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ABSTRACT

The Return to College, Marriage, and Intergenerational Mobility*

This paper examines the idea that the increasing return to college is reducing intergenerational mobility by differentially impacting the investments in children by parents across education groups. A larger return to college will create stronger incentives to invest in children by parents with more education, if educated parents have a comparative advantage in producing human capital in children. Given the importance of a two-parent household on childhood development, marital status is a critical investment decision that parents consider. Relative to less-educated mothers, the analysis shows that educated mothers in states with a larger increase in the return to education are more likely to be married, less likely to divorce, have a more educated spouse, and own more valuable houses. Their children also have relatively higher test scores in 8th grade and rates of college completion. These results are consistent with the increasing return to college differentially affecting the incentives for parental investments in children, which in turn, creates greater disparities in childhood conditions and reduces intergenerational mobility in education.

JEL Classification: I24, I26, J12, J24
Keywords: marriage, inequality, return to college

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I. Introduction

Since the early 1970's, the marriage rate of women with children has fallen in the United States, most precipitously for less-educated mothers. At the same time, the return to college dramatically increased, and intergenerational mobility has fallen (Chetty et. al. (2014)). This paper examines the connection between these phenomena, with a focus on the idea that a higher return to college differentially alters the incentives for parents to invest in their children according to the parent's education level.

A larger return to education generally increases the incentives for all parents to invest in their child's human capital, given that the future success and income of the child lies within the personal utility function of a parent. However, not all parents are equally productive in creating high human capital children. There is ample empirical evidence demonstrating that parental education has a causal effect on the academic and behavioral outcomes of children. If educated parents are more efficient at producing human capital in children, a higher return to education will generate stronger incentives for educated parents to invest in child quality relative to less-educated parents.

Marriage is one of the most important investments in children that parents can make, given the large literature on the importance of a two-parent household on childhood development (Kearney (2023)). If parents with more human capital have a comparative advantage in producing high human capital children, a higher return to education should increase the incentives for educated mothers to invest in their children with higher marriage rates relative to less-educated mothers. The aggregate trends over the last several decades support this hypothesis: the return to schooling is increasing while the incidence of two-parent households is increasingly skewed in favor of more educated mothers. The first goal of the paper is to analyze whether there is a causal connection between these dramatic societal changes.

The second empirical goal is to examine the impact of this mechanism on children. If a larger return to education is differentially altering the incentives to invest in children, including marriage, the changes in these incentives should manifest as greater differences in child outcomes. In this manner, the increasing return to education creates larger gaps in the quality of the household environment between children with different parental education levels, and this creates larger achievement gaps as the children grow up. As a result, a higher return to college decreases intergenerational mobility – which is also consistent with the aggregate trends.

It is important to note that a larger return to college, almost by definition, creates larger income gaps between parents of different education levels, and thus, increases inequality in the quality of child environments. The larger disparities in childhood conditions will only be exacerbated if the changes in the college premium also increase the relative chances of an educated mother to get married, stay married, and match with a highly educated spouse. Therefore, the goal of the paper is to empirically analyze whether the return to education has a differential causal effect on the household environment of children according to their mother's education level, and whether this in turn, has a causal effect on subsequent child outcomes.

To do this, we use Census data in the United States since 1970 to analyze the marital status of mothers. In particular, we utilize variation across states and over time to test whether the marriage rates of mothers are affected by the state-level return to college, and if so, whether the effect depends on the education level of the mother. The sensitivity of the results is tested by including controls for the age of the youngest child, number of children, state fixed-effects, state-specific time trends, and aggregate trends specific to college and non-college educated mothers.

The estimates present strong evidence in favor of the hypothesis that a higher return to college increases the marriage rate of college-educated mothers relative to less-educated mothers. The relative increase in the marriage rate for college-educated mothers is due to higher entry into marriage, and also lower "exit" into divorce. The latter result indicates that college-educated mothers are increasingly willing to invest in their children by staying in a marriage which suffers a negative marital shock, if the return to education increases. The results are not sensitive to defining "living together" as a form of marriage – a higher college premium increases the rate of living with both parents in the household for children with college-educated mothers relative to other children.

Generally speaking, the findings are consistent with the idea that a higher return to schooling is causing women with more education to behave in more "traditional" ways relative to women with less education. However, this interpretation is inconsistent with other findings in the analysis that show that women in states with a larger increase in the college premium are less likely to enter marriage (i.e. delay marriage), less likely to enter parenthood (i.e. delay having a child), and more likely to work full time. That is, in many ways, educated women are relatively more independent and less traditional in states with larger increases in the college premium. It is only

when we focus on women with children that we see a change in behavior – educated women with children are more likely to do so within a marriage or two-parent household, and are less likely to divorce (conditional on getting married). This change in behavior after having a child is consistent with the idea that a larger college premium differentially affects the incentives for educated women to invest in their children with a more "traditional" two-parent household. However, it is important to note that even if the main results are influenced by educated women becoming relatively more traditional when the return to college increases, the implications for children are the same: a higher college premium creates larger disparities in the quality of the childhood environment, which in turn, reduces intergenerational mobility.

The "child investment" interpretation is further supported by evidence regarding the education level of the spouse. In states with larger increases in the return to education, college-educated mothers are not only more likely to be married, relative to less-educated mothers, but they are also more likely to marry a college-educated spouse (i.e. higher assortative mating). Over the last several decades, the college enrollment rate of women has greatly surpassed that of men, so the gender ratio within college graduates is increasingly become disadvantageous over time for women. Yet, college-educated mothers in states with larger increases in the college premium are increasing their relative rates of marriage overall, and their rate of matching with a college-educated spouse. This result is consistent with the education of the spouse becoming a more important factor, in the eyes of a college-educated mother, when the return to education increases. That is, when it becomes more important to invest in children in order to increase their human capital, an educated mother becomes relatively more interested in the education of the spouse compared to other spousal characteristics.

Further evidence for the "child investment" interpretation comes from an analysis of house values. Using a similar estimation strategy, the results indicate that educated women report relatively higher housing values in states with larger increases in the college premium. This finding is robust to controlling for total family income. This means that even after controlling for the direct effect of a higher return to schooling on the family income of an educated mother (through her labor income, her greater chance of being married, her spouse's labor income, and her more-educated spouse), she still invests in a relatively more valuable house compared to less-educated mothers when the college premium rises. Given that higher value houses are strongly associated with better quality schools, neighborhoods, and peers, this finding again points to higher

relative investments in children by educated mothers when the return to schooling increases.[1] (This finding is consistent with the evidence in Chetty et. al. (2014) that mobility is lower in areas with more income inequality and stronger residential segregation by income.)

The results demonstrate that a higher college premium is creating larger disparities in the quality of the household environment for children according to their mother's education level. To analyze whether this manifests itself as larger gaps in child achievements, we use panel data on family members from the PSID. The PSID sample contains information on the education of the parent and child for children born between 1960 and 1992. Controlling for state and year fixed-effects, the results show a strong positive effect of the local college premium (at age seven) on the child's education level, which increases with parental education levels. That is, in states with a larger college premium, the positive effect of parental education on the child's education level is larger. This result is consistent with the idea that a larger college premium creates differentially stronger incentives for college-educated parents to invest in their children.

The findings of the PSID analysis are robust to controlling for aggregate trends which differ by parental college graduate status and state-specific trends. The findings are also very similar when we measure parental education using the mother, the father, or a composite of both parents. Overall, the PSID analysis shows that a larger college premium increases the persistence of education levels across generations, thus lowering intergenerational mobility in education.

The PSID analysis examines completed years of schooling by the child, which potentially could be influenced by increasingly binding credit constraints in the financing of a college education when the return to college increases. To see if there is an effect of the college premium at earlier stages of childhood development, before credit constraints regarding college tuition are relevant, we examine student test scores in the 8th grade using data from the National Center for Education Statistics (NCES). The data includes the mean scores on 8th grade reading and math tests by state, parental education group, and year (for various years from 1990 to 2022). Controlling for state and year fixed-effects, the analysis shows that a larger state return to college (at age

[1] The literature showing that housing prices increase with local school quality include Black (1999), Machin (2011), and Gibbons, Machin, and Silva (2013).

seven) increases the gap in test scores between children with and without a college-educated parent. Similar findings are found with reading and math scores, as well as using the log difference in test scores instead of the difference in levels.

Overall, the analyses in this paper show that a larger college premium is creating larger disparities in childhood environments according to the parent's education level. In states with larger increases in the return to college, children with an educated mother are even more likely to be growing up with both parents in the household and in a more valuable home. The wider disparities in childhood conditions are showing up as differences in achievements – on math and reading test scores in 8th grade and later on in terms of completed schooling and college-degree attainment.

The analysis establishes how changes in the return to schooling alter incentives to invest in children differentially according to parental education levels, and this in turn, creates larger gaps in the next generation and lowers educational mobility. This is the first paper to demonstrate these links. However, there are many studies on related issues. Heckman (2000) and others demonstrate the long-term effects of investments in human capital during early childhood. The strong correlation between child outcomes and the presence of two parents in the household is well documented, and several papers establish a negative causal impact of a single-parent household on the long-run achievements of children.[2]

The downward trend in the incidence of two-parent households has also received considerable attention. Lundberg and Pollak (2007), Murray (2013), Kearney (2022, 2023), and Kearney and Levine (2017) document the decline in the rate of children living with two parents over several decades, and highlight how the trend is more pronounced for families without a college-educated parent. These studies do not examine whether the college premium influences the downward trend in marriage, or whether it contributes to the steeper decline for children with less-educated parents.

Autor et. al. (2019) shows that the rapid expansion of trade with China from 2000 to 2014 impacted the employment prospects of men relative to women, leading to a decline in marriage and a rise in unmarried motherhood during this period. Gould (2021) traces a significant part of the downward trend in marriage starting in the early 1970's to the decline in manufacturing employment from 1970 to 2010, with larger

[2] For example, see Carlson (2006), McLanahan, Tach, and Schneider (2013), Lopoo and DeLeire (2014), Lerman et. al. (2017), Kearney and Levine (2017), and Kearney (2022, 2023).

effects for blacks relative to whites. Bertrand et. al. (2015) argues that traditional gender identity norms create an aversion to marriages where the wife earns more than the husband. They present evidence that marriage rates decline in marriage markets where a woman is likely to earn more money than a potential husband. With similar implications, Shenhav (2021) presents evidence that a higher relative female wage makes women more independent and choosier in terms of spouse quality, thus lowering marriage rates.

These studies highlight important factors influencing the decline in marriage rates over the last several decades. Adding controls to our analysis for the local share of manufacturing employment and the gender wage gap produces findings which confirm this to be the case.[3] These factors help explain why marriage is declining, but empirically, they do not explain why marriage rates are falling more for less-educated mothers. Our main finding, which links the trends in the college premium to the steeper decline in marriage for less-educated mothers, is not sensitive to adding controls for manufacturing employment or the gender wage gap. Overall, our analysis is the first to show how the increasing return to college over the last five decades is affecting inequality in marriage outcomes across mothers of different education groups, and how this differentially affects child achievements and intergenerational mobility.

Gould and Paserman (2003) show that women delay marriage in the presence of higher wage inequality. The evidence supports the interpretation that women search longer for a high quality spouse when the variance of spouse quality increases (see also Mansour and McKinnish (2023)). Similar findings are found in our analysis when we use a sample of all women (including those without children). However, our analysis concentrates on the marital and investment decisions of women with children, and examines whether there is a differential effect by education level. Doing this reveals very different patterns for mothers relative to women without children, whereby the return to schooling has a positive relative impact on the marriage rates of mothers with more education. This is the first paper to establish that the college premium is increasing the gaps in marital status between mothers of different education levels.

[3] As Kearney (2023) discusses in detail, the decline in the labor market prospects of less-educated men may be related to the decline in marriage rates for less-educated women, but this does not necessarily imply that single women and their children would be better off if both biological parents were in the household.

The idea that a larger return to human capital affects marriage outcomes through parental investment decisions in child quality relative to quantity has been examined, mainly in the theoretical growth literature (Gould et. al. (2008)).[4] There is a large empirical literature demonstrating that parental education has a causal impact on the human capital of children.[5] This evidence supports the assumption that educated parents have a comparative advantage in the production of child human capital, and can help explain why parental time with children increases with parental education.[6] However, this is the first paper to empirically examine whether a larger college premium is differentially affecting the marriage decisions and house values of mothers with different education levels, which would be consistent with the assumption that educated parents have a comparative advantage in raising high human capital children.

Recent studies have documented increasing gaps over time in parental expenditures and time investments in children between parental education groups (Ramey and Ramey (2010) and Kornrich and Furstenberg (2013)). Schneider et. al. (2018) show that inequalities (by parental education and income categories) in child expenditures are rising faster in states with larger increases in the Gini coefficient. However, family structure is a significant determinant of variation in household income and child expenditures (Hastings and Schneider (2021) and Kearney (2023)). Therefore, the Gini coefficient of household income, as well as its effect on household expenditures on children, may strongly be influenced by marriage market outcomes responding to changes in the college premium – which is the focus of this paper.

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[4] Gould et. al. (2008) develops a model to explain the emergence of monogamy when the return to human capital increases in the process of development. According to their model, if higher human capital parents have a comparative advantage in producing high human capital children, a larger return to human capital will generate a more monogamous marriage market, and stronger assortative mating, as richer parents focus more on child quality relative to child quantity. In this manner, inequality in the number of wives transitions into inequality in the quality of wives when human capital becomes a more important determinant of the income distribution as the economy develops. The analysis in the current paper examines a similar issue: does a higher return to education generate larger gaps in marriage rates between education groups, and stronger assortative mating? In this sense, the current paper is also examining how larger returns to human capital affect inequality in the marriage market, but is doing so empirically and in the context of a modern (monogamous), developed country experiencing large increases in the return to education.

[5] The intergenerational transmission of human capital has received considerable attention in recent years. Summaries of the literature are presented in Black and Devereux (2010), and Holmlund, Lindahl, and Plug (2011). See also Black, Devereux, and Salvanes (2005); Björklund, Lindahl, Plug (2006); Currie and Moretti (2003); Haegeland et. al. (2010); and Oreopoulos, Page, and Stevens (2006).

[6] Guryan, Hurst, and Kearney (2008) show how the time allocation of parents for child activities increases dramatically with parental education, and Gould et. al. (2020) and Kalil et. al. (2016) show how parental time with a child has a larger impact on the child's education if the parent is more educated.

The literature on intergenerational mobility developed considerably in the last decade, using unique data to document the downward trend in upward mobility in the United States over time (Chetty et. al. (2017)). These studies also reveal significant geographic variation in mobility (Chetty et. al. (2014) and Chetty and Hendren (2018)). Mobility tends to be lower in localities with more income inequality, lower quality schools, higher residential segregation by income, and more single-parent households. These findings are consistent with the results in our analysis, which also finds a relationship between inequality (the return to schooling), the rate of single-parent households, inequality in housing values, and upward mobility.

However, our analysis makes several contributions to this literature. First, this is the first paper to establish a causal connection, both theoretically and empirically, from higher returns to education to more single-parent families (headed by less educated mothers), larger inequality in housing values, and lower educational mobility in the next generation. This is the first paper to emphasize how this causal connection stems from the creation of differential incentives to invest in child quality when the return to education increases, if educated parents have a comparative advantage in the creation of child human capital. Second, the empirical relationships between mobility, inequality, and single-parenthood in recent papers on intergenerational mobility are cross-sectional correlations across localities, and do not address issues of causality. Our paper is the first to leverage variation in the college premium across time and space to establish a stronger causal interpretation for how the college premium affects single parenthood, according to parental education levels, and intergenerational mobility. In this manner, the analysis helps understand why mobility is declining over time as the return to education increased.[7]

The paper is organized as follows. The next section presents the US Census data and the empirical strategy to analyze the relationship between the college premium and the marital outcomes of mothers. Section III presents the main results on marriage and the college premium. Section IV assesses whether the main results are consistent with the idea that the college premium is generally causing educated women to be relatively more traditional compared to less-educated women. Section V tests the robustness of the results to the inclusion of controls for the "decline in marriageable

[7] By focusing on the role that the return to college plays on marriage formation, the analysis sheds new insights on the Great Gatsby Curb (Solon (2004) and Corak (2013)).

men" and the closing of the gender wage gap. Section VI examines other outcomes such as house values and the characteristics of the spouse (assortative mating). Section VII examines how the return to college affects intergenerational mobility in schooling, college degree attainment, and 8th grade test scores. Section VIII concludes.

II. The Census Data used to Analyze Marital Outcomes

The analysis uses United States Census data for each decade from 1970 to 2020.[8] The main sample includes women with children under 18 years old in the household, and is restricted to white, natives between the ages of 25-45. The restriction to white natives is aimed at abstracting from other factors affecting the marriage rates over time for other ethnic groups (Gould (2021)). The age ranges were chosen to include only women that are old enough to finish their college degree, and young enough so that their youngest children are most likely still in the household. The census data does not have information on children not present in the household, so parenthood status is known only by the household composition (i.e. having a child in the household). The analysis does not examine fathers, since the main outcome of interest is the increasingly common status of being an unmarried parent, and there is no information on the fertility of men that do not live in the same household as their children.

Descriptive statistics for the main variables of the marriage analysis appear in Table 1. The top row shows a steep decline in the marriage rate of white women with children – from 92 percent in 1970 to 74 percent in 2020. More children over time are growing up with only one parent in the household. However, this trend is much stronger for less-educated women. As depicted in Figure 1, the gap in the marriage rates between college and non-college educated women with children in the household is two percentage points in 1970, and rises dramatically to 23 percentage points by 2020. While it used to be the case that children of all parental education groups grew up in families with a similar household structure, stark differences have emerged over time.

[8] The American Community Surveys (ACS) for 2019-2020 are used for 2020, while the ACS 3-year 2011 file is used for 2010. The data was downloaded from IPUMS (Ruggles et. al., 2022). The samples were extracted from the ACS 2019 and 2020 files, ACS three-year 2011 file, the 5 percent sample for 2000, the 5 percent state files for 1990 and 1980, the 1 percent fm1 and fm2 files for 1970, and the 5 percent file for 1960.

Along with changes in marital patterns over time, women increasingly are going to college and developing careers since the 1970's. As a result, women are getting married and having children at older ages in recent decades. In Figure 2, the gap in marriage patterns, after controlling for the mother's age and the age of her youngest child, is displayed. As the figure shows, adjusting for these factors over time explains a small part of the expanding gap in marital status between college and non-college educated mothers. The adjusted gap increases by about 16 percentage points, compared to a 21 percentage point increase in the unadjusted rates.

The summary statistics in Table 1 show that most of the decline in marriage rates for mothers is due to never getting married, which rises about 14 percentage points over time. The divorce rate (among those that entered marriage) also increases by about 7 percentage points since 1970. Although more couples are living together rather than getting married over time, there is still a significant decline in the percent of households with both parents present – declining nine percentage points since 1970.

As the prevalence of one-parent households increased, especially for less-educated mothers, the return to schooling rose dramatically.[9] As depicted in Figure 3, the log wage return to college for white men (relative to high school graduates) declined in the 1970's, but more than doubled since 1980. The return to college went from 0.26 in 1980 to 0.59 in 2010, when it stabilized for the next decade. The analysis will examine whether there is a causal connection between the increasing return to college and the increasing gap in marriage rates between college and non-college educated mothers.

To do this, the empirical strategy will leverage state-level variation in the returns to college, as well as the marital status of women with children by state and year. The main estimating equation is:

$$(1) \quad married_{ijt} = \beta_0 + \beta_1 COG_{ijt} + \beta_2 ROR_{jt} + \beta_3 COG_{ijt} * ROR_{jt} + \beta_4 X_{ijt} + u_j + \delta_t + \varepsilon_{ijt}$$

where $married_{it}$ is an indicator equal to one if woman i living in state j in year t is married; COG_{ijt} is an indicator equal to one if woman i living in state j in year t is a college graduate; ROR_{jt} represents the return to college in state j in year t for full-time white male workers; X_{ijt} is a vector of time-varying personal and state-level

[9] See Autor, Katz, and Kearney (2008).

characteristics (the woman's age, age of the youngest child in the household, number of children in the household, state median wage, state education composition); μ_j is a fixed-effect unique to state *j,* and δ_t is an aggregate fixed-effect for each year *t*. Unobserved components of a woman's marital outcome are captured by the error term, ε_{ijt}.

The main parameter of interest in equation (1) is β_3, the coefficient on the interaction between college graduate status and the state-level return to college in the same year. This parameter represents the differential effect of the return to college on the marital status of college-educated mothers relative to those with less education. If the return to schooling affects the marital status of mothers across all education groups equally, this parameter would be equal to zero.

III. The Return to College and the Marital Status of Mothers

Table 2 presents the main results for equation (1) with the sample of white, native women with children under 18 years old in the household. The results are presented for the whole sample period, 1970-2020, and for the last three decades, 1990-2020. The sensitivity of the results is examined in this manner because of the large increases during the 1970's and 1980's in female enrollment in college, labor force participation, and delays in marriage. In order to assess how these unique phenomena are affecting the results, the analysis is performed on the whole sample and the subsample of the last three decades when these dramatic societal changes were more limited. As it turns out, the results are virtually identical if 1970 and 1980 are included or excluded from the sample.

The first column of Table 2 shows that the main parameter of interest, on the interaction between college graduate status and the state-level return to college, is positive and statistically significant. This finding suggests that college graduate women with children in states with larger increases in the return to college are more likely to be married relative to less-educated women with children. In other words, the gap in the marriage rates of mothers with different levels of education increases in states with larger returns to education.

This result is consistent with the idea that educated mothers find it increasingly worthwhile to invest in marriage when the payoff to child human capital rises. However, this finding is also consistent with any other explanation for why the trends in marriage rates for mothers across education groups may be different over the last several decades. It is possible that cultural influences, or labor market incentives, may be differentially affecting the marital decisions of women according to their education level. A college education is typically associated with more independence and less traditional views, so it is not clear that cultural factors should be causing a slower decline in the marriage rate of educated mothers relative to those less-educated. But, empirically, the positive and significant coefficient on the interaction variable of interest in the first column in Table 2 is consistent with any explanation for why the declining trend in marriage is less pronounced for college educated mothers (see Figures 1 and 2). In other words, since the return to college is trending upward over time, the interaction coefficient of interest in the first column may simply be capturing different aggregate trends in marriage across education groups.

The second column of Table 2 controls for the possibility that the aggregate trend in marriage varies by education level, by including an interaction between college graduate status and a linear time trend. The coefficient on this variable is positive and significant, suggesting a differential trend in marriage for more educated mothers. The third column specifies a more flexible differential trend by including a full set of year-by-college status fixed-effects. In both specifications, the main coefficient of interest, on the interaction between college status and the state return to college, is much smaller in size relative to the first column. However, it is still positive and significant, suggesting that educated mothers are increasingly married relative to less-educated mothers in states with larger increases in the return to schooling. This is true even after controlling for the differential aggregate trends in marriage between education groups. In other words, while it is true that the marriage rates of less-educated mothers are falling faster than those for mothers with a college education, this gap is widening even more in states with larger increases in the college premium. (This specification is akin to a "triple-diff" identification strategy.)

The fourth and fifth columns of Table 2 control more flexibly for the age of the youngest child in the household (with dummy variables for each age rather than entering the variable with a linear specification) and add state-specific linear time trends. The coefficient of interest is largely unchanged in terms of magnitude and

statistical significance. As noted above, the analysis is repeated in the right panel after deleting census years 1970 and 1980 from the sample, and the coefficient estimates for each specification are almost identical.

Although the main coefficient of interest is considerably smaller after controlling for differential aggregate trends in marriage by college status, the size of the estimate is still quite meaningful. The state return to college for the average mother in the sample increased from 0.26 in 1980 to 0.59 in 2010. During this time, the relative marriage rates of college educated mothers increased by 11.7 percentage points, after controlling for the mother's age and the age of the youngest child in the household (Figure 2). According to the estimates in the fourth column of Table 2, an increase of 0.33 in the college premium leads to a predicted 2.6 percentage point increase in the marriage rate of college educated mothers relative to those with less education. This predicted increase is about 22 percent of the adjusted increase in the relative marriage rate of educated mothers. If we used the specification without differential aggregate trends in marriage rates to compute the effect size (column 1 of Table 2), the predicted effect would essentially explain the entire increase in the relative marriage rates of educated mothers. However, the analysis will focus on the more conservative estimates from specifications that include differential trends (i.e. the "triple-diff" specification).

The robustness of the findings in Table 2, and alternative forms of marital status, are examined in Table 3. In the first three columns, the results for being married are replicated, but with additional controls including fixed-effects for the number of children in the household. If the local return to education affects marital status, the number of children in the household is likely to be an endogenous outcome. However, as column three demonstrates, adding fixed-effects for the number of children does not affect the coefficient of interest. Table 3 also shows that the differential effect of the state college premium on marriage rates is operating through the effect on getting married in the first place, and also on the decision to divorce (conditional on ever being married). The last columns of Table 3 reveal similar results for an alternative definition of marriage which includes both parents living in the same household.[10]

Overall, Table 3 demonstrates that the main findings are robust to alternative definitions of marriage which consider the increasing prevalence of couples "living

[10] Kearney (2023) extensively discusses the issue of whether unmarried parents living together is the same as marriage, and argues that the evidence suggests significant differences.

together", in addition to using the more formal, and perhaps stronger at least in the legal sense, status. It is also notable that the results are coming from both the decision to get married and the decision to divorce. Both of these results strongly support the idea that an increasing return to education affects the incentives to invest in children differentially according to the education of the parent. When the return to college increases, educated mothers invest more in their children, relative to less-educated mothers, both in terms of committing themselves to enter marriage and their willingness to stay married during parenthood. When the return to education is higher, educated mothers are acting on stronger incentives to weather the storm of adverse marital shocks for the benefit of their child's human capital.

IV. Is the College Premium Causing Educated Women to be More Traditional?

The patterns in Tables 2 and 3 suggest that a larger college premium, generally speaking, is making educated mothers more "traditional" relative to less-educated mothers, despite the overall downward trend in marriage rates for all mothers. It could be the case that a higher return to education simply raises the returns to getting married more for educated women, and this in turn, causes college-educated women to lead a more traditional family life of getting married, staying married, etc. In other words, the patterns seen in the previous tables may not be due to differentially stronger incentives for educated women to invest in their children with higher marriage rates and lower divorce rates.

To shed light on the relevance of these two potential mechanisms behind the main results, this section examines whether educated women are generally acting in more traditional ways in the presence of a higher college premium, relative to less-educated women. However, it is important to note that either mechanism has the same impact on children: a higher return to schooling generates larger gaps in childhood conditions, and reduces intergenerational mobility.

Table 4 examines the marriage rates of all women (ages 25-45), not just women with children as done in previous tables. The results in column 1 indicate that educated women are in general less likely to be married, while the aggregate trend in marriage for all women slopes downward (which is mostly a delay in the age of marriage). An increase in the return to college causes delays in marriage (column 2) for all women,

by increasing the returns to searching longer for a suitable educated spouse (Gould and Paserman (2003)). However, specifications which include differential aggregate trends by college status indicate that college-educated women in states with larger increases in the college premium delay marriage even longer (the interaction coefficient of interest is positive and significant in columns 4 and 5 in Table 4). This result indicates that a higher return to college is making college-educated women relatively less traditional by lowering their marriage rates (delaying marriage to an older age) compared to less-educated women.

The right panel of Table 4 presents similar results for the analysis of entry into parenthood (rather than entry in marriage). In states with a larger increase in the college premium, college-educated women are less likely to be a parent, according to the specification with differential aggregate trends by education (column 10). In Appendix Table 1, these findings are very similar if the census years 1970 and 1980 are deleted from the sample. Overall, these results are not consistent with the idea that a larger college premium is causing educated women to be more traditional in general, relative to less-educated women.

Table 5 provides further support for this interpretation by examining the labor force participation of women with children. When differential trends by education group are included in the specification, the estimated effect of the college premium on the employment of educated mothers (relative to less-educated mothers) is not significant, but there is a positive and significant effect on work hours. Working longer hours is typically associated more independence, lower marriage rates, and higher divorce rates. However, the main results in the previous section point in the opposite direction – a higher college premium increases the marriage rate and lowers the divorce rate for college-educated mothers relative to those with less education.

Overall, a higher return to education is making educated women delay marriage, delay motherhood, and work longer hours. While it is true that their value in the marriage market increases with a higher college premium, it is also true that the bargaining power of educated men rises as well. In addition, the gender ratio within the college-educated segment of the marriage market is becoming less favorable to women over time (see the summary statistics in Table 1). As a result, educated women are relatively more independent in states with larger increases in the return to college, until there is a child in the household. Once there is a child present, college-educated women in states with larger increases in the college premium are relatively more

traditional in the sense of higher marriage rates and lower divorce rates. These findings are consistent with the idea that educated women have a comparative advantage in producing children with high human capital, and react accordingly to stronger incentives to invest in their children when the college premium rises.

V. The Decline in Marriageable Men and the Gender Wage Gap

The existing literature emphasizes two economic developments in recent decades contributing to the downward trend in marriage rates. Studies show that the decline in high-paying manufacturing jobs reduced marriage rates (Autor et. al. (2019) and Gould (2021)). Bertrand et. al. (2015) suggests that the trend towards gender wage parity in the labor market reduces marriage rates due to prevailing gender norms guarding against the formation of couples where the wife is the dominant wage earner.

Table 1 shows that marriage rates are indeed declining at the same time that the share of men in manufacturing jobs is shrinking, and both are accompanied by notable reductions in the gender wage gap. The purpose of this section is to examine whether the main results presented above, regarding the effect of the college premium on marriage rates, are influenced by these alternative developments in the labor market. However, it is worth noting that these alternative mechanisms (declining manufacturing jobs and lower gender wage gaps) have been proposed as explanations for the decline in marriage overall. In contrast, the focus of this paper is to explain why the gap in marriage between mothers with and without a college education is expanding.

Empirically, though, it could be the case that the identification strategy in previous tables yields biased results due to a correlation between the local college premium with either of the two omitted variables - the local employment share in manufacturing or the local gender gap. Gould (2019) presents evidence that the decline in manufacturing employment increased measures of inequality, including the return to education. In addition, it is possible that a higher return to college is correlated with the gender gap, since factors which increase the demand for education may increase the relative demand for female labor, given that women have a comparative advantage in jobs emphasizing cognitive skills relative to manual labor.

To examine whether abstracting from these economic developments biases our previous estimates, Table 6 presents results after adding controls for both of these

mechanisms to the specification. Adding the local manufacturing share of male employment (and its interaction with the college status of the person) does not affect the estimated coefficient of interest on the interaction between the college premium and college status. Adding an additional control for the gender pay gap by college graduate status also does not affect the size or statistical significance of the main coefficient of interest. These findings are found for the whole sample period (1970-2020) and for the sub-sample period (1990-2020) that occurred after the major upheaval in women's labor force participation in the 1970's and 1980's. Overall, Table 6 shows that the marriage rates of educated mothers are increasing relative to less-educated mothers when the college premium rises, and this is not related to the overall decline in manufacturing employment for men or greater gender parity in the labor market.

Interestingly, the estimated effects of the manufacturing share of employment and the gender pay gap support the findings in the existing literature. The decline in manufacturing is reducing the marriage rates of women with children, and a smaller gender wage gap over time appears to reduce marriage rates as well (although this finding is significant for the whole period but not the 1990-2020 sub-sample period). However, the estimated effect for the gender gap (and to some extent for manufacturing employment) is stronger when the sample is expanded to include all women, not just those with children. Table 7 demonstrates this with an analysis of all women.

Table 7 also shows that the estimated effect on the interaction between the college premium and college graduate status once again flips sign when the sample is expanded to include women without children, while the estimated effects for manufacturing employment and the gender wage gap remain with the same sign, and tend to get stronger. This is another piece of evidence that the impact of the return to schooling on marriage rates is quite distinct from the other two phenomena. The reduction in the gender wage gap and manufacturing jobs reduces marriage rates – for women with and without children. At the same time, the college premium reduces the relative marriage rates for college-educated women in general, but increases their relative marriage rates when they decide to have a child. This pattern illustrates how the college premium alters incentives to invest in marriage depending on whether a child is present, while the availability of high-paying manufacturing jobs and the gender wage premium are affecting the rate that single people find a suitable partner in general.

There is another notable difference in the results for the other two phenomena relative to the findings regarding the college premium. Tables 6 and 7 show that both

of these alternative mechanisms are related to the overall downward trend in marriage rates. However, they are not able to explain why marriage rates are falling faster for less-educated women. The estimates for the coefficient on the interaction between the manufacturing share and college graduate status are positive, which suggests that the decline in male manufacturing employment is lowering the marriage rates of college-educated women more than for less-educated women. This stands in contrast to the observed faster decline in marriage for less-educated women over time.

In addition, the estimate effect of the gender wage gap on marriage rates is negative – implying that a smaller gender gap reduces marriage rates. According to Table 1, the gender gap declined a bit more for less-educated women compared to college-educated women (8 percentage points versus 6 percentage points since 1990). This difference should lead to a faster decline in marriage for less-educated women, but the estimated magnitude is not large – the gap in marriage rates is predicted to increase by 0.25 percentage points (using the estimate of -0.123 in column 10 of Table 7). Compared to an increase in the marriage gap of 15 percentage points since 1990, the change in the gender wage gap over time plays little role in explaining why marriage is declining much faster for less-educated women.

To summarize this section, the main finding that the larger return to college is increasing the relative marriage rates of educated mothers is robust to including controls for the decline in marriageable men (i.e. manufacturing employment share) and for greater gender wage parity. These alternative explanations are found to be related to the decline in marriage, but not to the steeper decline in marriage for less-educated mothers.

VI. The College Premium and Other Parental Investments in Children

This section analyzes other parental investment decisions in children that may depend on the college premium. Table 8 examines home ownership and house values using a similar estimation strategy as previous tables. The first three specifications indicate that educated mothers are more likely to be home-owners, relative to less-educated mothers, when the college premium increases. This finding is robust to adding controls for the age of the youngest child, the number of children in the household, and differential aggregate trends in home-ownership by college degree status. But, the interaction coefficient of interest becomes insignificant in column 4 when total family

income is added as a control variable. Adding marital status as an additional control variable in column 5 leaves this result unchanged. These findings suggest that a higher return to education increases the likelihood of educated mothers to be homeowners due to the increase in their family income. The change in family income is most likely derived from two different sources when the college premium increases: higher relative labor income, and the higher likelihood of being married (which adds an additional wage earner to the family).

Table 8 also examines the house values of home owners. The estimates reveal a positive and significant coefficient on the interaction of interest, showing that the gap in house values between mothers of different education groups increases with the college premium. The estimate is not sensitive to including additional controls for the age of the youngest child, the number of children in the household (size of the house), and differential aggregate trends by parental education group. Notably, the last two specifications show that this finding is robust to controlling for total family income and marital status. This pattern contrasts with the results for home-owner status, which revealed that the increasing gap in home-owner status was explained by the larger gap in total family income when the return to education increases.

With house values as the dependent variable, the estimates are quite robust to including controls for family income and marital status, although the magnitude declines a bit. This finding is perhaps the most direct evidence for the "child investment" interpretation of the main findings. Even after controlling for the relatively higher family income of educated mothers when the college premium rises, educated mothers invest even more in the value of their house relative to less-educated mothers. This result implies that educated mothers are spending more, relative to their own family income, for a higher value home. Since house values are strongly linked to the quality of the local schools, neighbors, and neighborhood, a more valuable home is indicative of a larger investment in their child's human capital. Again, this finding holds even after controlling for the direct effect of a higher college premium on family formation and total family income. As such, this result is perhaps the strongest direct evidence that educated mothers are responding to the stronger incentives to invest in their children's human capital when the return to education increases.

Previous tables showed that educated women are relatively more likely to be married (and less likely to be divorced) in the presence of a higher college premium. Table 9 examines the education level of the spouse. Marrying a spouse with a higher

level of education can be considered an investment in children, if a higher human capital spouse aids in the production of higher quality children (see Gould et. al. (2020)).

The dependent variable in Table 9 is an indicator for being married to a college-educated spouse. This variable is defined for the whole sample of mothers in the left panel, and for the sample restricted to married mothers in the right panel. (The left panel treats being married to a non-college educated spouse as equivalent to being unmarried.)

The first column in each panel of Table 9 displays a negative estimate on the interaction variable of interest, which flips sign to become positive and significant when differential aggregate trends by education group are added to the next specification. This pattern is consistent with the idea that the first column is picking up the national trend for college educated women to increasingly marry non-college educated men. This aggregate trend is likely due to the increasingly imbalanced gender ratio within college educated people that disfavors women. The summary statistics in Table 1 display much higher proportions of men with a college degree than women in 1970, but this pattern reverses itself by 2020.

Once the differential aggregate trends by education group are accounted for in the second specification, Table 9 reveals a very robust coefficient of interest on the interaction variable that is positive and significant. The coefficient is insensitive to adding controls for the age of the youngest child, the total number of children in the household, and state-levels controls for the median wage and gender-specific proportions of individuals with college degrees (i.e. the gender ratio by education group). The gender proportions are very significant determinants of spousal education, but adding these variables to the specification does not affect the main parameter of interest. Estimates for this parameter indicate that educated women are more likely to marry an educated spouse when the return to college increases. This pattern of stronger assortative mating is consistent with the idea that a higher return to college increases the relative incentives for college-educated women to invest in child human capital by marrying a better educated spouse -- who can help raise high human capital children.

VII. The College Premium and the Education of the Next Generation

The previous analysis shows that an increasing return to college is differentially affecting the marital status, spousal characteristics, and housing values of educated mothers relative to less-educated mothers. These findings point to a better home environment for children with educated parents, relative to other children, when the return to college increases. This, in turn, should produce a positive effect of the college premium on the relative achievements of children with educated parents. This section tests this hypothesis.

The data for this analysis is taken from the PSID (Panel Study of Income Dynamics). The sample is restricted to white respondents born between 1960 and 1992. The data includes information on each respondent's completed years of schooling and state where they grew up, which was matched to the state-level return to college when the respondent was seven years old. The college premium is the same variable used in previous sections that was estimated for each census year, with a linear interpolation between census years in order to match to the respondent's state-year combination at age seven.

Appendix Table 2 presents the sample means by decade of birth for the PSID sample. The data reveal the familiar increase in completed schooling over time, as well as the increase in parental education levels. In addition, the table shows that children grew up in the 1960's and 1970's with a much lower college premium than children growing up in the 1980's and 1990's. The analysis will control for these aggregate trends, so that the empirical strategy is again to exploit variation in the return to college across states and over time with the following model:

$$(2) \qquad educ_{ijt} = \beta_0 + \beta_1 momeduc_i + \beta_2 ROR_{jt} + \beta_3 momeduc_i * ROR_{jt} + u_j + \delta_t + \varepsilon_{ijt}$$

where $educ_{ijt}$ is an education outcome for respondent i, who grew up in state j and was age seven in year t; $momeduc_i$ measures the education of the mother of respondent i; ROR_{jt} represents the return to college in state j in year t for full-time white male workers; μ_j is a fixed-effect unique to state j, and δ_t is an aggregate fixed-effect for each year t (i.e. a cohort fixed-effect for all seven year olds in year t). Unobserved components of the respondent's education outcome are captured by the error term, ε_{ijt}.

The analysis also controls for the gender of the respondent, and the sensitivity of the results is tested by adding additional controls to the specification including fixed effects by state and parental education group, as well as state-specific time trends. The analysis is also performed using the education of the respondent's father instead of the mother as a treatment variable, as well as using a composite measure of the education levels of both parents – the maximum years of schooling of both parents.

The main parameter of interest in equation (2) is β_3, the coefficient on the interaction between the education of the respondent's parent and the state-level return to college in the year that the respondent was seven years old. The age of seven represents the formative years of the respondent's life when parental investment decisions are critical, and likely to have long-term consequences on the child's future development. If the local college premium affects parental investments, and subsequent child achievements, in ways that vary by the parental education levels, β_3 will be non-zero.

Table 10 presents the estimates for equation (2) with the PSID data using college graduate status as the education outcome for each child respondent. The first specification shows that educated mothers have better educated children, and that females are more likely to graduate from college. The main parameter of interest, on the interaction between maternal education and the local college premium, is positive and significant at the five percent level. This result is consistent with a differential effect of the local return to schooling on parental investments in children, resulting in differential educational outcomes as well. In other words, a larger college premium increases the persistence of education levels across generations, thus reducing educational mobility.

The robustness of this result is examined in the remainder of Table 10. In the left panel, the main coefficient of interest is not sensitive to including state-specific time trends. Adding fixed-effects by state and maternal college graduate status reduces the size and significance of the estimate, but it is still positive and significant at the ten percent level.

The middle panel of Table 10 uses the education of the father instead of the mother as a "treatment" variable. The point estimates for the main parameter of interest are almost identical to those using the education of the mother. However, across each specification, the statistical significance is stronger. This may be due to the low education levels of mothers, compared to fathers, in the early part of the sample period

(during the 1960's) which did not represent the human capital level of the parents very well. Table 10 also presents each specification mentioned above using the maximum education level of both parents as the measure of parental education. Again, the results for the main interaction parameter of interest are virtually identical to the estimates using the education level of each parent separately, but each coefficient is now significant at the one percent level. The more precise estimates may be due to using a more accurate measure of parental human capital in the respondent's household during childhood.

Table 11 repeats the analysis in Table 10 but uses the completed years of schooling as the outcome of interest, instead of college graduate status. Overall, the results are very similar. The estimates are very robust to using the education of either parent or the maximum education of both parents as part of the "treatment" interaction variable, and to the inclusion of additional control variables such as fixed-effects by parental education and year, and state-specific time trends. The results are again a bit more precise using father's education instead of the mother's as the treatment variable, and are the most significant using the maximum education level of both parents. Overall, Table 11 shows that an increase in the local college premium reduces educational mobility across generations.

However, Table 12 sheds a bit of nuance on this interpretation by repeating the analysis using high school graduation status as the outcome measure of the respondent's education level, instead of college graduation status (Table 10) or completed years of schooling (Table 11). The coefficient estimates for the main interaction parameter of interest are insignificant across all specifications. This pattern suggests that the local college premium is differentially affecting parental investments in children, according to parental education levels, but only in ways that are important for the child's attainment of advanced levels of education like college completion. Differences in parental investments do not seem to be showing up for a less important, and perhaps lower stakes, outcome like high school graduation. An alternative interpretation could be that a higher return to college makes credit constraints increasingly binding on less-educated parents, resulting in lower college enrollment for their children.

In order to probe these two interpretations, we examine child outcomes before the completion of high school. If the previous results are due entirely to the mechanism related to credit constraints, we should see no differential effect of the local college premium on child outcomes before high school. If the return to education is affecting

the childhood environment in a meaningful way, depending on parental education levels, we should see an effect on child outcomes before the child enters high school.

To do this, we examine 8th grade test scores using data from the National Center for Education Statistics (NCES). For selected years since 1990, the NCES publishes the National Assessment for Educational Progress (NAEP) which includes the mean scores on 8th grade reading and math tests by state, race, and parental education group.[11] Appendix Table 3 presents the summary means by parental education group for the state-level data on white students for each year the data is published. The table shows that the gap in test scores between children of different parental education groups is widening over time, and this is true for both reading and math scores.

Table 13 examines whether the state return to college can explain the state-level gap in test scores. The dependent variable is the state-level gap in each year between children with a college-educated parent relative to children without a college-educated parent. The return to college (for white men with a strong attachment to the labor force) by state and year is estimated from the Census data extracted from IPUMS and is matched to the year when the birth cohort was seven years old. The state-level returns to college for years in between the Census years were linearly interpolated using the Census years.

The first column of Table 13 demonstrates that there is a significant upward trend in the gap in reading scores, controlling for state fixed-effects. Since the dependent variable is expressed as the difference between the two groups, this result implies that the aggregate trends in test scores for students with college-educated parents are clearly different than the trends for children with less-educated parents. The second specification controls flexibly for differences in the trends between these two groups by including fixed-effects for each year (similar to previous tables which did not use a difference specification as the dependent variable but included fixed-effects by year and parental college graduate status), and shows that the gap in reading is increasing more in states with a larger increase in the return to college. Similar results are obtained by using the log difference in test scores as the dependent variable rather than the difference in levels.

Table 13 also presents an analysis of the state-level gap in math scores, and the results are very similar to the findings with reading scores. There is an upward trend in

[11] Available from: https://www.nationsreportcard.gov/ndecore/xplore/NDE

the gap, and the main parameter of interest on the state-level college premium is positive and significant – the gap in math scores is increasing faster in states with a larger increase in the college premium. This finding is not sensitive to using the log difference in math scores rather than the difference in levels. The bottom panel of Table 13 repeats the analysis using the test scores of all students, rather than concentrating on white students. The results are similar.

The magnitudes of the estimated effects in this analysis are quite large. For the sample used in the analysis of reading scores, the college premium increased on average by 0.15 from 1998 to 2022 (see Appendix Table 3). Using the estimated coefficient in Table 13 for reading scores (17.56), the predicted effect on the gap in test scores between parents with and without a college degree is 2.63. This predicted effect is 78 percent of the actual 3.36 point increase in the gap (Appendix Table 3). For the sample used to examine math scores, the college premium increased on average by 0.28 from 1990 to 2022, which leads to a predicted increase in the math score gap of 6.24 using the coefficient in Table 13 (22.28). This predicted increase is a bit larger than the average increase in the gap of 5.7 over this period. Therefore, the estimated effect of the college premium on the gap in test scores is not only statistically significant, but quite large in magnitude.

Overall, this section shows that the gap in education outcomes between children with college-educated parents and children with less educated parents is increasing more in states with larger increases in the college premium. This pattern is found for long-term outcomes like the child's completed years of schooling and college degree attainment, as well as earlier childhood outcomes like reading and math scores in 8th grade. An increasing return to college is generating stronger persistence of educational outcomes from parents to children over time, thus reducing educational mobility across generations.

VIII. Conclusion

The analysis shows that an increasing return to college is differentially affecting the marital status, spousal characteristics, and housing values of educated mothers relative to less-educated mothers. In this manner, the familiar upward trend in the

college premium is creating a divergence in the family structure and childhood environment between children with different parental education levels.

Moreover, the divergence in childhood conditions is generating disparities in academic achievements. The gap in the educational outcomes of children with college educated parents versus other children is increasing faster in states with larger increases in the college premium. This result is found for longer term academic outcomes like college-degree attainment and completed years of schooling, and also for earlier childhood outcomes like 8th grade test scores in math and reading. The divergence in outcomes is consistent with what is happening in the childhood home (parental marital status, home values, etc.). Children from stronger parental backgrounds are benefiting from growing up in relatively stronger conditions, with higher long term achievements to show for it.

These results are consistent with the idea that the increasing return to college is differentially affecting the incentives for parental investments in children, which in turn, reduces intergenerational mobility in education. The evidence suggests that the results are not driven by a higher college premium making educated women relatively more "traditional" in general. In states with larger increases in the return to college, educated women (including those without children) appear to be more "independent" in the sense of working more hours, delaying marriage, and postponing parenthood. Educated women appear to adopt more "traditional" behaviors only when they become parents, which supports the interpretation that the relatively stronger investment in marriage for educated mothers is influenced by concerns for their children's future. However, even if the main results are influenced by educated women becoming relatively more traditional in general when the return to college increases, the implications for children are the same: a higher college premium creates larger disparities in the quality of the childhood environment, which in turn, reduces intergenerational mobility.

When the return to education increases, children of educated parents already benefit from the higher relative income their parents earn in the labor market. This is an issue that is rather straightforward to address in terms of public policies regarding taxes and transfers. However, the results in this paper show that these financial advantages are amplified by the impact of the college premium on family formation and other parental investments in children. Mitigating the impact of these effects would require more complex policies targeting incentives for family formation and other

investments in children, particularly for the lower end of the parental education distribution.

While it is true that a larger return to education increases the incentives for all parents to invest in the human capital development of their children, the impact on society may play out in unexpected ways if educated parents have a comparative advantage in producing high human capital children. This key assumption is supported by extensive empirical evidence that parental education has a causal impact on the academic and behavioral outcomes of children. Under this assumption, a higher return to schooling generates stronger incentives for educated parents to invest in the human capital of their children, relative to less-educated parents. Consistent with the findings in this paper, this phenomenon creates even larger divergence in household environments for children, more inequality in educational achievements in the next generation, and lower intergenerational mobility. This chain of events may help to understand why intergenerational mobility declined in recent decades as the return to college trended in the opposite direction.

References

Autor, David, David Dorn, and Gordon Hanson. 2019. "When Work Disappears: Manufacturing Decline and the Falling Marriage Market Value of Young Men." *American Economic Review: Insights*, 1 (2): 161-78.

Autor, David H., Lawrence F. Katz, and Melissa S. Kearney. 2008. "Trends in U.S. Wage Inequality: Revising the Revisionists," *Review of Economics and Statistics*, 90(2): 300-323.

Bertrand, Marianne, Emir Kamenica, Jessica Pan. 2015. "Gender Identity and Relative Income within Households." *Quarterly Journal of Economics*, 130 (2): 571–614.

Black, Sandra E. 1999. "Do Better Schools Matter? Parental Valuation of Elementary Education", *Quarterly Journal of Economics*, 114(2), 577–599.

Black, Sandra, Paul J. Devereux, and Kjell G. Salvanes, "Why the Apple Doesn't Fall Far: Understanding Intergenerational Transmission of Human Capital," *American Economic Review*, XCV (2005), 437–449.

Björklund, Anders, Mikael Lindahl and Erik Plug. "The Origins of Intergenerational Associations: Lessons from Swedish Adoption Data" *Quarterly Journal of Economics*, 2006, 121 (3), 999 – 1028.

Carlson, Marcia J. 2006. "Family structure, father involvement, and adolescent behavioral outcomes". *Journal of Marriage and Family*, 68, no. 1 (2006): 137-154.

Chetty, Raj, David Grusky, Maximilian Hell, Nathaniel Hendren, Robert Manduca and Jimmy Narang. 2017. "The fading American dream: Trends in absolute income mobility since 1940", *Science*, 356 (6336), 398 – 406.

Chetty, Raj, and Nathaniel Hendren. 2018. "The Impacts of Neighborhoods on Intergenerational Mobility II: County-Level Estimates" *Quarterly Journal of Economics*, 133(3), 1163–1228.

Chetty, Raj; Hendren, Nathaniel; Kline, Patrick; and Emmanuel Saez. 2014. "Where is the land of Opportunity? The Geography of Intergenerational Mobility in the United States", *Quarterly Journal of Economics*, 129(4), 1553–1623.

Corak, Miles. 2013. "Income Inequality, Equality of Opportunity, and Intergenerational Mobility", *Journal of Economic Perspectives*, 27 (3): 79–102

Currie, Janet, and Enrico Moretti, "Mother's Education and the Intergenerational Transmission of Human Capital: Evidence from College Openings," *Quarterly Journal of Economics*, CXVIII (2003), 1495–1532.

Gibbons, Stephen, Stephen Machin, and Olmo Silva. 2013. "Valuing school quality using boundary discontinuities", *Journal of Urban Economics*, 75, 15-28.

Gould, Eric D. 2019. "Explaining the Unexplained: Residual Wage Inequality, Manufacturing Decline, and Low-Skilled Immigration", *Economic Journal*, 129 (619), 1281–1326.

Gould, Eric D. 2021. "Torn apart? The impact of manufacturing employment decline on black and white Americans," *Review of Economics and Statistics*, 103 (4), 770–785.

Gould, Eric D., Omer Moav, and Avi Simhon. 2008. "The mystery of monogamy," *American Economic Review* 98 (1), 333–357.

Gould, Eric D. and M. Daniele Paserman. 2003. "Waiting for Mr. Right: rising inequality and declining marriage rates," *Journal of Urban Economics* 53 (2), 257-281.

Gould, Eric D., Avi Simhon, and Bruce A. Weinberg. 2020. "Does parental quality matter? Evidence on the transmission of human capital using variation in parental influence from death, divorce, and family size", *Journal of Labor Economics* 38 (2), 569-610.

Guryan, Jonathan; Hurst, Erik; and Melissa Kearney. 2008. "Parental Education and Parental Time with Children," *Journal of Economic Perspectives,* 22 (3), 23–46.

Haegeland, Torbjorn; Kirkeboen, Lars Johannessen; Raaum, Oddbjorn; and Kjell G. Salvanes. "Why Children of College Graduates Outperform their Schoolmates: A Study of Cousins and Adoptees," IZA DP No. 5369, December 2010.

Hastings, Orestes P., and Daniel Schneider. 2021. "Family Structure and Inequalities in Parents' Financial Investments in Children," *Journal of Marriage and Family*, 83, 717-736.

Holmlund, Helena, Mikael Lindahl, and Erik Plug, 2011. "The Causal Effect of Parents' Schooling on Children's Schooling: A Comparison of Estimation Methods," *Journal of Economic Literature*, 49 (3), 615-651.

Heckman, James J. 2000. "Policies to Foster Human Capital", *Research in Economics*, 54, 3–56.

Kalil, Ariel, Magne Mogstad, Mari Rege and Mark E. Votruba (2016). "Father Presence and the Intergenerational Transmission of Educational Attainment," *Journal of Human Resources*, 51 (4), 869-899.

Kearney, Melissa S. 2022. "The "college gap" in marriage and children's family structure," NBER Working Paper 30078. May 2022.

Kearney, Melissa S. 2023. "The Two-Parent Privilege," University of Chicago Press Economics Books, University of Chicago Press, edition 1, number 9780226817781, December.

Kearney, Melissa S. and Philip Levine. 2017. "The Economics of Non-Marital Childbearing and the Marriage Premium for Children," *Annual Review of Economics* (9), 327–352.

Kornrich, Sabino, and Frank Furstenberg. 2013. "Investing in Children: Changes in Parental Spending on Children, 1972–2007." *Demography* 50(1):1–23.

Lerman, Robert I., Joseph Price, and W. Bradford Wilcox. 2017. "Family Structure and Economic Success Across the Life Course", *Marriage & Family Review*, 53:8, 744-758.

Lopoo, Leonard M. and Thomas DeLeire. 2014. "Family structure and the economic wellbeing of children in youth and adulthood", *Social Science Research*, 43, 30-44.

Lundberg, Shelly, and Robert A. Pollak. 2007. "The American Family and Family Economics." *Journal of Economic Perspectives*, 21 (2): 3-26.

Machin, Stephen. 2011. "Houses and schools – valuation of school quality through the housing market", *Labour Economics*, 18, 723–729.

Mansour, Hani, and Terra McKinnish. 2023. "Male wage inequality and characteristics of "early mover" marriages", *Journal of Population Economics*, 36, 115–138.

McLanahan, Sara, Laura Tach, and Daniel Schneider. 2013. "The Causal Effects of Father Absence." *Annual Review of Sociology* 39: 399-427.

Murray, Charles. 2012. "Coming Apart: The State of White America, 1960-2010," New York: Crown Forum.

Oreopoulos, Philip, Marianne Page and Anne Huff Stevens. 2006. "The Intergenerational Effects of Compulsory Schooling." *Journal of Labor Economics,* 24(4): 729-760.

Ruggles, Steven, Sarah Flood, Ronald Goeken, Josiah Grover, Erin Meyer, Jose Pacas and Matthew Sobek. IPUMS USA: Version 12.0 [dataset]. Minneapolis, MN: IPUMS, 2022. https://doi.org/10.18128/D010.V12.0

Ramey, Garey, and Valerie A. Ramey. 2010. "The Rug Rat Race," *Brookings Papers on Economic Activity,* Spring, 129-199.

Schneider, Daniel, Orestes P. Hastings, and Joe LaBriola. (2018). Income Inequality and Class Divides in Parental Investments. *American Sociological Review*, *83*(3), 475-507.

Shenhav, Na'ama. 2021. "Lowering Standards to Wed? Spouse Quality, Marriage, and Labor Market Responses to the Gender Wage Gap," *Review of Economics and Statistics*, 103 (2), 265–279.

Solon, Gary. 2004. "A Model of Intergenerational Mobility Variation over Time and Place." In Generational Income Mobility in North America and Europe, edited by M. Corak, 38–47. Cambridge: Cambridge Univ. Press.

Figure 1: Marriage Rates of College and Non-College Educated Mothers

White, Native Mothers between 25 and 45 Years Old

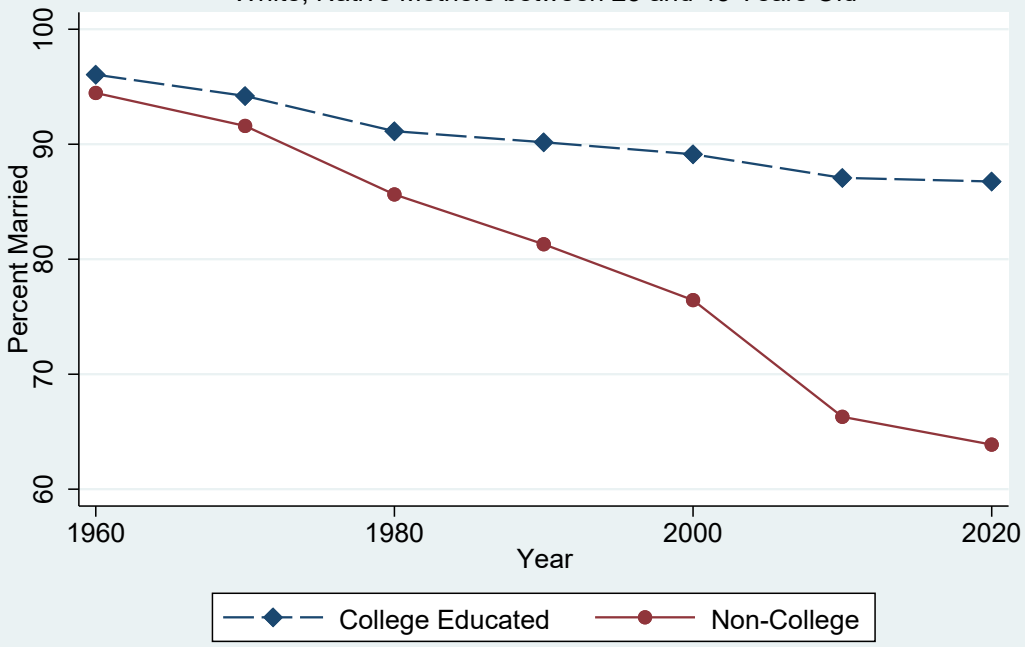
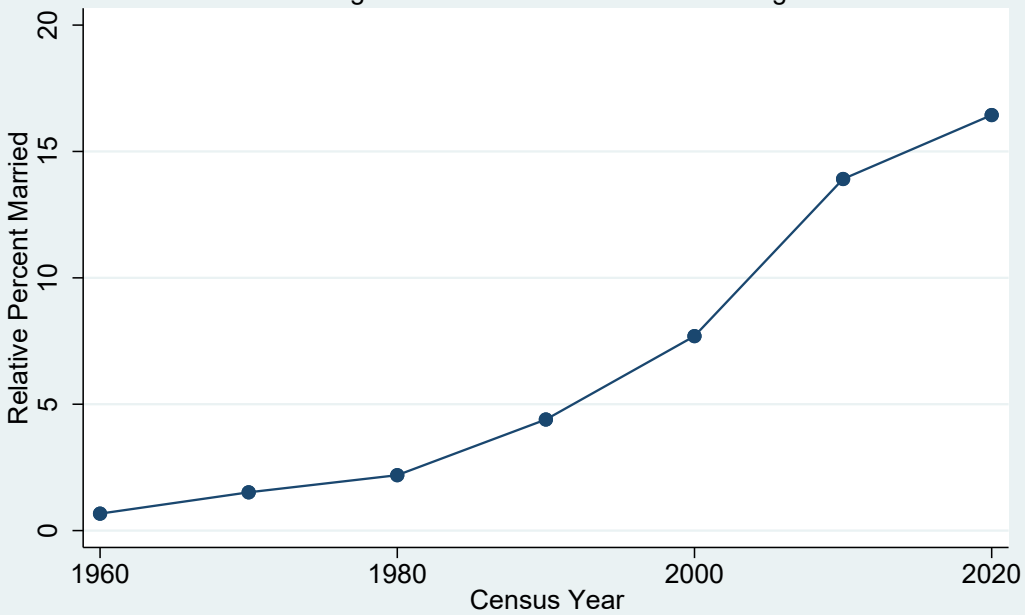


Figure 2: Adjusted Relative Marriage Rates of Mothers

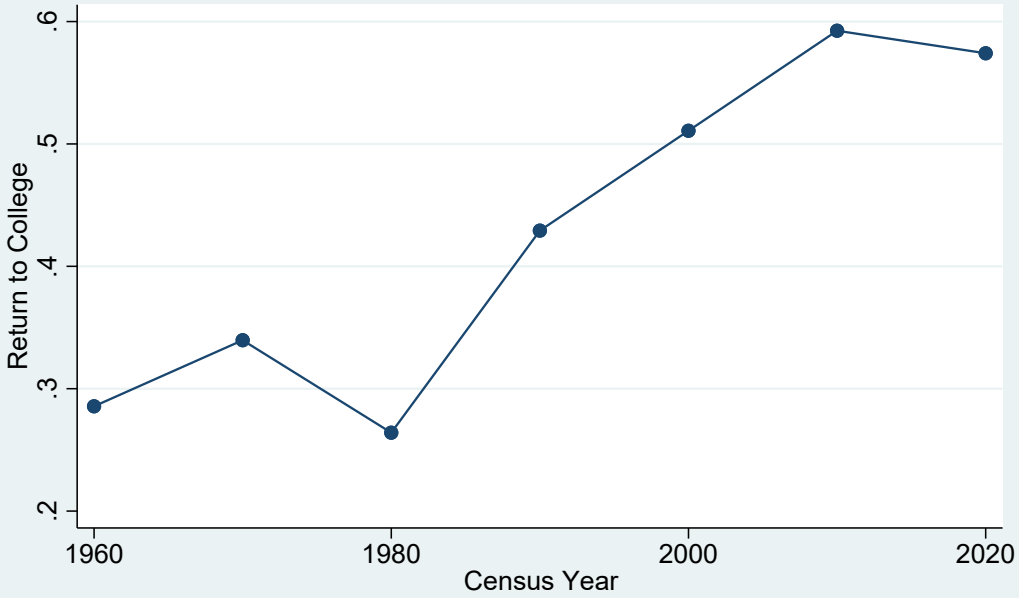
College Graduates Relative to Non-College



Sample: White, native women with children in the household. Controlling for age, age squared, and age of the youngest child.

Figure 3: The Log Wage Return to a College Degree

White, Native Men who work Full Time



The graph plots the mean state-level return to college for white, native mothers. The return to college (relative to high school graduates) controls for age and uses a sample of white, native men between ages 25-49 who work full-time.

Table 1: Sample Means of Women with Children under 18 by Decade (US Census Data)

	1970	1980	1990	2000	2010	2020
	(1)	(2)	(3)	(4)	(5)	(6)
Married (dummy)	0.92	0.86	0.83	0.80	0.74	0.74
Married (dummy) - College Graduates	0.94	0.91	0.90	0.89	0.87	0.87
Married (dummy) - Non-College Graduates	0.92	0.86	0.81	0.76	0.66	0.64
Never Married (dummy)	0.00	0.01	0.03	0.05	0.11	0.14
Divorced (dummy)	0.06	0.12	0.14	0.15	0.17	0.13
Both Parents in Household (dummy)	0.91	0.86	0.86	0.84	0.80	0.82
Spouse is a College Graduate (dummy)	0.18	0.23	0.25	0.26	0.28	0.33
Employed >30 hours (dummy)	0.28	0.48	0.61	0.64	0.64	0.67
Hours per Week	12.09	21.23	26.50	28.13	27.36	29.16
Home Owner (dummy)	0.74	0.78	0.74	0.78	0.72	0.74
Log House Value	11.37	11.72	11.58	11.70	11.80	11.96
College Graduate (dummy)	0.10	0.15	0.22	0.27	0.35	0.45
State Return to College	0.34	0.26	0.43	0.51	0.59	0.57
Age	34.16	33.60	34.40	35.75	35.59	35.77
Age of Youngest Child	6.21	6.71	6.55	6.67	6.24	5.88
Log Total Family Income	10.63	10.62	10.68	10.76	10.60	10.75
State Median Log Wage Income (White Men)	10.62	10.65	10.59	10.59	10.55	10.56
State Female Percent College Graduates	0.10	0.17	0.23	0.28	0.33	0.43
State Male Percent College Graduates	0.18	0.25	0.27	0.27	0.29	0.35
State Male Manufacturing Employment Share	0.27	0.26	0.22	0.19	0.14	0.13
State Gender Log Wage Gap for College Graduates	-0.46	-0.40	-0.32	-0.30	-0.28	-0.26
State Gender Log Wage Gap for Non-College Graduates	-0.55	-0.52	-0.40	-0.34	-0.32	-0.32
Number of Observations	305987	842754	970970	920354	464524	247757

The sample includes white, native women between the ages of 25 and 45 with children under 18 in the household. Observations are weighted by person weights. Census data is extracted from IPUMS (Ruggles et. al., 2022). The American Community Surveys (ACS) for 2019-2020 are used for 2020, while the ACS 3-year 2011 file is used for 2010. The samples were extracted from the ACS 2019 and 2020 files, ACS three-year 2011 file, the 5 percent sample for 2000, the 5 percent state files for 1990 and 1980, the 1 percent fm1 and fm2 files for 1970, and the 5 percent file for 1960.

Table 2: Probability of being Married (Women with Children)

	1970-2020					1990-2020				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
College Graduate	-0.0974***	-7.247***				-0.112***	-8.867***			
	(0.00727)	(0.350)				(0.0155)	(0.372)			
State Return to College	-0.125***	-0.0231	-0.0283	-0.0265	-0.0459*	-0.122***	-0.0116	-0.00216	0.00207	-0.0419
	(0.0273)	(0.0296)	(0.0305)	(0.0304)	(0.0234)	(0.0446)	(0.0484)	(0.0480)	(0.0481)	(0.0407)
College Graduate X State Return to College	0.405***	0.0684***	0.0798***	0.0802***	0.0962***	0.420***	0.105***	0.0814***	0.0809***	0.0943***
	(0.0160)	(0.0175)	(0.0239)	(0.0240)	(0.0274)	(0.0306)	(0.0228)	(0.0266)	(0.0268)	(0.0291)
Age of Youngest Child	-0.0160***	-0.0160***	-0.0160***			-0.0181***	-0.0181***	-0.0181***		
	(0.000454)	(0.000449)	(0.000450)			(0.000493)	(0.000489)	(0.000489)		
College Graduate X Year		0.00366***					0.00445***			
		(0.000179)					(0.000190)			
Observations			3,752,346					2,603,605		
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes				Yes	Yes			
Year by College Graduate Status FE			Yes	Yes	Yes			Yes	Yes	Yes
Age of Youngest Child FE				Yes	Yes				Yes	Yes
State-Specific Trends					Yes					Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression weighted by person weights. Robust standard errors adjusted for clustering by state in parentheses. All specifications control for age and age squared. The sample was extracted from Census data (described in Table 1) and is restricted to white, native women between the ages of 25 and 45 with children under 18 in the household.

Table 3: Other Marital Outcomes (Women with Children from 1970-2020)

	Married			Never Married			Divorced (conditional on being married)			Both Parents in Household		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
College Graduate	-0.102***			0.0968***			0.0341***			-0.0597***		
	(0.00734)			(0.00695)			(0.00588)			(0.00633)		
State Return to College	-0.125***	-0.0265	-0.0240	0.175***	0.107**	0.106**	-0.00570	-0.0558	-0.0563	-0.0496*	0.000488	0.00241
	(0.0272)	(0.0304)	(0.0317)	(0.0478)	(0.0489)	(0.0484)	(0.0497)	(0.0515)	(0.0520)	(0.0285)	(0.0298)	(0.0313)
College Graduate X State Return to College	0.411***	0.0802***	0.0816***	-0.292***	-0.0608**	-0.0615**	-0.193***	-0.0331*	-0.0340*	0.259***	0.0851***	0.0868***
	(0.0164)	(0.0240)	(0.0252)	(0.0159)	(0.0258)	(0.0267)	(0.0148)	(0.0192)	(0.0194)	(0.0145)	(0.0235)	(0.0253)
Observations	3,752,346			3,752,346			3,567,346			3,746,964		
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Age of Youngest Child FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes			Yes			Yes			Yes		
Year by College Graduate Status FE		Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes
Number of Children FE			Yes			Yes			Yes			Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression weighted by person weights. Robust standard errors adjusted for clustering by state in parentheses. All specifications control for age and age squared. The sample was extracted from Census data (described in Table 1) and is restricted to white, native women between the ages of 25 and 45 with children under 18 in the household.

Table 4: Marriage and Parenthood for the Sample of All Women (1970-2020)

	Never Married					Being a Parent (Child in household)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
College Graduate	0.0542***	0.0539***	0.172***	7.486***		-0.143***	-0.143***	-0.227***	-4.830***	
	(0.00422)	(0.00423)	(0.00795)	(0.412)		(0.00573)	(0.00568)	(0.00941)	(0.539)	
State Return to College		0.153*	0.250***	0.131	0.130*		-0.0492	-0.119***	-0.0440	0.00823
		(0.0818)	(0.0847)	(0.0803)	(0.0774)		(0.0393)	(0.0381)	(0.0366)	(0.0358)
College Graduate X State Return to College			-0.242***	0.100***	0.108**			0.174***	-0.0418	-0.181***
			(0.0212)	(0.0273)	(0.0476)			(0.0272)	(0.0435)	(0.0618)
College Graduate X Year				-0.00374***					0.00235***	
				(0.000212)					(0.000278)	
Year	0.00495***					-0.00320***				
	(0.000180)					(8.47e-05)				
Observations			6,041,954					6,041,954		
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	Yes	Yes			Yes	Yes	Yes	
Year by College Graduate Status FE					Yes					Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression weighted by person weights. Robust standard errors adjusted for clustering by state in parentheses. All specifications control for age and age squared. The sample was extracted from Census data (described in Table 1) and is restricted to white, native women between the ages of 25 and 45.

Table 5: Employment Outcomes (Women with Children from 1970-2020)

	Employed				Hours of Work (conditional on working)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
College Graduate	0.0219				-2.614***			
	(0.0156)				(0.206)			
State Return to College	-0.00625	0.0435	0.0454	0.0419	0.0800	2.238**	2.270**	2.273**
	(0.0816)	(0.0758)	(0.0745)	(0.0728)	(1.026)	(1.088)	(1.079)	(1.080)
College Graduate X State Return to College	0.134***	-0.0280	-0.0366	-0.0239	8.566***	2.360***	2.271***	2.316***
	(0.0314)	(0.110)	(0.107)	(0.108)	(0.373)	(0.538)	(0.520)	(0.526)
Married				-0.156***				-0.458***
				(0.00411)				(0.0482)
Observations	3,750,605				2,133,222			
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes				Yes			
Year by College Graduate Status FE		Yes	Yes	Yes		Yes	Yes	Yes
Age of Youngest Child FE								
Number of Children FE			Yes	Yes			Yes	Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression weighted by person weights. Robust standard errors adjusted for clustering by state in parentheses. All specifications control for age and age squared. The sample was extracted from Census data (described in Table 1) and is restricted to white, native women between the ages of 25 and 45 with children under 18 in the household. The sample in columns (5) to (10) is restricted to currently employed observations.

Table 6: The Return to College Versus the Decline in Manufacturing (Women with Children)

	Dependent Variable: Married									
	1970-2020					1990-2020				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
State Return to College	-0.026	-0.019	-0.023	-0.015	-0.010	0.002	0.041	0.036	0.005	0.038
	(0.030)	(0.029)	(0.029)	(0.034)	(0.033)	(0.048)	(0.046)	(0.047)	(0.050)	(0.048)
College Graduate X State Return to College	0.080***	0.085***	0.102***	0.059**	0.079***	0.081***	0.082***	0.097***	0.076**	0.092***
	(0.024)	(0.025)	(0.023)	(0.027)	(0.027)	(0.027)	(0.027)	(0.026)	(0.029)	(0.029)
State Employment Share in MFG		0.086*	0.081*		0.080*		0.238**	0.230**		0.225**
		(0.048)	(0.048)		(0.047)		(0.098)	(0.097)		(0.097)
College Graduate X State Employment Share in MFG			0.072***		0.084***			0.059**		0.063**
			(0.020)		(0.024)			(0.028)		(0.030)
State Gender Gap (within College Grad Status)				-0.056*	-0.068**				-0.017	-0.018
				(0.031)	(0.032)				(0.033)	(0.036)
Observations	3,752,346					2,603,605				
Age of Youngest Child FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year by College Graduate Status FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression weighted by person weights. Robust standard errors adjusted for clustering by state in parentheses. All specifications control for age and age squared. The sample was extracted from Census data (described in Table 1) and is restricted to white, native women between the ages of 25 and 45 with children under 18 in the household. The state employment share in manufacturing is for all men between the ages of 25 to 49.

Table 7: The Return to College Versus the Decline in Manufacturing (All Women)

	Dependent Variable: Married									
	1970-2020					1990-2020				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
State Return to College	-0.014	-0.011	-0.021	0.018	0.015	0.050	0.081**	0.064	0.063	0.075**
	(0.029)	(0.029)	(0.026)	(0.030)	(0.027)	(0.044)	(0.040)	(0.039)	(0.043)	(0.037)
College Graduate X State Return to College	-0.094	-0.093	-0.058	-0.151**	-0.117**	-0.111*	-0.111*	-0.065	-0.137**	-0.096*
	(0.059)	(0.059)	(0.047)	(0.060)	(0.045)	(0.063)	(0.063)	(0.050)	(0.066)	(0.050)
State Employment Share in MFG		0.037	0.024		0.018		0.198***	0.168**		0.133*
		(0.047)	(0.043)		(0.045)		(0.074)	(0.071)		(0.078)
College Graduate X State Employment Share in MFG			0.139***		0.172***			0.179***		0.206***
			(0.037)		(0.033)			(0.049)		(0.045)
State Gender Gap (within College Grad Status)				-0.158***	-0.187***				-0.085*	-0.123***
				(0.036)	(0.034)				(0.047)	(0.041)
Observations	6,041,954					4,324,985				
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year by College Graduate Status FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression weighted by person weights. Robust standard errors adjusted for clustering by state in parentheses. All specifications control for age and age squared. The sample was extracted from Census data (described in Table 1) and is restricted to white, native women between the ages of 25 and 45. The state employment share in manufacturing is for all men between the ages of 25 to 49.

Table 8: Home Ownership and House Values (Women with Children from 1970-2020)

	Home Owner					Log House Value				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
College Graduate	-0.00801					0.216***				
	(0.00943)					(0.0214)				
State Return to College	-0.277***	-0.222**	-0.218**	-0.180*	-0.185*	-0.684*	-0.746*	-0.743*	-0.672*	-0.672*
	(0.0815)	(0.0835)	(0.0829)	(0.0921)	(0.0930)	(0.404)	(0.421)	(0.422)	(0.389)	(0.390)
College Graduate X State Return to College	0.277***	0.0893**	0.0867**	0.0231	0.0224	0.488***	0.687***	0.683***	0.552***	0.551***
	(0.0179)	(0.0341)	(0.0336)	(0.0364)	(0.0331)	(0.0352)	(0.157)	(0.158)	(0.139)	(0.140)
Married					0.217***					0.113***
					(0.00470)					(0.00804)
Log Total Family Income				0.0810***	0.0593***				0.206***	0.196***
				(0.00159)	(0.00108)				(0.00605)	(0.00578)
Observations			3,752,346					2,718,499		
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes					Yes				
Year by College Graduate Status FE		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Age of Youngest Child FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Children FE			Yes	Yes	Yes			Yes	Yes	Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression weighted by person weights. Robust standard errors adjusted for clustering by state in parentheses. All specifications control for age and age squared. The sample was extracted from Census data (described in Table 1) and is restricted to white, native women between the ages of 25 and 45 with children under 18 in the household.

Table 9: Assortive Matching of Women with Children (1970-2020)

	Married to a College Educated Spouse					Married to a College Educated Spouse (Conditional of being Married)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
College Graduate	0.528***					0.582***				
	(0.0119)					(0.0113)				
State Return to College	0.0645	-0.0520	-0.0492	-0.0492	-0.0796***	0.106**	-0.0340	-0.0319	-0.0319	-0.0595*
	(0.0422)	(0.0390)	(0.0386)	(0.0386)	(0.0269)	(0.0461)	(0.0454)	(0.0453)	(0.0453)	(0.0312)
College Graduate X State Return to College	-0.191***	0.181***	0.179***	0.179***	0.167***	-0.224***	0.175***	0.173***	0.173***	0.157***
	(0.0231)	(0.0442)	(0.0444)	(0.0444)	(0.0427)	(0.0226)	(0.0430)	(0.0439)	(0.0439)	(0.0418)
State Median Log Wage Income (Men)					-0.000947					-0.0111
					(0.0155)					(0.0154)
State Percent Female College Graduates					-0.560***					-0.516***
					(0.104)					(0.0991)
State Percent Male College Graduates					0.869***					0.882***
					(0.0977)					(0.0935)
Observations	3,723,083					3,065,696				
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes					Yes				
Year by College Graduate Status FE		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Age of Youngest Child FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of Children FE			Yes	Yes	Yes			Yes	Yes	Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression weighted by person weights. Robust standard errors adjusted for clustering by state in parentheses. All specifications control for age and age squared. The sample was extracted from Census data (described in Table 1) and is restricted to white, native women between the ages of 25 and 45 with children under 18 in the household. The sample in columns (6) to (10) is restricted to currently married observations. The sample in the left panel treats being married to an uneducated spouse as equivelent to being single.

Table 10: Explaining College Graduate Status with the PSID Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mother Education	0.0340**	0.0289**	0.0334**	0.0301**								
	(0.0133)	(0.0125)	(0.0137)	(0.0130)								
State Return to College (Age 7)	-1.465***	-0.753	-0.900	-0.596	-1.543***	-0.788**	-0.913*	-0.428	-1.649***	-0.948**	-1.051**	-0.552
	(0.530)	(0.482)	(0.586)	(0.585)	(0.360)	(0.357)	(0.487)	(0.418)	(0.419)	(0.398)	(0.480)	(0.466)
Mother Education X State Return to College (Age 7)	0.102**	0.0665*	0.103**	0.0626*								
	(0.0384)	(0.0347)	(0.0398)	(0.0370)								
Father Education					0.0275***	0.0195**	0.0272***	0.0189*				
					(0.00862)	(0.00869)	(0.00929)	(0.00955)				
Father Education X State Return to College (Age 7)					0.103***	0.0653**	0.103***	0.0669**				
					(0.0258)	(0.0265)	(0.0286)	(0.0295)				
Max Parental Education									0.0371***	0.0301***	0.0360***	0.0302***
									(0.0101)	(0.00954)	(0.0104)	(0.0102)
Max Parental Education X State Return to College (Age 7)									0.106***	0.0740***	0.110***	0.0751***
									(0.0284)	(0.0256)	(0.0292)	(0.0272)
Female	0.0561***	0.0570***	0.0569***	0.0575***	0.0541***	0.0551***	0.0548***	0.0557***	0.0525***	0.0534***	0.0534***	0.0540***
	(0.00833)	(0.00818)	(0.00843)	(0.00833)	(0.00799)	(0.00815)	(0.00806)	(0.00819)	(0.00839)	(0.00830)	(0.00846)	(0.00832)
Observations	10,232				10,292				10,292			
State (during childhood) FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year (Age 7) FE	Yes		Yes		Yes		Yes		Yes		Yes	
Year (Age 7) by Parent College Graduate FE		Yes		Yes		Yes		Yes		Yes		Yes
State-Specific Linear Trends			Yes	Yes			Yes	Yes			Yes	Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression. Robust standard errors adjusted for clustering by state in parentheses. The sample from the Panel Study of Income Dynamics (PSID) is restricted to respondents that are white and born between 1960 and 1992. The return to college at the state-level is estimated from the Census data taken from IPUMS. This variable is linearly interpolated between census years to create the return to college at age seven in the state where the respondent grew up. The variables for "Mother Education" and "Father Education" are measured as years of completed schooling.

Table 11: Explaining Years of Schooling with the PSID Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mother Education	0.261***	0.262***	0.253***	0.258***								
	(0.0538)	(0.0652)	(0.0540)	(0.0651)								
State Return to College (Age 7)	-5.032**	-4.337*	-4.357	-4.734*	-4.752***	-3.675**	-3.625	-3.159	-6.251***	-4.430**	-5.467**	-4.265*
	(2.197)	(2.465)	(2.640)	(2.723)	(1.539)	(1.736)	(2.264)	(1.982)	(1.732)	(2.015)	(2.133)	(2.217)
Mother Education X State Return to College (Age 7)	0.376**	0.344*	0.401**	0.349*								
	(0.163)	(0.191)	(0.162)	(0.188)								
Father Education					0.241***	0.228***	0.239***	0.226***				
					(0.0329)	(0.0439)	(0.0332)	(0.0445)				
Father Education X State Return to College (Age 7)					0.307***	0.243*	0.308***	0.244*				
					(0.106)	(0.139)	(0.106)	(0.140)				
Max Parental Education									0.269***	0.280***	0.259***	0.271***
									(0.0354)	(0.0434)	(0.0337)	(0.0433)
Max Parental Education X State Return to College (Age 7)									0.410***	0.344**	0.442***	0.376***
									(0.116)	(0.143)	(0.106)	(0.132)
Female	0.348***	0.350***	0.351***	0.352***	0.352***	0.356***	0.354***	0.357***	0.342***	0.345***	0.346***	0.346***
	(0.0364)	(0.0358)	(0.0370)	(0.0367)	(0.0344)	(0.0351)	(0.0348)	(0.0355)	(0.0365)	(0.0379)	(0.0368)	(0.0381)
Observations	10,232				10,292				10,292			
State (during childhood) FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year (Age 7) FE	Yes		Yes		Yes		Yes		Yes		Yes	
Year (Age 7) by Parent College Graduate FE		Yes		Yes		Yes		Yes		Yes		Yes
State-Specific Linear Trends			Yes	Yes			Yes	Yes			Yes	Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression. Robust standard errors adjusted for clustering by state in parentheses. The sample from the Panel Study of Income Dynamics (PSID) is restricted to respondents that are white and born between 1960 and 1992. The return to college at the state-level is estimated from the Census data taken from IPUMS. This variable is linearly interpolated between census years to create the return to college at age seven in the state where the respondent grew up. The variables for "Mother Education" and "Father Education" are measured as years of completed schooling.

Table 12: Explaining High School Graduate Status with the PSID Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Mother Education	0.0320***	0.0364***	0.0306***	0.0345***								
	(0.00849)	(0.0101)	(0.00878)	(0.00976)								
State Return to College (Age 7)	0.254	-0.164	-0.0662	-0.357	0.230	-0.0268	-0.0981	-0.179	-0.0544	-0.267	-0.423	-0.541
	(0.396)	(0.451)	(0.491)	(0.457)	(0.353)	(0.400)	(0.499)	(0.444)	(0.377)	(0.481)	(0.475)	(0.491)
Mother Education X State Return to College (Age 7)	0.00313	0.0258	0.00749	0.0320								
	(0.0254)	(0.0310)	(0.0262)	(0.0296)								
Father Education					0.0315***	0.0382***	0.0308***	0.0374***				
					(0.00723)	(0.00846)	(0.00725)	(0.00861)				
Father Education X State Return to College (Age 7)					-0.00535	0.00290	-0.00333	0.00523				
					(0.0219)	(0.0269)	(0.0217)	(0.0270)				
Max Parental Education									0.0281***	0.0371***	0.0265***	0.0346***
									(0.00742)	(0.00922)	(0.00742)	(0.00884)
Max Parental Education X State Return to College (Age 7)									0.0176	0.0293	0.0228	0.0384
									(0.0232)	(0.0298)	(0.0228)	(0.0279)
Female	0.0436***	0.0435***	0.0432***	0.0432***	0.0454***	0.0457***	0.0448***	0.0452***	0.0446***	0.0443***	0.0442***	0.0439***
	(0.00745)	(0.00735)	(0.00749)	(0.00739)	(0.00726)	(0.00727)	(0.00724)	(0.00728)	(0.00713)	(0.00702)	(0.00710)	(0.00698)
Observations	10,232				10,292				10,292			
State (during childhood) FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year (Age 7) FE	Yes		Yes		Yes		Yes		Yes		Yes	
Year (Age 7) by Parent College Graduate FE		Yes		Yes		Yes		Yes		Yes		Yes
State-Specific Linear Trends			Yes	Yes			Yes	Yes			Yes	Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression. Robust standard errors adjusted for clustering by state in parentheses. The sample from the Panel Study of Income Dynamics (PSID) is restricted to respondents that are white and born between 1960 and 1992. The return to college at the state-level is estimated from the Census data taken from IPUMS. This variable is linearly interpolated between census years to create the return to college at age seven in the state where the respondent grew up. The variables for "Mother Education" and "Father Education" are measured as years of completed schooling.

Table 13: Explaining the Gap between College and Non-College Educated Parents in their Children's 8th Grade Test Scores

	Reading Scores			Math Scores		
	Gap in Levels		Log Gap	Gap in Levels		Log Gap
	(1)	(2)	(3)	(4)	(5)	(6)
			White 8th Grade Students			
Year	0.182***			0.188***		
	(0.0203)			(0.0267)		
State Return to College		17.56**	0.0659**		22.28**	0.0799**
		(7.365)	(0.0258)		(9.416)	(0.0336)
Observations	550	550	550	629	629	629
			All 8th Grade Students			
Year	0.206***			0.163***		
	(0.0284)			(0.0299)		
State Return to College		16.60***	0.0600***		9.360	0.0282
		(5.768)	(0.0220)		(5.758)	(0.0205)
Observations	562	562	562	643	643	643
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	Yes		Yes	Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Robust standard errors adjusted for clustering by state in parentheses. Observations are weighted by the total number of test-takers by state and year. The data is taken from the National Center for Education Statistics (NCES) and is described in Appendix Table 3.

Appendix Table 1: Marriage and Parenthood of All Women (1990-2020)

	Never Married					Being a Parent (Child in household)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
College Graduate	0.0404***	0.0402***	0.189***	10.24***		-0.130***	-0.130***	-0.175***	-6.911***	
	(0.00419)	(0.00420)	(0.0191)	(0.502)		(0.00585)	(0.00584)	(0.0207)	(0.622)	
State Return to College		0.105	0.241***	0.0988	0.0938		0.0383*	-0.00225	0.0934***	0.110***
		(0.0651)	(0.0680)	(0.0597)	(0.0593)		(0.0226)	(0.0278)	(0.0272)	(0.0291)
College Graduate X State Return to College			-0.279***	0.0937**	0.105**			0.0832*	-0.167***	-0.213***
			(0.0400)	(0.0395)	(0.0458)			(0.0453)	(0.0572)	(0.0644)
College Graduate X Year				-0.00511***					0.00343***	
				(0.000260)					(0.000323)	
Year	0.00581***					-0.00165***				
	(0.000153)					(7.01e-05)				
Observations			4,324,985					4,324,985		
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE		Yes	Yes	Yes			Yes	Yes	Yes	
Year by College Graduate Status FE					Yes					Yes

Significance levels are indicated by: *** for the 1% level, ** for the 5% level, and * for the 10% level. Each column represents a separate OLS regression weighted by person weights. Robust standard errors adjusted for clustering by state in parentheses. All specifications control for age and age squared. The sample was extracted from Census data (described in Table 1) and is restricted to white, native women between the ages of 25 and 45.

Appendix Table 2: Means of the Main Variables in the PSID Analysis

	Birth Year		
	1960-1969	1970-1979	1980-1992
	(1)	(2)	(3)
College Graduate (dummy)	0.25	0.30	0.42
High School Graduate (dummy)	0.86	0.86	0.91
Years of Schooling	13.27	13.49	14.23
Mother Education	11.94	12.54	13.50
Mother College Graduate	0.11	0.15	0.28
Father Education	11.82	12.70	13.56
Father College Graduate	0.16	0.23	0.31
State-Level Return to College at Age 7	0.31	0.30	0.36
Female (dummy)	0.50	0.50	0.55
Number of Observations	3794	2732	3706

The sample from the Panel Study of Income Dynamics (PSID) is restricted to respondents that are white and born between 1960 and 1992. The return to college at the state-level is estimated from the Census data taken from IPUMS. The variables for "Mother Education" and "Father Education" are measured as years of completed schooling.

Appendix Table 3: Means of State-Level 8th Grade Test Scores by Parental Education for White Students (NCES Data)

	Year of the Test															
	1990	1992	1996	1998	2000	2002	2003	2005	2007	2009	2011	2013	2015	2017	2019	2022
8th Grade Reading Scores																
College Graduate Parents				276.63		277.49	277.64	276.39	276.94	278.22	278.98	282.04	279.79	280.13	277.78	274.24
Non-College Parents				261.93		264.56	262.78	261.18	262.50	262.88	262.85	265.04	263.13	263.06	260.20	256.17
Gap				14.71		12.93	14.86	15.21	14.45	15.34	16.12	17.00	16.66	17.07	17.57	18.07
State Return to College				0.45		0.48	0.49	0.50	0.52	0.54	0.55	0.57	0.59	0.61	0.60	0.60
Observations (States)				36		41	49	49	49	49	49	49	48	43	44	44
8th Grade Math Scores																
College Graduate Parents	280.66	284.70	288.50		291.51		294.58	295.96	298.48	300.86	300.89	301.39	299.71	300.31	299.81	292.60
Non-College Parents	262.68	267.35	271.30		273.83		278.23	278.88	281.43	281.70	282.59	281.96	278.72	278.71	277.71	268.93
Gap	17.98	17.35	17.19		17.68		16.36	17.08	17.06	19.16	18.30	19.43	20.99	21.59	22.10	23.68
State Return to College	0.32	0.36	0.42		0.46		0.49	0.50	0.52	0.54	0.55	0.57	0.59	0.61	0.60	0.60
Observations (States)	37	41	39		39		49	49	49	49	49	49	48	43	44	44

The data is taken from the National Center for Education Statistics (NCES), which contains the mean scores on 8th grade tests by state, race, and parental education group. Observations are weighted by the total number of test-takers by state and year. The state return to college (for white men with a strong attachment to the labor force) is estimated from Census data extracted from IPUMS. The state return to college for years in between the Census years were linearly interpolated using the Census years, and matched to the year that the test takers were seven years old.