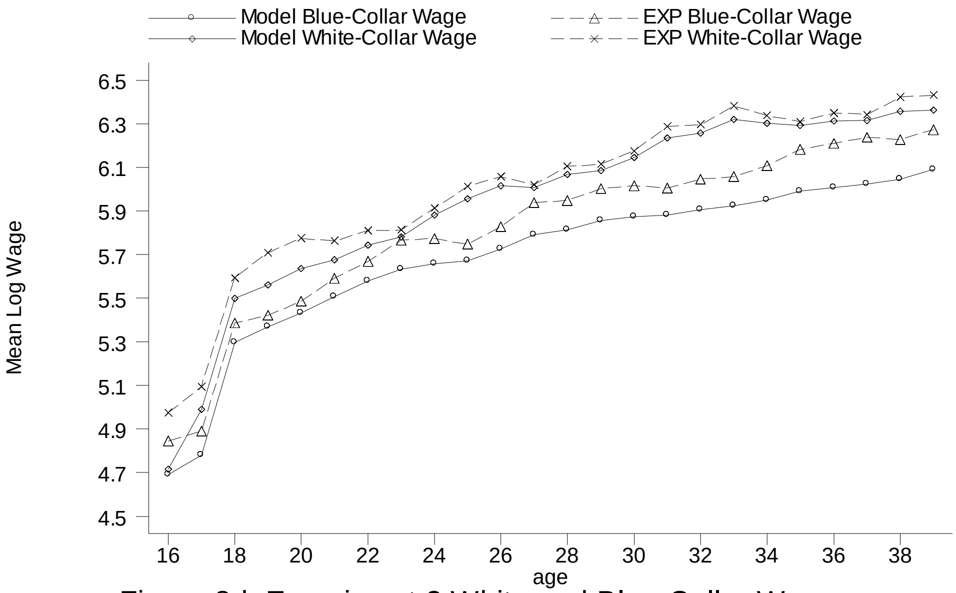

Figure 8d: Experiment 3 White and Blue-Collar Wages

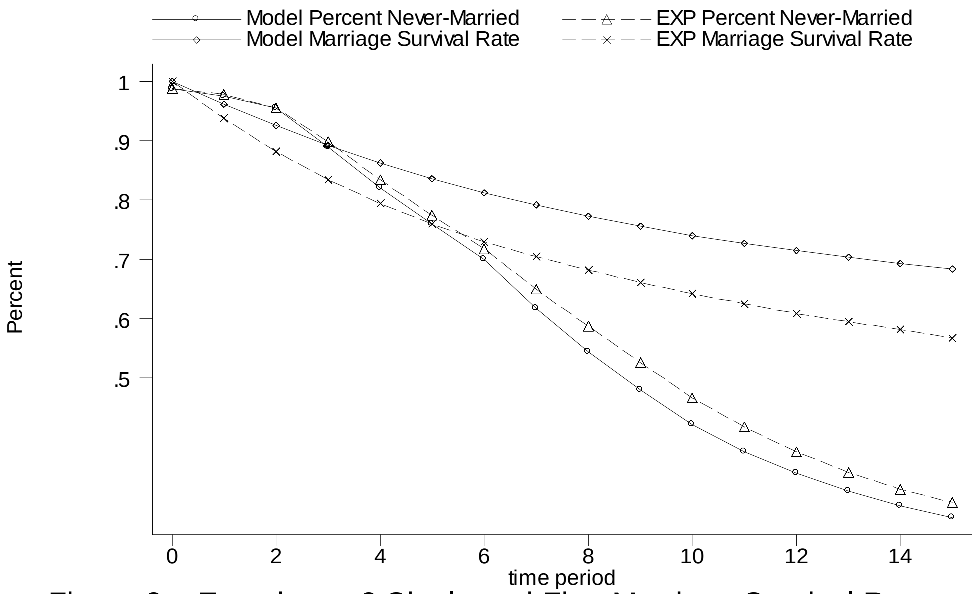

Figure 8e: Experiment 3 Single and First Marriage Survival Rates

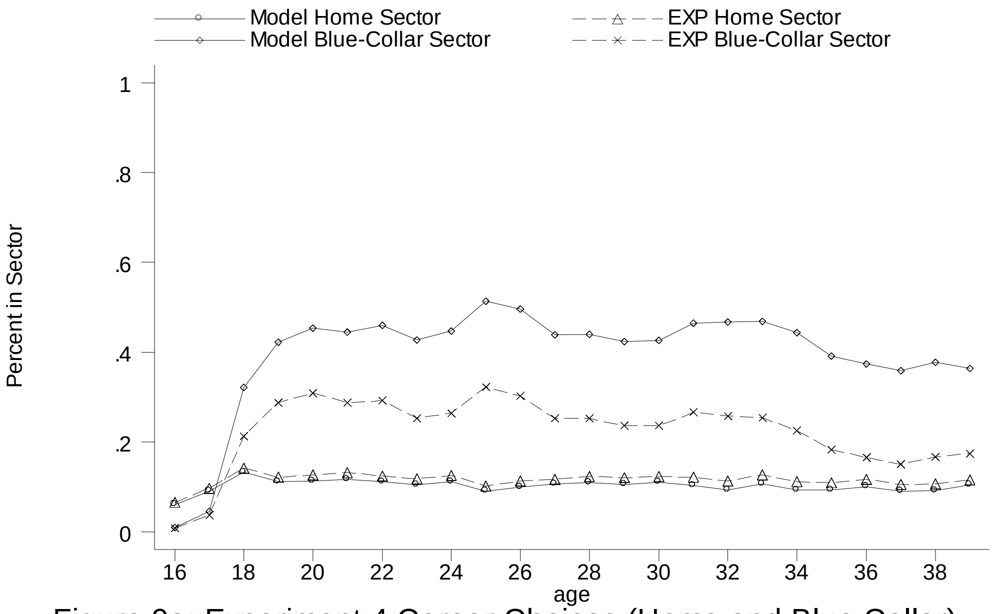

Figure 9a: Experiment 4 Career Choices (Home and Blue Collar)

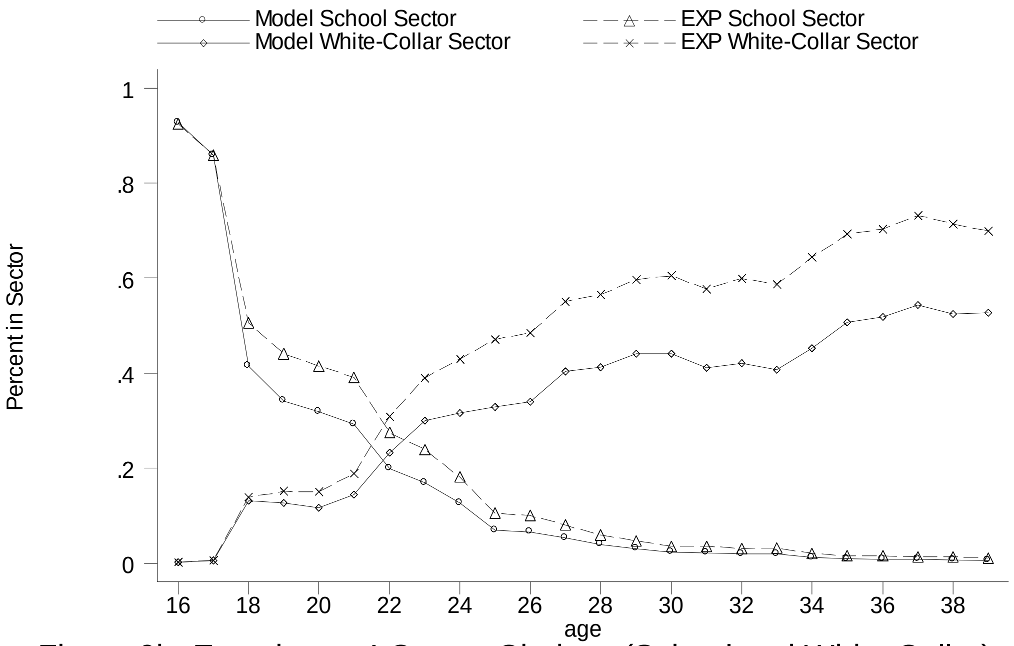

Figure 9b: Experiment 4 Career Choices (School and White Collar)

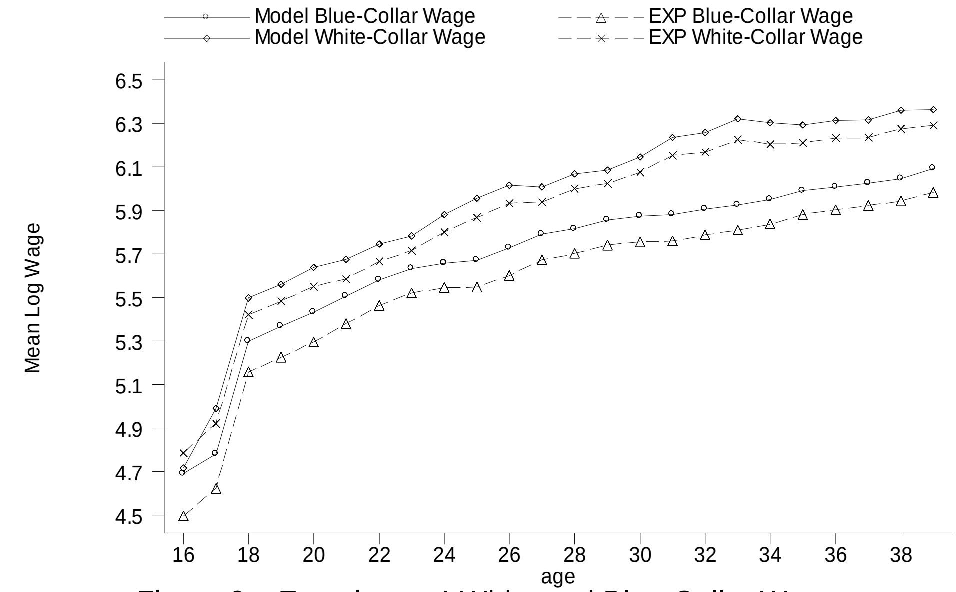

Figure 9c: Experiment 4 White and Blue-Collar Wages

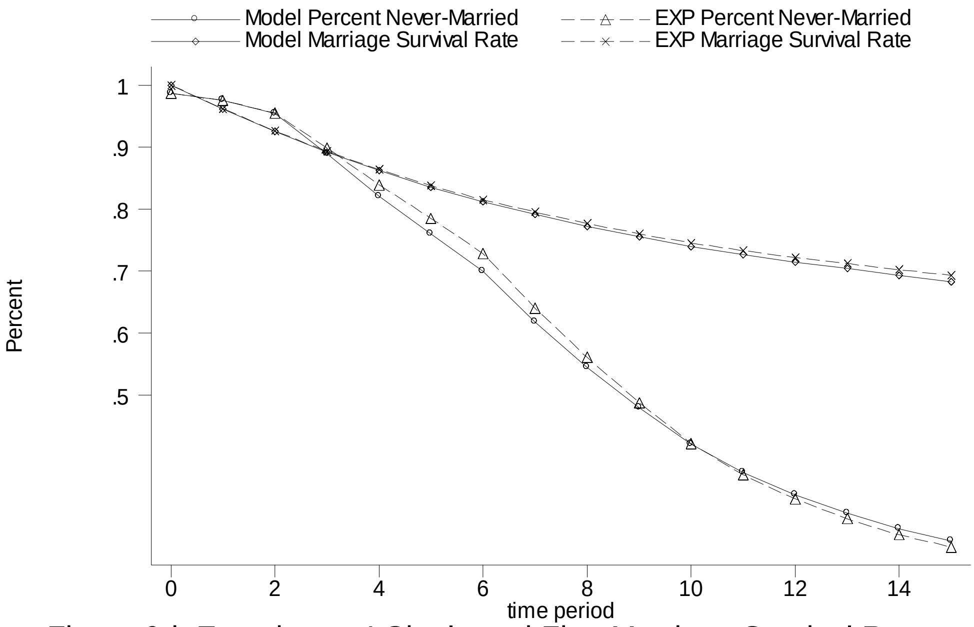

Figure 9d: Experiment 4 Single and First Marriage Survival Rates

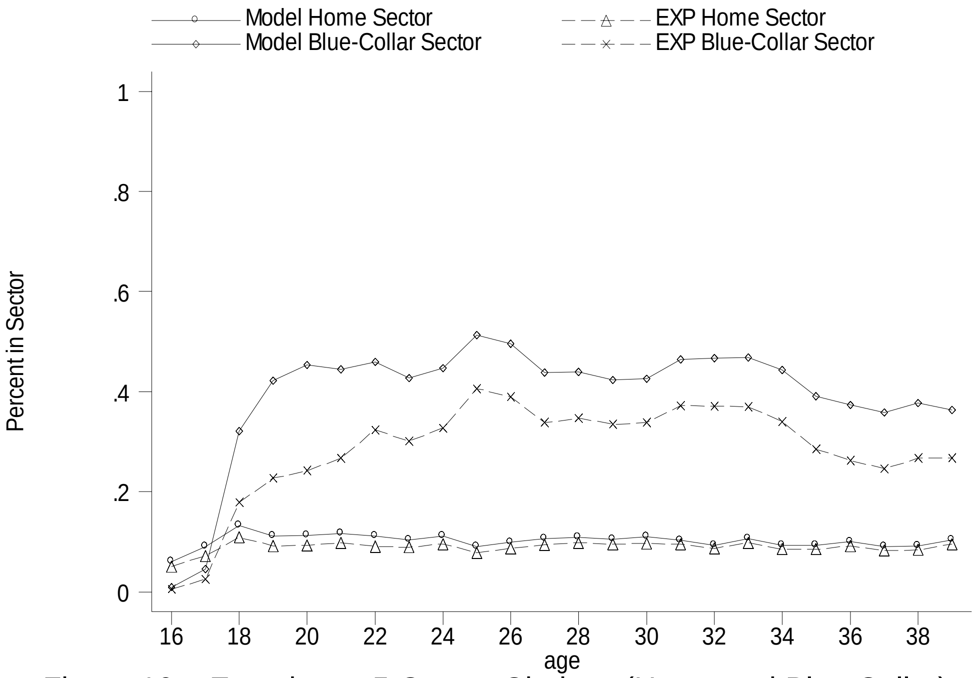

Figure 10a: Experiment 5 Career Choices (Home and Blue Collar)

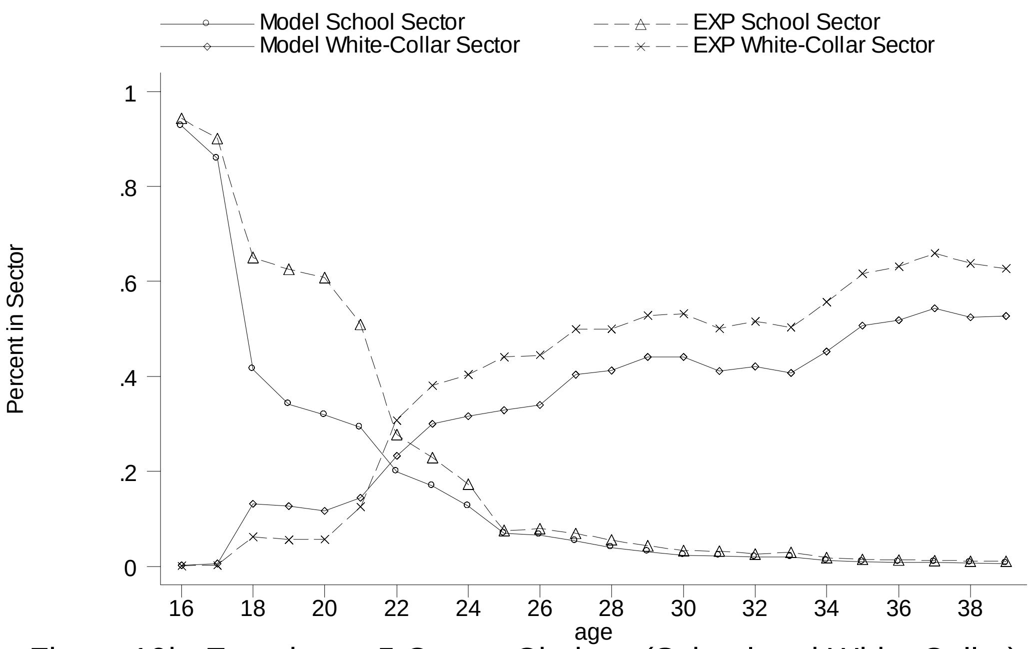

Figure 10b: Experiment 5 Career Choices (School and White Collar)

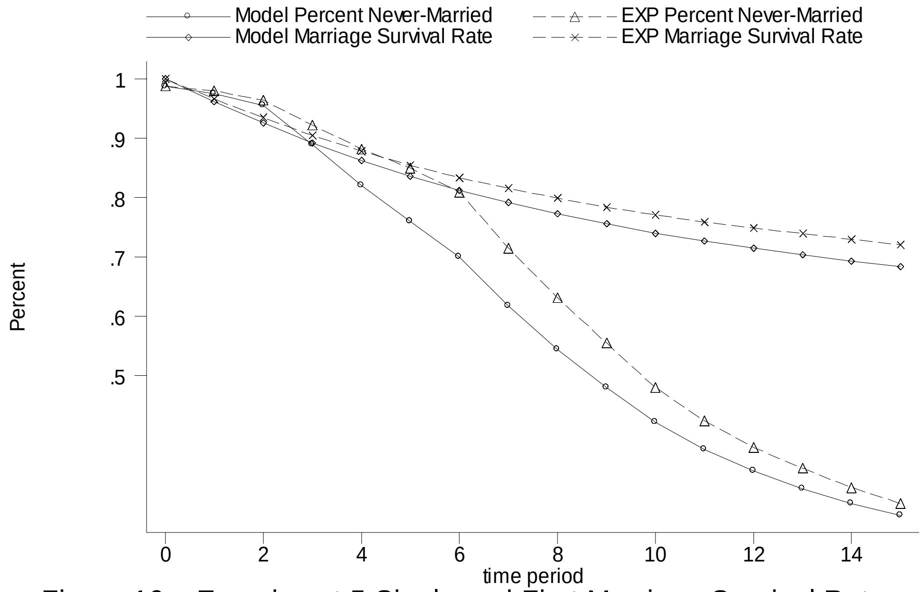

Figure 10c: Experiment 5 Single and First Marriage Survival Rates

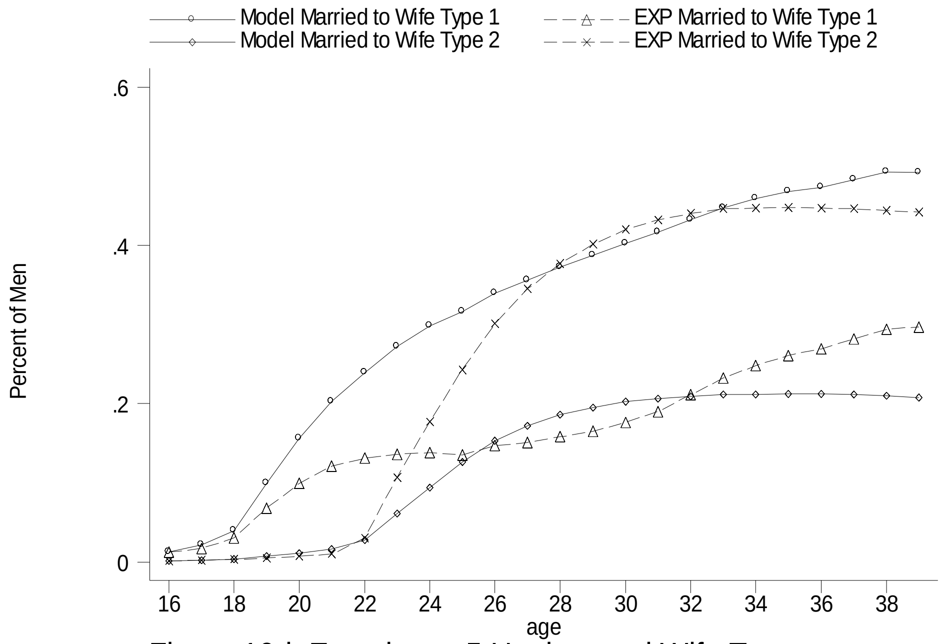

Figure 10d: Experiment 5 Unobserved Wife Types

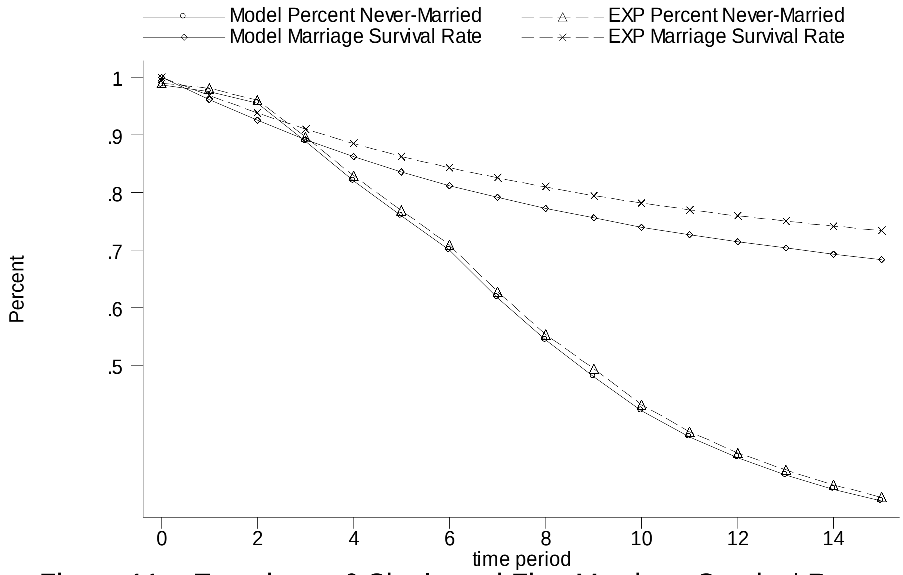

Figure 11a: Experiment 6 Single and First Marriage Survival Rates

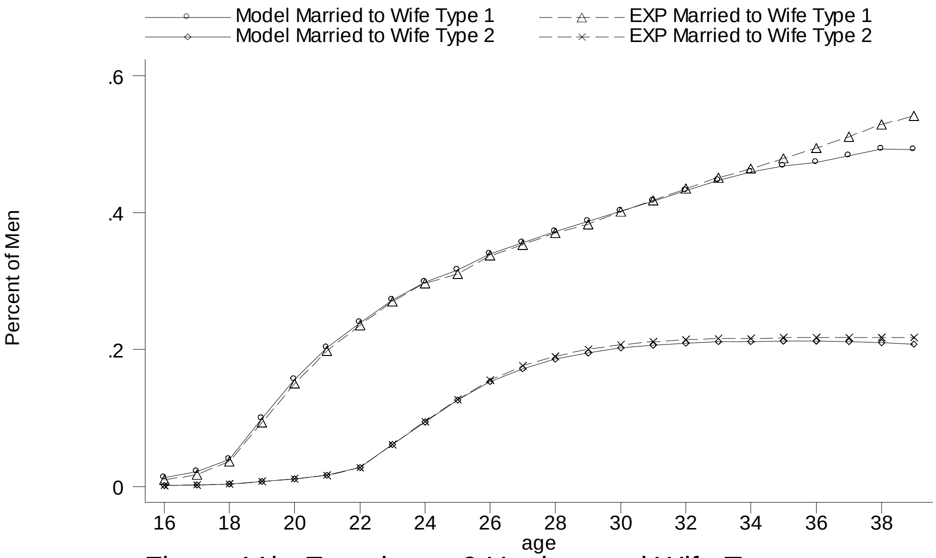

Figure 11b: Experiment 6 Unobserved Wife Types

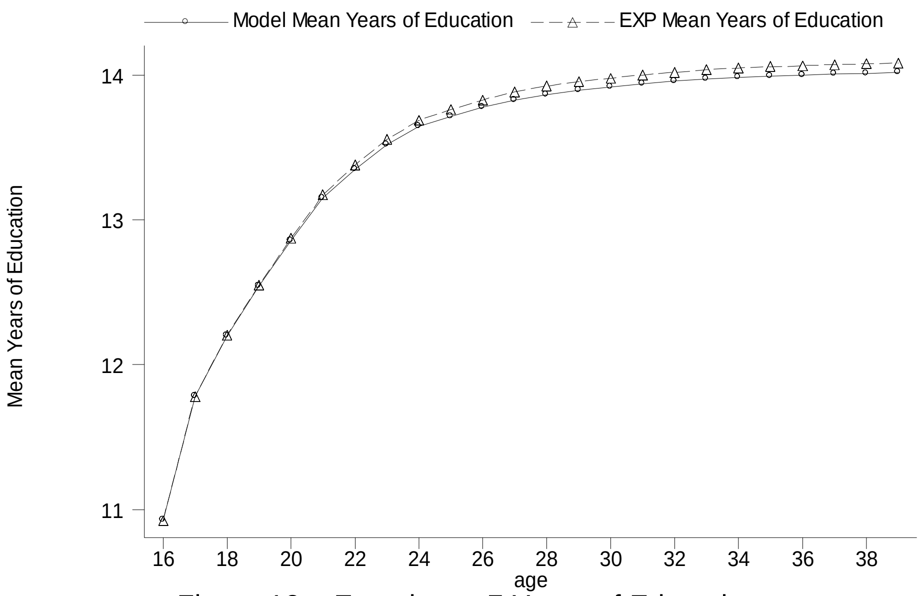

Figure 12a: Experiment 7 Years of Education

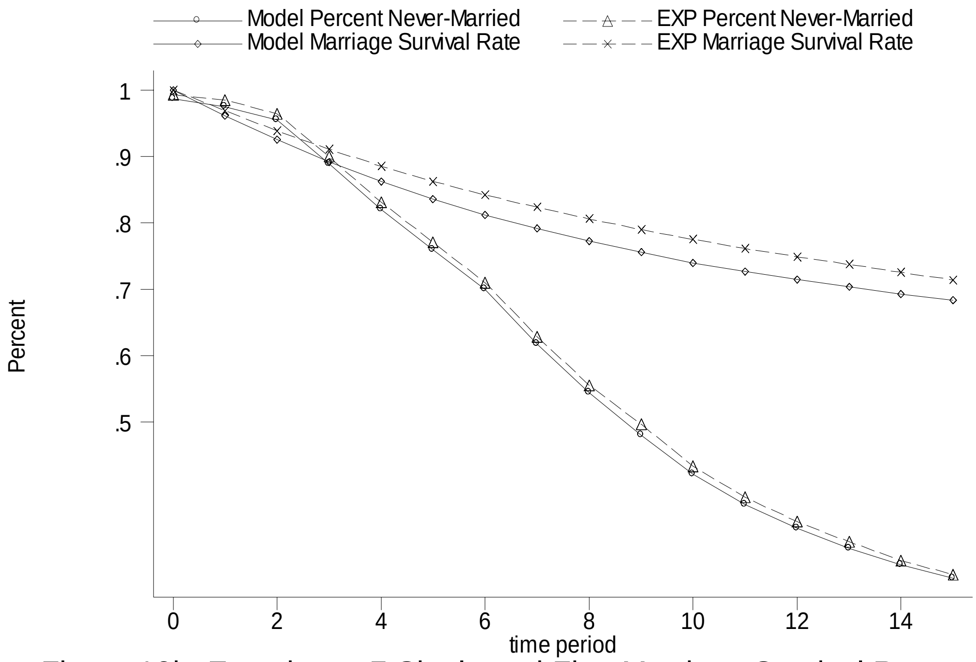

Figure 12b: Experiment 7 Single and First Marriage Survival Rates

Appendix: Marriage and Career Model Estimates

	Log Wage Functions			
	Blue Collar		White Collar	
Type 1 intercept	4.79	(0.0023)	4.54	(0.0032)
Type 1 experience	0.06	(0.0003)	0.06	(0.0005)
Type 1 exper square/100	-0.20	(0.0027)	-0.26	(0.0027)
Type 2 intercept	5.06	(0.0027)	4.67	(0.0026)
Type 2 experience	0.05	(0.0002)	0.05	(0.0004)
Type 2 exper square/100	-0.18	(0.0016)	-0.19	(0.0036)
Type 3 intercept	5.01	(0.0025)	4.77	(0.0024)
Type 3 experience	0.05	(0.0002)	0.07	(0.0003)
Type 3 exper square/100	-0.05	(0.0007)	-0.14	(0.0014)
HS Graduate	0.11	(0.0012)	0.17	(0.0016)
College Graduate	0.08	(0.0012)	0.23	(0.0012)
Education	0.03	(0.0003)	0.06	(0.0002)
Married to Type 1 Wife	0.09	(0.0011)	0.10	(0.0012)
Married to Type 2 Wife	-0.005	(0.0057)	-0.04	(0.0013)
Ever Divorced	0.03	(0.0008)	0.03	(0.0006)
Ever Married *experience	0.002	(0.0001)	-0.0005	(0.00003)
Divorced*experience	-0.006	(0.0001)	-0.004	(0.0003)
AFQT	0.03	(0.0009)	0.18	(0.0013)
AFQT*experience	0.01	(0.0001)	0.003	(0.0001)
AFQT*experience squared/100	0.02	(0.0004)	-0.01	(0.0006)
Under 18	-0.18	(0.0062)	-0.58	(0.0346)
Experience in the other occupation	0.04	(0.0002)	0.06	(0.0002)
Experience squared in other occupation	-0.14	(0.0019)	-0.15	(0.0014)
Worked in same occupation in previous period	0.15	(0.0012)	0.19	(0.0016)

	Probability Functions for Types of Men (multivariate logit)			
	Type 2		Type 3	
Intercept	-0.99	(0.0052)	-1.59	(0.0052)
AFQT	-0.20	(0.0891)	0.04	(0.0694)
Lived with Both Parents at age 14	0.34	(0.1061)	1.15	(0.0067)
Mother HS Grad	0.31	(0.0087)	0.60	(0.0060)
Mother College Grad	0.36	(0.2597)	0.91	(0.0143)
Father HS Grad	0.35	(0.1095)	0.44	(0.0066)
Father College Grad	-0.04	(0.2129)	0.73	(0.0071)
Estimated Percent of Men of Each Type	24%		43%	

	Marriage Offer Functions (logit functions)			
	Type 1 Wife		Type 2 Wife	
Intercept	-5.88	(0.0037)	-9.50	(0.0095)
Education	-0.04	(0.0003)	0.45	(0.0019)
Blue Collar Exper	0.11	(0.0006)	0.17	(0.0022)
White Collar Exper	0.24	(0.0009)	0.21	(0.0022)
Age	-0.01	(0.0001)	0.002	(0.0002)
Age Squared	-0.002	(0.0000)	-0.01	(0.00004)
HS Grad	0.31	(0.0020)	0.62	(0.0053)
College Grad	0.55	(0.0068)	2.24	(0.0117)
Currently in High School	-0.64	(0.0388)	0.17	(0.3076)
Currently in Post High School Studies	-0.67	(0.0093)	-1.19	(0.0158)
Working in Blue Collar	1.41	(0.0040)	0.94	(0.0106)
Working in White Collar	1.24	(0.0050)	1.14	(0.0105)
Currently in first marriage	-10.75	(1977.94)	-4.95	(0.0356)
Ever Divorced	-2.19	(0.0042)	-3.74	(0.0331)
Divorced and Single	0.76	(0.0043)	0.89	(1.0173)
Type 2 Male	3.15	(0.0045)	2.00	(0.0162)
Type 3 Male	1.89	(0.0079)	2.74	(0.0092)
AFQT	-0.28	(0.0019)	-0.37	(0.0022)
	Exogenous Divorce Function (logit function)			
Currently Home	0.51	(0.0007)		
Currently in School	-0.38	(0.0194)		
Currently in Blue Collar	-0.47	(0.0187)		
Currently in White Collar	-0.47	(0.0135)		
Education	-0.13	(0.0024)		
Type 1 Male	-3.78	(0.0168)		
Type 2 Male	-2.25	(0.0036)		
Type 3 Male	-5.35	(0.0067)		
AFQT	-0.29	(0.0066)		
	Current Period Non-Pecuniary Utilities			
	Home Sector (log utility)			
Type 1 Male intercept	5.09	(0.0052)		
Type 2 Male intercept	5.07	(0.0017)		
Type 3 Male intercept	4.89	(0.0084)		
Age	0.03	(0.0002)		
Age squared/100	-0.12	(0.0010)		
AFQT	-0.12	(0.0013)		
	School Sector			
Intercept	-15.32	(0.3863)		
Under 18	205.84	(5.4229)		
	Married			
Type 1 Wife	158.09	(0.6224)		
Type 2 Wife	277.22	(1.3446)		
	Current Period Costs			
	Net Tuition Costs			
High School	506.25	(8.1204)		
College	-112.78	(0.8419)		

Post-College	204.07	(2.2276)		
	Entry Costs into School			
Not HS Grad	-257.94	(5.6719)		
HS Grad	-296.56	(1.4645)		
	Entry Costs into Occupations			
	Blue Collar		White Collar	
Intercept	-118.34	(1.0178)	-141.21	(1.0758)
Age	-8.34	(0.1084)	-1.34	(0.0508)
	Divorce Costs			
Intercept	-0.88	(162.057)		
Divorced at least twice	-50.37	(0.8406)		
Divorced three times	-48.72	(42.8735)		
	Terminal Value Emax Function			
Working in Blue Collar	221.97	(6.2864)		
Working in White Collar	162.46	(3.8943)		
Education	37.76	(1.0555)		
Blue Collar Exper	69.01	(0.6840)		
White Collar Exper	30.92	(0.4667)		
Education*AFQT	129.02	(1.9054)		
Blue Collar Exper*AFQT	12.82	(0.4414)		
White Collar Exper*AFQT	25.42	(0.5629)		
Divorced at least once	-1154.13	(17.2341)		
Divorced at least twice	-552.16	(12.8990)		
Divorced three times	-58.00	(10673.03)		

Cholesky Decomposition Matrix of Shocks

	Log Blue Collar Wage	Log White Collar Wage	Log Home Utility	School Utility	Marriage Utility
Log Blue Collar Wage	0.51 (0.0015)				
Log White Collar Wage	-0.06 (0.0009)	0.51 (0.0016)			
Log Home Utility	-0.04 (0.0008)	0.004 (0.0004)	0.92 (0.0019)		
School Utility	122.64 (0.7963)	15.30 (0.7705)	-0.74 (0.8103)	305.89 (0.7588)	
Marriage Utility	453.51 (2.4946)	149.75 (5.3299)	-0.60 (2.3270)	216.15 (5.6826)	-189.13 (2.7051)

Standard Deviation of Shocks
(implied by Cholesky Decomposition of shocks)

	0.51	0.51	0.92	329.91	557.30

Correlation of Shocks

Log Blue Collar Wage	1.0				
Log White Collar Wage	-0.12	1.0			
Log Home Utility	-0.04	0.01	1.0		
School Utility	0.37	-0.00	-0.02	1.0	
Marriage Utility	0.81	0.17	-0.04	0.00	1.0

Initial Conditions of Parental Background				
	Lived with Both Parents at age 14 (logit function)			
Intercept	1.62	(0.0631)		
AFQT	0.33	(0.0714)		
	Mother's Education (multivariate logit)			
	High School Graduate		College Graduate	
Intercept	0.99	(0.1356)	-0.99	(0.2267)
AFQT	0.85	(0.0741)	1.71	(0.1186)
Lived with Both Parents at 14	0.29	(0.1463)	0.25	(0.2420)
	Father's Education (multivariate logit)			
	High School Graduate		College Graduate	
Intercept	-0.78	(0.1665)	-3.27	(0.3409)
AFQT	0.41	(0.0753)	1.13	(0.1034)
Lived with Both Parents at 14	0.24	(0.1531)	0.60	(0.2296)
Mother HS Grad	1.76	(0.1319)	2.64	(0.2950)
Mother College Grad	2.52	(0.4200)	5.45	(0.4820)

Estimated standard errors are in parentheses. Numbers which appear without standard errors are derived from other estimated parameters (with standard errors) or from the simulated data. All parameter estimates were estimated within the maximization of the likelihood function except for the intitial conditions for parental background which were estimated seperately outside the model in order to start the simulation procedure with simulated agents who have similar family background characteristics to the sample observed in the NLSY data (the logits for these characteristics are designed to produce the same proportion of agents with each background characteristic and the correlations between those characterisitics).