

# **The Role of Individual Socioeconomic Change in Marital Decision-making**

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## **Abstract**

This paper examines the impacts of short-term changes in individual socioeconomic status on marital formation and dissolution by using data from Current Population Survey (CPS). Empirical results suggest that employment stability plays the most important role in conditioning the marriage entry and dramatic increase in relative earning power within family may impose greatest threat to marital stability. There are few gender differences in such effects are found, and patterns do not very much vary overtime.

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## 1. Introduction

The paper aims to investigate the impacts of short-term changes in individual socioeconomic status on marital formation and dissolution in the United States over the last two decades by using the data from Current Population Survey (CPS). The 4-8-4 pattern design in the CPS permits the merge of each two consecutive surveys, which allows me to capture the dynamic socioeconomic effects on marital transitions. And such methodology saliently differentiate the present study from the others with similar interest in the American family economics.

The Western family has been radically altered, some even claim that it is almost destroyed, by events of the last three decades (Becker, 1991). Interventions to promote health marriages, strengthen families, and reduce number of illegitimate births and children growing up in single-parent families can no longer be neglected. With this in mind, it demands a deep understanding of the determinants of today's marital formation and stability. The most dramatic and apparent changes in the American household demography are the rise of age at marriage, celibacy rate, and marital disruption. Many of these changes are, at least partly, driven by the large increase in the labor force participation and earning power of women along with the growth of American economy, which contribute to the conflict between the sexes in employment, marriage market as well as within family life. Furthermore, low fertility reduces the family size, which, in turn, facilitates the propensity of divorce and labor force participation of married women. Therefore these are considerable forces depressing the gain from marriage when the sexual division of labor becomes less advantageous.

Among rival theories regarding marital formation, Becker's positive assortative mating is much more appropriate for the society where the nature of marriage has been modified by the convergence in the economic profiles of men and women. Empirical evidences have always suggest that mating of likes is overwhelmingly preferable (Lundberg and Pollak, 2007; Schwartz and Mare, 2005). In this regard, one might argue that socioeconomic status has been equally important for both males and females in the secular mating process since this is a precondition for complementarity and would potentially dominate economic gains and aggregate output from a potential marriage. In addition, Oppenheimer also argued that an individual's current labor market position affects his or her current ability to marry because it would determine the ability of establishing an independent household. And economic independence could also possibly enforce already-formed matches to proceed to the marital stage. Therefore, the assortative mating process and, to some extent, the execution of a good match are affected by the transition-to-work process. Large quantity of literature has confirmed such arguments as they found positive impacts of earnings and employment on marriage entry for women (Lichter *et al.*, 1992; McLaughlin *et al.*, 1993; McLaughlin and Lichter, 1997; Olsen and Farkas, 1990; Raley, 1996; South, 1991) as well as for men (Burgess *et al.*, 2003; Koball, 1998; Lloyd and South, 1996; Oppenheimer *et al.*, 1997; Sweeney, 2002; Clarkberg, 1999; Nock, 1998).

Since the US no-fault divorce law was granted in 1970s, mutual consent has been no longer required upon marital dissolution. Hence unlike marriage that requires a joint agreement between the two partners, marital disruption can be a self-decision as long as he or she expected to be better off divorced. Family dissolution could be an anticipated response to not only imperfect information on partners which are not readily assessed prior to marriage, but also life-cycle change in traits that fall short of what expected. Any unexpected changes in earnings and health do raise the probability of divorce (Becker *et al.*, 1977). Moreover, divorce might not merely depend on any individual's own earnings, nor to family income as a whole, it is attributable to partner's relative income and distribution of resources, thus this is where the cooperative bargaining model comes into play, which relax the pooling assumption and recognize the involvement of two or more agents with distinct preferences in determining family consumption (Lundberg and Pollak, 1996). Empirical evidences regarding union stability reported so far are greatly puzzled for both men and women. Some concluded that women's employment or earnings are positively associated with stable marital life (Hoffman and Duncan, 1995; Greenstein, 1990). Some found that the effects are adverse or no effect at all (Burgess *et al.*, 2003; Johnson and Skinner, 1986; Ruggles, 1997; Ressler and Waters, 2000; Tzeng and Mare, 1995). For males, most basic researches provided straightforward evidences that higher earning capacity or economic status of husbands decrease the likelihood of divorce (Burgess *et al.*, 2003; Ono, 1998; Sayer and Bianchi, 2000).

Although the socioeconomic influences on family transitions have been widely discussed by economists and numerous rival theories have been tested, empirical results are rather lacking consistency. Furthermore, most studies are conducted in a static manner, to employ cross-sectional data and examine the impact of individual socioeconomic traits on the probability of marital formation and disruption, whereas there is very few researches focusing on dynamic effects, i.e. effects of changes in income, educational attainment, and employment status on marital outcome. Such changing effects should be important in family formation and post-marital life as Becker *et al.* (1977) argued any unexpected changes in earnings and health do raise the probability of divorce, and Oppenheimer *et al.* (1997) also suggested that economic status should be conceptualized as an evolving career process.

Hence a salient difference in this research from many other previous studies is that I examine the impacts of short-term changes in individual socioeconomic status on marital formation and dissolution. And relevant question arises here is whether changes in individual's socioeconomic status have strong impact on family transitions. If so, whether such effects are positive or negative. Moreover, as discussed that large increase in female labor force participation and earning power has greatly altered the sexual division of labor, which, in turn, facilitate the positive assortative mating and enhance women's bargaining position within family, thus another issue I address in this paper is that if gender differential in socioeconomic influences on marriages is

diminishing, or even disappeared.

In addition, as Lindberg (2003) argued, recent decades have witnessed dramatic changes in marital behavior and attitudes, and successive cohorts experience the same phases of life in different social and economic environments, cross-cohort comparisons of effects are needed to absorb fully the implications of period change. Therefore I not only study the most recent period, between 2008 and 2009, but also the periods with 10 and 20 years back in time so as to investigate if such mechanism vary overtime.

I estimate entries to first marriages and exits from current marriages using three merged datasets derived from the Current Population Survey in the United States - during the period between 1988 and 1989, 1998 and 1999, and 2008 and 2009. The survey consists sample of 50,000 occupied households from 50 states and the District of Columbia. All the households are following a 4-8-4 pattern, that is in the survey for 4 consecutive months, out for the next 8 months, and return for another 4 months before leaving the sample permanently. This design ensures high degree of year-to-year continuity, and therefore allows the investigation on short-term changes (between two consecutive years) in socioeconomic roles and demographic outcomes. Furthermore, the eligible participants in the CPS are 15 years of age or over (no upper age limit) and not in the armed force or institutions (e.g. prisons, long-term care hospitals, and nursing homes), such selection criteria permits consistent definitions of the variables of interest across the two processes, and has relevance for current trends in household formation and dissolution.

The paper is structured as follows. In chapter 2, I review relevant theories and empirical findings followed by outlining a theoretical framework and hypothesis accordingly. The data, variables and their definitions are described in chapter 3. The statistical models are illustrated in Chapter 4. Empirical results are presented and discussed in Chapter 5. And Chapter 6 concludes.

## 2. Background

A considerable evolution of the family has been in process during the recent decades. Age at first marriage, rates of marital disruption, labor force participation of married women have all experienced a dramatic increase. Such trends are, at least, partly attributable to the growing earning power of females along with the economic development. This chapter conducts a brief literature review on established theories and empirical findings with regard to the determinants of marital behavior in the modern society, and followed by a construction of theoretical framework and hypothesis accordingly.

### 2.1 Previous Research

#### 2.1.1 *Marriage*

Since information in the marriage market is usually imperfect, whether a person is marrying to a right partner can only be ascertained through their marital life. The most apparent characteristics that people can possibly detect prior to a marriage is the traits of the potential partners. This can include a wide range of personal characteristics, i.e. appearance, race, age, education, and occupation, etc. However, the analysis in this study only stresses on the traits in economic sense, whether a pair of two persons' traits can maximize the aggregate utility through a marriage. An optimal match can be reached when traits of partners are either complement or substitute. This implies that gains from marriage is greater for those of given quality marrying to a superior person when both traits are complements - a positive assortative mating, and marrying to a inferior person when traits are substitutes - a negative assortative mating (Becker, 1991).

Traditionally the substitutable traits are more important than complementary traits between couples as women are usually specialized in household productions and men devote more time in market work. In modern societies, however, this complementarities can no longer be unimportant. The economic development in the Western world with combination of rapid expansion of the service sector impose great contributions to the growth of women's earning power and labor force participation rate, which, in turn, make the sexual division of labor within household become less advantageous, due to the fact that women's time is worthier. Therefore the convergence in the economic profiles of men and women has changed the nature of marriage and its prevalence, and gains from marriages with substitutes of traits (e.g. specialization and exchange within household) are reduced, as a result, complementarities become more important, and consequently mating of likes is overwhelmingly favored. Empirical evidence has always suggested positive assortative mating on measurable characteristics (Lundberg and Pollak, 2007). Schwartz and Mare (2005) concluded that men and women with similar education backgrounds are increasingly likely to marry each other.

Becker's positive assortative mating theorem implies that higher quality man and woman marry each other rather than selecting lower quality mates when these qualities are complements. Theory suggests that the correlation between partner's preference and resources is positively increasing, while specialization and exchange within marriage is declining. Therefore not only men would have preference on high quality women in order to maximize the aggregate output because both increases in traits of men and women adds more to output than separate increases, but also, perhaps a more important notion for the recent decades, women have more freedom to be choosy on male-partner selection in order to optimize the material standards of living in the future. Hence one might argue that socioeconomic status has been equally important for both males and females in the secular mating since this is precondition for complementarity and would potentially dominate economic gains and aggregate output from a potential marriage. Number of authors found positive effects of women's employment, hours of work, current and potential earnings on entries to marriage (McLaughlin *et al.*, 1993; McLaughlin and Lichter, 1997; Olsen and Farkas, 1990; Raley, 1996; South, 1991). Lichter *et al.* (1992) found that women who lives away from home and work get married quicker than those do not. Similarly Buck and Scott (1993) find that working women are more likely to enter marriage. Although there are some other researches providing inconsistent results, some suggest that there is negative effect or no effect of women's economic position on marriage, they still tended to show that women's employment and earnings have more positive effects on marriage among disadvantaged persons (Lindberg, 2003).

Greater economic independence enable women have the freedom to be picky in selecting their husbands and set a higher level of minimum acceptable match, thus they are more concerned about how much a men can contribute to total family resource, as two incomes are increasingly required to meet rising consumption aspirations (Oppenheimer, 2000), rather than whether he can merely fulfill the primary breadwinner role. Such theory yields conventional expectation that men's wealth or ability to acquire economic resource is positively associated with marriage prospects. The most relevant empirical research for such hypothetical testing is to use panel data to estimate the probability of or timing to marriage over time as a function of men's time varying economic characteristics. A study on American youth between 1979 and 1992 concluded that men with higher wage rate and earning potentials get married quicker (Burgess *et al.*, 2003). Lloyd and South (1996) concluded that men's own earnings stimulate transition to marriage. Additionally, many other studies have also confirmed such positive effects of men's economic status on marriage formation (Koball, 1998; Oppenheimer *et al.*, 1997; Sweeney, 2002; Clarkberg, 1999; Nock, 1998).

Moreover, the effects of economic factors are sometimes in its non-economic character (Lindberg *et al.*, 2003). For instance, men's high earning potential or high socioeconomic position might improve potential partner's life-long standards of living. Nonetheless this, unfortunately, cannot be substantially assured because any



unexpected events or exogenous threats occurred over the long-term engagements can be barely predicted. Despite of the fact, a solid economic status can still psychologically reduce stress or uncertainty and create confidence about future family life. And people, particularly in the well-developed economies, would still believe that work provides the means to achieve any given long-run socioeconomic status. Hence the psychological effect further strengthen the importance of individual economic circumstance, and one might argue that a so called good match (with similar or complementary traits) formed by assortative mating depends on the individual and their potential partner's transitions to adult economic roles, or, more literally, the transitions to stable work career, as a major source of uncertainty in an industrial society lies in this sort of regard, and work has such a profound influence in structuring a couple's life-style and determining its socioeconomic status (Oppenheimer, 1988). In addition, Oppenheimer also argued that an individual's current labor market position affects his or her current ability to marry because it would determine the ability of establishing an independent household. And economic independence could also possibly enforce already-formed matches to proceed to the marital stage. Therefore, the assortative mating process and, to some extent, the execution of a good match are affected by the transition-to-work process. And the employment status perhaps is the most relevant indication of a person's current economic position and attractiveness in the marriage market, conversely unemployment or job instability implies a lower economic position which, in turn, reduce the attractiveness, as some ethnographic work indicates that poor employment prospects are an important strike against men in the minds of low income women (Edin, 2000)

Besides marital decisions made by individuals are attributable to the economic circumstances of themselves and their counterparts, and sometimes such attributes is in psychological character, it might also be shifted systematically with age<sup>1</sup>. This is because the essential traits (e.g. adult economic roles and independence) concerned in the mating process would mostly be developed at late ages, and the younger a person is, the greater difficulty of being established, and thus more uncertainty about the future characteristic. This matters for both searchers and potential partners in the marriage market. In addition, searching itself is costly, time consuming is one of the regards, higher expectation for a perfect match is always accompanied by a longer searching period. The optimum, in terms of availability of unascertainable information on several important assortative mating attributes, would be often at an older age (Oppenheimer, 1988). Hence, to some extent, marriage outcome is likely to be correlated with age, this might partly explaining the late marriages. On the other hand, an early marriage may predict a great likelihood of mismatch since all the estimations of a young person's future characteristics are on the basis of current information which is mostly incomplete.

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<sup>1</sup> The degree of uncertainty about important attributes of potential partners or even the searcher's own attributes also shifts systematically with age (Oppenheimer, 1988).

In sum, along with the economic development accompanied by growing market work opportunity and earning power of women, it is clear, at least in most Western society, that families are characterized as both spouses are working, and gains to marriage arise from specialization and exchange between home and market are diminishing, instead from the joint consumption of household public goods are increasing. Therefore Becker's positive assortative mating theorem seems more applicable to the contemporary marriage market. Furthermore economic and psychological effect further strengthen the importance of adult economic role and transition-to-work process, thus current or prospective job stability become a contributing factor to the mating process and its subsequent outcome. Finally age is another determinants of marital behavior due to the fact that young men are usually associated with poor economic position and greater uncertainty, thus attempts to make matches are discouraged and early marries are mostly thought as mismatch. This can partly explain the late marriage pattern emerging in the Western society.

### *2.1.2 Divorce*

Divorce rates climbed up dramatically over the last half of the twentieth century, the share of women in the United States divorced from their first marriage in the early 50s is less than 15 percent, however this number increased to 60 percent in the early 80s (Martin and Bumpass, 1989; Preston, 1975). Unlike marriage that requires a joint agreement between the two partners, divorce can be decided by a single party, unless husband and wife both expected to be better off divorced, then mutual consent can be reached. However after the no-fault divorce law was granted in the United States in 1970, which does not require mutual consent anymore upon on divorce, therefore, since then, it can be reasonably assumed that the dissolution decision could be made independently by either husband or wife if they feel gains from divorce is positive. I will not go any further detail to discuss the effects of law enforcement on marriage disruption since this paper focus mainly on the socioeconomic factors, discussion about policy and legislation change is somewhat beyond the scope. Nonetheless, one expectation may arise from these changes is that divorce is easier to operate after 1970 because there is no requirements on mutual consent or proof of fault, and bargaining over the divorce process become less costly and time-consuming, thus disruption might be encouraged once gains to divorce is realized, and it could be individual decision without any consent from partners.

Since participants in the marriage market have limited access to complete information about all prospects on their potential partners and traits may vary along with life-cycle that could be only revised through the post-marital life, and therefore divorce would be an anticipated response to not only imperfect information which are not readily assessed prior to marriage, but also life-cycle change in traits fall short of what expected. Some traits are static, e.g. age, physical appearance, family background, which do not vary so much over the life-course and are easily acknowledged through the mating process, thus they are not the major source of discontent. However many other aspects of traits, particularly related to economic status, may vary overtime and

difficult to evaluate or predict prior to marriage, and they might be significant contributors to dissolution. For example, employment, earnings and income, and health conditions may be affected by exogenous factors, such as changing economy, crisis, or even short-term fluctuations, which can be hardly anticipated before or even after marriage. Such unexpected changes in earnings and health do raise the probability of divorce (Becker *et al.*, 1977).

Economic development has largely altered family structure and behavior. On one hand, it is clear that growing earning power and labor force participation of women diminish the gain from marriage due to less advantageous sexual division of labor in marriage, and therefore the preference of divorce increased. On the other hand, husband's economic position are also of great importance for marital stability. Rival theories concerning divorce on the men side have generated somewhat mixture of expectations. Becker (1991) argued that men with higher income should have lower propensities to divorce as increase in the gain from marriage also increases the gain from staying married compared to gain from divorce. However this assertion challenges the self-reliance effect, in which, high earnings potential raises the value of this outside option, and thus it would be more likely to transit into the state of independent living (Burgess *et al.*, 2003). As discussed formerly, the convergence in the economic profiles of men and women has changed the nature of marriage and its prevalence, and gains from specialization and exchange within household are reduced, as a result, positive assortative mating are more likely. Hence self-reliance effect could be relevant for everyone, as men and women mate assortatively with similar quality, both would expect gains from complementarities, if there is any unexpected changes occurred on either husband and wife in their marital life threatening the complementarity, the gains from marriage would be reduced, otherwise the household would go back to the traditional type. For instance, if wife's income greatly declines due to some exogenous factor, and husbands income remains the same or grows gradually, the gains from marriage for husband decreases, then there would be two options for such couple. One is to converge to the traditional household with sexual division of labor, woman start being a complete housewife, taking care of children and all necessary household work and man fully participate in the market work, by doing that, the gains from marriage still remains, but it just transformed from complementarities to substitutes. Alternatively, the increasing ratio of husband to wife income would raise the outside options for husband, and in the society with no-fault divorce, he would be more likely to choose independent living or meet with other high quality women. In short, the likelihood of getting a divorce for both man and woman not merely depends on their own earnings, it also attribute to their partners economic circumstances, and, to a larger extent, the division of family total income. Hence this is where the bargaining model should be brought in.

The cooperative bargaining model relax the assumption of pooling income and recognize the nontrivial fashion that two or more agents within a family have distinct preference in determining consumption (Lundberg and Pollak, 1996). The Nash

Bargaining Solution<sup>2</sup> is the leading solution in bargaining models of marriage, in which, the utility received by husband or wife depends on the threat point – a point that the payoff received if agreement is not reached – and the allocation of the solution maximizes the product of the gains to cooperation. The assumption can be made upon this solution is that the higher one's utility at the threat point, the higher one's utility in the Nash Bargaining Solution. Furthermore, in a divorce-threat bargaining model, the threat point is not only determined by internal factors (e.g. the income received by couples separately), but also outside options (e.g. conditions in the remarriage market and income available to divorced population that do not directly affect marital utility). Hence, one might argue that if one of the family member's income increases, his or her utility at threat point also increases which, in turn, should enhance the specific person's utility in the Nash Bargaining Solution if agreement is reached, otherwise his or her utility lies away from the Nash Bargaining Solution frontier, thus the gains from marriage reduced and divorce would be a default outcome. Additionally, if remarriage market is in good condition and income for divorced person is sufficient, it would further raise the value of outside options, therefore the preference of divorce increases accordingly.

Age might also have some effect on the probability of disruption. As argued earlier, an early marriage may predict a great likelihood of mismatch since all the estimations of a young person's future characteristics are on the basis of current information which is mostly incomplete. Therefore young marriers would be less stable than older ones unless the actual characteristics and the experience within marital life are just as what predicted prior to marriage, or there is somewhat imperfect information which, however, are compensated through post-marital socialization (Oppenheimer, 1988).

Children could be an asset for a stable marriage, especially young children (e.g. children under 6), since they can be sort of marital-specific capital in the family. And therefore empirical evidence suggest that dissolution is less likely for the family with young children in the United States and many other developed countries (Becker *et al.*, 1977; Goode, 1963)

Empirical evidences regarding union stability reported so far are greatly mixed for both men and women. Some concluded that women's employment or earnings are positively associated with stable marital life (Hoffman and Duncan, 1995; Greenstein, 1990). Some found that the effects are adverse or no effect (Burgess *et al.*, 2003; Johnson and Skinner, 1986; Ruggles, 1997; Ressler and Waters, 2000; Tzeng and Mare, 1995). For males, most basic researches provided straightforward evidences that higher earning capacity or economic status of husbands decrease the likelihood of divorce (Burgess *et al.*, 2003; Ono, 1998; Sayer and Bianchi, 2000). Some scholar, however, paid specific attention to the differences between husband and wife's economic circumstances. Tzeng and Mare (1995) conducted a more advanced studies to assess the effects of changes in husbands' economic status relative to their wives'

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<sup>2</sup> See Shelly Lundberg and Robert A. Pollak (1996), *Journal of Economic Perspectives*, pp 146

economic status and draw the conclusion that such effect increased the probability of divorce.

To sum up, if married couples are positively assorted, which is more likely in Western societies, then the marital stability would be dependent on how well members within a family can complement to each other. And once complementarities are failed, and substitutes are not possible, the gains to marriage would decline and, consequently, divorce would be the ultimate outcome. Such mechanism could be explicated by the cooperative bargaining model. The research expectation on recent marital disruption should be in line with this bargaining game theory, though previous studies has not revealed a consistent pattern.

### 2.1.3 Common Methods and Research Need

A wide range of datasets, measures and econometric approaches have been employed for studies on the effects of employment and earnings on marriage formation and dissolution and yield either positive or negative relations. One set of analysis focuses on the personal characteristics and its contribution to the marital prospects. The other line of research explored the role of differences between partners in their marriage outcomes, e.g. income ratio of men to women, husband's economic status relative to wife's economic status. Nevertheless, there is certain difficulty within this line of studies on marital formation since the relevant potential partners can be hardly identified.

Although some studies even further specified the influences of changes in partner's relative characteristic (Tzeng and Mare, 1995), the number of such researches are too rare to generate any comparable patterns. One explanation for the shortage of such studies is that it requires longitudinal data on a sufficient number of individuals and multiple observations on the same individual across time. If relevant datasets are available, the investigation could be expended to if employment at time  $t$  affects union status in time  $t+1$  or if any changes on economic status occurred at time  $t$  influence the marital decision in the current or following year. In addition, Oppenheimer *et al.* (1997) also suggested that economic status should also be conceptualized as an evolving career process.

Due to the increasing availability of the data for 1990s, it would facilitate the comparative analysis on different cohorts or periods, which might enable us to have a deeper understanding of the association between dramatic changes in family behaviors and our socioeconomic life, and importance of gender roles.

## 2.2 Theoretical Framework

### 2.2.1 Marriage

Marital formation can be modeled as the ultimate outcome of a search process in the marriage market, and what determines the search process should also contribute to the

subsequent outcome. As discussed in the former section, growing earning power and labor force participation of women makes gender roles within household and the marriage market be more egalitarian. Hence complementary traits of the potential partners become more important in the contemporary mating process, by which is meant that personal characteristics, both for men and women, should be equally important since positive assortative mating suggest a matching of similar quality of partners. And a good match - with similar or complementary traits - depends on the individual and their potential partner's transitions to adult economic roles as career stability might substantially reduce the future uncertainty and predict good economic prospects. In addition to that, individual's current labor market position should also affect his or her current ability to marry. Therefore current socioeconomic status and stability can be strong determinants of his or her position in the marriage market and eligibility for a positive assortative mating, subsequently contribute to the marital outcome. One question needs to be addressed here is that what kind of characteristics are relevant for reflecting the economic stability.

It is not hard to imagine that, to be economically independent and stable, a promising career is crucial, which not only requires certain completion of higher education, but also extensive on-job trainings. Thereby, first of all, education attainment should be one of the most relevant factors determining whether a person is qualified for highly-skilled career path, and possibly achieve a high level of socioeconomic status in the long run, this might eventually affect the probability and the timing of marriage. Secondly the income/earnings that might directly imply a person's economic ability to establish an independent household. Finally, the essential variable that reflecting the economic stability is the employment status since transition from school to labor market and career at early stage are usually associated with great uncertainty, e.g. the risk of losing a job or change career paths is high, thus job stability somewhat implies a successful transition into a stable career.

Another important note is that age could be another contributing factor to marital formation as youth are usually associated with poor economic position and greater uncertainty, thus attempts to make matches are discouraged and early marriages are mostly thought as mismatch. Furthermore, recent trends in the marriage market reveal a late marriage pattern due to the time consuming on transition to work and mate searching.

Hence, to date, a preliminary theoretical model for the economic determinants of individuals marriage outcome based on my former discussion about previous theories and empirical findings can be illustrated as equation 1. Marriage is dependent on an individual's education attainment, income level, employment status, and age.

*Equation 1.*

$$M_i = f(\text{Education}_i, \text{Income}_i, \text{Employment}_i, \text{Age}_i)$$

Where  $M_i$  denotes individual's marriage outcome, the terms in the parenthesis are explanatory variables,  $\text{Education}_i$  denotes individual's education attainment,  $\text{Income}_i$  denotes individual's income,  $\text{Employment}_i$  denotes individual's current employment status, and  $\text{Age}_i$  denotes individual's age.

### 2.2.2 Divorce

Due to the transformation of marriage law in the US in 1970s, from fault to no-fault, divorce can be an individual decision without any mutual consent between the couples. And it can be modeled as an outcome of internal bargaining failure. Hence the major issues that family members are more concerned and would be more likely bargaining about are of great importance affecting the marital stability and ultimate outcome – divorce.

I discussed earlier that personal traits can be sorted as static or non-static. The former can be readily assessed prior to marriage, e.g. age, physical appearance, family background, and other ascribed characteristics, the latter, however, can vary according to exogenous changes, e.g. income, employment status, and school enrollment might be associated with the state economy. If the discontent within a marriage only arise from the static factors, then divorce would be fully anticipated. Otherwise one might argue that non-static traits that repeatedly detected or revised through the marital life might more likely cause the battles between the sexes than static ones.

Moreover, the cooperative bargaining model suggests that the utility received by husband or wife in the Nash Bargaining Solution depends upon the threat point, and in the cooperative equilibrium, the separate utility will depend on the incomes controlled separately by each spouse (Lundberg and Pollak, 1996). If we assume that any income received by either husband or wife is fully under control by his or her-self and such control influences the threat point, then once one of the family members income increases relatively to the other, he or she would have larger share of control over the family resource, which, in turn, increase the threat point utility level accordingly, and, as a result, the utility in the bargaining solution increases. Otherwise, if the agreement is not reached, either spouse would receive the utility at threat point respectively which associated with a default outcome of divorce. More simply, discontent occurs when the utility at threat point is higher than the utility attainable within a marriage. Hence, in short, one of the spouses income relative to the other seems a candidate variable explaining the control over family resources, relative well-being of men and women within marriage, and, ultimately, the marital disruption if the distribution of family resources are not fairly defined in accordance with the spouse relative income and bargaining is not successful.

On the other hand, as argued, the probability of getting a divorce might also be attributable to age and whether there is young children within a family since young married couples would be less stable than older ones and children could be sort of

marital-specific capital in the family. To date, factors such as married person's income, employment status, years of schooling, age, and presence of children in the family, are regarded as the family internal influences on marital stability.

In addition to such internal effects, a divorce-threat bargaining model suggests that it might also depend on the external factors, the environment, that do not directly affect marital utility, e.g. conditions in the remarriage market and the income or other benefits available for divorced men and women (Lundberg and Pollak, 1996). This might raise the value of outside options and up shift the threat point in the divorce-threat bargaining model.

Therefore, in short, all of these factors I have discussed so far are relevant parameters in the divorce model as they would contribute to the divorce-threat marital bargaining, and its subsequent outcome. And the theoretical model is explicitly illustrated as Equation 2.

*Equation 2.*

$$D_i = f(\text{Education}_i, \text{Relative Income}_i, \text{Employment}_i, \text{Age}_i, \text{Child}, \text{Environment})$$

*Where  $D_i$  is individual's divorce, the terms in the parenthesis are explanatory variables,  $\text{Education}_i$  denotes individual's education attainment,  $\text{Relative Income}_i$  denotes individual's relative income to spouse,  $\text{Employment}_i$  denotes individual's current employment status,  $\text{Age}_i$  denotes individual's age,  $\text{Child}$  denotes whether there is own children present in family, and  $\text{Environment}$  denotes environmental factors: the remarriage market, income/benefits available to divorced person.*

## 2.3 Hypothesis

### 2.3.1 Marriage

As Equation 1 illustrates that marriage is dependent upon two dimensions of factors, socioeconomic status and age. According to Becker's positive assortative mating, high quality person is more willing to and eligible to marry to another high quality person so as to complement each other. Furthermore current socioeconomic status and stability can positively determine his or her position in the marriage market and ability to form a family. Hence the first hypothesis can be made for the marriage model is that high socioeconomic status have positive effects on marital formation. Similarly age might also positively associated with the probability of marriage since recent trends in the marriage market reveal a late marriage pattern due to the time consuming on transition to work and mate searching process.

Nonetheless, the current study specifically focuses on the effects of short-term changes in individual's socioeconomic status on marital formation, thus the hypothesis on such association might be slightly different. First of all, completion of a education degree somewhat improves a person's socioeconomic position, as master graduates have higher status than bachelor graduates, thus the marital prospects should be better for those higher educational level graduates. However this upward



shift of socioeconomic status might not necessarily leads to a marriage instantly since school leavers are usually facing a transition into a stable job career which still remains great uncertainty, and even if some graduates might complete such transition very quickly, it will still take certain time for a mate searching process unless the match is already formed during the student life. Therefore one might argue that among all the variables indicating personal socioeconomic status, employment status should deserve more attention as which might better define a person's economic independence and stability. The more stable whose employment status is, the more likelihood of marriage. Income, in general, should have positive effect on marital formation as current income might strengthen people's ability to form a family. Nevertheless, one factor needs to be definitely taken into account is that dramatic changes in income might not necessarily imply a person's economic stability, rather instability. Thus one possible explanation for those marriage formed upon significant gains in income, if there is any, is that those partners might be already matched before the change occurs.

Hence, in sum, short-term changes in education attainment and income can have positive effects on marital formation, yet such marriages are more likely depend upon the matches prior to these changes occurred. Employment status, on the other hand, can more fairly reflect a person's economic role and stability, which should increase the probability of marriage regardless of when such assortative mating is formed.

- *Hypothesis 1: Positive dynamic effects of educational attainment, personal income, and employment status on marriage entries.*

Additionally, during recent decades, we have witnessed the dramatic changes in the importance of gender roles within household and the marriage market, that is, at least, partly due to the growing earning power and labor force participation of women, thus I would expect that the sexual egalitarian would result in the similar marital response to such socioeconomic changes. And a convergent pattern of such response between male and female are expected over time, if there is any.

- *Hypothesis 2: The marriage responses to dynamic effects are the same for men and women.*

### 2.3.2 Divorce

Previous theories and empirical evidences suggest that divorce model should comprise more explanatory factors than the marriage model, besides the socioeconomic variables and age are relevant for the divorce model, the presence of children within family and other environmental factors are also effective to marital disruption. As discussed formerly, children, particularly young children, could be sort of marital-specific capital in the family, thus one relevant hypothesis is that a family with (young) children is less likely disrupted than those without, and the greater number of children would further depress the likelihood of dissolution. Environment should have negative impact on marital stability since sufficient remarriage market

and income source for divorced men and women would increase the value of the alternative to current marriages, which consequently lead to dissolution.

In general, socioeconomic position should positively influence the marital stability as partner selection are mostly based on such economic characteristics, and positive assortative mating requires two persons with similar qualities in order to stay together, high level of socioeconomic status may strengthen the quality of partners and therefore ensure the complementary. Hence, the primary hypothesis can be proposed here is that higher income, education attainment, and stable employment would lower the probability of getting divorce. However, as we discussed, socioeconomic status can be non-static traits which may vary due to exogenous threats through post-marital life. And unexpected changes in earnings and health do raise the probability of divorce (Becker *et al.*, 1977). Furthermore, the personal traits on married couples should be considered pairwise since if socioeconomic progress on both partners are in parallel, the complementarities may still be maintained, therefore divorce is unlikely. Otherwise, dissolution would be the outcome of great divergence in the economic position of the family members. Hence among the three socioeconomic variables included in the divorce model (Equation 2), relative income between partners should provide more detail insights on marital disruption. If such ratio changes dramatically, it will bring two partners to a new bargaining process, via which, the threat points need to be adjusted and the ultimate utility or well-being for each partner will be redistributed. If the gap between the two income sources are too large, the bargaining would be more difficult to reach an agreement, therefore divorce would be a default outcome of unreachable bargaining. So it could be hypothesized that the larger the income gap between married couples, the more difficult to arrive at a mutual consent, and the more likely to disrupt the family as a result.

- *Hypothesis 3: A dramatic increase in individual's socioeconomic position or earning ability relative to spouse lifts the probability of divorce.*

Another important note is that pairwise information on married couples are not always readily available, for instance, education attainment and employment status. If this is the case, more assumptions would be needed. One important assumption is that all couples are positively assorted upon marriage, by which is meant that they all with similar quality of traits. Then if there is any change in education or employment status on one of the partners, but remains the same on the other, there would be a divergence in traits emerged, this would increase the likelihood of divorce. Otherwise, if both partners are in parallel progress or no progress in their education or employment status, then their complementarities could remain the same as it was upon marriage. Hence, this can be hypothesized as the probability of divorce would be lifted when there is progress in a married person's education or employment while the counterparts are remain the same.

The gender role hypothesis for the divorce model is similar to the marriage model, as gender roles become more equal in the American society and divorce is no longer based on mutual consent between husband and wife, it could be anyone's self-decision, thus the socioeconomic effects on marital stability are approaching a similar pattern for both genders over the recent decades.

- *Hypothesis 4: The divorce responses to dynamic effects are the same for men and women.*

### 3. Data

This section provides a brief introduction of data source and management, followed by a description of variables and their definition.

#### 3.1 Data Source

The key importance of this paper is to examine the impact of socioeconomic changes on marriage and divorce, thus the ideal dataset should comprise not only economic, but also demographic variables. The Current Population Survey (CPS) does contain necessary information for the current study, as it is the source providing data on a wide range of issues relating to employment and earnings, and collecting extensive demographic data. Hence, such data source make it possible to model the role of socioeconomic status in marital formation and dissolution.

The CPS consists sample of 50,000 occupied households from 50 states and the District of Columbia. All the households are following a 4-8-4 pattern, that is in the survey for 4 consecutive months, out for the next 8 months, and return for another 4 months before leaving the sample permanently. This design ensures high degree of year-to-year continuity, and therefore allows the investigation on short-term changes (between two consecutive years) in socioeconomic roles and demographic outcomes. Furthermore, the eligible participants in the CPS are 15 years of age or over (no upper age limit) and not in the armed force or institutions (e.g. prisons, long-term care hospitals, and nursing homes), such selection criteria can further ensure the sample population are marriageable which is crucial for the research interest here.

I employ three pairs of consecutive surveys over the last two decades, which are the years of 1989-99, 1998-99, 2008-09, and compare them in order to see whether the patterns of marital response to short-term individual changes are consistent over recent decades. The pairing process is done by merging the two consecutive datasets in accordance with the month-in-sample code, personal identification number, household number of each individual. The merged files enable me to generate new variables which provide information on changes in person's marital status and socioeconomic status.

#### 3.2 Data Description

##### 3.2.1 *Changes in Marital Status*

The marriages defined in the merged files are person who get married within the period between two consecutive years, that is that the marital status is never married in the time  $t$  survey, and married in the time  $t+1$  survey. Table 1 illustrates the share of surveyed population who were married during each period between two consecutive survey years. As shown that the marriage rates are nearly 2 percent, and male have slightly higher marriage rates than female in the sample population, except the year

1998 and 1999, the marriage rate is the lowest among the three, and male's rate is lower than female's.

**Table 1: The Percentage of Married Persons between Two Consecutive Survey Years**

Survey Years	All (%)	Men (%)	Women (%)
1988-1989	2.10(6625)	2.24(3522)	1.93(3103)
1998-1999	1.78(6892)	1.76(3584)	1.81(3308)
2008-2009	2.11(8798)	2.12(4629)	2.11(4169)

*Note: figures in parenthesis are total number of observations*

Similarly, the divorces defined in the merged files are person who get divorce within the period between two consecutive years, that is that the marital status is married in the time  $t$  survey, and divorced in the time  $t+1$  survey. The probability of getting a divorce between every two surveyed years are shown in Table 2, in which, the divorce rate are almost the same for the first two periods, whereas increased by 0.15% for the latest period. Moreover, men's divorce rates are much higher than female's, particularly during late 80s and 90s, though the number of observations on the two subgroups are approximately the same.

**Table 2: The Percentage of Divorced Persons between Two Consecutive Survey Years**

Survey Years	All (%)	Men (%)	Women (%)
1988-1989	0.47(21828)	0.72(11002)	0.22(10826)
1998-1999	0.48(20165)	0.59(10110)	0.37(10055)
2008-2009	0.63(20537)	0.66(9953)	0.60(10584)

*Note: figures in parenthesis are total number of observations*

### 3.2.2 Changes in Socioeconomic Status

Personal income in the CPS is recoded value (categorized from 1 to 41 with 2499 US Dollar for each interval). The lowest category indicates the income level under 2500 US Dollar per year and the highest category indicates the income level is 100000 US Dollar or over. Personal income changes are the differences between recoded total personal income in time  $t$  and time  $t+1$ , which are further categorized into 4 levels, from extreme loss to extreme gain in accordance with the mean and one standard deviation. Such categorization only applies to the marriage model.

The income variable in the divorce model is slightly different since I calculated the changes in the ratio of personal to family income instead of the changes in single person's income. That is the ratio of personal to family income at time  $t+1$  minus the ratio in the previous year. The ratio changes are also categorized into 4 levels based on the mean and standard deviation. Therefore the least level (Extreme Decline) means the ratio of personal income to family income has a negative change over one standard deviation, which implies that a person's earning ability in a family has a dramatic loss, conversely, if the ratio of personal to family income has a positive

change over one standard deviation, that implies that personal earning power within a family has a significant increase. And if the change lies in the interval between mean and one standard deviation, then it is regarded as moderate increase or decrease in individual's earning capacity in each family.

The original variable of educational attainment in the CPS are coded in 17 categories. Children have a value of 0, from less than first grade up to high school graduate lies in the levels between 31 and 39, and college without degree up to doctorate degree is from 40 to 46. Since one year extra schooling under the college level dose not distinguish so much in socioeconomic status, thus I recoded all of the observations whose educational attainment in the CPS is below 40 as no college education. Moreover people who attended college but has no degree attained are coded as college, but no degree, those attained either associated degree or bachelor degree in college are treated as completed college with degree, therefore coded as bachelor degree, and those attained master degree or higher are coded as graduate degree. After recoding educational attainment, I further specify the change in educational status between the two consecutive survey years. If education remains the same for all levels in the two consecutive surveys, then status is coded as it was (no college education, college no degree, bachelor degree, and graduate degree). If educational attainment is higher in the latter survey than the former, the status is recoded as entering college (from "no college" to "college education, but no degree"), attained bachelor degree, and attained graduate degree, which implies that there is significant progress in education or academic degrees.

Employment status has four possible changes over the two-year-period of survey, thus the changes in employment status are categorized in four levels: 1) unemployed if a person is not employed in both years, 2) new unemployed if a person is employed at time  $t$  and unemployed at time  $t+1$ , 3) new employed if a person is unemployed at time  $t$  and employed at time  $t+1$ , and 4) employed if a person is employed in both years. Among which, the first category implies the worst situation that a person is unemployed persistently during the two consecutive survey period and the fourth category implies certain employment stability, at least in the short-run.

### *3.2.3 Other Controlling Variables*

Age in the CPS is numeric, I further recode it as a multi-categorical variable with 4 levels (under age 25, between age 25 and 34, between age 35 and 44, and over age 45) for the marriage model and 2 levels (under age 45, and age 45 or over) in the divorce model. The number of own children under 6 in each family is coded in three categories, no children, one child, and two or more children.

Unfortunately the variables relating to the environmental factors are not available in the CPS, as the measurement of the condition in remarriage market or what income source or other benefits divorced person can get does not exist in the survey, therefore not included in the empirical model for divorce.

## 4. Methods

For both marriage and divorce models, the response variables are binary, for which the response outcome for each subject is “never married or married” and “divorced or married”, thus logistic regression is applied for estimating the models respectively, which is the most popular model for binary data.

Logistic regression can have multiple explanatory variables, and some or all of them can be categorical, rather than quantitative (Agresti, 2007). This is applicable for the marriage and divorce models, as, in which, the explanatory variables are all categorized in  $k$  levels, i.e. changes in personal income and personal to family income ratio has four categories, changes in educational attainment has seven categories, changes in employment status has four categories, age has four categories for the marriage model and two categories for the divorce model, and number of children in each family has three categories. Furthermore, the factors with more than two categories requires  $k-1$  indicator variables, thus the representation of all the explanatory factors is in the ANOVA type.

The marriage model formula can be written as Equation 3. The one on the left-hand side of the equation is a binary response variable, changes in marital status, it equals 1 if a person is single in the former survey and married in the latter survey or equals zero if remains never married in the both consecutive surveys. Terms on the right-hand side are a constant and explanatory factors. The factors relating to socioeconomic status are all differenced values between the two consecutive years and categorized in  $k$  levels. The last term denotes person’s age at early survey, i.e. the age when first time interviewed. Another important note is that each factor has many parameters as it has categorical levels, but one is redundant and treated as reference, thus there are  $k-1$  parameters in total for every factor, i.e. education has 6 parameters (no college is reference), income has 3 parameters (extreme gain is reference), employment has 3 parameters (employed during both years is reference), and age has 3 parameters (age under 25 is reference).

*Equation 3.*

$$\text{Logit}[\text{Pr}(M = 1)] = \alpha + \beta_7^{\Delta\text{Educ}} + \beta_4^{\Delta\text{Inc}} + \beta_4^{\Delta\text{Empl}} + \beta_4^{\text{Age}}$$

Where  $M$  is the response variable that equals to one if married, and equals zero if never married. The term  $\alpha$  is a constant.  $\beta_7^{\Delta\text{Educ}}$  represents the effects of changes in educational attainment.  $\beta_4^{\Delta\text{Inc}}$  represents the effects of income change.  $\beta_4^{\Delta\text{Empl}}$  represents the effects of changes in employment status, and  $\beta_4^{\text{Age}}$  represents the effects of age. The subscript numbers denote the number of categories of each explanatory variables ( $k$ ), and the total number of indicator variables equals to  $k-1$ .

Equation 4 illustrates the representation of divorce model, in which, the dependent variable is a binary response - changes in marital status, it equals to 1 if a person is married in the former survey and divorced in the latter survey or equals zero if

remains married in the both consecutive surveys. Terms on the right-hand side are a constant and explanatory factors. Similar to the marriage model, the factors relating to socioeconomic status are all differenced values between the two consecutive years and categorized in  $k$  levels. One difference is the specification of income, that is the changes in the ratio of personal to family income. Age is person's age when first time interviewed, whereas it only has 2 levels in the divorce model. Another variable included in the divorce model, not in marriage model, is the number of young children an individual has in his or her family at former surveyed year, which has three categories, no children, one child, and two or more children. It is noteworthy, as in the marriage model, that each factor has many parameters as it has categorical levels, but one is redundant and treated as reference, thus there are  $k-1$  parameters in total for each factor, i.e. education has 6 parameters (no college is reference), the ratio of personal to family income has 3 parameters (extreme increase is reference), employment has 3 parameters (employed during both years is reference), age has 1 parameter (age under 45 is reference), and children has 3 categories (two or more children is reference).

*Equation 4.*

$$\text{Logit}[\text{Pr}(D = 1)] = \alpha + \beta_7^{\Delta \text{Educ}} + \beta_4^{\Delta \text{Person Inc/Family Inc}} + \beta_4^{\Delta \text{Empl}} + \beta_2^{\text{Age}} + \beta_3^{\text{Child}}$$

Where  $D$  is the response variable that equals to one if divorced, and equals zero if remain married. The term  $\alpha$  is a constant.  $\beta_7^{\Delta \text{Educ}}$  represents the effects of changes in educational attainment.  $\beta_4^{\Delta \text{Inc}}$  represents the effects of income change.  $\beta_4^{\Delta \text{Empl}}$  represents the effects of changes in employment status,  $\beta_2^{\text{Age}}$  represents the effects of age, and  $\beta_3^{\text{Child}}$  represents the effects of number of children in each family. The subscript numbers denote the number of categories of each explanatory variables ( $k$ ), and the total number of indicator variables equals to  $k-1$ .



## 5. Analysis

This section provides the estimated results (the estimate for each parameter is odds ratio) for both marriage and divorce model, and followed by a brief discussion respectively.

### 5.1 Results

#### 5.1.1 Marriage

Table 3 illustrates the ratio of relative risks of marital formation on all observed population during the period between two consecutive surveys by controlling varied socioeconomic and age factors. In general, short-term changes in socioeconomic status and age have positive effects on marriages, there is, however, certain inconsistency over the three different periods.

First of all, a dramatic increase in personal income, over one standard deviation in each sample, reduce the relative risk of getting married in late 80s as the odds ratios for the other three levels, extreme loss, moderate gain, and loss, are over one, although none of them are statistically significant. Those with extreme loss in their income has the largest positive effect on marital formation – the relative risk is over 50 percent higher than those with extreme gains. Nonetheless, there has been a reversal in such pattern since late 90s, as extreme gains in income seems associate with a greater likelihood of marriage in both 98-99 and 08-09. And extreme loss in income impose a very strong and negative impact on marital formation, especially in the late 90s, the relative chance for the group experienced a dramatic decline in income to get married is 60% less than their counterparts experienced an extreme increase (the odds ratio for which is 0.399 and statistically significant at 95% level).

Secondly, educational attainment, regardless of whether there is any advancement or remain at same level, generally have positive effects on marriage as estimates revealed the pattern that education above all college levels have larger relative probability of getting married than no college level except for those entering college and holding a graduate degree in 88-89 surveys, and those holding a graduate degree in 08-09 surveys. Despite most of the estimates are neither statistically significant, nor with large magnitudes (the odds ratios are mostly approximate to one), it is still noteworthy that those attaining a graduate degree during the survey period have a much larger relative risk of getting married comparing to those never attended college, the odds ratio is twice higher in 88-89 and 98-99 surveys, and not only large, but also significant in the most recent surveys. This is also the greatest effect among all the categories of educational attainment.

The effects of employment status are surprisingly consistent across three surveys. People who remain employed within the year between two surveys have much greater chance towards a marriage, as the odds ratios for those being unemployed all the time,

newly unemployed, and newly employed all far below one, and among which, those just get employed have the least relative chance to get married, approximately fall in the range between 80 and 70 percent lower than the relative risk for those remain employed. All estimates are large in magnitudes, statistically significant, and consistent all the time, except in the 98-99 survey, a very small positive effect of newly unemployed on marital formation is captured, but insignificant in statistical sense.

The last, but perhaps the most important note in the marriage model, is that the age effects also reveal a consistent pattern as well throughout different periods. A considerable share of observations got married during the consecutive surveys is between age 25 and 34 as the estimated odds ratio for this group is nearly 4 time higher than those under age 25 in late 80s and approximately triple larger thereafter. In addition, the relative risk for the population between age 35 and 44 is also much greater in contrast to under age 25, approximately twice higher. The estimates of the two age groups are not only large, but also statistically significant at 95% confidence level.

**Table 3: Odds Ratio Estimates of Marriage, All Observations**

Survey Year	1988-1989	1998-1999	2008-2009
Extreme Income Loss	1.532	0.399**	0.795
Moderate Income Loss	1.068	0.654	0.899
Moderate Income Gain	1.125	0.576**	0.590**
Extreme Income Gain	Reference Category		
No College	Reference Category		
Enter College	0.906	1.411	1.133
Attain Bachelor Degree	1.038	1.297	1.788
Attain Graduate Degree	2.136	2.003	3.153**
College, No Degree	1.018	1.185	1.295
Bachelor Degree	1.338	1.687**	1.051
Graduate Degree	0.737	1.233	0.644
Unemployed	0.391***	0.341***	0.311***
New Unemployed	0.667	1.233	0.391***
New Employed	0.295***	0.216**	0.311***
Employed	Reference Category		
Age under 25	Reference Category		
Age between 25 and 34	3.904***	2.664***	3.342***
Age between 35 and 44	2.142**	1.744*	2.011***
Age over 45	1.086	1.226	1.019
Constant	0.0139***	0.0195***	0.0253***
Prob>Pearson Chi-square	0.0761	0.1616	0.0997
Observations	6625	6892	8798

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Overall, the estimated results, illustrated in Table 4, suggest a different marriage pattern between men and women in the early periods, yet a similar pattern recently. This is particular for the income and employment effects. The extreme gains in personal income have negative impact on marital formation for males, whereas positive for females in the 88-89 survey. Nonetheless, this effect in the 98-99 survey are approaching the same direction, but differences in magnitudes still exist, as the odds ratios for female is much smaller than male that is especially profound in the category of extreme income loss (odds ratio: 0.673 for male vs. 0.157 for female). For the other two levels, moderate income gain and loss, men's odds ratio estimates are approximately twice larger than women's. During the most recent periods, such differences are almost disappeared, as those odds ratios in each category of income change are nearly the same for both sexes. Hence for the gender role expectation in terms of income effect, one might conclude that the patterns between men and women are converging from late 80s onwards.

Such converging gender pattern is also detectable when employment status comes into play, specifically for those who are with instable career, being unemployed or newly unemployed during the survey years. For those remain unemployed throughout the consecutive survey periods, both men and women have lower chance to get marry than those remain employed, however the magnitudes between the genders are different in the late 80s and 90s, as the odds ratio estimates for male is approximately one third of which for female. Such difference is almost none in the 08-09 survey as the estimates are nearly the same and both highly significant. Furthermore, for those just loss the employment over the survey periods, the effects on men and women are greatly divergent during the first two survey periods, as the odds ratios for male are 0.303 (88-89 survey) and 0.574 (98-99 survey), yet 1.266 (88-89 survey) and 2.220 (98-99 survey) for female, which implies that men would have fewer chance to marry while exit from current employment, whereas women are more likely entering to a marriage. This pattern is no longer stand during the most recent periods, as the estimates for newly unemployed men and women in the 08-09 survey are nearly the same. Although the odds ratio for men (0.323) is still smaller than their counterparts (0.491), the difference is barely apparent. Surprisingly, the effects of newly employed on marital formation have been consistently the same for both genders across all three survey periods, and results suggest that for those just get a new employment would have much lower chance for marrying in contrast to those remaining employed.

There are considerable differences in education effect on marriage between men and women, and which are puzzling over time. For the new college students, men and women similarly have lower odds than those no college education in the 88-89 survey. Nonetheless, in the later two pair of surveys, new entered male college students have double relative risk comparing to no college males, while new female college students have lower risk than no college females. For those just attained a bachelor degree, the odds ratio for both sexes are not comparable in the 88-89 survey as there is no counts in the female subgroup, thus estimate is unpredictable. Nevertheless, gender

differences do exist in the other two surveys, as in the 98-99 survey, female odds ratio is greater than one, whereas male odds ratio is smaller than one. In the 08-09 survey, the results are completely reversed, as men just attained a bachelor degree would have triple larger chance to marry, whereas women would have slightly less chance, when comparing to men and women with no college education. For those upon completion of graduate school, the relative risks of getting married for men and women are both larger than no college group, the magnitudes are different, female have approximately twice larger odds ratio than male in the 88-89 survey and 08-09 survey, which is not comparable in the 98-99 survey due to the fact that marriages out of the group of women who just attained a graduate school degree are none. The results for those without any progress in their educational attainment are rather mixed, the estimates for both genders sometimes are different in signs, sometimes in magnitudes, and sometimes are not different at all. However, it is noteworthy that mostly holding a bachelor degree would have positive impact on marital formation, this is particularly strong for female in the 98-99 survey (estimated odds ratio is 2.539 and statistically significant at 5% level). For both men and women holding a graduate school degree would have fewer relative chance to marry than without college education, except for males in 98-99 survey, the chance is nearly twice greater, but insignificant.

Another important note is that both men and women are much more likely to marry between the age 25 and 34, rather than under age 25, this has been consistent over time. Nevertheless, there is slightly gender difference in the age group 35-44, in which, the relative probability for male is higher than female, and it is particularly significant in 88-89 and 98-99 surveys (odds ratio for male are more than twice higher than for female). Although none of the estimates are significant for the group of age over 45, it is still necessary to mention that mid age or older men are much more likely to marry than women, as age 45 and over have positive effect for male, but negative for female, on marital formation. And this has been remained in the same pattern over the two decades.

**Table 4: Odds Ratio Estimates of Marriage by Men and Women**

Survey Year	1988-1989		1998-1999		2008-2009	
	Male	Female	Male	Female	Male	Female
Extreme Income Loss	1.698	1.268	0.673	0.157**	0.877	0.656
Moderate Income Loss	1.355	0.719	0.840	0.469**	0.810	1.033
Moderate Income Gain	1.603	0.669	0.788	0.388**	0.518**	0.692
Extreme Income Gain	Reference Category					
No College	Reference Category					
Enter College	0.731	0.866	2.051	0.930	1.959	0.515
Attain Bachelor Degree	2.407	N/V	0.786	1.885	2.893**	0.980
Attain Graduate Degree	1.226	3.444	3.124	N/V	2.323	4.410**
College, No Degree	1.313	0.703	0.762	1.731	1.367	1.216
Bachelor Degree	1.548	1.070	1.223	2.539**	1.245	0.871
Graduate Degree	0.801	0.660	1.718	0.656	0.297	0.915
Unemployed	0.182***	0.646	0.172***	0.582	0.334***	0.285***
New Unemployed	0.303	1.266	0.574	2.220*	0.323**	0.491
New Employed	0.392*	0.151*	0.283*	0.165*	0.181**	0.451*
Employed	Reference Category					
Age under 25	Reference Category					
Age between 25 and 34	4.117***	3.639***	3.613***	2.138**	3.731***	2.994***
Age between 35 and 44	2.875**	1.220	2.731**	1.163	2.222**	1.833*
Age over 45	1.560	0.753	1.915	0.895	1.441	0.673
Constant	0.0102***	0.0225***	0.0140***	0.0249***	0.0228***	0.0270***
Prob>Pearson Chi-square	0.0048	0.0019	0.9450	0.2378	0.7935	0.8501
Observations	3522	3022	3584	3298	4629	4169

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ , and N/V denotes if there is no counts in that category.

### 5.1.2 Divorce

The estimated odds ratios for the divorce model, full sample included, are shown in the Table 5. The overall results show a consistent pattern across the three surveyed periods during the last two decades, and which is especially prominent on the effect of changes in personal to family income ratio, as it can be seen that all the estimates of the indicator variables regarding such income ratio are statistically significant and in the same magnitudes over time. They all suggest that an extreme increase in personal to family income would significantly and greatly lift the relative probability of marital disruption, and moderate decrease would impose the largest positive impact on marital stability (odds ratios for the level of moderate decrease in personal to family income ratio are the least among all categories).

Entering college would increase the likelihood of getting divorce, and such effect reveal an increasing pattern over periods, as in the earliest survey, the effect of entering college is almost none when comparing to no college, whereas in the latest survey such effect is nearly doubled. The effects of attain a bachelor degree and attain a graduate school degree both follow a downward trend over time. In the 88-89 survey,

those degree awardees is associated with more than twice higher relative risk of divorce in contrast to those never attend college, which, however, is reversed to lower relative risk of dissolution in the 08-09 survey. The estimates for those remain at the same level of educational attainment are invariant over time. People who attended college education without degree have nearly the same risk of divorce as never attended college as odds ratios are close to one. Not only do those holding a bachelor, but also graduate school degree have lower chance to divorce, the latter, however, shows a much greater and significant positive influence on marital stability.

Employment status and its changes do not have any strong effects on marital disruption at all since none of the estimated odds ratio is statistically significant. And such insignificance stays the same in all the three survey periods. Nonetheless, it is still noteworthy that those remain unemployed through a year would have smaller odds than those remain employed. And those experienced changes in their employment status, regardless of loss or get a new employment, would have greater relative risk of divorce comparing to those with stable employment, except in the survey 88-89, the odds for newly employed is merely one half of which for remain employed.

Although none of the estimates on number of kids in each family is statistically significant, children do seem matter for marital dissolution. Results reveal a consistent pattern over the two decades that persons with two or more children are associated with lower relative probability of divorce in comparison with those with only one child or none.

Finally, higher age does have positive impact on marital stability as the predicted odds ratio on the group over age 45 is around 0.5, and which are all statistically significant and consistent over time.

**Table 5: Odds Ratio Estimates of Divorce, All Observations**

Survey Year	1988-1989	1998-1999	2008-2009
Extreme Decrease in Person to Family Income Ratio	0.0950***	0.0318***	0.0566***
Moderate Decrease in Person to Family Income Ratio	0.0471***	0.0178***	0.0348***
Moderate Increase in Person to Family Income Ratio	0.165***	0.0874***	0.164***
Extreme Increase in Person to Family Income Ratio		Reference Category	
No College		Reference Category	
Enter College	1.093	1.814	1.986
Attain Bachelor Degree	2.285	1.594	0.734
Attain Graduate Degree	2.559	1.846	0.579
College, No Degree	1.125	1.363	1.078
Bachelor Degree	0.673	0.921	0.788
Graduate Degree	0.343**	0.231**	0.442**
Unemployed	0.646	0.661	0.655
New Unemployed	1.506	1.357	1.449
New Employed	0.491	1.547	1.278
Employed		Reference Category	
No Child	1.716	2.048	1.530
One Child	1.712	1.262	1.125
Two or More Children		Reference Category	
Age 45 or under		Reference Category	
Age over 45	0.406***	0.538***	0.575***
Constant	0.0254***	0.0246***	0.0349***
Prob>Pearson Chi-square	0.3604	0.0000	1.0000
Observations	21828	20165	20537

Note:\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

The odds ratios estimated for subgroups, men and women, respectively are illustrated in Table 6. The most important note is that the estimated indicator variables of personal to family income ratio change are all statistically significant at even one percent level, and the signs and magnitudes of these estimates are nearly the same for male and female. This might imply that the change effect of income ratio within a household are equally profound on marital dissolution for both men and women, and such similar pattern is not only a recent trend, it was already emerged in late 80s (as shown in the 88-89 survey). Hence one might conclude that husbands and wives would evenly have preference of marital disruption when facing a dramatic increase in earning power relative to their spouses.

Since there are considerable number of unpredictable estimates on the indicator variables of changes in educational attainment due to zero counts in such categories, the comparison of gender differences across periods is therefore restrained. Nevertheless, as long as estimates for both sexes are valid, the differences are generally rare except for those attained a graduate school degree in the 88-89 survey and those remain college education, but no degree in 80-09 survey, the former shows

that the estimated odds ratio for female is much larger than male (1.45 for male vs. 7.148 for female), and the latter indicates that relative risk of divorce for male is higher, while for female is lower, when comparing to those never attended college.

There are quite a few salient gender differences in the effects of employment changes on divorce. In the first set of survey, the risk of dissolution for female is much greater than male due to either unemployed, newly unemployed or newly employed, in another words, men are more likely to divorce than women if their employment were being kept. Such pattern, however, was reversed in the 98-99 survey, in which, those men who are either newly employed or newly unemployed are much more likely to divorce than women with same status. In the latest survey, unemployed men and women are facing approximately the same risk of disruption, whereas for those just get new employment, the risk is considerably higher for female.

Although only one estimated odds ratio of children effect is statistically significant, the gap of such estimates between genders do present. Nevertheless the pattern is inconsistent overtime. In the 88-89 survey, both men and women would have larger chance to divorce if they have only one or no child in contrast to those with two or more kids, however the magnitudes of odds ratio for female much greater than for male, suggesting that female are more likely to divorce if they have fewer children or none. Nonetheless, this has been completely reversed since the late 90s, as in the 98-99 and 08-09 surveys, the odds ratio estimates of no child and one child for male are all considerably greater than for female, therefore the opposite conclusion can be drawn that men are more likely to divorce if they have fewer children or none.

The age effect is consistently equivalent for both genders across all surveys. Although, some estimates are highly significant, some are merely at 10% level, some are even not, they all suggest that the relative risk of divorce for those over age 45 are much smaller than for those not yet arrive at middle-age.



**Table 6: Odds Ratio Estimates of Divorce by Men and Women**

Survey Year	1988-1989		1998-1999		2008-2009	
	Male	Female	Male	Female	Male	Female
<b>Extreme Decrease in Person to Family Income Ratio</b>	0.110***	0.0640***	0.0595***	N/V	0.0650***	0.0526***
<b>Moderate Decrease in Person to Family Income Ratio</b>	0.0702***	N/V	N/V	0.0357***	0.0393***	0.0325***
<b>Moderate Increase in Person to Family Income Ratio</b>	0.155***	0.190***	0.128***	0.0386***	0.263***	0.0986***
<b>Extreme Increase in Person to Family Income Ratio</b>	Reference Category					
<b>No College</b>	Reference Category					
<b>Enter College</b>	1.774	N/V	3.351*	N/V	1.724	2.090
<b>Attain Bachelor Degree</b>	N/V	9.268**	1.684	1.491	N/V	1.145
<b>Attain Graduate Degree</b>	1.450	7.148*	2.735	N/V	1.318	N/V
<b>College, No Degree</b>	1.162	1.080	1.119	1.793	1.375	0.772
<b>Bachelor Degree</b>	0.852	N/V	0.923	0.960	0.727	0.827
<b>Graduate Degree</b>	0.368*	N/V	0.337	N/V	0.290**	0.584
<b>Unemployed</b>	0.625	1.631	0.577	0.868	0.881	0.569
<b>New Unemployed</b>	1.170	4.931***	2.052	0.987	1.362	1.576
<b>New Employed</b>	0.284	1.740	2.591**	1.008	0.481	1.558
<b>Employed</b>	Reference Category					
<b>No Child</b>	1.811	2.475	1.475	7.930e+06	2.813	1.035
<b>One Child</b>	1.493	2.896	1.034	3.224e+06***	2.187	0.724
<b>Two or More Children</b>	Reference Category					
<b>Age 45 or Under</b>	Reference Category					
<b>Age over 45</b>	0.339***	0.393*	0.482**	0.543	0.599*	0.546**
<b>Constant</b>	0.0384***	0.00612***	0.0364***	6.04e-09***	0.0158***	0.0586***
<b>Prob&gt;Pearson Chi-square</b>	0.0000	0.9452	0.0000	1.0000	1.0000	1.0000
<b>Observations</b>	10967	5499	6935	8296	9733	10500

Note: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ , and N/V denotes if there is no counts in that category.

## 5.2 Discussion

Taking all the socioeconomic measures as a whole, the results do suggest that there are pronounced impacts of short-term changes in individual status on marital formation and dissolution. And the pattern, magnitudes, and even significance of such influences are not so consistent from one period to the other during last decades. Moreover, results also indicate some degree of gender differences in these socioeconomic change effects, which are in particular in the early periods, whereas largely diminished or disappeared recently.

### 5.2.1 *Marriage*

A considerable increase in personal income do have large and positive impact on marital formation, which are evidently suggested by the results from last two sets of surveys, in which, those income changes within the range from extreme loss to moderate gain are all associated with lower relative risk of marriage than extreme income gain. This is in line with my expectation that income, in general, should have positive effect on marital formation as current income might strengthen people's ability to form an independent household. However, there is certain inconsistency over time as the estimated effects in the 88-89 survey are opposing the evidence from late surveys. Hence such interpretation needs to be cautious. One necessary assumption for the positive effect is that those marriages formed upon dramatic increase in one's income might derived from an early match far prior to those changes occur rather than afterwards. Otherwise, the marital response to income change would be too quick to rely on. Additionally a considerable gender gap is detected in the early period, which, however, is shrinking in the late 90s, and eventually disappeared most lately. This is as what I expected that there is a convergent pattern of such response between male and female over time due to marriages today are more likely a product of positive assortative mating. Hence individual income is equally important for both men and women entering a formal union.

The estimates for changes in educational attainment revealed a pattern that educational progress are positively related to marital formation. This is particularly strong for those upon completion of graduate school. Nevertheless, as I mention in the hypothesis that obtaining a higher degree might not necessarily leads to a marriage instantly since school leavers are usually facing a transition into a stable job career which still remains great uncertainty, and even if some graduates might complete such transition very quickly, it will still take certain time for a mate searching process unless the match is already formed during the student life. Hence, my results are not readily drawing the conclusion that attained a higher degree would induce marriage. However, as indicated that the estimated odds ratios for graduate school leavers are much greater than for those under-graduate school leavers, it is somewhat support the argument that marriages formed by graduates instantly, at least for those completing graduate school, might be based on their successful match during student life. Furthermore, the pattern of response to graduate school degree attainment are the

same for both genders, whereas magnitudes saliently differ, as among which, female have much higher odds ratio than male. This implies that female are more likely to go forward to marriage than male upon graduation if there is already a relation formed previously. The comparison of other educational effects on union formation between men and women fulfill puzzles, some differ in directions and some in magnitudes, and most of them are insignificant in statistical sense. In short, changes in education level do not seem a strong variable explaining marital formation, which might be attributable to the fact that economic independence is dependent on various factors and transition toward stable career work. And, as I argued a promising career does not only require certain completion of higher education, but also extensive on-job trainings. The former is usually a step before the latter, hence to be more directly and appropriately reflecting the career stability, or economic stability to a larger extent, income/earnings and employment might be a better gauge. Such argument can be supported by the results of marriage model in current study, as estimates on employment status and its changes are the most statistically significant and consistent overtime among all indicator variables relating to socioeconomic status.

Of all the dummies indicating changes in employment status, new employed has the least odds ratio in all three sets of survey, that is to say that people who just get a new employment would have much less relative chance to marry than those remained employed over the year between two surveys. This is not a surprising result since people are usually associated with great uncertainty at the early career stage or the beginning of a new job. Even though to be newly employed is a good progress of an individual's labor market position, which, in turn, enhance the ability to set up an independent household, yet this independence more likely enables already-formed matches to proceed to the marital stage (Oppenheimer, 1988). Hence, in this regard, new employed is just like those attained a higher educational degree or experienced a considerable income gain that might not necessarily lead to marriage immediately, since it need time to make transitions to and stabilize career and then go through mate-searching process, unless a match is already formed prior to the new employment. According to the results here, there is no likelihood that a new employment would stimulate an already-formed matches to marriage as the association between new employed and marital formation is adverse. Conversely it suggests that a new employment may still imply uncertain nature of adult work role, and subsequently unknown quantity as a potential mate, and therefore is associated with much little relative risk of marriage. Although people who are unemployed over the survey period has slightly higher odds ratio estimate than new employed, the gap is small, and even none in the latest survey. In addition, the new unemployed category carries out greater odds ratio in contrast to other two categories, even over one in the 98-99 survey, but they are mostly insignificant except the one in the latest survey which is significant, yet almost no difference than those unemployed and new employed. To sum, among all the indicator variables of employment status, persistently unemployed, newly unemployed, and newly employed are all somewhat reflecting less employment or economic stability when referring to persistently

employed, thus a person who is a long way from making the transition to a fairly stable work career is very much an unknown quantity as a potential mate (Oppenheimer, 1988), consequently facing fewer chance to marry.

The gender differences in the effects of short-term changes in employment status on marital formation are rare, as most of the estimated odds ratios for both men and women are very much below one. The estimates for the category of new unemployed in the 88-89 and 98-99 surveys revealed somewhat different patterns between sexes, in which, men are associated with lower relative probability of marriage, whereas women are associated with higher, comparing to remain employed. This might possibly due to the fact that some women might quit their job so as to go forward to a marriage. However such conclusion can be hardly draw since, first of all, the estimates are barely significant, secondly the current type of data does not include the information about their employment status in the long run, nor their spouse employment status or economic position. If such unemployment is temporarily, it could be argued that those women might choose to quit their current job in order to prepare for a marriage. And if such unemployment is pro-longed and their spouse is in a good economic position, then the conclusion would be that these women are leaving the market labor force and entering to domestic household production, and such assortative mating is no longer positive, but negative. Nevertheless, the present data and method employed in this study is incapable to draw such strong conclusion. Moreover the gender gap is almost diminished to none in the 0809 survey, therefore a converging pattern of marital response to employment status change between male and female is detected and the assumption of positive assortative mating is still valid since, at least recently, the effects of employment status on both sexes are the same.

By controlling for socioeconomic status change, results suggest a non-linear relation between marriage and age, as the relative risk for those between age 25 and 34 is approximately tripled, for those between age 35 and 44 is doubled, and for those over age 45 is almost equal to, the reference group that those under age 25. Hence one can argue here that a late marriage pattern do exist in the American society, and has already started, at least, for two decades. Such evidence is also consistent with my expectation that marital formation might also be shifted systematically with age due to two facts. One is that the essential (economic) traits would mostly be developed at late ages, and the younger a person is, the greater difficulty of being established and more uncertainty about the future characteristic, therefore less likelihood of forming a marriage. Secondly, a higher acceptance level of a perfect match is always accompanied by a longer searching period, thus the optimum search, in terms of availability of unascertainable information on several important assortative mating attributes, would be often at an older age (Oppenheimer, 1988).

Furthermore, the odds ratio estimates for both men and women falling in the age groups between 25 and 44 are all over one, by which is meant that people within these age groups would have larger relative risk of marrying than those under age 25,

regardless of gender. Thus, in this sense, it can be concluded that delayed marriage pattern of both sexes are parallel emerged. This could be partly due to the greater independence allows women to set a higher standard for the minimally acceptable match (Oppenheimer, 1988). And it can further validate the positive assortative mating assumption in the marriage market at present since there is continued gains to marriage if search framework can ensure complementary traits between partners, although there is certain decline in gains to some marriages where complementarity cannot be maintained. Nevertheless, one noteworthy is that there is salient difference in the estimated odds ratios for the late ages between sexes. To explicate, assuming all people are with same experience of changes in socioeconomic status, the odds for males over age 45 to marry is always higher than those under 25, whereas the odds for females over age 45 to marry is always lower than those under 25. This further suggest the fact that once women's marriage is delayed till mid-age, perhaps induced by a high acceptance level of match, it would be accompanied by great risk of non-marriage. Such celibacy might be partly because of the depreciation on physical appearance along with age increase, and subsequently losing the attractiveness in the market.

### 5.2.2 *Divorce*

Of all the socioeconomic variables in the divorce model, the personal to family income ratio plays the most important role as all of the estimated odds ratios are with large magnitudes and statistically significant. There are four levels of income ratio change from one year to the next, which are ranked from extreme decrease to extreme increase, the upper extreme is the reference in the regression output. Since the estimates are all far below one, they all suggest that the relative risk of dissolution for all the three categories are much lower than the reference category, in another word, those who experienced a dramatic increase in their personal to family income ratio are associated with the greatest odds of marital disruption. Such evidence is in line with my hypothesis that if such ratio changes dramatically, it will bring two partners to a new bargaining process, via which, the threat points need to adjusted and the ultimate utility or well-being for each partner will be redistributed. If the gap between the two income sources are too large, the bargaining would be more difficult to reach an agreement, therefore divorce would be a default outcome of an unreachable bargaining. However one question might arise here is that why the extreme decrease in income ratio does not have strong negative impact on marital stability. One possible explanation could be that the investigated period is under the scheme of no fault divorce law in the US, thus the assumption that divorce could be made upon individual decision is fulfilled as the mutual consent is no longer required, as a result, for those relative income to their spouse largely increase may have preference of outside options and proceed to divorce without any heavy cost if new bargaining solution is not reached (this also implies that the utility at divorce-threat point is higher than the utility attainable within a marriage), conversely those relative income greatly decrease may rather prefer stay in the marriage and maintain the gains to it as long as the spouse does not attempt to leave the family. For those experienced

moderate fluctuations in their relative income to the family, the chance of disruption is obviously low. Hence, all in all, my results do validate the bargaining theory in marital dynamics over the last two decades.

Moreover, the estimated results for men and women respectively suggest that husbands and wives would have equivalent preference of marital disruption when facing a dramatic increase in relative earning power in the family as all indicator variables of personal to family income ratio change are statistically significant, and the signs and magnitudes of these estimates are nearly the same for male and female. This is not only as what I hypothesized that the gender difference in such effect should be rare, but also further validate the bargaining model, in which, each person, regardless of sex, is identical in the family with own utility function and threat point. Hence one might argue that the relative earning power within a family is a contributing factor to marital disruption today, and such mechanism has been persistent, at least, since late 1980s.

As I argued in my hypothesis of education effect on divorce, higher socioeconomic status, i.e. education, employment and income, should be positively associated with marital stability. Numerous studies also suggest the same mechanism, such as women's employment or earnings are positively associated with stable marital life (Hoffman and Duncan, 1995; Greenstein, 1990), and higher earning capacity or economic status of husbands decrease the likelihood of divorce (Burgess *et al.*, 2003; Ono, 1998; Sayer and Bianchi, 2000). The estimates on education impact here do reveal a similar pattern and in line with my hypothesis, as for those holding a bachelor or higher degree, the relative divorce risk is lower than those no college education. Such effects are consistent all the time and particularly strong at the top stream, as the odds ratio for people who hold a graduate school degree is far off one and statistically significant in all three sets of surveys.

On the other hand, the effects of individual educational advancement on marital dissolution are not significant at all, but it reveals a downward trend from late 80s till most recently, as the odds ratio estimates for both bachelor and graduate school degree awardees is over two in the earliest survey, which, however, is somewhat diminished in 10 years later, and eventually depressed to below one in the most recent survey. According to such evidence, one might argue that there is a period effect, as higher education would positively influence marital stability during recent years, but not far back in time, this is, however, might not be completely true not only because the estimated odds ratios are insignificant, but also the pairwise information (information about both husbands and wives) is not available, the spouse education level and progress are not controlled for. As argued in the hypothetical part that pairwise information on married couples are not always readily available, if so, more assumptions would be needed. One important assumption is that all couples are positively assorted upon marriage, by which is meant that they all with similar quality of traits. Then if there is any change in education or employment status on one of the

partners, but remains the same on the other, there would be a divergence in traits, this would affect the complementarity and subsequently increase the likelihood of divorce. Otherwise, if both partners are in parallel progress or no progress at all, then their complementarities could remain the same as it was upon marriage. Therefore it could be the case that the likelihood of divorce is higher in the early years because there is only advancement in a married person's education, but not his or her spouse. However this cannot be confirmed due to certain limitation on current data.

Similarly the employment status and its changes do not have any strong impact either, as none of the estimates are statistically significant, nor is it eligible to draw any precise conclusion since the information of spouse employment status is not available. Hence such impact on marital stability could be either positive if married partner's employment status changes in parallel, or adverse if changes divergently.

The lack of pairwise information on both husbands and wives educational attainment and employment status restrain my interpretation of such effects, and which might also explain the low significance of the estimates, therefore among all of the socioeconomic factors in the divorce model, the only pairwise variable is the personal to family income ratio that does provide significant estimates. Furthermore, the divorce model heavily stresses on the bargaining game theory, in which, person's own utility or well being, and threat point are of great importance, what determines such would be consequently contributing to the ultimate outcome - divorce or not. Of all the three socioeconomic variables in my divorce model, the personal to family income ratio directly reflecting a person's relative earning power and economic position within family, this could be the best gauge of their internal bargaining position, and subsequently determining the threat point and own utility. Therefore, it is not so surprising that the education and employment factors are not as significant as income ratio in my divorce model, as this could be explained both empirically and theoretically.

In addition, results also suggest that those individuals who have no own child under age 6 in his or her family are associated with approximately twice larger relative risk to divorce as those have two or more children, and these effects are the same in all three surveys. This is no doubt since young children could be strong assets for stabilizing a marriage, as not only argued in theory that they can be sort of marital-specific capital in the family, but also empirically that dissolution is less likely for the family with young children in the United States and many other developed countries (Goode, 1963; Becker *et al.*, 1977)

The last note in the divorce model is regarding the age effects. My estimates suggest strong and positive effect of age on marital stability as the relative divorce risk for those over age 45 is merely as half of those under age 45. Hence one might argue that mid-age marriages are more stable than young couples, which might be due to that the amount of marital-specific capital, and the stability of personal economic traits

increase to a certain level accordingly while married couples reached their mid-age, which make the relation sufficiently solid.



## 6. Conclusion

The large increase in the labor force participation and earning power of women along with the growth of American economy have shed the light on the battle of the sexes, as a result, the family behavior has been considerably altered. To keep this in mind, one can argue that the gains to the marriage are more likely derived from complementarity instead of substitutes of traits. Hence positive assortative mating is always suggested, which has the implication that economic independence, ability to form a household and maximize the aggregate family output, and career stability, traits alike have relevance for both sexes upon marital formation. On the other hand, bargaining game theory similarly suggest that economic position of husbands and wives are equally important in determining the marital stability as the larger gap between two income sources, the greater difficulty of reaching an equilibrium of bargaining solution, and consequently the more likelihood of divorce.

In this paper, I have investigated the dynamic effects of socioeconomic factors on the marital transitions. Informed by a search theoretic framework, I argue that current socioeconomic status and stability of both men and women can be strong determinants of his or her position in the marriage market and eligibility for a positive assortative mating, this subsequently contribute to the marital outcome. And among a wide range of socioeconomic factors, the employment status can be the best one reflecting the economic stability, thus it should have the most significant impact on entries to marriage. According to the cooperative bargaining model that the utility received by husband or wife in the Nash Bargaining Solution depends upon the threat point, and in the cooperative equilibrium, the separate utility will depend on the incomes controlled separately by each spouse (Lundberg and Pollak, 1996), therefore I argue that individual's income relative to the spouse seems a strong candidate variable explaining the control over family resources and the determinants of threat points, which, in turn, contributing to relative well-being of husband and wife within marriage, and, ultimately, the marital disruption if the distribution of family resources are not fairly defined in accordance with the relative income.

My empirical results do provide promising evidence of the mechanisms that I have argued. First of all, short-term changes in employment status appears to be the most significant contributing factors to marital formation, and the impact is positive as people who persistently employed are associated with much greater likelihood of marrying than those with relatively less job stability. In addition, the gender gap of such influences is almost none during most recent period, though there is slightly insignificant divergence in the early periods. Hence one can conclude that economic stability do have the strong positive impact on transitions into first marriage, and which has equal relevance for both men and women, at least in the latest period. This can further validate Becker's positive assortative mating in today's American marriage market.

Secondly, the personal to family income ratio plays the most important role in conditioning the marital dissolution as all of the estimates in this regard are not only large in magnitudes, but also statistically significant. Estimated odds ratios evidently suggest that people who experienced a dramatic increase in their personal to family income ratio are associated with the greatest risk of divorce, this is in line with what I argued that if the gap between two income sources are too large to reach the equilibrium of bargaining solution, divorce would be a default outcome. Moreover, estimates for men and women respectively suggest that the propensity of divorce, when one's income occupies a extreme large share of total family income, is the same for both husbands and wives. This, once again, can make the positive assortative mating theory applicable to those divorced couples as both men and women would have the similar response when they recognize the complementary characteristics are no longer maintained. Another important note regarding such effect is that this mechanism has been persisted, at least, since 1980s as all the estimates are consistent over the three investigated periods.

To date, socioeconomic changes do have strong impact on marital decisions, particularly for the positive effects of employment status on marriages and adverse effects of income ratios on marital stability. The gender differences in these influences are almost none in general, this might be partially attributable to the events of growing importance of women's role in many aspects of socioeconomic activities that we have witnessed during the last a few decades, but also to some policy reinforcement, such as the no-fault divorce law. Overall, the period effects are not so pronounced, this is perhaps due to social and environmental changes are not so dramatic over the last twenty years. Regarding sexual differences in effects, if there is any, during the early surveys, they all converged to the same pattern in the latest surveys.

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