Returns to Education for Women in the Mid-Twentieth Century: Evidence from Compulsory Schooling Laws *

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Abstract

Women had a similar level of schooling to men during the mid-twentieth century United States, but research on the returns to education for women is scarce. Using compulsory schooling laws as instrumental variables, this paper examines the causal effect of education on women's labor market and marriage market outcomes. I examine both outcomes because women frequently traded off employment and marriage due to marriage bars and gender norms against married women working. I show that an additional year of schooling increases women's probability of gainful employment by 7.9 pp. and women's wage earnings by 15 percent, which can be explained by women's entry into skilled occupations. Given the large returns on earnings, education surprisingly does not increase women's probability of never marrying, but it does increase the probability of divorce and separation. In addition, women's education positively affects the husband's and the household's labor supply and earnings, conditional on marriage formation and the husband's education.

1 Introduction

Women and men born around the turn of the 20th Century had similar educational attainment. Although returns to education during the historical United States have been well-studied

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for men (Goldin and Katz 2000, Feigenbaum and Tan 2020, Clay et al. 2021), returns to education for women have been neglected. Unlike men, women often faced the tradeoff between work and marriage due to marriage bars and gender norms, and most women could only realize the benefits of education in the labor or marriage market but not both. The motivation to document such tradeoffs is best captured by Goldin and Katz 2008. On the one hand, a woman with higher educational attainment "could secure a position as a clerk, stenographer, or, better yet, a secretary" and would be "freed from the drudgery of piece-rate work in a factory". On the other hand, they would also have "a better chance of securing a higher income husband". Documenting the returns to education for women in both markets is necessary for economists to understand such tradeoffs women experienced historically and, unfortunately, are still experiencing today.

This paper examines the effect of education on women's economic outcomes in the labor and marriage markets using an instrumental variable (IV) strategy. Since education is an endogenous choice, I instrument years of schooling with state-level legislations on compulsory schooling, child labor, and school continuation for birth cohorts born between 1885 and 1912 following Clay et al. 2021. Identification mainly relies on cohort-by-state level differences in years of compulsory attendance required. The validity of the IV strategy is well-established for men (Stephens and Yang 2014, Clay et al. 2021), but this is one of the few papers to document the positive and significant relationship between required years of compulsory attendance and women's educational attainment. I show that laws requiring children to attend school for seven to ten years positively affected the years of schooling completed for women, and the magnitudes are comparable with those of men.

I use the complete-count decennial census data from 1940 to study birth cohorts born between 1885 and 1912 that were affected by state compulsory schooling laws.[1] I further restrict the sample to native-born White women for two reasons. First, only native-born individuals are included because foreign-born individuals might not have completed schooling in the United States and, as a result, might not be subjected to state schooling laws. In addition, the US South was late in introducing state schooling laws, and enforcement was weak after the laws were established. For this reason, I exclude Black women in the sample (Margo 1990, Lleras-Muney 2002, Stephens and Yang 2014).

[1] I only use the 1940 census data because education is not reported in previous censuses and complete count censuses after 1940 are not yet available.

I show that an additional year of schooling increases women's probability of gainful employment and wage earnings. Specifically, the two-stage-least-square (2SLS) estimate indicates that an additional year of schooling increases women's probability of having a gainful occupation by 7.9 percentage points. The magnitude of the estimate is large since only 25 percent of women in the sample were gainfully employed. The 2SLS estimate is also much larger than the 2.2 pp. OLS estimate, possibly because the OLS estimate might be biased downward due to the correlation between women's socioeconomic status, education, and the lack of labor force participation. Conditional on working, the 2SLS estimate indicates that an additional year of schooling increases women's wage earnings by 15 percent but does not increase their labor supply.

The returns to education on wage earnings are larger for women than for men born around the same time, which ranges from 3.5 to 7.7 percent (Feigenbaum and Tan 2020, Clay et al. 2021).[2] Why are the returns to schooling among women so large? I show that this is because women with more education were more likely to enter skilled occupations. I use the same IV approach to examine whether the woman was more likely to become a stenographer, a clerical worker, a bookkeeper, or a housekeeper, where the first three are skilled occupations. Consistent with my hypothesis, the results show that an additional year of schooling increases the probability of being a stenographer/clerical worker/bookkeeper by 1.5 to 4.2 pp. while it decreases the probability of being a housekeeper by 2.2 pp.

Next, I examine the effect of education on marriage market outcomes, which is necessary because women frequently traded off employment and marriage due to marriage bars and gender norms against married women working during the historical period (Goldin 1988, Goldin 1990, Goldin 2021). Despite women's large returns to schooling in the labor market, I show that an additional year of education does not increase the probability of never marrying, which is a surprising result. On the other hand, an additional year of schooling does increase women's probability of divorcing or separating by 1.3 pp., a large increase relative to an average share of 2.5 percent of women who had been divorced or separated. The findings suggest more education might help women to leave a marriage because educated women could support themselves financially, but does not make women less likely to be married to start with.

Conditional on marriage formation and the husband's education, an additional year of the

[2]Past research shows that another reason why women have larger returns to schooling than men might be that education decreases the gender wage gap due to discrimination (Dougherty 2005).

wife's education decreases the husband's probability of gainful employment by 1.5 pp. This suggests that an educated wife might be able to replace her husband as the person in the household with a gainful occupation, but the magnitude of the estimate is small. I additionally show that the wife's education had a positive effect on the husband's labor market outcomes as well as household outcomes. The combined results suggest educated wives improved household outcomes by being gainfully employed and indirectly increasing the husband's productivity.

I advance the literature in several directions. My findings add new insights into the large literature on returns to schooling in the United States (Angrist and Krueger 1991, Card 1993, Goldin and Katz 2008, Oreopoulos and Salvanes 2011, Stephens and Yang 2014). What differentiates my paper from others is that I take advantage of the complete-count census data to examine the returns to schooling among women. I quantify the magnitude of returns to education on earnings among women and extend our knowledge about the mechanism behind the large returns to schooling by showing that education allows women to enter skilled occupations.

In addition, I study how legislation helps people achieve higher educational attainment and, in turn, affected future labor market and marriage market outcomes. Even though I only study the effect of compulsory schooling laws (Angrist and Krueger 1991, Schmidt 1996, Margo and Finegan 1996, Lleras-Muney 2002, Goldin and Katz 2008, Stephens and Yang 2014, Gihleb and Lang 2016, Clay et al. 2021), my paper also relates to research studying the effect of the G.I. Bill on educational attainment and earnings (Bound and Turner 2002, Angrist and Chen 2011, Lennon 2021). My estimates of returns to schooling on earnings are similar to Lennon 2021, which studies the effect of the G.I. Bill on annual earnings among female veterans.

Lastly, I contribute to the growing literature on women's marriage during the historical United States (Craig et al. 2019, Olivetti et al. 2022, Lafortune et al. 2022, M. Bailey and Lin 2022, LaGuardia and Niemesh 2023). While past research focuses on assortative mating by education and socioeconomic background and often suggests a positive correlation between women's education and the probability of never marrying, I show that the effect might not be causal. Instead, I find that additional education obtained because of compulsory schooling laws did not affect women's probability of never marrying. I also examine additional outcome variables, such as the husband's labor market outcomes and household income.

2 Background

2.1 State Laws on Compulsory Attendance, Child Labor, and Continuation

State-level legislation on compulsory attendance, child labor, and school continuation was enacted between the 1850s and the 1910s to keep children in school. Compulsory attendance laws were established at the earliest, which often set a minimum school entry age, maximum school leaving age, and a minimum period that children should be in school. Massachusetts was the first state to enact compulsory attendance laws in 1852, and other states in the Northeast region followed suit. States in the South were the last to establish compulsory attendance laws. Enforcement and penalties for violating such laws also varied by state. Several states had enforcement officers and visiting teachers with supervising authorities, and most states established a fine for parents whose children did not follow such laws.[3]

Child labor laws were enacted as a complement to the compulsory attendance laws. Most laws specified the minimum age which children could start working. Child labor laws enacted before 1900 had weak enforcement, and child labor activists noticed an increase rather than a decrease in child labor between 1880 and 1900 (Moehling 1999). Between 1900 and 1910, however, more states established child labor laws and committees to enforce these laws, and the share of young children working (13 years old and under) declined below 5 percent by 1930 (Feigenbaum and Russo 2020). Like compulsory attendance laws, variations in child labor laws across different states were large.

State governments also enacted school continuation laws, which required children who were already working but still under maximum school leaving age to attend school in their spare time. The required school time was short, usually only a few hours per week, but it increased the opportunity cost of hiring children under the maximum school leaving age since they could often be excused from work (Goldin and Katz 2011).

Compulsory schooling, child labor, and continuation schooling laws together generated large variations in school attendance across birth cohorts and states.[4] Children born in different birth years and birth states faced different lengths of compulsory attendance, ranging from below 5

[3] See more details and a timeline on these laws in Steinhilbe and Sokolowski 1966.

[4] For a more in-depth review of the variations generated by state laws, see Moehling 1999, Goldin and Katz 2011, Clay et al. 2012, Clay et al. 2021.

years to above 9 years. Figure 1 shows the variations in state laws for birth cohorts born from 1880 to 1910. States outside the South introduced compulsory attendance laws later than others, but all states had established such laws by the early 1910s. I use the cohort-by-state variations in compulsory attendance as instrumental variables for years of schooling.

2.2 Women's Education during the Late 19th and Early 20th Centuries

The American education system embraced the virtue of gender neutrality starting from the early 19th Century, offering to educate female and male students to similar levels for those under 15 years old (Goldin and Katz 2008). Publicly funded schools helped to achieve such a goal since parents of poorer households did not have to choose between sons and daughters to receive an education. State laws on compulsory schooling, child labor, and school continuation also had a moderately positive effect on educational attainment and enrollment (Margo and Finegan 1996, Lleras-Muney 2002, Goldin and Katz 2008).

Figure 2 shows that women and men had similar educational attainment, and the share of women completing 8th and 12th grade is slightly higher than the share of men.[5] However, most women did not go to school to pursue a career. Instead, they went to school to learn skills, knowledge, and morals to become good wives and mothers (Rury 1991). Only a small share of women attended school to work, usually at the cost of marriage, and they would be able to support themselves without a husband (Harris 1978).[6] The returns to education for women in both markets are expected to be positive. Specific benefits of women's education in the labor market and the marriage market are outlined below.

2.2.1 The Benefits of Education in Employment

Although education was not offered to women for the purpose of having a career after leaving school, skills transmitted in school that aimed to make women better homemakers also may have made them better workers. For example, courses in bookkeeping and accounting were

[5]Since some people born in the late 19th Century might have died by 1940, the educational attainment reported for older birth cohorts in the 1940 census is not as accurate as the younger cohorts. To address the issue, I plot the educational attainment of birth cohorts born between 1885 and 1895 as reported in the 1915 Iowa State Census (Goldin and Katz 2010). The gender differences in schooling reported in the 1940 Decennial Census and the 1915 Iowa State Census are similar.

[6]Many occupations and industries established marriage bars that prevented married women from working and fired women after marriage during this period (Goldin 1988, Goldin 2021).

offered to women so that they could improve household management efficiency after getting married, but bookkeeping skills also provided women the option to become bookkeepers, which generated income. Many women took courses in typewriting and stenography, entered the labor force briefly, and worked as stenographers and secretaries before marriage (Rury 1984).

Because of new skills gained through education, education made a difference in the types of occupations women engaged in, and the returns to education are expected to be positive because educated women could work in skilled occupations that paid more (Goldin and Katz 2008). On the other hand, women who worked as factory workers and domestic servants engaged in tasks similar to those performed at home, such as sewing and cleaning, making formal industrial education unnecessary for them.

In addition, demand-side factors, such as occupation segregation, also made education more beneficial for women in the labor market. For example, education often prepared men for management and administrative roles, leaving vacancies in other lower-ranked jobs for women to fill (Rury 1991).

2.2.2 The Benefits of Education in Marriage

Educators and domestic feminists argued that education made women more efficient homemakers and knowledgeable mothers. Education could improve women's performance in the household in several ways. First, women were able to acquire practical skills in school. For example, many schools offered courses on sewing and cooking for women, making it possible for women to mend and alter clothes for men and children in their families. With sewing skills, women could also make clothes for sale and support their families with additional income (Rury 1991). In addition, women learn about moral values and character development through education, which were essential in child-rearing. Raising children was a sacred responsibility, and "women needed all the intellectual and moral ballast they could get" (Nash 2005). Mothers were responsible for developing "both the skills and the character in future generations necessary for continued social and economic development" (Rury 1991). Finally, educated women could directly contribute to household income by participating in the labor market, which might be extremely useful if the husband was out of a job.

3 Data

3.1 Compulsory Schooling

Data on compulsory attendance, child labor, and school continuation laws are obtained from the replication package of Clay et al. 2021. The data provide cohort-by-state level variation in years of compulsory schooling required for those born between 1885 and 1912.

3.2 Complete Count Censuses

Cohort-by-state level data on compulsory schooling are merged into the 1940 complete count decennial census (Ruggles et al. 2021). I only use the 1940 census data for women's analysis because education is not reported in previous censuses, and complete count censuses after 1940 are not yet available.

I restrict the sample to native-born White women were born between 1885 and 1912 for two reasons. First, only native-born individuals are included because foreign-born individuals might not have completed schooling in the US and, as a result, might not be subjected to state-level compulsory schooling laws. In addition, since the US South was late in introducing state schooling laws, and enforcement was weak after the laws were established, I do not include Black women in the sample (Margo 1990, Lleras-Muney 2002, Stephens and Yang 2014).

4 Identification: Instrumental Variable

Since education is an endogenous choice, OLS estimates of years of schooling on the outcome variables are likely biased. For example, women of higher socioeconomic backgrounds might be more likely to complete more years of schooling but less likely to work after graduation, biasing the estimates downwards. As a result, I instrument years of schooling with laws on compulsory schooling, child labor, and continuation of school. Compulsory attendance laws are plausibly exogenous, as shown in Lleras-Muney 2002, and the IV estimates can establish the causal effect of education.

4.1 Baseline Specification

The main specification and the first-stage estimation are the following:

$$Y_{icsr} = \beta_0 + \beta_1 Educ_{icsr} + \gamma_s + \gamma_{cr} + \epsilon_{icsr}$$

$$Educ_{icsr} = \beta_0^{'} + CA_{icsr}^{'}\Omega + \theta_s + \theta_{cr} + u_{icsr}$$

where Y_{icsr} is the outcome variable in the 1940 census (that measures labor market returns and marriage market returns) for individual i who was born in birth cohort c, state s and region r, and $Educ_{icsr}$ is the years of schooling completed. CA_{icsr} is a vector consisting of three indicator variables denoting whether the birth cohort c born in state s was required to attend school for 7, 8 or 9 plus years.[7] The main specification also includes birth state fixed effects γ_s and birth year by birth region fixed effects γ_{cr}. With both fixed effects, β_1 captures changes within the state over time and variations across states but within the same region and birth cohort. This is the same specification used by Stephens and Yang 2014 and Clay et al. 2021.

4.2 First Stage Results

Table 1 presents the first stage estimates of the instruments on years of schooling completed for several groups of women. Column 1 includes all native-born White women born between 1885 and 1912. The results show that seven, eight, and nine plus years of required schooling increase women's educational attainment by 0.054, 0.062, and 0.134 years respectively. The magnitudes of the coefficients are smaller than those of men, as reported by Stephens and Yang 2014 and Clay et al. 2021, indicating that the laws might have a smaller effect on women than on men. This could be because women were more likely to attend school than men, since women attended school to become better wives and mothers, and women's labor during their teenage years was valued less than men's labor in the industry. The joint F-statistics is 21.2, also smaller than men's, but it is still large enough for the instruments to be strong.

Columns 2, 3, 4, and 5 further restrict the sample to currently married women in 1940, working women who earned positive wages in 1940, sample-line women in the 1940 census (less than 5 percent of the female population), and women born outside the south. The goal of estimating

[7] Laws requiring six years and below are not included because these laws have much smaller effects of women's education and result in weaker first-stage (see Table A1).

the first stage using various samples is to ensure the results are not driven by subgroups and that the instruments are still valid in different samples that will be used later in the analysis. Results from Column 2 and Column 5 are very similar to those of Column 1, suggesting the effect of laws on years of schooling is similar between all women, married women, and women born outside the South. Column 3 shows that laws requiring 7 and 8 years of mandatory attendance have larger effects on years of schooling among working women, possibly because working women were a selected group. Column 4 also reports similar results to Column 1, but the joint F-statistics among sample-line women is much smaller (which is only a little above 10), indicating the instruments are less strong. This could be due to the much smaller sample size in Column 4.

5 Returns to Education on Employment and Earnings

I present evidence on the positive effect of education on women's gainful employment and earnings here. While past literature on returns to schooling mostly focuses the effect on earnings when studying men, I argue that the probability of gainful employment and labor supply are more important when studying women because women's labor supply was much more elastic (Goldin 2006).

The first outcome variable of interest is gainful employment, which is defined as having a gainful occupation that does not include working as a housewife, helping with chores at home, or being a student.[8] I prefer using gainful employment as the outcome variable because it captures women's work more comprehensively, which was often part-time and temporary.[9]

Results on women's gainful employment are shown in Column 1 of Table 2. The OLS estimate suggests that an additional year of schooling increases women's probability of having a gainful occupation by 2.2 pp. On the other hand, the IV estimate suggests a much larger 7.9 pp. effect. The OLS estimate might be biased downward if women from higher socioeconomic back-

[8] "Gainful occupation" is not a formally defined term, but census enumerators were instructed to mark down a gainful occupation if the occupation is income-generating. For example, a housekeeper is not considered a gainful occupation if the woman works in her home as the housekeeper but is considered a gainful occupation if the woman works for other households and gets paid for the housework done. See more details here: https://www.census.gov/library/publications/1929/dec/monograph-9.html

[9] Gainful employment is different from the "employment" variable recorded by the census enumerator since being employed requires the person to work for pay in the specific reference period. In the 1940 census, a person is considered "employed" if she worked at least 1 hour for pay during the week of March 24 to March 30 in 1940.

grounds obtained more years of education but were less likely to work outside the household. The IV estimate suggests that an additional year of schooling increases women's employment substantially since only around 25 percent of women had a gainful occupation in 1940.

Results from Column 1 reflect the average effect of an additional year of education among all women, which reflects the effect at the extensive margin since the outcome variable concerns whether a woman was gainfully employed or not. Next, I examine the effect of women's education on their labor supply and earnings among working women, which reflects the effect at the intensive margin. The sample is restricted to working women who earned positive wages in 1940 and the OLS and IV estimates are shown in Columns 2, 3, and 4 of Table 2.

I show that an additional year of schooling increased women's wage earnings substantially without affecting women's labor supply, possibly by allowing women to enter better-paid occupations. The OLS and IV estimates suggest an additional year of schooling increases wage earnings by 11.2 to 15.1 percent but has a minimal effect on weeks and hours worked. One hypothesis is that education allowed women to enter higher-paying occupations, such as stenographers and clerical workers, with a similar number of working hours, thus generating large returns to schooling. I show that this argument is true with additional results from Columns 5 to 8 of Table 2, where the outcomes variables are indicator variables which equal 1 if the woman was a stenographer, a clerical worker, a bookkeeper, or a housekeeper. The first three occupations are skilled labor which was only available to educated women while the last was not. Consistent with my hypothesis, the results show that an additional year of schooling increases the probability of being a stenographer/clerical worker/bookkeeper by 1.5 to 4.2 pp. while it decreases the probability of being a housekeeper by 2.2 pp.[10]

The returns to schooling for women are larger than those of men.[11] There are likely two main reasons behind the differences. First, the returns to education for women are objectively larger because wage differentials between unskilled and skilled occupations were larger for women than for men. For example, women who had some years of high school could secure clerical jobs

[10]Note that the results from Table 2 are the average effect among native-born White women aged 28 to 55 in 1940, and the identification strategy cannot separate the effect of education on earnings over the life cycle due to cross-section data. We might expect education not only benefits women immediately after graduation, but also benefits women when they have the option to rejoin the labor force when they are older and after the children leave the households (M. J. Bailey 2006, Goldin, Kerr, et al. 2022).

[11]See details on the returns to schooling for men during the historical US in Goldin and Katz 1999, Feigenbaum and Tan 2020, Clay et al. 2021.

that paid much more than manual labor jobs, while men who had some years of high school could secure administrative jobs that were paid similar to manufacturing jobs.[12] Second, both positively and negatively, working women might be a selected group. Women might choose not to work, either because they were restricted by marriage and family responsibilities, or because they were from richer households where additional income was not needed. In contrast, the sample of men is not as selected since most men worked and had wage earnings.

In addition, we might be worried that Southern-born White women were driving the results given that the laws were adopted later during the South and the birth cohorts affected in the South were the youngest group in 1940. I show that the results among non-southern born women in Table A2 are similar to those outlined above. Overall, the results show that education increases women's probability of having a gainful occupation and earnings.

6 Returns to Education on Marriage Outcomes

Women frequently traded off working and marriage due to marriage bars and gender norms during historical times (Goldin 1988, Goldin 1990, Goldin 2021), making it necessary to examine returns to education on women's marriage market outcomes. I examine two groups of outcome variables in the marriage market. The first group is related to marriage formation and dissolution, such as the probability of never marrying and the probability of being divorced or separated. The second group concerns the match quality between the husband and the wife (conditional on marriage formation), such as assortative mating by education, the husband's labor market outcomes, and household income.

It is challenging to examine the effect of women's education on marriage market outcomes directly because many outcome variables of interest, such as women's productivity in home production and quality of child-rearing, are not observed in the census data. As a result, I turn to examine the husband's and the household's outcomes. If women with more education were more productive and efficient homemakers, they might create spillovers and lead to positive returns on the husband's labor market outcomes and household outcomes.

[12] Based on Author's calculation, the average wage for men who completed 8th grade is $920 and for men who completed 12th grade is $1130 in 1940 (a 23 percent increase), while the average wage for women who completed 8th grade is $500 and for women who completed 12th grade is $675 in1940 (a 35 percent increase).

6.1 Marriage Formation and Dissolution

Given the positive returns to education in the labor market, we might expect the effect of additional years of education on never marrying to be positive because some women would give up marriage to pursue a career. Correlational evidence suggests that the most educated women were the least likely to marry among those born before 1960 (Lafortune et al. 2022).[13] Indeed, the OLS estimate of years of education on the probability of never marrying in Column 1 in Table 3 is 1.36, confirming the positive correlation between the two variables, relative to an average share of 12.45 percent never married women aged 28 to 55 in 1940. However, the IV estimate is -0.09, much smaller than the OLS estimate, suggesting an additional year of education led to a 0.09 pp. decrease, instead of an increase, in the probability of never marrying. Importantly, the IV estimate is not statistically significant, and we cannot reject the hypothesis that education had no causal effect on marriage formation. Though initially surprising, the null result is consistent with the historical account that most women attended school to learn knowledge about homekeeping. The very few women who pursued a career after graduation might not be motivated by the additional years of schooling they obtained through compulsory attendance.

On the other hand, education might positively affect women's bargaining power within the household and allow women to exit marriage more easily. Column 2 of Table 3 supports this interpretation. Although only 2.56 percent of women in the sample got divorced or separated in 1940, the OLS and IV estimates suggest that an additional year of education increased the probability of divorce or separation by 0.06 and 1.30 pp., respectively. This is likely because women with more education were able to support themselves financially after the divorce or separation.

In addition, I examine whether education delays women's age at first marriage, given that education makes women stay in school longer. Column 3 of Table 3 shows that an additional year of education increased age at first marriage by 0.38 to 0.68 years, where the IV estimate is larger than the OLS estimate. This is consistent with the evidence from post-WW2 United States (Lennon 2022) and the mid-20th Century United Kingdom (Powdthavee and Adireksombat 2010). Note that the question regarding age at first marriage was only asked for sample-line women that consisted of less than 5 percent of the female population. The results here should be

[13] Olivetti et al. 2022 shows similar evidence that women of highest socioeconomic background are also least likely ever to get married.

interpreted cautiously, given the much weaker first-stage results due to the smaller sample size (see Table 1).

6.2 Match Quality Among Married Couples

6.2.1 Husband's Outcomes

I present evidence on assortative matching. Column 1 of Table 4 shows that an additional year of the wife's education is associated with 0.71 to 0.93 additional years of the husband's education. This is consistent with findings from past research on assortative mating during the historical US (Goldin 2004, M. Bailey, Guldi, et al. 2014). Note that the positive relationship is likely driven by the fact that most marriage markets were local and men were also affected by compulsory attendance just as women. The identification strategy does not distinguish between whether women with more education were able to find better-educated husbands or whether women and men in the same marriage market were simply treated at the same time.

Since women and men were affected by compulsory attendance during the same period, it is difficult to separate the effect of the wife's education on match quality from the effect of the husband's education. As a result, I control for the husband's years of education in the specification when estimating the effect on other outcome variables. Without claiming causality, this allows me to examine whether the wife's education plays a role in matching outcomes conditional on the husband's education.[14]

In addition, I argue that a wife with higher education might be more productive. To support the argument, I first show that an educated wife could replace her husband as the person in the household with a gainful occupation. As shown in Column 2 of Table 4, the IV estimate suggests that an additional year of the wife's education decreases the husband's probability of gainful employment by 1.5 pp. This is perhaps surprising given that the wife's education and the husband's gainful employment are positively correlated, as shown by the OLS estimate.

Finally, the wife's education has a positive spillover effect on the husband's productivity, as measured by the husband's labor supply and wage earnings. The IV estimates indicate that an additional year of the wife's education increases the husband's labor supply by 1.1 weeks

[14]Causality is difficult to establish because the sample of married couples is selected and the matches of women who would have married but chose not to were not realized. In addition, the husband's education is not instrumented and therefore is endogenous.

worked per year and the husband's wage earnings by 7.8 percent (Columns 3 to 5 of Table 4). Although the magnitudes of the estimates on the husband's gainful employment and labor supply are pretty small, possibly because men's labor supply was inelastic, the results indicate that educated wives helped to improve the husband's productivity, but the mechanism behind such improvements is difficult to disentangle.[15]

6.2.2 Household Outcomes

I examine the effect of the wife's education on household outcomes, which include household labor supply and household earnings. Household outcomes are defined as the sum of the husband's and the wife's outcomes, conditional on one of them earning positive wages. The rationale for examining household outcomes is similar: If an educated wife were more productive in the household or in the labor market, the effect of the wife's education on household labor supply and earnings would be positive.

As shown in Columns 6 to 8 of Table 4, the IV estimates suggest that an additional year of a wife's education increases household labor supply by 4.8 weeks worked per year, 2.6 hours worked per week, and household income by 10.4 percent. The effects are sizeable considering the fact that the husband's years of education are being controlled in the specification. The magnitudes of the IV estimates are much larger than the OLS estimates and the IV estimates on the husband's outcomes, suggesting that educated wives might be working even while married, and increased the household labor supply and income through their labor force participation.

I further show that an additional year of education increases the wife's gainful employment by 7.3 pp. among married women in Table 5.[16] This can be explained by the fact that educated wives also have a higher probability of working in a skilled occupation. The combined results suggest educated wives improved household outcomes by being gainfully employed and indirectly increasing the husband's productivity.

[15]The effect of the wife's education might be similar to the "added worker effect", which is often studied in the context of when the husband became unemployed (Lundberg 1985). Past research suggests the added worker effect is present during the Great Depression (Bellou and Cardia 2021), which overlaps with the sample period in this case.

[16]Interestingly, the husband's education has the opposite effect: an additional year of the husband's education is associated with a decrease in the wife's probability of gainful employment by 3.7 pp.

7 Conclusion

Although women and men had similar levels of educational attainment during the historical US, the returns to education for women are not well documented. This paper fills the gap in the literature by estimating the effect of women's education on their labor market and marriage market outcomes using compulsory schooling laws as instrumental variables.

I document large returns to schooling in women's labor market outcomes, which could be explained by women's entry into skilled occupations that paid more. Despite the large returns in earnings and the fact that women often traded off between employment and marriage during the historical period, I show that there is little evidence that education caused women to not be married, but it did increase women's probability of divorce. Conditional on marriage formation, I find that women's education had a positive effect on the husband's and the household's outcomes.

Works Cited

Angrist, Joshua D., and Stacey H. Chen. "Schooling and the Vietnam-Era GI Bill: Evidence from the Draft Lottery". *American Economic Journal: Applied Economics*, vol. 3, no. 2, Apr. 2011, pp. 96–118. https://doi.org/10.1257/app.3.2.96.

Angrist, Joshua D., and Alan B. Krueger. "Does Compulsory School Attendance Affect Schooling and Earnings?*". *The Quarterly Journal of Economics*, vol. 106, no. 4, 1 Nov. 1991, pp. 979–1014. https://doi.org/10.2307/2937954.

Bailey, Martha, Melanie Guldi, et al. "Is there a Case for a 'Second Demographic Transition': Three Distinctive Features of the Post-1960 U.S. Fertility Decline". *Human Capital and History: The American Record*, 2014.

Bailey, Martha, and Peter Lin. "Marital Matching and Women's Intergenerational Mobility in the Late 19th and Early 20th Century U.S." *Working Paper*, 2022.

Bailey, Martha J. "More Power to the Pill: The Impact of Contraceptive Freedom on Women's Life Cycle Labor Supply". *Quarterly Journal of Economics*, 2006.

Bellou, Andriana, and Emanuela Cardia. "The Great Depression and the rise of female employment: A new hypothesis". *Explorations in Economic History*, vol. 80, 2021, p. 101383. https://doi.org/http://doi.org/10.1016/j.eeh.2020.101383.

Bound, John, and Sarah Turner. "Going to War and Going to College: Did World War II and the G.I. Bill Increase Educational Attainment for Returning Veterans?" *Journal of Labor Economics*, vol. 20, no. 4, 2002, pp. 784–815.

Card, David. "Using Geographic Variation in College Proximity to Estimate the Return to Schooling". *Working Paper*, 1993.

Clay, Karen, et al. "Do Schooling Laws Matter? Evidence from the Introduction of Compulsory Attendance Laws in the United States". *NBER Working Paper*, 2012.

———. "Laws, educational outcomes, and returns to schooling evidence from the first wave of U.S. state compulsory attendance laws". *Labour Economics*, vol. 48, 2021.

Craig, Jacqueline, et al. "Marriage and the Intergenerational Mobility of Women: Evidence from Marriage Certificates 1850-1910". *Working Paper*, 2019.

Dougherty, Christopher. "Why Are the Returns to Schooling Higher for Women than for Men?" *Journal of Human Resources*, vol. XL, no. 4, 2005, pp. 969–88. https://doi.org/10.3368/jhr.XL.4.969.

Feigenbaum, James, and Gianluca Russo. "Regulating Child Labor: Evidence from the US Progressive Era". *Working Paper*, 2020.

Feigenbaum, James, and Hui Ren Tan. "The Return to Education in the Mid-Twentieth Century: Evidence from Twins". *The Journal of Economic History*, vol. 80, no. 4, Dec. 2020, pp. 1101–42. https://doi.org/10.1017/S0022050720000492.

Gihleb, Rania, and Kevin Lang. "Educational Homogamy and Assortative Mating Have Not Increased". 2016.

Goldin, Claudia. *Career and Family: Women's Century-Long Journey toward Equity*. Princeton UP, 2021.

———. "Marriage Bars: Discrimination Against Married Women Workers, 1920's to 1950's". *NBER Working Paper*, 1988.

———. "The Long Road to the Fast Track: Career and Family". *The ANNALS of the American Academy of Political and Social Science*, vol. 596, no. 1, Nov. 2004, pp. 20–35. https://doi.org/10.1177/0002716204267959.

———. "The Quiet Revolution that Transformed Women's Employment, Education, and Family". *American Economic Review*, vol. 96, no. 2, 2006.

———. *Understanding the Gender Gap: An Economic History of American Women*. Oxford UP, 1990.

Goldin, Claudia, and Lawrence F. Katz. "Education and Income in the Early Twentieth Century: Evidence from the Prairies". *The Journal of Economic History*, vol. 60, no. 3, 2000, pp. 782–818. https://doi.org/10.1017/S0022050700025766.

———. "Mass Secondary Schooling and the State: The Role of State Compulsion in the High School Movement". *Understanding Long-Run Economic Growth: Geography, Institutions, and the Knowledge Economy*, 2011.

———. The 1915 Iowa State Census Project. 2010, Inter-university Consortium for Political and Social Research [distributor].

———. *The Race between Education and Technology*. Harvard UP, 2008.

———. "The Shaping of Higher Education: The Formative Years in the United States, 1890 to 1940". 1999.

Goldin, Claudia, Sari Pekkala Kerr, et al. "When the Kids Grow Up: Women's Employment and Earnings across the Family Cycle". *NBER Working Paper*, 2022.

Harris, Barbara J. *Beyong Her Sphere: Women and The Professions in American History*. Greenwood P, 1978.

Lafortune, Jeanne, et al. "The changing identities of American wives and mothers". *Working Paper*, 2022.

LaGuardia, Emma, and Gregory Niemesh. "Trends in Educational Assortative Mating over the Early 20th-Century United States". *Working Paper*, 2023.

Lennon, Conor. "Female Educational Attainment, Marriage, and Fertility: Evidence from the 1944 G.I. Bill". *SSRN Electronic Journal*, 2022. https://doi.org/10.2139/ssrn.4220862.

———. "G.I. Jane Goes to College? Female Educational Attainment, Earnings, and the Servicemen's Readjustment Act of 1944". *The Journal of Economic History*, vol. 81, no. 4, Dec. 2021, pp. 1223–53. https://doi.org/10.1017/S0022050721000425.

Lleras-Muney, Adriana. "Were Compulsory Attendance and Child Labor Laws Effective? An Analysis from 1915 to 1939". *The Journal of Law and Economics*, vol. 45, no. 2, 2002.

Lundberg, Shelly. "The Added Worker Effect". *Journal of Labor Economics*, vol. 3, no. 1, 1985, pp. 11–37. *JSTOR*, www.jstor.org/stable/2535048. Accessed 13/7/2023.

Margo, Robert. *Race and Schooling in the South, 1880-1950: An Economic History*. National Bureau of Economic Research, Inc, 1990, EconPapers.repec.org/RePEc:nbr:nberbk:marg90-1.

Margo, Robert, and T. Aldrich Finegan. "Compulsory schooling legislation and school attendance in turn-of-the century America: A 'natural experiment' approach". *Economics Letters*, vol. 53, no. 1, 1996, pp. 103–10. https://doi.org/https://doi.org/10.1016/S0165-1765(96)00882-8.

Moehling, Carolyn M. "State Child Labor Laws and the Decline of Child Labor". *Explorations in Economic History*, vol. 36, 1999.

Nash, Margaret A. *Women's Education in the United States, 1780-1840*. Palgrave Macmillan, 2005.

Olivetti, Claudia, et al. "Who married, (to) whom, and where? Trends in marriage in the United States, 1850-1940". *Working Paper*, 2022.

Oreopoulos, Philip, and Kjell G. Salvanes. "Priceless: The Nonpecuniary Benefits of Schooling". *Journal of Economic Perspectives*, vol. 25, no. 1, Mar. 2011, pp. 159–84. https://doi.org/10.1257/jep.25.1.159.

Powdthavee, Nattavudh, and Kampon Adireksombat. "From Classroom to Wedding Aisle: The Effect of a Nationwide Change in the Compulsory Schooling Law on Age at First Marriage in the UK". *SSRN Electronic Journal*, 2010. https://doi.org/10.2139/ssrn.1634486.

Ruggles, Steven, et al. IPUMS Ancestry Full Count Data: Version 3.0 [dataset]. 2021, Minneapolis, MN: IPUMS.

Rury, John L. *Education and Women's Work: Female Schooling and the Division of Labor in Urban America, 1870-1930*. SUNY Series on Women / Work, 1991.

———. "Vocationalism for Home and Work: Women's Education in the United States, 1880-1930". *History of Education Quarterly*, vol. 24, no. 1, 1984.

Schmidt, Stefanie R. "School Quality, Compulsory Education Laws and the Growth of American High School Attendance, 1915-1935". *Dissertation*, 1996.

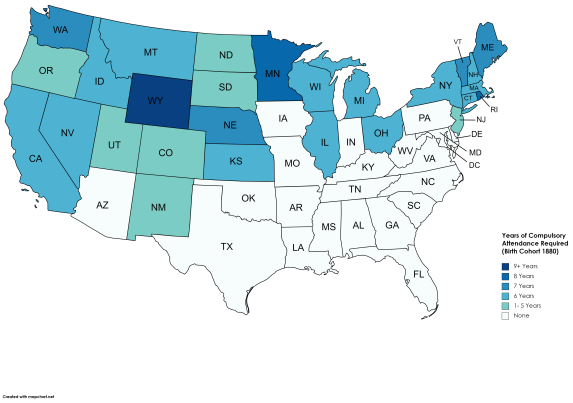
Steinhilbe, August W., and Carl J. Sokolowski. State Law on Compulsory Attendance. 1966, U.S. Government Printing Office.

Stephens, Melvin, and Dou-Yan Yang. "Compulsory Education and the Benefits of Schooling". *American Economic Review*, vol. 104, no. 6, 2014.

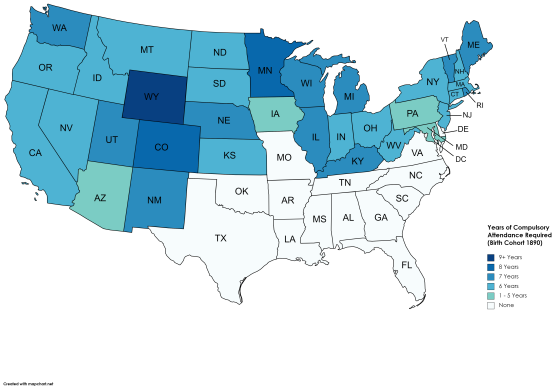
8 Figures

Figure 1: States with Different Lengths of Compulsory Attendance

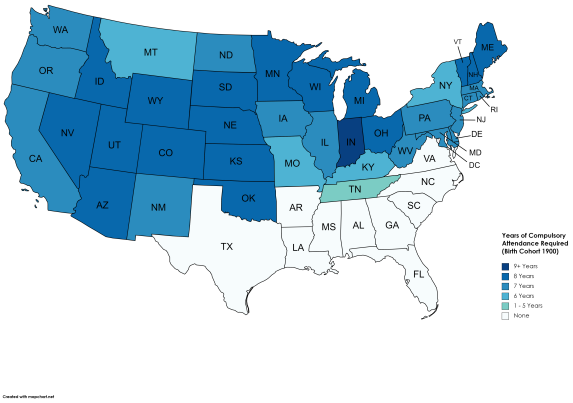
(a) Birth Cohort 1880



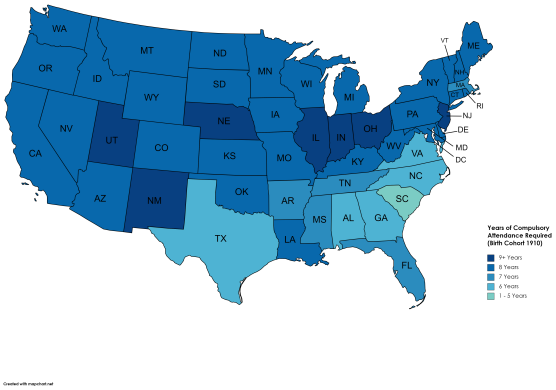
(b) Birth Cohort 1890



(c) Birth Cohort 1900

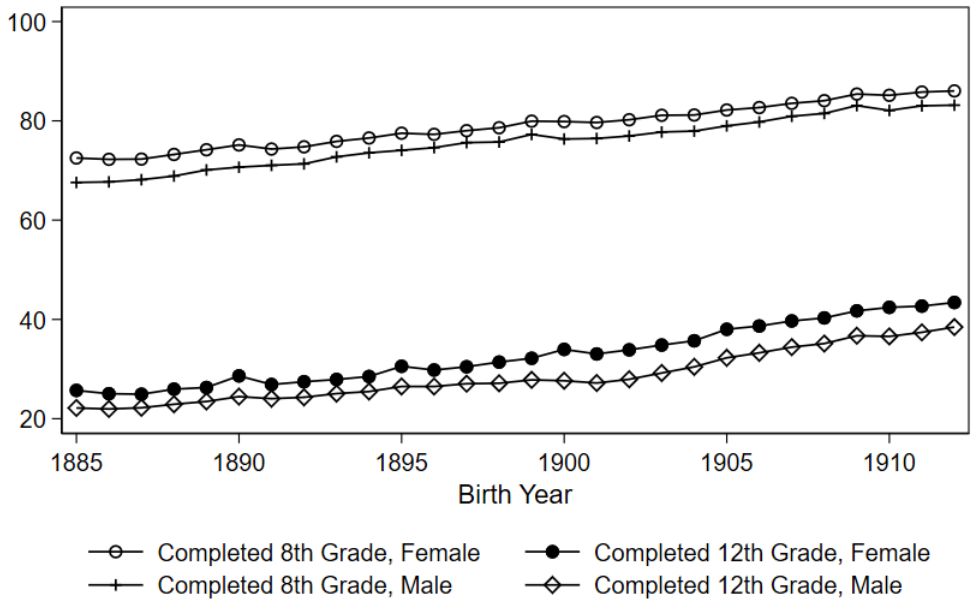


(d) Birth Cohort 1910

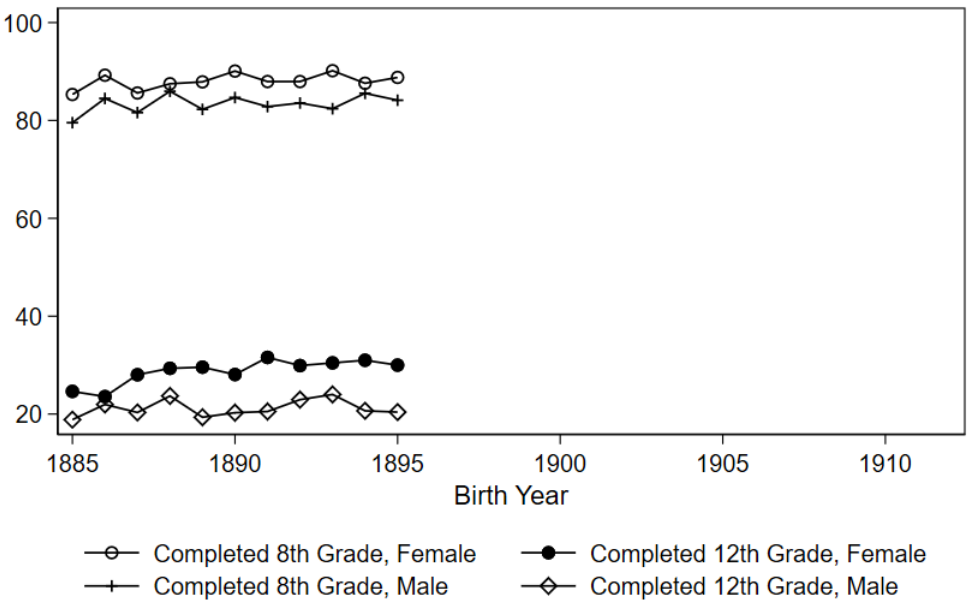


The figure illustrates the lengths of compulsory attendance for birth cohorts 1880, 1890, 1900, and 1910 in different states. Lengths of compulsory attendance are categorized into (1) None; (2) 1-5 years; (3) 6 years; (4) 7 years; (5) 8 years; (6) 9 years and above.

Figure 2: % Population Completed 8th and 12th Grade by Birth Cohort and Gender



Sample: Native-born White Individuals in the 1940 Census



Sample: Native-born White Individuals in 1915 Iowa Census

The figure at the top shows the share of the population completed 8th and 12th grade as reported in the 1940 Decennial Census, and the figure at the bottom shows the share of the population completed 8th and 12th grade as reported in the 1915 Iowa State Census.

9 Tables

Table 1: First Stage - The Effect of Compulsory Attendance on Years of Education Completed

	(1) All Women	(2) Married Women	(3) Working Women	(4) Sample-line Women	(5) No South
Required Years of Schooling					
7 Years	0.054***	0.052***	0.102***	0.058***	0.053***
	(0.011)	(0.011)	(0.015)	(0.016)	(0.011)
8 Years	0.062***	0.059***	0.110***	0.070***	0.056***
	(0.012)	(0.013)	(0.014)	(0.018)	(0.012)
9 Years +	0.136***	0.145***	0.083***	0.141***	0.130***
	(0.019)	(0.020)	(0.021)	(0.027)	(0.018)
N	18836237	14902197	4151245	936920	14784416
F Stats	21.226	20.752	25.897	10.482	20.509

The outcome variable is years of education completed reported in the 1940 census. The independent variables are dummy variables indicating years of required compulsory attendance. The regression includes birth state fixed effects and birth year by region fixed effects. The sample from Column 1 is White, native-born women who were born between 1885 and 1912. Column 2, 3, 4 and 5 further restricts the sample to currently married women in 1940, working women who earned positive wages in 1940, sample-line women in the 1940 census, and women born outside of the South. First-Stage F Stats are reported.

Table 2: The Effect of Years of Schooling on Labor Market Outcomes

	(1) Gainful Occupation		(2) Weeks Worked		(3) Hours Worked		(4) ln Wage	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	2.190***	7.857***	0.443***	0.098	0.346***	0.270	0.112***	0.151***
	(0.019)	(1.933)	(0.006)	(0.354)	(0.017)	(0.410)	(0.001)	(0.028)
Mean	25.871	25.871	40.568	40.568	32.658	32.658	6.391	6.391
	(5) Steno-graphers		(6) Clerical Workers		(7) Book-keepers		(8) House-keepers	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	0.515***	4.211***	0.238***	2.113***	0.213***	1.480***	-0.282***	-2.161***
	(0.011)	(0.795)	(0.003)	(0.471)	(0.002)	(0.249)	(0.003)	(0.416)
Mean	2.482	2.482	1.748	1.748	1.284	1.284	2.012	2.012

The sample is White, native-born women who were born between 1885 and 1912 in Columns 1, 5, 6, 7, and 8 (N=18836237). Column 2, 3, and 4 further restricts the sample to working women who earned positive wages (N=4151245). The outcome variables are whether one had a gainful occupation in 1940 (*100), weeks worked in 1939, weekly hours worked in 1940, the natural log of wages reported in 1940, and whether the woman was a stenographer, a clerical worker, a bookkeeper, or a housekeeper (*100). The independent variable is years of education completed. Both OLS and IV estimates are reported. The regression includes birth state fixed effects and birth year by region fixed effects.

Table 3: The Effect of Years of Schooling on Marriage Formation/Dissolution

	(1) Never Married		(2) Divorced or Separated		(3) Age at First Marriage	
	OLS	IV	OLS	IV	OLS	IV
Educ	1.361***	-0.089	0.063***	1.298***	0.382***	0.679*
	(0.017)	(0.858)	(0.003)	(0.315)	(0.003)	(0.272)
Mean	12.455	12.455	2.492	2.492	21.616	21.616

The sample is White, native-born women born between 1885 and 1912 (N=18836237). Column 3 further restricts the sample to sample-line women (N=710094). The outcome variables are whether one was never married in 1940 (*100), whether one was divorced or separated in 1940 (*100), age at first marriage (only available for sample-line women). The independent variable is years of education completed. Both OLS and IV estimates are reported. The regression includes birth state fixed effects and birth year by region fixed effects.

Table 4: The Effect of Years of Schooling on Match Quality

	(1) H's Educ		(2) H Gain. Occ.		(3) H's Wks Worked		(4) H's Hrs Worked	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	0.708***	0.931***	0.082***	-1.471*	0.397***	1.093*	0.596***	0.259
	(0.001)	(0.061)	(0.003)	(0.602)	(0.005)	(0.491)	(0.007)	(0.687)
H's Educ			0.221***	0.198***	1.063**	0.134	0.515***	0.704
			(0.004)	(0.348)	(0.004)	(0.335)	(0.008)	(0.384)
Mean	9.085	9.085	96.602	96.602	44.891	44.891	37.616	37.616
	(5) H's ln Wage		(6) TT Wks Worked		(7) TT Hrs Worked		(8) ln TT Wage	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	0.052***	0.078*	0.870***	4.786***	0.999***	2.573**	0.055***	0.104*
	(0.001)	(0.040)	(0.010)	(1.149)	(0.010)	(0.972)	(0.001)	(0.041)
H's Educ	0.077***	0.063**	0.397***	-1.791**	0.415***	-0.465	0.075***	0.048*
	(0.000)	(0.022)	(0.008)	(0.640)	(0.010)	(0.543)	(0.000)	(0.023)
Mean	7.029	7.029	51.054	51.054	42.714	42.714	7.067	7.067

The sample is White, native-born women who were married in 1940 and had her husband in the household (N=12583226). Columns 3 to 5 further restrict the sample to households where the husband was earning positive wages (N=8652777), and Columns 6 to 8 further restrict the sample to households where either the husband or the wife was earning positive wages (N=8929187). The outcome variables are the husband's education, whether husband had a gainful occupation in 1940, the husband's weeks and hours worked, the husband's log wages, the husband's plus wife's weeks and hours worked, and husband's plus wife's log wages. The independent variables are years of education completed by the wife and the husband. Both OLS and IV estimates are reported, and only the wife's years of education are instrumented in the IV estimates. The regression includes birth state fixed effects and birth year by region fixed effects. Columns 2 to 8 add the husband's age, age square, birthplace, and birth region as control variables.

Table 5: The Effect of Years of Schooling on Labor Market Outcomes: Married Women

	(1) Gainful Occupation		(2) Weeks Worked		(3) Hours Worked		(4) ln Wage	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	1.011***	7.331**	0.293***	1.809	0.262***	-0.483	0.073***	0.335**
	(0.017)	(2.396)	(0.010)	(1.319)	(0.018)	(1.327)	(0.001)	(0.107)
H's Educ	-0.212***	-3.733**	0.323***	-0.537	0.212***	0.634	0.039***	-0.109
	(0.013)	(1.332)	(0.007)	(0.747)	(0.009)	(0.753)	(0.000)	(0.061)
Mean	13.182	13.182	37.148	37.148	29.130	29.130	6.196	6.196
	(5) Steno-graphers		(6) Clerical Workers		(7) Book-keepers		(8) House-keepers	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	0.167***	2.511***	0.097***	1.568***	0.116***	1.206***	-0.051***	-0.235
	(0.004)	(0.579)	(0.002)	(0.391)	(0.002)	(0.251)	(0.001)	(0.204)
H's Educ	0.072***	-1.234***	0.023***	-0.797***	0.007***	-0.601***	-0.046***	0.057
	(0.003)	(0.321)	(0.001)	(0.218)	(0.001)	(0.139)	(0.001)	(0.114)
Mean	0.936	0.936	0.740	0.740	0.618	0.618	0.551	0.551

The sample is White, native-born women who were born between 1885 and 1912 and who were married in 1940 (N=12583226). Column 2, 3, and 4 further restricts the sample to working women who earned positive wages (N=1372848). The outcome variables are whether one had a gainful occupation in 1940 (*100), weeks worked in 1939, weekly hours worked in 1940, the natural log of wages reported in 1940, and whether the woman was a stenographer, a clerical worker, a bookkeeper, or a housekeeper (*100). The independent variable is years of education completed. Both OLS and IV estimates are reported. The regression includes the husband's education/age/age square/birthplace/birth region as the control variables, as well as birth state fixed effects and birth year by region fixed effects.

10 Appendix

Table A1: Alternative Instruments - The Effect of Compulsory Attendance on Years of Education Completed

	(1) All Women	(2) Married Women	(3) Working Women	(4) Sample-line Women	(5) No South
Required Years of Schooling					
1 - 5 Years	0.028	0.020	0.038	0.038	0.019
	(0.018)	(0.018)	(0.024)	(0.027)	(0.031)
6 Years	0.043*	0.028	0.144***	0.063*	0.024
	(0.021)	(0.022)	(0.029)	(0.031)	(0.030)
7 Years	0.094***	0.079**	0.227***	0.115***	0.076*
	(0.023)	(0.024)	(0.032)	(0.033)	(0.032)
8 Years	0.104***	0.086**	0.241***	0.130***	0.079*
	(0.026)	(0.026)	(0.034)	(0.036)	(0.034)
9 Years +	0.180***	0.173***	0.220***	0.204***	0.155***
	(0.030)	(0.031)	(0.038)	(0.042)	(0.038)
N	18836237	14902197	4151245	936920	14784416
F Stats	12.858	12.435	19.443	6.993	12.160

The outcome variable is years of education completed reported in the 1940 census. The independent variables are dummy variables indicating years of required compulsory attendance. The regression includes birth state fixed effects and birth year by region fixed effects. The sample from Column 1 is White, non-South, native-born women who were born between 1885 and 1912. Column 2, 3, 4 and 5 further restricts the sample to currently married women in 1940, working women who earned positive wages in 1940, sample-line women in the 1940 census, and women born outside of the South. First-Stage F Stats of all independent variables (but not fixed effects) are reported.

Table A2: The Effect of Years of Schooling on Labor Market Outcomes: No South

	(1) Gainful Occupation		(2) Weeks Worked		(3) Hours Worked		(4) ln Wage	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	2.232***	12.207***	0.465***	-0.227	0.258***	-0.409	0.113***	0.150***
	(0.019)	(2.333)	(0.007)	(0.386)	(0.020)	(0.438)	(0.001)	(0.031)
Mean	26.021	26.021	40.762	40.762	32.671	32.671	6.439	6.439
	(5) Steno-graphers		(6) Clerical Workers		(7) Book-keepers		(8) House-keepers	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	0.557***	4.896***	0.245***	2.502***	0.219***	1.772***	-0.290***	-2.160***
	(0.014)	(0.917)	(0.004)	(0.541)	(0.003)	(0.283)	(0.002)	(0.446)
Mean	2.714	2.714	1.927	1.927	1.383	1.383	2.113	2.113

The sample is White, non-South, native-born women who were born between 1885 and 1912 in Columns 1, 5, 6, 7, and 8 (N=14784416). Column 2, 3, and 4 further restricts the sample to working women who earned positive wages (N=3371943). The outcome variables are whether one had a gainful occupation in 1940 (*100), weeks worked in 1939, weekly hours worked in 1940, the natural log of wages reported in 1940, and whether the woman was a stenographer, a clerical worker, a bookkeeper, or a housekeeper (*100). The independent variable is years of education completed. Both OLS and IV estimates are reported. The regression includes birth state fixed effects and birth year by region fixed effects.

Table A3: The Effect of Years of Schooling on Marriage Formation/Dissolution: No South

	(1) Never Married		(2) Divorced or Separated		(3) Age at First Marriage	
	OLS	IV	OLS	IV	OLS	IV
Educ	1.544***	0.510	0.045***	1.502***	0.400***	0.743*
	(0.014)	(0.928)	(0.003)	(0.356)	(0.003)	(0.290)
Mean	13.356	13.356	2.556	2.556	21.912	21.912

The sample is White, non-South, native-born women born between 1885 and 1912 (N=14784416). Column 3 further restricts the sample to sample-line women (N=552530). The outcome variables are whether one was never married in 1940 (*100), whether one was divorced or separated in 1940 (*100), age at first marriage (only available for sample-line women). The independent variable is years of education completed. Both OLS and IV estimates are reported. The regression includes birth state fixed effects and birth year by region fixed effects.

Table A4: The Effect of Years of Schooling on Match Quality: No South

	(1) H's Educ		(2) H At Work		(3) H's Wks Worked		(4) H's Hrs Worked	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	0.687***	0.964***	0.078***	-2.037**	0.381***	1.571**	0.575***	0.337
	(0.001)	(0.062)	(0.004)	(0.632)	(0.006)	(0.524)	(0.008)	(0.697)
H's Educ			0.230***	1.340***	0.539***	-0.091	0.523***	0.649
			(0.005)	(0.333)	(0.005)	(0.277)	(0.009)	(0.369)
Mean	9.401	9.401	96.016	96.016	45.005	45.005	37.430	37.430
	(5) H's ln Wage		(6) TT Wks Worked		(7) TT Hrs Worked		(8) ln TT Wage	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	0.046***	0.092*	0.876***	6.964***	0.969***	4.130***	0.050***	0.143**
	(0.000)	(0.040)	(0.011)	(1.265)	(0.011)	(1.048)	(0.000)	(0.044)
H's Educ	0.075***	0.050*	0.409***	-2.807***	0.415***	-1.255*	0.073***	0.023
	(0.000)	(0.021)	(0.009)	(0.667)	(0.012)	(0.554)	(0.000)	(0.023)
Mean	7.104	7.104	50.888	50.888	42.280	42.280	7.142	7.142

The sample is White, non-South, native-born women who were married in 1940 and had her husband in the household (N=9643189). Columns 3 to 5 further restrict the sample to households where the husband was earning positive wages (N=6872829), and Columns 6 to 8 further restrict the sample to households where either the husband or the wife was earning positive wages (N=7077062). The outcome variables are the husband's education, whether husband had a gainful occupation in 1940, the husband's weeks and hours worked, the husband's log wages, the husband's plus wife's weeks and hours worked, and husband's plus wife's log wages. The independent variables are years of education completed by the wife and the husband. Both OLS and IV estimates are reported, and only the wife's years of education are instrumented in the IV estimates. The regression includes birth state fixed effects and birth year by region fixed effects. Columns 2 to 8 add the husband's age, age square, birthplace, and birth region as control variables.

Table A5: The Effect of Years of Schooling on Labor Market Outcomes: Married Women + No South

	(1) Gainful Occupation		(2) Weeks Worked		(3) Hours Worked		(4) ln Wage	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	1.041***	13.480***	0.340***	1.814	0.186***	-0.595	0.077***	0.300***
	(0.021)	(2.654)	(0.011)	(1.144)	(0.022)	(1.167)	(0.001)	(0.090)
H's Educ	-0.260***	-6.787***	0.332***	-0.449	0.182***	0.595	0.040***	-0.078
	(0.016)	(1.389)	(0.008)	(0.605)	(0.011)	(0.619)	(0.001)	(0.047)
Mean	12.998	12.998	37.054	37.054	28.814	28.814	6.234	6.234
	(5) Steno-graphers		(6) Clerical Workers		(7) Book-keepers		(8) House-keepers	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Educ	0.184***	3.126***	0.101***	1.938***	0.118***	1.445***	-0.050***	-0.217
	(0.005)	(0.639)	(0.002)	(0.429)	(0.002)	(0.269)	(0.001)	(0.205)
H's Educ	0.068***	-1.475***	0.017***	-0.947***	-0.000	-0.696***	-0.048***	0.040
	(0.003)	(0.334)	(0.002)	(0.224)	(0.002)	(0.141)	(0.001)	(0.107)
Mean	1.014	1.014	0.802	0.802	0.645	0.645	0.567	0.567

The sample is White, non-South, native-born women who were born between 1885 and 1912 and who were married in 1940 (N=1055438). Column 2, 3, and 4 further restricts the sample to working women who earned positive wages (N=9643189). The outcome variables are whether one had a gainful occupation in 1940 (*100), weeks worked in 1939, weekly hours worked in 1940, the natural log of wages reported in 1940, and whether the woman was a stenographer, a clerical worker, a bookkeeper, or a housekeeper (*100). The independent variable is years of education completed. Both OLS and IV estimates are reported. The regression includes the husband's education/age/age square/birthplace/birth region as the control variables, as well as birth state fixed effects and birth year by region fixed effects.