

**Cohabitation and the Uneven Retreat from Marriage in the U.S., 1950-2010**

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# Cohabitation and the Uneven Retreat from Marriage in the U.S., 1950-2010

## ABSTRACT

Since 1950 the sources of the gains from marriage have changed radically. As the educational attainment of women overtook and surpassed that of men and the ratio of men's to women's wage rates fell, the traditional pattern of gender specialization and division of labor within the household weakened. The primary source of the gains to marriage shifted from the production of commodities to investment in children. As a result, the gains from marriage fell sharply for some groups and may have risen for others.

For some, the decline in the male-female wage ratio and the weakening of traditional patterns of gender specialization meant that marriage was no longer worth the costs of limited independence and potential mismatch. Cohabitation became a socially and legally acceptable living arrangement for all groups, but cohabitation serves different functions among the poor and less educated than among the affluent and highly educated. The poor and less educated are much more likely to have and rear children in cohabitating relationships. Among the college-educated, marriage and parenthood remain tightly linked. College-educated men and women have delayed marriage and typically cohabit before marriage, but they marry before conceiving children and their marriages are relatively stable.

This class divergence in patterns of marriage and parenthood is associated with class differences in childrearing. We suggest that different patterns of childrearing are the key to understanding class differences in marriage and parenthood, not an unintended byproduct of it. Rising returns to human capital, dynamic complementarities in human capital production, and diverging parental resources across the income distribution have increased the returns to joint investments in children in high-income, relative to low-income, households. We view marriage as the commitment mechanism for this joint project and, hence, marriage is more valuable for parents who adopt a high-investment strategy for their children.

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## 1. Introduction

Since 1950 there have been dramatic changes in patterns of marriage and divorce in the United States. Americans now marry later and are more likely to divorce. More men and women, though still a small minority, do not marry at all. Cohabitation as a precursor or an alternative to marriage has become commonplace. A growing fraction of births now take place outside marriage. The implications of this retreat from marriage for the wellbeing of children and the intergenerational transmission of economic disadvantage are of primary concern.

A great deal of attention has focused on this decoupling of marriage and parenthood, usually focused on differences in nonmarital childbearing across racial and ethnic groups. Within each racial and ethnic group there are dramatic differences across education and income groups. But these differences, and the associated differences in parenting practices, have received less attention than racial and ethnic differences.

In this chapter, we make two claims about marriage. First, we claim that intertemporal commitment is central to understanding marriage as an economic institution. Second, we claim that in early 21st century in America intertemporal commitment is valuable primarily because it facilitates investment in children. These claims are distinct, but together they imply that the desire to invest in children as a joint project has become a primary motive for marriage. Differences in the expected returns to these investments explain the rise in cohabitation and the uneven retreat from marriage.

We revisit the literature on the economics of marriage, distinguishing between explanations that involve intertemporal commitment and those that do not. What Claudia Goldin has called the “quiet revolution” in women’s economic status since 1970 led to a wholesale redefinition of men’s and women’s roles in the household. Commitments between wage-earning men and their stay-at-home wives that were central to marriage in the first half of the 20th century became obsolete as the labor force participation of married women increased. Changes in family law and social norms weakened the strength of the marriage commitment by making divorce easier to obtain and blurring the social importance of the legal distinction between cohabitation and marriage. Once cohabitation became a socially and legally acceptable way to achieve the benefits of coresidential intimacy and economic cooperation, the advantages of living in a multiple-person household no longer provide a rationale for marriage. Marriage must be based on gains compared with cohabitation as well as gains compared with living alone.<sup>1</sup> For sociologists, the cultural significance of marriage is the source of its persistence as a goal and ideal. For economists, once cohabitation is recognized as an alternative to marriage, intertemporal commitment is central to understanding the persistence of marriage.

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<sup>1</sup> By “living alone” we mean living in a one-adult household; thus, living alone includes lone parents. The not entirely satisfactory rationale for this is the fiction that the adult is the sole decision maker in a one-adult household.

Investment in children is clearly not the only reason couples have ever made intertemporal commitments, nor do we claim it is the only reason couples do so now. In particular, not all couples that marry intend to have children,<sup>2</sup> and some married couples have other motives for commitment. Women who marry after menopause generally do not intend to have additional children; for many older couples, the relevant marital commitment may be to provide care for each other in old age. The current debate over same-sex marriage is best understood as primarily a contest over social recognition and acceptability, with considerations involving children playing a secondary role. We argue that during the last half of the 20th century the importance of investment in children has increased, particularly for the most advantaged families, while the importance of other reasons for making intertemporal commitments has diminished.

What we see in data often depends on the categories we impose, so the choice of family structure and education categories is crucial. Unlike much of the family structure literature which combines cohabitation and marriage into a single category (i.e., “two-parent families”), we distinguish between cohabitation and marriage.<sup>3</sup> In discussing education, we use a three-fold classification, distinguishing among college graduates (the “college educated”), individuals with some college, and those with a high-school education or less.<sup>4</sup>

## 2. The Retreat from Marriage: 1950-2010

*“The family in the Western world has been radically altered, some claim almost destroyed, by the events of the last three decades” (Gary S. Becker, Treatise on the Family, 1981).*

In her 2006 Ely Lecture, Claudia Goldin traces the “quiet revolution” in American women’s careers, education, and family arrangements that began in the 1970s, and the “evolutionary” changes in the labor force that preceded it (Goldin, 2006). Evolving patterns of marriage and divorce in the United States are linked to these changes in women’s status and identity, as well as historic changes in fertility rates and in women’s participation in the labor market. As the post-war baby boom came to an end and

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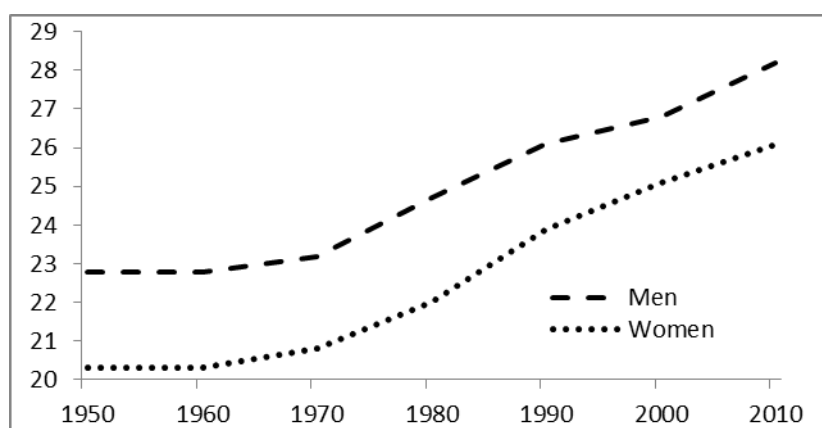
<sup>2</sup> Abma and Martinez (2006) find that only 4 percent of married women aged 35 to 44 in the 2002 National Survey of Family Growth are voluntarily childless, and that rates of voluntary childlessness are lower in the 2002 wave of the National Survey of Family Growth (NSFG) than in the 1988 and 1992 waves.

<sup>3</sup> The family structure literature often distinguishes between children who live with both biological parents and children who do not. Ginther and Pollak (2004) and Genetian (2005) distinguish between families that include step-children and “traditional nuclear families” (i.e., households in which all of the children live with both biological parents).

<sup>4</sup> The literature often uses a different three-fold classification, combining college graduates and individuals with some college into a single category, but distinguishing between high-school graduates and high-school dropouts. We have chosen our categorization because the high school dropout group has become increasingly dominated by immigrants with distinctive family patterns and the ‘some college’ group behaves very differently from college graduates.

fertility rates fell in the 1960s, and as women's intermittent employment turned into lifetime commitments to market work and careers, marriages changed as well. Marriage was delayed to accommodate higher education and smaller families, divorce rates rose rapidly, and for many, coresidence without marriage became an acceptable precursor if not a replacement for marriage.

The median age at first marriage was at a historic low during the height of the baby boom in the 1950s—just over age 20 for women, and about age 23 for men. A modest delay in first marriage during the 1960s was followed by a rapid increase in marriage age that continued for the next four decades (Figure 1). Part of this delay was due to additional years spent in school: the college attendance of young men and women rose steadily until the 1980s, when improvements in men's educational attainment stalled while women's continued to rise. The proportion of young adult women with college degrees equaled, and then exceeded, that of men in the 1990s. Beginning in the 1980s, increases in premarital coresidence by young couples became another important factor—stabilizing the age at which households are first formed while further delaying age at marriage (Bailey, Guldi, and Hershbein, this volume).



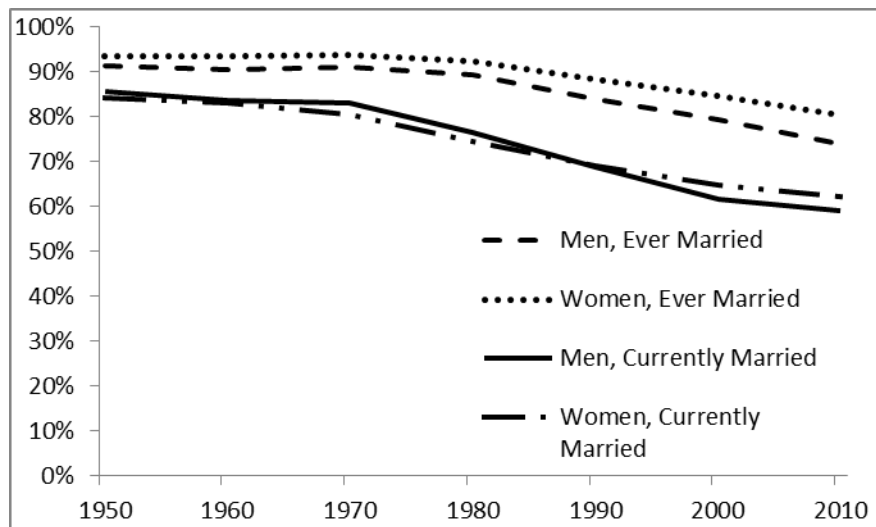
**Figure 1: Median Age at First Marriage**

(Source: U.S. Bureau of the Census)

Marriage delay itself reduced the fraction of young men and women who were currently married (or ever married) in their twenties, but the prevalence of marriage began to decline in the 1970s even for older groups of men and women. Figure 2 shows this decline for men and women aged 30 to 44. Much of this decrease in marriage is accounted for by an increase in cohabitation, which is not easily tracked in government data sources such as the American Community Survey. The National Survey of Family Growth (NSFG) does permit the tracking of trends in cohabitation from the first wave in 1982 to the most recent in 2006-2010. Over this period, the 8 percent decline in the fraction of 15 to 44 year old women

currently married (from 44 to 36 percent) is exactly offset by the increase in the proportion cohabiting (from 3 to 11 percent).<sup>5</sup>

The gap between the proportion of 30 to 44 year-olds currently married (now about 60 percent) and ever-married (80 percent for women, 74 percent for men) has widened due to increases in divorce (Figure 2). The annual divorce rate (the number of divorces per thousand married couples) more than doubled between 1960 and 1980—from less than 10 to more than 20. In part a transitory response to liberalized divorce laws, the divorce boom has since subsided, falling by more than 25 percent since the peak in 1979. Stevenson and Wolfers (2007) argue that current rates are consistent with a long-term pre-war trend of rising divorce.<sup>6</sup>



**Figure 2: Proportion of Men and Women Ever Married and Currently Married, Ages 30-44**

(Source: Census 1950-2000, American Community Survey 2010)

In recent decades, the social and legal significance of the distinction between marriage and nonmarriage has eroded. Spells of cohabitation became longer and more likely to involve children (Kennedy and Bumpass, 2008). Supreme Court decisions in the 1960s and 1970s increased the rights of children born out of wedlock to financial support and inheritance.<sup>7</sup> Marriage became less important as a determinant of obligations for paternal child support as the introduction of in-hospital voluntary paternity establishment programs by states (following a federal mandate) during the 1990s reduced the costs of legal paternity establishment. By 2005, the ratio of paternities established to nonmarital births had risen to nearly 90 percent (Rossin-Slater, 2012).

<sup>5</sup> Copen et al., (2012) find, not surprisingly, similar trends for men.

<sup>6</sup> Taking a different approach, Rotz (2011) shows that, given the strong negative relationship between the probability of divorce and age at marriage, the delay in marriage age since 1980 may be a major proximate cause of the decrease in divorce propensity during that period.

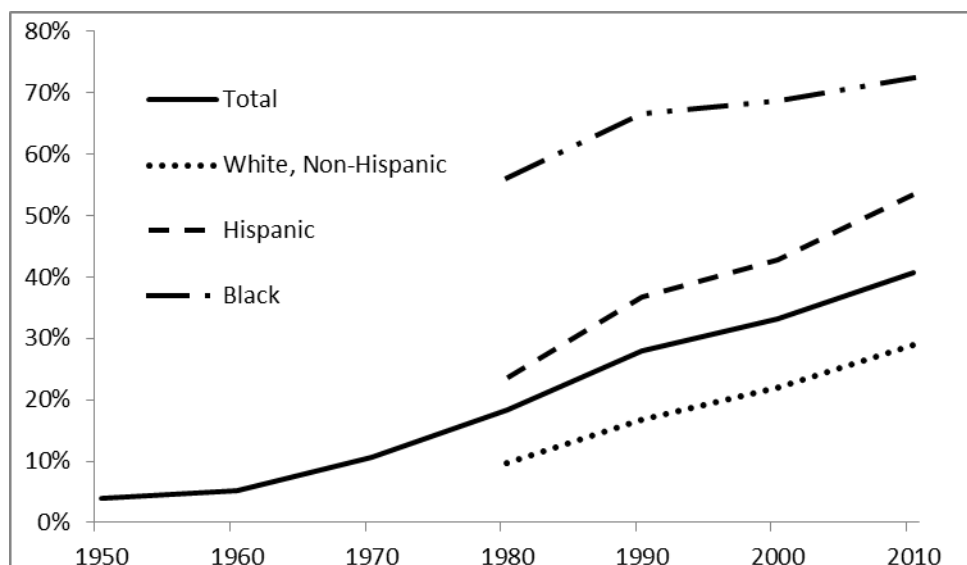
<sup>7</sup> Stevenson and Wolfers (2007) provide a summary of these rulings.

The costs of exiting marriage fell as unilateral divorce became, in one form or another, universal across the United States and the expectation that divorced women would work led to the virtual end of alimony. Changes in social norms that accompanied these changes have also played a role: the stigma associated with nonmarital sex, cohabitation, nonmarital fertility, and divorce have declined dramatically (Thornton and Young-DeMarco, 2001).

Rising rates of nonmarital fertility in the United States and the pronounced race/ethnic gaps in these rates (Figure 3) have received a great deal of attention from researchers and policymakers. The median age at first marriage has been rising more rapidly than the median age at first birth and in 1991 the two trends crossed and continued to diverge. In 2009, the median age at first birth was more than one year lower than the median age at first marriage (Arroyo, et al., 2012). The circumstances in which nonmarital births take place have been changing, however. England and Wu (forthcoming) show that, for women who reached childbearing age in the 1950s through the mid-1960s, the primary cause of rising premarital births was an increase in premarital pregnancies that were brought to term (and in all probability an increase in premarital sex). During the subsequent two decades, however, the principal driver of the trend in premarital childbearing was a reduction in the propensity to marry following a premarital conception—a decrease in “shot-gun” marriages.<sup>8</sup> The proportion of nonmarital births that are to lone mothers has also been decreasing: 52 percent of nonmarital births now occur within cohabiting unions, many of them the outcome of a “shot-gun cohabitation” (Manlove, et al., 2010; Lichter, 2012).

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<sup>8</sup> Akerlof, Yellen and Katz (1996) attribute this change to endogenous norms regarding nonmarital sex and responsibility for unintended pregnancies. They argue that the increasing availability of the birth control pill in the 1960s and the nationwide legalization of abortion in 1973 led to a new equilibrium in which nonmarital sex was more readily available because competition for the attention of men increased the pressure on unmarried women to have sex and responsibility for contraception (and unintended pregnancies) shifted to women.



**Figure 3: Nonmarital Births as a Proportion of All Births, by Race and Ethnicity**

(Source: Child Trends Data Bank)

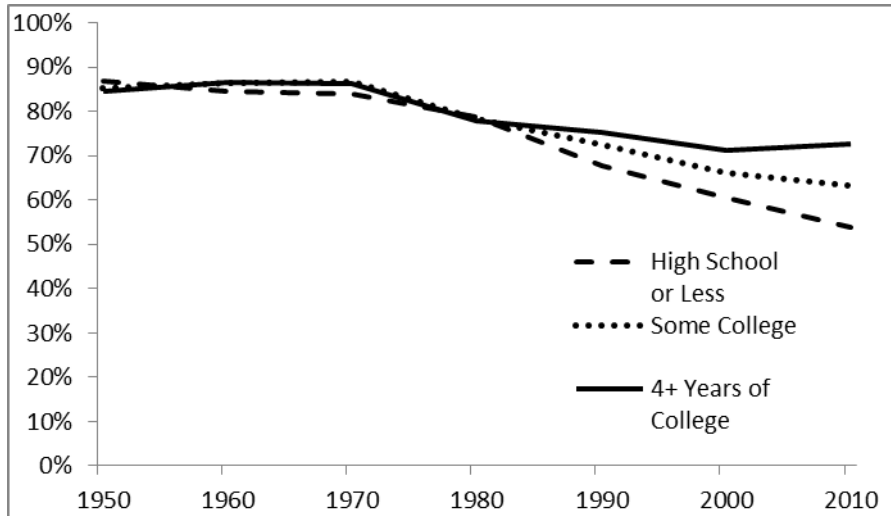
Compared with other wealthy countries, the U.S. is an outlier in many dimensions of family dynamics. The level of fertility that occurs outside any union—marital or cohabiting—is high, and both marital and cohabiting unions are very unstable (Cherlin, 2009). In many northern European countries, cohabitation has progressed further in the direction of becoming a replacement for marriage: a much smaller proportion of the population ever marries, rates of cohabitation and proportions of births within cohabiting unions are much higher, and these unions are much more durable. There is a socioeconomic gradient in family structure in most European countries, with low levels of education associated with more cohabitation and higher rates of nonmarital childbearing<sup>9</sup> but these discrepancies are more pronounced in the U.S.

Focusing on whites with different levels of education, we can see that the retreat from marriage has been much more rapid for men and women with lower levels of education (Figures 4 and 5). The proportion of men aged 30 to 44 who are currently married (reflecting both marriage and divorce behavior) has been almost flat for men with a college degree, but has declined substantially for men with less education. Women with college degrees were less likely to be married than women with less education until 1990, and more likely to be married thereafter. Both marriage and remarriage rates have risen for women with college degrees relative to women with less education, and the fall in divorce rates since 1980 has been much larger for the college-educated (Isen and Stevenson, 2011). This implies that long-term marital stability also has an education gradient: the probability that a first marriage will remain

<sup>9</sup> Perelli-Harris, et al., (2010) also find that the negative educational gradient of childbearing within cohabitation is significantly steeper than that of marital births in four of the eight countries they study.

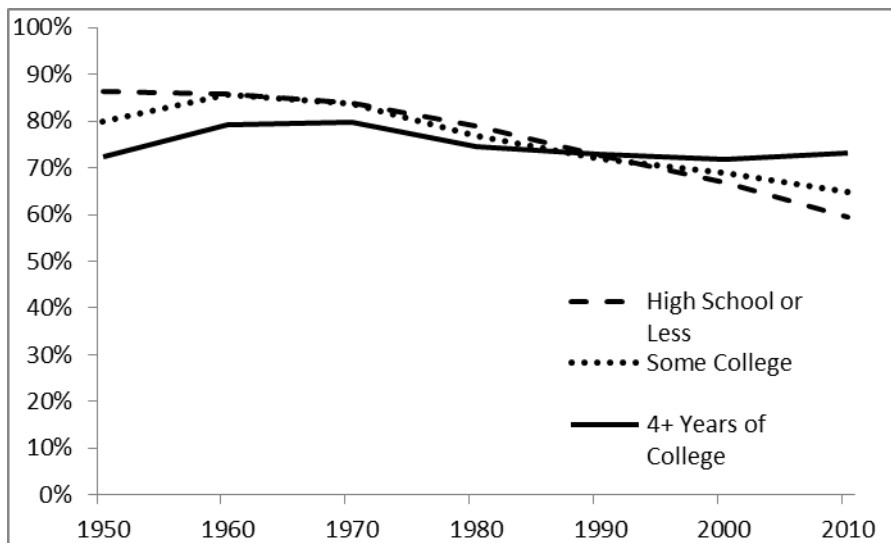


intact for 20 years is sharply higher for women with a college degree (78 percent) than for women with a high-school diploma (41 percent) or some college (49 percent) (Copen et al., 2012).<sup>10</sup>



**Figure 4: Proportion of White Men Currently Married, Age 30-44**

(Source: Census 1950-2000, American Community Survey 2010)



**Figure 5: Proportion of White Women Currently Married, Age 30-44**

(Source: Census 1950-2000, American Community Survey 2010)

The prevalence of cohabitation is strongly decreasing in education (Table 1) and cohabitation tends to play different roles in the lifecycles of women with high and low levels of education. For high

<sup>10</sup> They also find that the education gradient in divorce probability is much less steep for men than for women.

education couples, cohabitation is usually a precursor to marriage—a part of courtship or a trial marriage that rarely includes childbearing. Serial cohabitation<sup>11</sup> is much more prevalent among economically-disadvantaged men and women and, for low income and low education groups, cohabiting unions are less likely to end in marriage than in dissolution (Lichter and Qian, 2008). Though serial cohabitation increased in the late 1990s and early 2000s along with cohabitation more generally, a substantial majority of women only cohabit with the men they eventually marry (Lichter, Turner, and Sassler, 2010).

	<b>First marriage</b>	<b>Second or higher marriage</b>	<b>Cohabiting</b>	<b>Never in a union</b>	<b>Formerly married</b>
<b>No high-school diploma or GED</b>	36.6	7.7	20.2	19.1	16.5
<b>High-school diploma or GED</b>	39.5	9.2	15.5	20.3	15.6
<b>Some college</b>	42.1	7.4	11.6	26.4	12.6
<b>Bachelor's degree</b>	58.3	3.3	6.8	25.5	6.1
<b>Master's degree or higher</b>	63.0	4.4	5.5	20.1	7.0

**Table 1: Current Union Status among Women Aged 15-44 Years, 2006-2010**

(Source: Copen et al., 2012, from National Survey of Family Growth)

The growing divergence in marriage, cohabitation, and fertility behavior across educational groups has potentially important implications for inequality and the intergenerational transmission of economic disadvantage. In her Presidential Address to the Population Association of America in 2004, Sara McLanahan (2004) showed how the rise in single-parent families and widening gaps in maternal age and divorce rates were leading to growing disparities in the parental resources, both time and money, received by the children of more- and less-educated mothers. The sociologist Andrew Cherlin (2009) also emphasizes the costs imposed on children, and particularly the children of the non-college-educated, by the instability in living arrangements and parental ties inherent in what he calls the American “Marriage-Go-Round.” Focusing on non-Hispanic whites, Charles Murray’s 2012 book on the class divide in family arrangements and economic status makes a similar point from a conservative social and political perspective.

<sup>11</sup> Serial cohabitation is defined as multiple premarital cohabiting relationships (Lichter et al., 2010).

The causes of post-war changes in cohabitation and marriage patterns, both the general retreat from marriage and its education and income gradient, are more difficult to establish than their likely consequences. The question we address here is how to reconcile these changes with an economic model of marriage.

### 3. Economic Models of Cohabitation and Marriage: The Role of Commitment

*“From an economic point of view, marriage is a voluntary partnership for the purpose of joint production and joint consumption.” (Yoram Weiss, The New Palgrave Dictionary of Economics, 2008)*

The standard economic model of marriage ignores cohabitation as a possible living arrangement and recognizes only two alternatives: marriage and living alone. The standard model assumes that divorce is the only route to lone parenthood and, hence, that never married individuals will be childless.<sup>12</sup> Marriage is treated as a choice by individuals who evaluate the gains to a specific marriage relative to other marriages and to living alone. For example, in Becker's *Treatise on the Family* (Becker, 1981, 1991) and in Yoram Weiss's important survey article on “The Formation and Dissolution of Families...” (Weiss, 1997), the feasible set contains exactly two elements, marriage and living alone without children. In the mid-20th century, when cohabitation and nonmarital childbearing were rare and stigmatized, this truncation of the feasible set bought analytical simplicity at a relatively low cost. In recent decades, however, changes in technology, social norms, and laws have increased the attractiveness and prevalence of alternative family arrangements including cohabitation and lone parenthood.<sup>13</sup>

The economics of the family has recognized two broad categories of potential gains from marriage: joint production and joint consumption. Production gains come from the “division of labor to exploit comparative advantage or increasing returns” (Weiss, 2008) and are based on Becker's household production model. Consumption gains come from the joint consumption of household public (non-rival) goods (Lam, 1988). Stevenson and Wolfers (2007) expanded the joint consumption category to include shared leisure activities as well as household public goods and coined the phrase “hedonic marriage” to describe modern marriages in which there is little gender-based division of labor and consumption benefits are paramount.

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<sup>12</sup> And possibly celibate—for the most part, family economics is silent about sex.

<sup>13</sup> Few theoretical papers in economics model nonmarital fertility. Willis (1999) and Neal (2004) develop models in which nonmarital fertility leads to lone parenthood; neither paper discusses cohabitation. Willis (1999) also analyzes men's multiple-partner fertility as an equilibrium outcome.

The economics of the family has long acknowledged the centrality of children. For example, Becker (1991, p. 135) writes “...the main purpose of marriage and families is the production and rearing of own children.” Similarly, Weiss (1997, p. 82) writes, “the production and rearing of children is the most commonly recognized role of the family.” The presence of children enhances the gains to marriage in two ways: they are themselves public goods that generate utility for each of their parents, and the coresidence of their caring parents permits the coordination of an efficient quantity of childcare (Weiss and Willis, 1985).

How can the standard model of marriage explain the retreat from marriage over the past 60 years? As long as the family economics literature continues to assume that unmarried men and women face a two-element feasible set--{marriage, living alone}--it must explain the delay and increased instability of marriage in terms of the increasing attractiveness of living alone or the decreasing attractiveness of marriage.

Though much of the increase in the age at first marriage for very recent cohorts can be attributed to increases in premarital cohabitation, the pronounced delay in marriage between 1970 and 1990 was associated with an extended period of living alone. Changes in contraceptive technology and change in state laws in the 1970s made oral contraceptives (and thus reliable fertility control) available to young single women. These changes in technology and law, together with the weakening of norms stigmatizing premarital sex, increased the availability (or reduced the risk) of sex outside marriage or cohabiting unions. As a result, delaying “union formation” no longer required choosing between abstinence and the risk of unwanted pregnancy.<sup>14</sup> Goldin and Katz (2002) show that these changes in technology and law accelerated the entry of women into careers that required tertiary education.

The relative attractiveness of living alone was also enhanced by the greater availability of market substitutes for commodities that used to be produced within the household (e.g., home cooked meals; childcare) and improvements in household technology (e.g., microwaves; electric washing machines) that reduced the time and skill required by the remaining household tasks (Greenwood, Seshadri, and Yorukoglu, 2005). The emergence of market substitutes and developments in applied technology were, to a large extent, endogenous—a response to the growing number of single-person households as well as to increased market work by women. This is one way that living alone creates positive externalities for others who live alone; the increased density in single social networks is undoubtedly another.

As conditions for one-adult households improved and women entered the workforce, the incremental value of specialization and exchange in multiple-person households fell. Gender

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<sup>14</sup> Sex does provide a rationale for marriage if sex outside marriage is strongly stigmatized. For example, those who believe that sex outside marriage is a sin may marry early, especially in communities that readily accept divorce and remarriage. Cherlin (2009) argues that the acceptance of divorce and remarriage, especially by evangelical Protestants, has been an important factor in the instability of children’s living arrangements.

specialization in married couple households has decreased dramatically during the past 60 years (Lundberg and Pollak, 2007). The labor force participation rate for women aged 25 to 54 has increased from 37 to 75 percent between 1950 and 2010, while the participation rate for prime-age men has fallen from 97 to 89 percent. Though married women still report more weekly hours of housework than married men, women's housework hours have fallen by 10 hours per week since 1965 and men's have increased by about 4 hours per week (Aguilar and Hurst, 2007). As women's educational attainment, wages, and hours of market work have risen relative to men's, the opportunities for gains from trade within a household, which depend to a large extent upon the segregation of men and women in separate home and market sectors, have diminished.

The expansion of the feasible set to include cohabitation, with or without children, substantially changes the economic analysis of marriage. Cohabitation provides many, but not all of the sources of marital surplus identified in standard economic models of marriage. In particular, a cohabiting couple can exploit many of the joint production advantages (e.g., specialization and the division of labor; economies of scale) and the joint consumption advantages (e.g., shared leisure and household public goods, including children). Many of the gains that economists usually ascribe to "marriage" are, in fact, gains to multiple-person households that coordinate production. For some couples cohabitation can be simply a solution to the roommate problem, unrelated to children or to marriage, but for others cohabitation can be a precursor to marriage or a substitute for it. What distinguishes marriage from cohabitation in an economically meaningful way?

Marriage is more costly to exit than cohabitation, and this higher exit cost enables marriage to act as a commitment device that fosters cooperation between partners. Some degree of commitment is valuable in any shared household because of transactions costs—even roommates must rely on one another to pay a share of next month's rent—and all commitments, including marriage, are limited. Marriage represents a stronger commitment because the social and legal costs of exit are greater than those facing roommates or cohabitants, even when the cohabitants have shared children. The economic costs of marital exit have decreased as fault-based or mutual consent grounds for divorce have been replaced by state laws permitting unilateral divorce. The social costs of marital dissolution have also decreased as divorce has become commonplace. Nevertheless, a theme of much of the sociological literature on the retreat from marriage is that divorce is seen as a personal failure to be avoided, if necessary, by delaying or avoiding marriage (Edin and Kefalas, 2005; Gibson-Davis, Edin, and McLanahan, 2005). The cultural significance of marriage in America and the public commitment to a permanent and exclusive relationship that marriage entails distinguishes marriage from cohabitation, which often begins informally and without an explicit discussion of terms or intentions (Manning and Smock, 2005).

Models of marriage as a commitment device that fosters cooperation and encourages marriage-specific investments have been based on this high cost of exit. Matouschek and Rasul (2008) construct alternative models of marriage and cohabitation in which divorce costs enable marriage to serve as either a commitment device or as a signal of perceived match quality. They show that, if marriage facilitates commitment, a decrease in divorce costs may lead to an improvement in the average match quality of married couples (lower divorce costs weaken marriage as a commitment device, leading low-match-quality couples to cohabit instead of marrying). Matouschek and Rasul's empirical evidence supports this theory over an alternative model in which the willingness to marry acts as a signal that match quality is expected to be high. A plausible theory of marriage must explain not only why commitment is valuable in generating a demand for marriage rather than cohabitation but also, given the substantial heterogeneity in marriage patterns across education/income groups, why some couples value it more than others.

The standard marriage model emphasizes long-term intertemporal commitments to support the production benefits of specialization and exchange. Becker (1991, p. 30-31) provides a clear statement of the marital contract: "Since married women have been specialized to childbearing and other domestic activities, they have demanded long-term 'contracts' from their husbands to protect them against abandonment and other adversities. Virtually all societies have developed long-term protection for married women: one can even say that 'marriage' is defined by a long-term commitment between a man and a woman." In its strongest form, the standard model assumes and rationalizes a traditional marriage with strong sector specialization: the wife works exclusively in the household sector and the husband works exclusively in the market sector. This pattern of sector specialization leaves the wife vulnerable because she fails to accumulate market human capital. Marriage, and in particular the costs of exiting marriage, protects her.<sup>15</sup> Specialization and vulnerability provide a plausible account of most marriages in the 19th and early 20th centuries but are less and less plausible as a rationale for contemporary American marriage in the face of the converging economic lives of men and women.

After discussing "the division of labor to exploit comparative advantage or increasing returns," Weiss discusses two sources of gains from marriage that are explicitly intertemporal in nature: providing credit that facilitates investment (one partner works while the other is in school) and risk pooling (one works while the other is sick or out of work). Credit and investment activities require intertemporal commitment, but one spouse investing in the other's human capital has become less common as student loans have become more important and age at marriage has increased.<sup>16</sup> Risk pooling also requires

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<sup>15</sup> Cigno (2012) argues that the effectiveness of marriage as a commitment device depends, not on the exit cost per se, but upon the property division regime, which can be designed to compensate domestic specialists.

<sup>16</sup> Because marriage is a limited commitment with divorce always an outside option, such investments are risky. How risky depends on the divorce laws of the state, and Stevenson (2007) finds that spouses are less likely to invest in each other's human capital in states where the investing spouse has less legal protection. For a discussion of the optimal treatment of human capital in divorce, see Borenstein and Courant (1989).

intertemporal commitment and often involves extended families as well as marital partners. Other benefits (and costs) of marriage depend on policy structures and laws, including the tax code (e.g., joint taxation vs. individual taxation), eligibility for social security (e.g., spousal and survivor benefits) and eligibility for employer benefits (e.g., health insurance).

In a one-period model, cohabitation is as good as marriage except to the extent that marriage has direct “consumption” value to one or both spouses. Hence, our claim that intertemporal commitment is central to marriage implies that one-period models, no matter how elegant and sophisticated, cannot explain marriage once cohabitation is recognized as a socially and legally-acceptable alternative. For example, increasing returns to scale or the assumption that individuals' time inputs are perfect substitutes in household production provide a rationale for multiple-person living arrangements (e.g., marriage; cohabitation; roommates) rather than living alone, but cannot explain the choice among alternative multiple-person living arrangements.<sup>17</sup> Household production models can provide a rationale for intertemporal commitment only in the context of multiperiod models that include physical or human capital.

Hedonic/consumption theories of marriage focus on shared leisure and household public goods. Their starting point is the recognition that production theories with their emphasis on specialization and the division of labor fail to provide a satisfactory account of contemporary marriage. Stevenson and Wolfers (2007, 2008) sketch a one-period hedonic/consumption theory which can be extended to a multiperiod theory in order to provide a rationale for commitment and, hence, for marriage. If shared leisure requires the purchase of physical capital (e.g., ski equipment) and the resale market is weak, or investment in activity-specific human capital (e.g., “skiing human capital”), then intertemporal commitment may be useful. Intertemporal commitment stories based on shared leisure, however, seem too insubstantial to provide a plausible account of marriage.<sup>18</sup>

Lam's notion of household public goods provides a more promising rationale for intertemporal commitment. Weiss (1997, p. 86) observes that “Some of the consumption goods of a family are nonrival and both partners can share them. Expenditures on children or housing are clear examples.” With household public goods, multiple-person living arrangements may dominate living alone. When the household public good is housing, intertemporal commitment is valuable only in the presence of market imperfections, transaction costs, or search frictions. If the rental market for housing were frictionless, an individual could share housing with one person today and another tomorrow. If the market for owner occupied housing were perfect, an individual could buy a house in one period, live in it, and sell it in the

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<sup>17</sup> For discussions of the perfect substitutes assumption, see Becker (1991, Ch. 2), Lundberg (2008) and Pollak (2012, 2013).

<sup>18</sup> The weasel word “seem” is deliberate. The findings of Buckles, Guldi, and Price (2011) on the effect of state blood test requirements for marriage imply that modest increases in the cost of marriage can deter couples near the margin between marriage and nonmarriage.

next. Even with transaction costs, it is reasonable to ask whether these costs are high enough to motivate marriage: cohabiting couples, after all, do own houses together.

Children are different: parents tend to be extremely attached to their “own” children, whether defined by birth or adoption, and child wellbeing is enhanced by stability and consistency in parenting. We argue that a principal role of marriage is a social device that enables parents to commit themselves and their partners to intense and long-term investments in their children. Hence, we expect differences in marriage patterns across education and income groups and, particularly, differences in the timing of marriage and childbearing to be associated with differences in parental investment strategies.

#### 4. Marriage and Investments in Children

*“Middle-class parents tend to adopt a cultural logic of childrearing that stresses the concerted cultivation of children. Working-class and poor parents, by contrast, tend to undertake the accomplishment of natural growth...”* (Annette Lareau, *Unequal Childhoods: Class, Race, and Family Life*, 2003, p. 3)

Patterns of marriage, childbearing and childrearing across education and income groups are consistent with the existence of a close connection between the decision to marry and childrearing strategies. Within each race/ethnic group, the rate of nonmarital childbearing is sharply declining in mother’s educational attainment. For non-Hispanic white college graduates, the women who are most likely to have the earnings and benefits that would enable them to support a child alone, single or cohabiting motherhood is uncommon (Table 2).<sup>19</sup>

Table 2: Nonmarital Births as a Proportion of All Births by Mother’s Education, 2010

	<b>Non-Hispanic White</b>	<b>Black</b>	<b>Hispanic</b>
<b>High School or Less</b>	53.6	83.5	59.6
<b>Some College</b>	31.0	68.7	45.3
<b>College Graduate or more</b>	5.9	32.0	17.4

(Source: Centers for Disease Control and Prevention. National Center for Health Statistics. VitalStats <http://www.cdc.gov/nchs/vitalstats.htm>.)

<sup>19</sup> A closer look at the Vital Statistics data reveals additional evidence that high-education women wait for marriage until the biological clock has almost run out — for college-educated women in their early 40s, the rate of nonmarital childbearing rises to 10 percent.



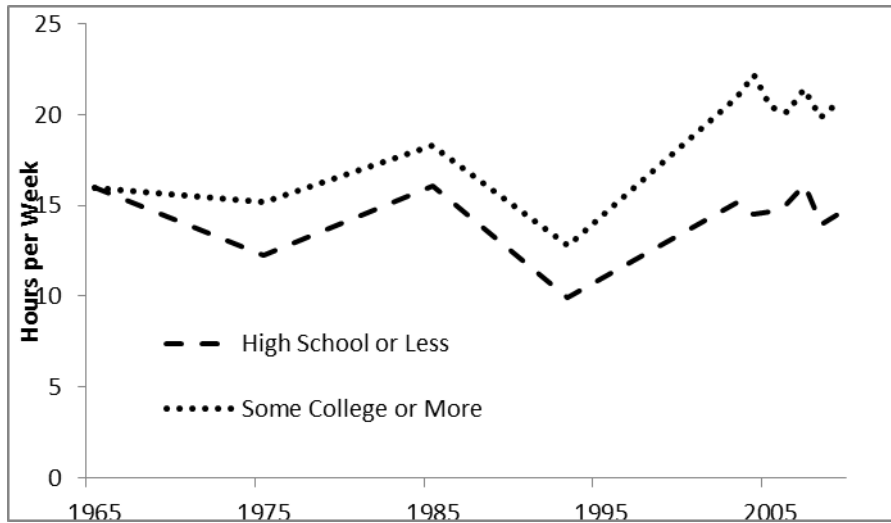
As Bailey, Guldi, and Hershbein (this volume) show, most women in all education groups eventually marry—the proportions of women in the upper and lower education quartile who marry by age 35 are close to 80 percent for recent cohorts. However, they also show that the age at first birth has risen along with the age at first marriage for high-education women, while the age at first birth for women in the lowest education group has remained essentially constant for decades. The decoupling of marriage and childbearing has simply not occurred for the most advantaged women.

Direct evidence shows increasing inequality in the time and money that parents allocate to their children – parents with more education spend more time with children and parents with more income spend more money on children. Researchers who study time allocation emphasize the importance of parents spending time with children while researchers who study expenditure patterns emphasize the importance of parents spending money on children. Because few data sets report both time allocation and expenditure patterns, it is difficult to assess the relative importance of time and money and the possibility of interaction between them. We return to this issue after briefly summarizing what is known about time and money.

During the past few decades, parental time with children has been increasing, despite increasing rates of maternal employment (Bianchi, 2000; Bianchi, Robinson, and Milkie, 2006, Aguiar and Hurst, 2007). Guryan, Hurst and Kearney (2008) show that there is a positive relationship between parental education and time with children: despite their higher rates of employment, mothers with a college education spend about 4.5 hours more with children than mothers with a high-school degree or less. This pattern holds for working and non-working mothers, and also for working fathers. It holds not only in the U.S. but across a sample of 13 other countries. Ramey and Ramey (2010) examine the trends in U.S. childcare time separately by parental education, and find that the increase in childcare time that began in the mid-1990s was particularly pronounced for college-educated parents. They attribute this change to increased competition for admission to selective colleges. In their comments on Ramey and Ramey, both Hurst (2010) and Sacks and Stevenson (2010) show that the relative increase in childcare time is particularly large for mothers with younger children. These analyses cast some doubt on the Ramey and Ramey explanation and suggests that the increased polarization of parental time with very young children may have other explanations, including an increase in early investments by high-education parents as the returns to human capital rise. Figures 6 and 7 show that the widening gap between the childcare time of parents whose youngest child is under 5 is particularly pronounced for fathers.<sup>20</sup>

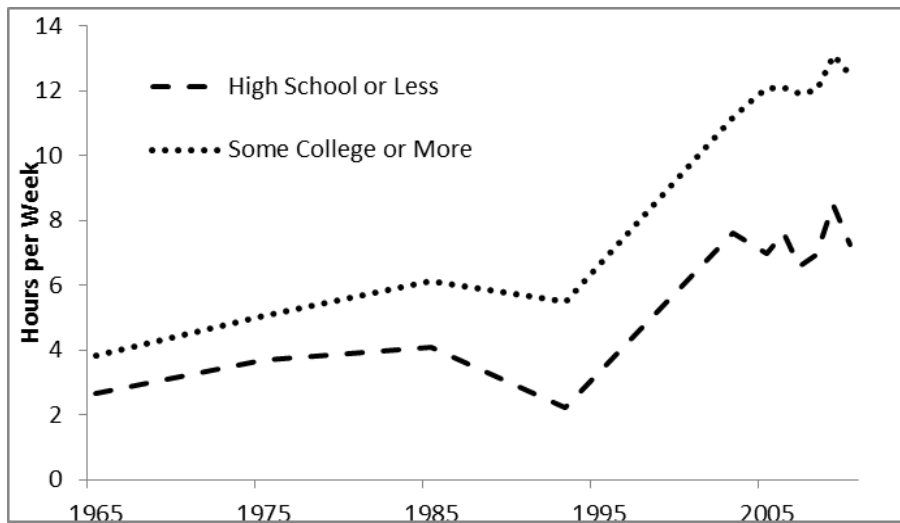
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<sup>20</sup> In Figures 6 and 7 parents with some college and college graduates are combined for the high-education group to avoid very small samples sizes for some years.



**Figure 6: Childcare Time of Mothers with Children Under 5 (under 4 in 1965)**

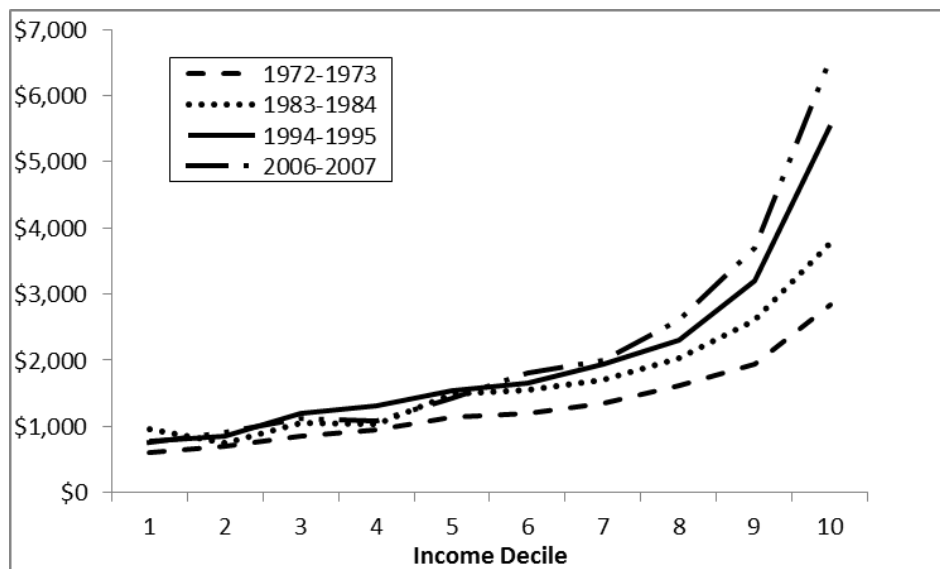
(Source: 1965-1966 America's Use of Time, 1975-1976 Time Use in Economics and Social Accounts, 1985 Americans' Use of Time, 1992-1994 National Human Activity Pattern Survey, and the 2003-2010 waves of the American Time Use Survey)



**Figure 7: Childcare Time of Fathers with Children Under 5 (under 4 in 1965)**

(Source: See Figure 6)

Kornrich and Furstenberg (2013) find that expenditures on children increase with income, and that both parental spending and the inequality of this spending has risen from the early 1970s to the late 2000s (Figure 8). To a large extent, this increase in spending inequality across income deciles has been



**Figure 8: Spending per Child, 1972-2006**

(Source: Kornrich and Furstenberg, 2013, from Consumer Expenditure Survey)

Note: Dollar figures adjusted to year 2008 dollars using the CPI-U-RS.

driven by the increase in income inequality during this period, but expenditures on children as a percentage of income have been rising overall (particularly in the 1990s), especially for the top two income deciles. Kornrich and Furstenberg note that increased parental spending “may reflect growing pressures to invest in children,” particularly for middle- and upper-class parents. Kaushal, Magnuson and Waldfogel (2011) document the pattern of rising expenditures on child “enrichment items” by income quintile. For families in each income quintile, they estimate the effects on expenditures on child enrichment items of a \$1000 increase in family budgets, finding that “trips,” which account for a large share of enrichment items in higher income quintiles, are highly elastic.

The causal effect of family income on child outcomes is contested. Susan Mayer (1997) argues that the correlation between income and child achievement is accounted for by parental education and unobserved heterogeneity. More recent studies using natural experiments or policy-driven changes in family income find significant effects of increases in income on test scores and school achievement of young children from low-income families (Dahl and Lochner, 2012; Duncan, Morris, and Rodrigues, 2011; Løken, Mogstad, and Wiswall, 2012).<sup>21</sup> The finding that income matters most for child outcomes in the bottom deciles of the income distribution is important because many of the studies emphasizing income inequality focus on the top deciles.

<sup>21</sup> The finding that income differences affect young children is important because evidence suggests that substantial differences in children’s cognitive and noncognitive skills are present when they enter kindergarten and are little affected by subsequent schooling (Cunha et al., 2006)

Given the high and increasing correlation between education and income, sorting out the relative importance of time and money will be difficult. On a priori ground, we find it plausible that production functions for child outcomes differ systematically with parents' education and that, with the same inputs of time and money, more-educated parents are likely to produce children with better cognitive and noncognitive outcomes than less-educated parents. We also find it plausible that production functions for child outcomes exhibit decreasing returns as time and money are increased together, and diminishing returns as they are increased separately. Because many child outcomes are ordinal, formalizing these intuitions about production functions will be difficult to assess empirically.<sup>22</sup>

The differences in time and money inputs to childrearing are reflected in parenting practices and attitudes more generally. In her ethnographic research, the sociologist Annette Lareau (2003) has documented pronounced class differences in childrearing practices.<sup>23</sup> Concerted cultivation of middle-class children includes parental involvement in recreational and leisure activities as well as school and schoolwork, and is one source of the large gaps in skills and behavior that are present when children enter school (Duncan and Magnuson, 2011). In Lareau's analysis, these childrearing practices reflect parents' class-determined "cultural repertoires" for childrearing. Concerted cultivation is the childrearing script consistent with the advice of "experts" and is designed to foster children's cognitive and social skills. Working-class and poor families consider the consistent provision of food, shelter, and other basic support to be successful parenting and, given their time and resource constraints, many do not attempt deliberate cultivation.<sup>24</sup> Sociologists Kathryn Edin and Maria Kefalas (2005), in their ethnographic study of low-income single mothers, conclude that in the face of economic hardship poor mothers "adopt an approach to childrearing that values survival, not achievement" (p. 166).

A central question that highlights the different approaches of economics and sociology is whether to interpret class differences in childrearing practices as reflecting pre-determined cultural repertoires or as reflecting constrained parental choice. Economists tend to believe that childrearing practices reflect choice, and that choices depend on preferences and opportunities. In treating parenting practices as a choice, we are assuming that parents are forward looking and that outcomes for children are among the arguments of parents' utility functions, although not the only argument of their utility functions. Parental opportunities depend on prices, wages, and the household technology, including the technology for producing the skills and traits of children.

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<sup>22</sup> A further difficulty is distinguishing between investment and consumption. The difficulty is not that some expenditures and activities are both investment and consumption -- such activities should be treated as investments irrespective of their consumption components. The difficulty is that some expenditures and some activities are not investments at all, but are simply consumption for the parents or for the children.

<sup>23</sup> Lareau's analysis is based on intensive observation of 12 families.

<sup>24</sup> Lareau raises the question of whether concerted cultivation requires a two-parent family but cannot, with her small sample, attempt an answer.

Parents, therefore, choose different child investments strategies because their preferences or their opportunities differ. First, prospective parents may differ in the kind of children that they want to produce. If all parents love and are attached to their children, then they will want their children to be happy and economically successful, but also to remain emotionally close (and possibly physically close) and to share their social and cultural values. For high education and income parents, these objectives are more or less consistent; economically-successful children are likely to accept their family's culture and values. For low education and income parents, these objectives may conflict: children who are economically successful may reject their family's culture and values and, for this reason, these parents may be ambivalent about what they want for their children.<sup>25</sup> Thus, faced with the same opportunity set, parents with different levels of education and income might rationally choose different childrearing practices.

Second, prospective parents with different levels of education and different incomes also face different opportunities. Higher wages increase the opportunity cost of parental time with children. On the other hand, the time that high-education parents spend with their children may be more productive in enhancing children's skills (Becker and Murphy, 2007). A productivity effect may occur because parents possess a higher level of the skills they wish to impart, or because they have better information about how children learn: parents with higher levels of education may be better able to read with a younger child or help an older child with homework. Finally, parents' skill levels may affect their enjoyment of cognitively-stimulating activities with children (e.g., reading). The balance between the wage rate effect and the productivity effect is theoretically indeterminate, but the empirical education gradient in parental time suggests that the latter dominates.

Recent work in economics has modeled and estimated dynamic production functions for children's human capital or "capabilities" in which child development is treated as a cumulative process that depends on the full history of parental and school-based investments (Heckman, 2000; Todd and Wolpin, 2003, 2007). A key feature of these models is complementarity between the child's stocks of human capital and the productivity of subsequent investments. Cunha and Heckman (2007) construct a multi-period model in which parental investments in different periods are complements in the production of human capital, and Aizer and Cunha (2012) find evidence of dynamic complementarities in the effects of preschool on children with different stocks of early human capital. These complementarities suggest that parental investments (and also formal schooling) will be more productive for children who have early cognitive and health advantages, whether these are due to genetic endowments, prenatal environment, (Currie, 2011) or early post-natal investments. The increasing evidence that "skill begets skill"

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<sup>25</sup> The children may also be ambivalent, but economists generally assume that the parents are the decision makers and children are passive.

(Heckman, 2000) indicates that even if the time inputs of high-education parents are not inherently more productive, payoffs to parental investments, and especially to paternal investments are highest for the most-advantaged children. In a period of rising returns to skill in the labor market and growing income inequality, this difference in family structure can accentuate the class divergence in child investments.

Even if parents at different education and income levels have identical goals for their children, differences in parental resources and the productivity of parental time, combined with complementarities between early and later investments, can produce the kind of parenting strategy divides that Lareau and others have observed. If parents differ in their motivation to make intense investments in their children's human capital, they may also differ in their desire to enter into the kind of long-term and cooperative joint parenting arrangement that marriage facilitates. If marriage is a mechanism by which parents support a mutual commitment to continue to invest in their children's human capital, then for parents who adopt a relatively low-investment strategy for their children, the benefits of marriage before childrearing will be substantially lower than for high-investment parents.

## 5. Marriage Trends and Class Divergence

*“Couples rarely referred to their children when discussing marriage, and none believed that having a child was a sufficient motivation for marriage. Furthermore, no parent talked about marriage enhancing the life chances of their child.” (Christina Gibson-Davis, Kathryn Edin, and Sara McLanahan, “High Hopes but Even Higher Expectations: The Retreat from Marriage Among Low-Income Couples,” 2005).*

One of the most striking aspects of the trends in marriage behavior documented in section 2 is the relative stability of traditional patterns of marriage and childbearing among the highly-educated, compared to the pronounced retreat from marriage and marital childbearing among men and women with a high-school diploma or less and, to a lesser extent, among those with some college. High-education couples choose marriage because it entails a greater degree of commitment, a choice that is consistent with decreased returns to gender specialization that are offset by increased returns to joint investments in children. Intensive investment is a characteristic parenting pattern among the well-educated and well-off, and these investments are increasing in absolute terms and relative to the investments made by those with less education and fewer resources. These increases are probably due to some combination of rising returns to human capital as income inequality rises, increasing real incomes at the top of the distribution, improved information about the payoffs to early child enrichment activities and, perhaps, evolving social norms.

Couples with low levels of education are more likely to choose cohabitation or lone parenthood, suggesting that for many of them the decreased returns to specialization are not offset by increased returns

to joint investments in children. For these couples, a child's limited prospects for upward mobility combined with falling real resources, particularly those of fathers with little education, precludes an intensive investment strategy for parents and limits the value of marriage and the commitment it implies.<sup>26</sup> Kearney and Levine (2012) offer a related explanation for the very high rate of teenage childbearing in the United States, attributing it to a limited expectation of economic success caused by high inequality and low mobility, and leading to "choices that favor short-term satisfaction—in this case, the decision to have a baby when young and unmarried." Their analysis focuses on the young mother's own prospects for upward mobility; in our view, limited parental investments and low marriage rates can be caused by the child's limited prospects for economic success and low expected returns to that investment.

The social science literature generally treats differences in investments in children as an accidental by-product of changing patterns in marriage, cohabitation, and lone parenting and identifies three other factors as contributing to or causing the uneven retreat from marriage: the decline in the marriageability of men with low levels of education; the availability of government welfare benefits; and the increasing cultural significance of marriage to women in low-income communities. To some extent, we view these as complements to our emphasis on marriage as a commitment to invest in children.

The marriageability explanation emphasizes the decline in the employability of men with low levels of education and the fall in their wages relative to those of the women they would have married a generation or two earlier. Wilson (1987) pointed to the decline in industrial jobs in inner-city neighborhoods as the cause of a shortage of marriageable men and, since then, this shortage has been exacerbated in black marriage markets by the rise in incarceration (Charles and Luoh, 2010). The decline in male wages and the decline in the employability of men with low levels of education reduces their ability to contribute to investments in children, and therefore limits their attractiveness as husbands.<sup>27</sup> Marriage to less employable men may imply additional costs if it entails a commitment to a partner who is more prone to substance abuse or violence, or who holds traditional views about the gender division of labor.

In two books published almost three decades apart, Charles Murray argues that government welfare benefits and welfare policy caused the retreat from marriage. Murray (1984) argued that both the

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<sup>26</sup> Autor and Wasserman (2013) provide a compelling summary of the declining economic fortunes of men with high-school education or less. To explain the gender difference in outcomes for boys and girls from disadvantaged backgrounds, they emphasize the role of family structure. More specifically, they argue that female-headed families are particularly damaging for boys and speculate that this may be because it is important for children to have a same-sex parent as a role model. Bertrand and Pan (2011) focus on boys disruptive behavior. They suggest that boys may be more sensitive than girls to parental time inputs and find that mothers in female-headed families spend less time with sons than with daughters.

<sup>27</sup> Thomas and Sawhill (2002, 2005) argue for "marriage as an antipoverty strategy," showing that if the unmarried mothers married men similar to the unmarried fathers of their children, the couples and their child(ren) would often be above rather than below the poverty line. Revealed preference reasoning suggests that such marriages are unlikely to be Pareto improving, perhaps because of prospective spouses' inability to make binding agreements in the marriage market (see Lundberg and Pollak, 1993).

value of welfare benefits and conditioning eligibility for benefits on not having a man in the house caused poor women to substitute away from marriage and toward welfare dependency in order to provide for their children. In his more recent book, Murray (2012) argues that the availability of welfare benefits sapped the moral fiber of the working poor and triggered a cascade of bad behaviors. Neal (2004) also treats the provision of government aid as a necessary condition for widespread single motherhood, reinforced by the declining economic prospects of less-educated men. Most studies, however, find a very small effect of welfare benefits on female headship or nonmarital childbearing, and the erosion of the real value of welfare benefits in the 1980s and beyond did not slow the increase in nonmarital childbearing.<sup>28</sup>

Based on their ethnographic work, Edin and Kefalas (2005) offer a cultural explanation of the decline in marriage, arguing that women in low-income communities have unrealistically high aspirations for marriage. In these communities marriage is no longer closely connected to parenting, but is about “the white picket fence dream” and good stable jobs and maturity are prerequisites. Cherlin (2004) also asserts that, as the “practical significance” of marriage has diminished, its “cultural significance” has grown. In contrast, for college educated men and women, the practical significance of marriage has become its role as a commitment device that supports high levels of investment in children.

## 6. Conclusion

Since 1950 the sources of the gains from marriage have changed radically. As the educational attainment of women overtook and surpassed that of men and the ratio of men's to women's wage rates fell, the traditional pattern of gender specialization and division of labor within the household weakened. The primary source of the gains to marriage shifted from the production of commodities to investment in children. As a result, the gains from marriage fell sharply for some groups and may have risen for others.

For some, the decline in the male-female wage ratio and the weakening of traditional patterns of gender specialization meant that marriage was no longer worth the costs of limited independence and potential mismatch. Cohabitation became a socially and legally acceptable living arrangement for all groups, but cohabitation serves different functions among the poor and less educated than among the affluent and highly educated. The poor and less educated are much more likely to have and rear children in cohabitating relationships, although the extent of this decoupling of marriage and parenthood is often exaggerated.<sup>29</sup> Among the college-educated, marriage and parenthood remain tightly linked. College-educated men and

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<sup>28</sup> Moffitt (2001) concludes that labor market factors have played the most important role in the rise in female headship but, after controlling for male and female wages, he finds a residual that follows the same pattern as real welfare benefits remains.

<sup>29</sup> Half of white women with a high-school education or less are still marrying before the birth of their first child.



women have delayed marriage and typically cohabit before marriage, but they marry before conceiving children and their marriages are relatively stable.<sup>30</sup>

This class divergence in patterns of marriage and parenthood is associated with class differences in childrearing. Lareau characterizes the childrearing practices of poor and working class parents as one of “natural growth,” which she contrasts with middle-class practices of “concerted cultivation.” Time use data are consistent with Lareau's ethnographic findings: college-graduate mothers and fathers spend considerably more time interacting with their children than mothers and fathers with less education.

How do we understand these class differences (and divergence) in marriage, parenthood, and childrearing? We have suggested that different patterns of childrearing are the key to understanding class differences in marriage and parenthood, not an unintended byproduct of it. Rising returns to human capital, dynamic complementarities in human capital production, and diverging parental resources across the income distribution have increased the returns to joint investments in children in high-income, relative to low-income, households. We view marriage as the commitment mechanism for this joint project and, hence, marriage is more valuable for parents who adopt a high-investment strategy for their children.

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<sup>30</sup> We have focused on non-Hispanic whites in documenting differences by education but as table 2 shows, both Hispanic and black marriage and cohabitation patterns exhibit a strong education gradient, although Hispanic and black marriage rates differ from each other and from those of whites. Black marriage and childbearing patterns are substantially different, and these race differences are the subject of an enormous literature in themselves.

## References

- Abma, Joyce C., and Gladys M. Martinez. 2006. "Childlessness Among Older Women in the United States: Trends and Profiles," *Journal of Marriage and Family* 68(4): 1045-1056.
- Aguiar, Mark, and Erik Hurst. 2007. "Measuring Trends in Leisure: The Allocation of Time over Five Decades," *Quarterly Journal of Economics* 122(3): 969-1006.
- Aizer, Anna, and Flávio Cunha. 2012. "The Production of Human Capital: Endowments, Investments and Fertility," National Bureau of Economic Research Working Paper No. 18429.
- Akerlof, George A., Janet L. Yellen, and Michael L. Katz. 1996. "An Analysis of Out-of-Wedlock Childbearing in the United States," *Quarterly Journal of Economics* 111(2): 277-317.
- Arroyo, Julia, Krista K. Payne, Susan L. Brown, and Wendy D. Manning. 2012. "Crossover in Median Age at First Marriage and First Birth: Thirty Years of Change," National Center for Family & Marriage Research. [http://ncfmr.bgsu.edu/pdf/family\\_profiles/file107893.pdf](http://ncfmr.bgsu.edu/pdf/family_profiles/file107893.pdf).
- Autor, David and Melanie Wasserman. 2013. "Wayward Sons: The Emerging Gender Gap in Labor Markets and Education," Third Way Report.
- Bailey, Martha J., Melanie Guldi, and Brad J. Hershbein. 2013. "Two Twentieth Century Fertility Transitions: Implications for Human Capital," in Leah P. Boustan, Carola Frydman, and Robert A. Margo, eds. *Human Capital and History: The American Record*. Cambridge, MA: National Bureau of Economic Research.
- Becker, Gary S. 1981. *A Treatise on the Family*. Cambridge, MA: Harvard University Press.
- Becker, Gary S. 1991. *A Treatise on the Family*, enlarged edition. Cambridge, MA: Harvard University Press.
- Becker, Gary S., and Kevin M. Murphy. 2007. "Education and Consumption: The Effects of Education in the Household Compared to the Marketplace," *Journal of Human Capital* 1(1): 9-35.
- Bertrand, Marianne and Jessica Pan. 2011. "The Trouble with Boys: Social Influences and the Gender Gap in Disruptive Behavior," National Bureau of Economic Research Working Paper No. 17541.
- Bianchi, Suzanne M. 2000. "Maternal Employment and Time with Children: Dramatic Change or Surprising Continuity?" *Demography* 37(4): 139-154.
- Bianchi, Suzanne M., John P. Robinson, and Melissa A. Milkie. 2006. *Changing Rhythms of American Family Life*. New York: Russell Sage.
- Borenstein, Severin, and Paul N. Courant. 1989. "How to Carve a Medical Degree: Human Capital Assets in Divorce Settlements," *American Economic Review* 79(5): 992-1009.
- Buckles, Kasey, Melanie Guldi, and Joseph Price. 2011. "Changing the Price of Marriage: Evidence from Blood Test Requirements," *Journal of Human Resources* 46(3): 539-567.

- Charles, Kerwin Kofi and Ming Ching Luoh. 2010. "Male Incarceration, the Marriage Market, and Female Outcomes," *The Review of Economics and Statistics* 92(3): 614-627.
- Cherlin, Andrew J. 2004. "The Deinstitutionalization of American Marriage," *Journal of Marriage and Family* 66: 848-861.
- Cherlin, Andrew. 2009. *The Marriage-Go-Round: The State of Marriage and the Family in America Today*. New York: Alfred A. Knopf.
- Cigno, Alessandro. 2012. "Marriage as a Commitment Device," *Review of Economics of the Household* 10(2): 193-213.
- Copen, Casey E., Kimberly Daniels, Jonathan Vespa, and William D. Mosher. 2012. "First Marriages in the United States: Data from the 2006-2010 National Survey of Family Growth," *National Health Statistics Reports* 49: 1-22.
- Cunha, Flavio, and James Heckman. 2007. "The Technology of Skill Formation," *American Economic Review* 97(2): 31-47.
- Cunha, Flavio, James J. Heckman, Lance Lochner, and Dimitriy V. Masterov. 2006. "Interpreting the Evidence on Life Cycle Skill Formation," in Eric A. Hanushek and Finis Welch, eds. *Handbook of the Economics of Education, Vol. 1*, Amsterdam: North Holland, 698-812.
- Currie, Janet. 2011. "Inequality at Birth: Some Causes and Consequences," *American Economic Review* 101(3): 1-22.
- Dahl, Gordon B., and Lance Lochner. 2012. "The Impact of Family Income on Child Achievement: Evidence from the Earned Income Tax Credit," *American Economic Review* 102(5): 1927-1956.
- Duncan, Greg J., and Katherine Magnuson. 2011. "The Nature and Impact of Early Achievement Skills, Attention Skills, and Behavior Problems," in Greg J. Duncan and Richard J. Murnane, eds. *Whither Opportunity?: Rising Inequality, Schools, and Children's Life Chances*. New York: Russell Sage Foundation, 47-69.
- Duncan, Greg J., Pamela A. Morris, and Chris Rodrigues. 2011. "Does Money Really Matter? Estimating Impacts of Family Income in Young Children's Achievement with Data from Random-Assignment Experiments," *Developmental Psychology* 47(5): 1263-1279.
- Edin, Kathryn, and Maria Kefalas. 2005. *Promises I Can Keep: Why Poor Women Put Motherhood Before Marriage*. Berkeley, CA: University of California Press.
- England, Paula and Lawrence L. Wu. Forthcoming. "Cohort Trends in Premarital First Births: What Role for the Retreat from Marriage?" *Demography*.
- Gennetian, Lisa. 2005. "One or Two Parents? Half or Step Siblings? The Effect of Family Structure on Young Children's Achievement," *Journal of Population Economics* 18(3): 415-436.
- Gibson-Davis, Christina M., Kathryn Edin, and Sara McLanahan. 2005. "High Hopes but Even Higher Expectations: The Retreat from Marriage among Low-Income Couples." *Journal of Marriage and Family* 67(5): 1301-1312.

- Ginther, Donna K. and Robert A. Pollak. 2004. "Family Structure and Children's Educational Outcomes: Blended Families, Stylized Facts, and Descriptive Regressions," *Demography* 41(4): 671-696.
- Goldin, Claudia. 2006. "The Quiet Revolution that Transformed Women's Employment, Education, and Family," *American Economic Review* 96(2): 1-21.
- Goldin, Claudia, and Lawrence F. Katz. 2002. "The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions," *Journal of Political Economy* 110(4): 730-770.
- Greenwood, Jeremy, Ananth Seshadri, and Mehmet Yorukoglu. 2005. "Engines of Liberation," *Review of Economic Studies* 72(1): 109-133.
- Guryan, Jonathan, Erik Hurst, and Melissa Kearney. 2008. "Parental Education and Parental Time with Children," *Journal of Economic Perspectives* 22(3): 23-46.
- Heckman, James J. 2000. "Policies to Foster Human Capital," *Research in Economics* 54(1): 3-56.
- Hurst, Erik. 2010. Comment on "The Rug Rat Race," *Brookings Papers on Economic Activity* Spring: 177-184.
- Isen, Adam, and Betsey Stevenson. 2011. "Women's Education and Family Behavior: Trends in Marriage, Divorce, and Fertility," in John B. Shoven, ed. *Demography and the Economy*. Chicago: University of Chicago Press, 107-140.
- Kaushal, Neeraj, Katherine Magnuson and Jane Waldfogel. 2011. "How Is Family Income Related to Investments in Children's Learning?" Chapter 9 in Greg J. Duncan and Richard J. Murnane, eds. *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*. New York: Russell Sage Foundation, 187-205.
- Kearney, Melissa S. and Phillip B. Levine. 2012. "Why Is the Teen Birth Rate in the United States So High and Why Does It Matter?," *Journal of Economic Perspectives* 26(2): 141-63.
- Kennedy, Sheela, and Larry Bumpass. 2008, "Cohabitation and Children's Living Arrangements: New Estimates from the United States." *Demographic Research* 19(47): 1663-1692.
- Kornrich, Sabino, and Frank Furstenberg. 2013. "Investing in Children: Changes in Parental Spending on Children, 1972-2007," *Demography* 50(1): 1-23.
- Lam, David. 1988. "Marriage Markets and Assortative Mating with Household Public Goods: Theoretical Results and Empirical Implications," *Journal of Human Resources* 23(4): 462-487.
- Lareau, Annette. 2003. *Unequal Childhoods: Class, Race, and Family Life*. Berkeley, CA: University of California Press.
- Lichter, Daniel T. 2012. "Childbearing among Cohabiting Women: Race, Pregnancy, and Union Transitions," in A. Booth, S.L. Brown, N.S. Landale, W.D. Manning, and S.M. McHale, eds. *Early Adulthood in a Family Context*. New York: Springer, 209-219.
- Lichter, Daniel T., and Zhenchao Qian. 2008. "Serial Cohabitation and the Marital Life Course," *Journal of Marriage and Family* 70:861-878.

- Lichter, Daniel T., Richard N. Turner, and Sharon Sassler. 2010. "National Estimates of the Rise in Serial Cohabitation," *Social Science Research* 39: 754-765.
- Løken, Katrine V., Magne Mogstad, and Matthew Wiswall. 2012. "What Linear Estimators Miss: The Effect of Family Income on Child Outcomes," *American Economic Journal: Applied Economics* 4(2): 1-35.
- Lundberg, Shelly. 2008. "Gender and Household Decisionmaking," in Francesca Bettio, ed. *Frontiers in Gender Economics*, New York: Routledge.
- Lundberg, Shelly, and Robert A. Pollak. 2007. "American Family and Family Economics," *Journal of Economic Perspectives* 21(2): 3-26.
- Lundberg, Shelly and Robert A. Pollak. 1993. "Separate Spheres Bargaining and the Marriage Market," *Journal of Political Economy* 101(6): 988-1010.
- Manlove, Jennifer, Suzanne Ryan, Elizabeth Wildsmith, and Kerry Franzetta. 2010. "The Relationship Context of Nonmarital Childbearing in the US," *Demographic Research* 23(22): 615-654.
- Manning, Wendy D., and Pamela J. Smock. 2005. "Measuring and Modeling Cohabitation: New Perspectives from Qualitative Data," *Journal of Marriage and the Family* 67(4): 989-1002.
- Matouschek, Niko, and Imran Rasul. 2008. "The Economics of the Marriage Contract: Theories and Evidence," *Journal of Law and Economics* 51(1): 59-110.
- Mayer, Susan. 1997. *What Money Can't Buy: Family Income and Children's Life Chances*. Cambridge, MA: Harvard University Press.
- McLanahan, Sara. 2004. "Diverging Destinies: How Children Are Faring Under the Second Demographic Transition," *Demography* 41(4): 607-627.
- Moffitt, Robert. 2001. "Welfare Benefits and Female Headship in U.S. Time Series," in L. Wu and B Wolfe, eds. *Out-of-Wedlock: Causes and Consequences of Nonmarital Fertility*. New York: Russell Sage Foundation, 143-172.
- Murray, Charles. 1984. *Losing Ground: American Social Policy, 1950-1980*. New York: Basic Books.
- Murray, Charles. 2012. *Coming Apart: The State of White America, 1960-2010*. New York: Crown Forum.
- Neal, Derek A. 2004. "The Relationship Between Marriage Market Prospects and Never-Married Motherhood," *Journal of Human Resources* 39(4): 938-957.
- Perelli-Harris, Brienna, Wendy Sigle-Rushton, Trude Lappegard, Renske Keizer, Michaela Kreyenfeld, and Caroline Berghammer. 2010. "The Educational Gradient of Childbearing Within Cohabitation in Europe," *Population and Development Review* 36(4): 775-801.
- Pollak, Robert A.. 2012. "Allocating Time: Individuals' Technologies, Household Technology, Perfect Substitutes, and Specialization," *Annals of Economics and Statistics. (Annales d'Economie et Statistique)*. 105-106: 75-97. (National Bureau of Economic Research Working Paper No. 17529. October 2011).

- Pollak, Robert A. 2013. "Allocating Household Time: When Does Efficiency Imply Specialization?"
- Ramey, Garey and Valerie A. Ramey. 2010. "The Rug Rat Race," *Brookings Papers on Economic Activity* Spring: 129-176.
- Rossin-Slater, Maya. 2012. "Engaging Absent Fathers: Lessons from Paternity Establishment Programs." [http://www4.gsb.columbia.edu/filemgr?&file\\_id=7221308](http://www4.gsb.columbia.edu/filemgr?&file_id=7221308).
- Rotz, Dana. 2011. "Why Have Divorce Rates Fallen? The Role of Women's Age at Marriage," Mathematica Policy Research Reports, Mathematica Policy Research, <http://EconPapers.repec.org/RePEc:mpr:mpres:7714>.
- Sacks, Daniel W., and Betsey Stevenson. 2010. Comment on "The Rug Rat Race," *Brookings Papers on Economic Activity* Spring: 184-196.
- Stevenson, Betsey. 2007. "The Impact of Divorce Laws on Marriage-Specific Capital," *Journal of Labor Economics* 25(1): 75-94.
- Stevenson, Betsey, and Justin Wolfers. 2007. "Marriage and Divorce: Changes and their Driving Forces," *Journal of Economic Perspectives* 21(2): 27-52.
- Stevenson, Betsey, and Justin Wolfers. 2008. "Marriage and the Market," *Cato Unbound*. <http://www.cato-unbound.org/2008/01/18/betsey-stevenson-and-justin-wolfers/marriage-and-the-market/>.
- Thomas, Adam and Isabel Sawhill. 2002. "For Richer or for Poorer: Marriage as an Antipoverty Strategy," *Journal of Policy Analysis and Management* . 21(4): 587-599.
- Thomas, Adam and Isabel Sawhill. 2005. "For Love and Money? The Impact of Family Structure on Family Income," *The Future of Children* 15(2): 57-74.
- Thornton, Arland, and Linda Young-DeMarco. 2001. "Four Decades of Trends in Attitudes Toward Family Issues in the United States: The 1960s through the 1990s." *Journal of Marriage and Family* 63(4): 1009-1037.
- Todd, Petra E., and Kenneth I. Wolpin. 2003. "On the Specification and Estimation of the Production Function for Cognitive Achievement," *Economic Journal* 113(485): F3 - F33.
- Todd, Petra E., and Kenneth I. Wolpin. 2007. "The Production of Cognitive Achievement in Children: Home, School, and Racial Test Score Gaps," *Journal of Human Capital* 1(1): 91-136.
- Weiss, Yoram. 1997. "The Formation and Dissolution of Families: Why Marry? Who Marries Whom? And What Happens Upon Divorce," in Mark R. Rosenzweig and Oded Stark, eds. *Handbook of Population and Family Economics* 1, 81-123.
- Weiss, Yoram. 2008. "Marriage and Divorce," in Lawrence Blume and Steven N. Durlauf, eds. *The New Palgrave Dictionary of Economics*. New York: Palgrave Macmillan.
- Weiss, Yoram, and Robert J. Willis. 1985. "Children as Collective Goods and Divorce Settlements," *Journal of Labor Economics* 3(3): 268-292.

Willis, Robert J. 1999. "A Theory of Out-of-Wedlock Childbearing," *Journal of Political Economy* 107(S6): S33-S64.

Wilson, William J. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago Press.