Minimum wage and racial marriage gap

Kla Kouadio* Eva Moreno - Galbis†

Abstract

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Previous research has predominantly focused on the lower male-female ratio as an explanatory factor for the lower marriage rates among black individuals relative to white individuals in the United States. In our paper, we investigate the role of economic factors as drivers of marriage formation and their potential to explain this racial gap. Specifically, we estimate the impact of minimum wage hikes on the marital racial gap between black and white individuals. Our findings suggest that following minimum wage increases, the marriage rate of young black individuals increases relative to that of white individuals. Additionally, our results indicate that in response to the minimum wage hikes, young black individuals increase their labor supply relative to whites. This relative improvement in the economic prospects of black individuals is consistent with the reduction in the marital gap estimated for this population.

1 Introduction

According to the US Bureau of Labor Statistics report 2021, the employment-population ratio among adult men (20 years and older) for blacks equals 58.0 percent. This is in great contrast with the employment-population ratio for white adult men which equals 65.6 percent.[1] The jobless rate is equal to 11.4% for blacks and 7.3% for whites. Economic prospects for young black people are clearly less promising than those of white people. While research on the reason behind the racial gap in marriage has essentially focused on the lower male-female ratio in marriageable ages

*Aix Marseille Univ, CNRS, AMSE, Marseille, France. Email: kla.kouadio@univ-amu.fr

†Corresponding author. ORCID: 0000-0001-6049-8830. Aix Marseille Univ, CNRS, AMSE, Marseille, France. Email: eva.moreno-galbis@univ-amu.fr. This work was supported by the French National Research Agency Grant ANR-21-CE26-0019. This work was also supported by the French National Research Agency Grant ANR-17-EURE-0020, and by the Excellence Initiative of Aix-Marseille University - A*MIDEX.

[1]Among adult women, the ratios showed less variation across both groups: 54.4 percent for blacks, 52.7 percent for whites.

for blacks, our paper will focus on the role of economic prospects.[2] We want to study if, for a given male-female ratio, minimum wage increases, by improving economic prospects of people earning the minimum wage, manage to push towards marriage. People, traditionally women, are not willing to enter in a marriage from which little is expected in terms of economic well-being. Actually, as shown by Autor et al. (2019), "the China shock" reduced male's relative earnings and by doing so it also reduced marriage and fertility. These shocks heighten male idleness and premature mortality, and raised the share of mothers who were unwed and the share of children living in single-headed households.

Economic prospects seem then a driver of marrying decision. In this paper, we focus on an exogenous change in economic prospects. The period going from 2011 to 2016 was characterized by substantial state variation in minimum wage policies in the US. From 2014 to 2016 states' minimum wage policies diverged substantially. Many states approved legislations setting the path of minimum wage increases in the following years. We then propose a difference-in-differences identification strategy exploiting heterogeneity between people residing in states that implemented statutory minimum wage increases versus residents in states that did not implement government legislated minimum wage increases to estimate the impact of the minimum wage on the racial gap in marriage.

As shown by Clemens et al. (2021) the effects of minimum wage increases are essentially concentrated in low-paid occupations. Our descriptive statistics section reveals that black people are over represented (with respect to white people) in low-paid jobs. The statutory increases in the minimum wage, will then improve the relative economic prospects of black people with respect to white people, which should contribute to reduce the racial gap, for a given sex ratio. Additionally, this paper goes a step further and exploits time use to propose socio-economic mechanisms that may be driving the variation in the relative marriage rate of black people.

Our estimation results reveal that in states implementing minimum wage increases, the racial gap in marriage decreased for young individuals with respect to the states where no minimum wage increase was implemented. The decrease in this racial gap was mainly driven by the increase in the number of people that marry and a decrease in the number of people that have never been married. It seems then that the relative improvement in the economic prospects of young black people (which are relatively more present in low-paid positions than white people) residing in states where there were statutory increases in the minimum wage, pushed them towards marriage.

We then exploit racial differences in labor supply and time use between individuals residing in states with minimum wage increases and those in other states to identify the driving factors of

[2]The sex ratio, and particularly the lack of marriageable black men due to unemployment and incarceration was first underlined by Wilson (1987). Since then, the "Wilson hypothesis" has been empirically investigated by papers such as Lichter et al. (1992), Wood (1995), Charles and Luoh (2010) or through estimated dynamic search models by Seitz (2009) and, more recently by Caucutt et al. (2018).

the estimated changes in the racial gap in marriage. Our results indicate that in response to the minimum wage increase, black individuals raise their labor supply relative to white individuals, thereby improving their relative economic prospects. This, in turn, leads black individuals to marry more or divorce less.

This paper is related to two streams of literature. On the one hand it relates to the minimum wage literature. Many of the papers in this literature have analyzed the impact of minimum wages on economic prospects by considering the impact on employment, unemployment or earnings. Research in the 1990s onward challenged the conventional wisdom of neoclassical models according to which higher minimum wages (above the market equilibrium wage) induce higher earnings but lower employment-to-population rates. The "new minimum wage research" literature exploits variation in state-specific minimum wage in the US and finds zero or slightly positive employment effect of the minimum wage on employment (see Allegretto et al., 2011; Card, 1992a,b; Card and Krueger, 1994, 2000; Dube et al., 2010, 2007; Katz and Krueger, 1992; Zavodny, 2000). Explanations for these results include decreased hours worked per worker instead of in the number of workers, imperfectly competitive labor markets, underground economy (*i.e.* people work for wages below the wage floor) and improved quality or productivity of workers that compensates wage increases. Many papers have criticized the approach proposed by the "new minimum wage research" (see Deere et al., 1995; Kim and Taylor, 1995; Neumark and Wascher, 2000; Welch, 1995) and other papers still find negative employment effects mainly concentrated among younger workers (see Currie and Fallick, 1996; Neumark, 2001; Neumark et al., 2004; Neumark and Wascher, 2002; Williams and Mills, 2001) and low skilled workers (see Clemens et al., 2021; Clemens and Wither, 2019; Sabia, 2014). Major recent publications align though with the "new minimum wage research" findings underlining small and even negligible impacts on employment (see works by Cengiz et al., 2019; Clemens and Strain, 2018; Harasztosi and Lindner, 2019).[3]

The importance of improved economic prospects on family stability (*i.e.* marriage, divorce and fertility) seems though neglected by the minimum wage literature.[4] Our contribution consists then on focusing on the impact of minimum wage increases on marriage and, more precisely, we focus on

[3]Several recent US studies have attempted to measure how minimum wage changes affect low-skilled immigrants (see Orrenius and Zavodny, 2008, Churchill and Sabia, 2019 or Averett et al., 2019), Neumark et al. (2020) try to assess evidence on the short and long-run effects of the minimum wage on earnings, employment, poverty and public assistance in areas with (*i*) high share of poverty in 1970; (*ii*) low education; (*iii*) high share of blacks and (*iv*) high share of single mothers. Derenoncourt and Montialoux (2020) study how the extension of the federal minimum wage coverage by the 1966 Fair Labor Standards Act to industries that were not previously covered by the minimum wage, explains more than 20% of the reduction in the racial earnings and income gap during the Civil Rights Era. Finally other papers focus on the impact of the minimum wage on mental and physical health (see Horn et al., 2017; Kronenberg et al., 2017; McCarrier et al., 2011; Reeves et al., 2017)

[4]Lindo et al. (2022) exploit state-level changes in maximum unemployment benefits over time as well as comparisons across workers who have been laid off and those that have not been laid off, to study the impact of stable income on family stability (divorce and fertility).

the racial gap in marriage in the US since black people display systematically lower marriage rates than white people and one of the driving causes is likely to be related to the over-representation of black people on low-paid positions, having the poorest economic prospects.

Our paper also relates to the literature on racial gap in marriage. Differences in marriage rates and family structure between blacks and whites display a long-term pattern. The persistence of this gap has even led researchers like Banks (2011) to question if marriage was only for whites. The consequences of family structure and, more precisely, of single parenthood on children have been analyzed in McLanahan and Sandefur (2009) and McLanahan et al. (2013). Already in the 60s, the relationship between the racial gap in family structure and social problems such as poverty or crime among the black population was underlined in Moynihan (1965)'s report. Gayle et al. (2016) study instead the consequences on intergenerational mobility of racial differences in family structure. The impact of wage inequality on marriage rate is studied in Loughran (2002) and Gould and Paserman (2003).

2 How can economic prospects influence marriage decisions?

To illustrate the economic mechanism through which economic prospects influence the marriage decision, we exploit a simplified version of Mortensen (1988) seminal work. We exploit a search theoretic model of matching. Potential partners meet sequentially at finite rates. However, identities of potential match partners are uncertain since no pair know their match quality before they meet. They anticipate though that this match quality will be enhanced or deteriorated by the material living conditions. Good living conditions, over a poverty threshold, will tend to enhance match quality (which is more linked to compatible personalities, life interests and life values). Bad living conditions (close to the poverty threshold) will tend to deteriorate the quality of the match. For simplicity, and to be in line with our empirical approach, we consider a low skilled population that can only be expected to find an occupation located in the first three deciles of the wage distribution (*i.e.* low- and bottom-paid occupations). There are two types of agents to be matched, male and female (denoted m and f, respectively). We assume an equal number of males and females, $n_m = n_f = n$. Every individual of each type is identical ex ante, however, ex-post realized match qualities differ. The joint benefit to be shared, match quality, is defined as a random variable observed only after a specific pair meet. Let x denote the random-match quality of any pair with a cumulative probability distribution given by $F(x) = Pr(X < x)$. As remarked before, this match quality is driven by the sharing of common interests, life values and compatible personalities by both partners.

Meetings are generated by two independent Poisson arrival processes characterized by arrival rates λ_m and λ_f, where the magnitude of each rate is the average frequency per unit time period with which an individual of the specified type generates meetings with individuals of the other

type. Only unmatched agents search and it is also assumed that any match breaks at exogenous probability δ.

Each agent acts to maximize the expected capitalized value of his or her own future benefit stream. Capitalizing a future stream is simplified by assuming that the interest rate, r, is stationary and the same for all and that every agent lives forever. Each individual is aware of the nature of the matching process (*i.e.* knows the values of the arrival rate parameters, the distribution of match quality, the value of the exogenous turnover rate and the interest rate). Each agent can thus compute the capital value associated with the unmatched state as well as the capital value of being matched, conditional on the realized value of the match.

Let us denote $W(x)$ as the capital value of a potential match known to be of quality x and V_f and V_m the capital values associated with the fact of being single. Two single wealth maximizing agents will have an interest in forming a partnership if the capital value of their match exceeds the capital values of remaining singles, that is: $S(x) = W(x) - V_f - V_m \geq 0$, where $S(x)$ stands for the surplus capital value of the match. In order to induce two singles to form a match, the surplus capital value must be shared. Denote θ the positive fraction received by females and $(1-\theta)$ the fraction received by males. The capital value of an acceptable match for single females will be $\theta S(x) = W_f(x) - V_f$ while for males it equals $(1-\theta)S(x) = W_m(x) - V_m$. Given any positive share fraction, θ, both prefer a partnership with each other to the single state if and only if the surplus capital value of the match is positive.

The capital value of an existing match of quality x satisfies:

$$W(x) = (b - \overline{w})x - \delta S(x) \tag{1}$$

The match quality is weighted by a "living conditions" factor that is defined as the difference between the benefit flow of the partnership and the poverty trap, $\overline{w}$. This benefit flow results from the addition of the benefits flow obtained by each of the parties when single, *i.e.* b_f and b_m. These benefits cover among other wages and unemployment benefits. We assume an additive relationship of these flows that do not compensate each other after the match, that is, both partners keep the benefit flows they obtained when single. For identical match quality x, the "living conditions" factor modifies the capital value of the match, which also implies that it can modify the minimum quality match required by singles to accept a partnership. $\delta S(x)$ stands for the capital loss to the pair in case of exogenous separation.

The expected present value of the future income stream anticipated by a single female equals:

$$rV_f = b_f + (\lambda_m + \lambda_f)u\theta \int Max[S(y), 0]dF(y) \tag{2}$$

where $u = u_f = u_m$ stands for the fraction of males that is single. This fraction is the same for women, given that we are assuming an equal number of males and females. The expected present value for single females equals then the addition of the benefit flow when single, plus the expected

present value of a match. For this match to happen, the single female needs first to generate a meeting with a single men, which happens with probability $\lambda_m u$, or a single male needs to meet a single female, which happens with probability $\lambda_f u$. Once the meeting occurs, the match is only formed if the female surplus capital value of the match is positive.

The same reasoning applies when considering the expected present value of the future income stream anticipated by a single male, which will equal:

$$rV_m = b_m + (\lambda_f + \lambda_m)u(1-\theta)\int Max[S(y),0]dF(y) \tag{3}$$

To derive the endogenously determined surplus capital value associated with any match, we have to add the respective sides of equations (2) and (3). We obtain:

$$r(V_f + V_m) = b_f + b_m + (\lambda_f + \lambda_m)\int Max[S(y),0]dF(y) \tag{4}$$

We denote $b = b_f + b_m$ and $\lambda = \lambda_f + \lambda_m$. Subtracting (4) from (1) we obtain:

$$\begin{aligned} r(W(x) - (V_f + V_m)) &= (b-\overline{w})x - b - \delta S(x) - \lambda u \int Max[S(y),0]dF(y) \\ (r+\delta)S(x) &= (b-\overline{w})x - b - \lambda u \int Max[S(y),0]dF(y) \end{aligned}$$

Since $S(x^*) = 0$ and $S'(x) = \dfrac{(b-\overline{w})}{(r+\delta)}$ we integrate by parts and find:

$$\begin{aligned} S(x^*) = 0 &= \frac{1}{r+\delta}\Big[(b-\overline{w})x - b - \frac{\lambda u(b-\overline{w})}{r+\delta}\int_{x^*}^{\overline{x}}(1-F(y))dF(y)\Big] \\ x^* &= \frac{1}{(b-\overline{w})}\Big[b + \frac{\lambda u(b-\overline{w})}{r+\delta}\int_{x^*}^{\overline{x}}(1-F(y))dF(y)\Big] \\ x^* &= \frac{1}{(1-\overline{w}/b)} + \frac{\lambda u}{r+\delta}\int_{x^*}^{\overline{x}}(1-F(y))dF(y) \end{aligned} \tag{5}$$

where $\overline{x}$ stands for the largest value of the match quality distribution so that $1 - F(\overline{x}) = 0$. The solution to equation (5) is greater or equal to b in general and is less than $\overline{x}$ if and only if $b < \overline{x}$. If this condition is not satisfied there is no incentive for match formation in first place. In our case, the match that is acceptable to two singles is stable because we are ignoring endogenous separations (*i.e.* we do not allow any of the partners to find a match of better quality). People do not wait for the "perfect match" (*i.e.* a match of quality $\overline{x}$), as soon as $x \geq x^*$, the match takes place.

Benefit flows, include among other components, the wage earned by the individuals. In our paper we are considering the pool of workers located in low- and bottom-paid positions, so many of them are likely to be paid at the minimum wage or earn a wage indexed to the minimum wage. An increase in the minimum wage, improves then benefit flows, which according to equation (5), reduces the threshold match quality required by single individuals to accept a match. The reduction

in x^* promoted by the improved living conditions (associated with the better economic prospects) stimulates the number of matches. Therefore, minimum wage policies have the ability to influence marriage decisions through their effect on economic prospects.

Evidently, our simplified framework abstracts from the possibility that individuals could reduce their hours of work following the minimum wage increase, and in this case, economic prospects will not be improved. In the econometric section, we analyze how minimum wage changes have modified individual's time use in order to study whether the improvement in the economic prospects is likely to be driving marriage decisions.

The model is closed with the steady state equilibrium flows and match quality distribution presented in Appendix A. An equilibrium steady state solution to the model is any reservation quality, a steady state fraction of unmatched agents and distribution of match qualities that simultaneously satisfies equations (5), (A.1) and (A.2).

3 Data and variables

This paper leverages repeated cross-sections of the IPUMS 1-year American Community Survey (ACS) from 2011 to 2016. The dataset offers information on various population characteristics including marital status, ethnicity, employment status, occupation and educational attainment. The ACS is the largest publicly available household survey in the United States, allowing for well-sized samples of sub-populations at the state-by-time level. This survey annually tracks 3 millions individuals throughout the 2011-2016 period.

This paper also exploits the American Time Use Survey (ATUS), the first federally administered, continuous survey on time use in the United States. The goal of the survey is to measure how people divide their time among life's activities. In ATUS, individuals are randomly selected from a subset of households that have completed their eighth month of interviews for the Current Population Survey (CPS). ATUS respondents are interviewed only one time about how they spent their time on the previous day, where they were, with whom they were with, and whether the activities were done for one's job or business. The survey is sponsored by the Bureau of Labor Statistics (BLS) and is conducted by the U.S. Census Bureau.

Each wave is based on 24-hour time diaries where respondents report the activities from the previous day in detailed time intervals. Survey personnel then assign the activities reported by the individual to a specific category in the ATUS's set classification scheme which is comprised of over 400 detailed time use categories (see Hamermesh et al., 2005 for more details). Demographic information—including sex, race, age, educational attainment, occupation, income, marital status is available for each respondent[5].

[5]Although some of these variables are updated during the ATUS interview, most of this information comes from earlier CPS interviews, as the ATUS sample is drawn from a subset of households that have completed month 8 of

The paper complements the ACS with the NBER Merged Outgoing Rotation Group (MORG) of the Current Population Survey[6] (CPS) earning data to provide some descriptive statistics on marital status by age and/or race for people located on the bottom half of the wage distribution. Workers wages are available at an annual basis in the ACS and include tips and overtime. Imputing hourly pay rates would thus be imprecise. In contrast, hourly wages (in cases of hourly pay rate) or weekly salaries are directly reported for currently employed workers in the CPS MORG. We thus specifically classify occupations based on their location on the wage distribution in 2006, using MORG data. As in Clemens et al. (2021), we consider 2006 because it predates both the minimum wage increases we study and the Great Recession. All occupations located in the first decile of the wage distribution are defined as "Low paid". These occupations are mechanically impacted by minimum wage laws. Since this definition of low paid occupations is restrictive, we sometimes consider occupations located in the first three deciles of the wage distribution, that we define as being in the "Bottom paid". NBER extracts from the CPS monthly cover 1979 through the most recently completed calendar year. Fifty or more variables each month are selected for continuity across years. There are 25,000 records or more per month. This subset includes all adult respondents in the outgoing rotation group each month. It includes data needed to explore or explain wage determination, union wage effects, inter-industry wage differentials, wage inequality, and employment discrimination.

Historical data on the minimum wage by state is kindly provided by the Github repository associated with Vaghul and Zipperer (2016).

3.1 The variables

We consider three different marital status, married, never married and separated or divorced. We restrict our sample to black and non-black people (including whites, non-black hispanics and asian) when using ATUS or CPS. Since other races stand for less than 2.5% of the sample, this restriction is not problematic. When using ACS for our main regressions, we limit the sample to white individuals who are not of mixed race with any other racial category (Black, Hispanic, Asian, and Native American), as well as non-mixed Black individuals. We use the NBER Merged Outgoing Rotation Group of the CPS earning data for 2006 to classify occupations depending on their lo-

the CPS

[6]The CPS is the monthly household survey conducted by the Bureau of Labor Statistics to measure labor force participation and employment. 50-60,000 households per month are queried. Every household that enters the CPS is interviewed each month for 4 months, then ignored for 8 months, then interviewed again for 4 more months. Usual weekly hours/earning questions are asked only at households in their 4th and 8th interview. These outgoing interviews are the only ones included in the NBER extracts, also known as NBER Merged Outgoing Rotation Group of the CPS earning data. New households enter each month, so one fourth the households are in an outgoing rotation each month.

cation on the wage distribution. We use consistent hourly wage series during entire period (the variable used imputes hourly wage for weekly workers and actual hourly wage for hourly workers).[7] Specifically, in the ACS, an occupation is reported for any individual who had worked within the previous five years, irrespective of employment status. Therefore, we not only restrict to employed individuals. In fact, unemployed and out-of-labor individuals may also be impacted by minimum wage increases on their marriage decisions. Additionally, this approach allows us to include potential negative employment effects resulting from the minimum wage increase, which could possibly impact marriage formation negatively. Restricting the analysis to employed individuals could lead to positively biased results. Moreover, it helps to avoid the issue of "bad" control (control affected by the treatment) that could result from restricting to employed individuals.
Concerning the ATUS, we closely follow Aguiar et al. (2013) and segment allocation of time into broad categories:

- "Market work" includes all time (in minutes) spent working in the market sector on main jobs, second jobs, and overtime, including any time spent commuting to or from work and time spent on work related meals and activities. Within this category we distinguish the "Atypical Hours". We transform the 24 hours of the day in 1440 minutes. We define standard hours as minutes worked from 8 am (480 minutes) to 4 pm (960 minutes) in a weekday. Atypical hours are defined as minutes worked during the weekends and outside the range 8 am to 4 pm.

- Non market work (home production) consists of four subcategories: core production, activities related to home ownership, obtaining goods and care of other adults. Core home production includes any time spent preparation and cleanup, doing laundry, ironing, dusting, vacuuming, indoor hold cleaning, cleaning or repairing vehicles and furniture, and activities the management and the organization of the household. Home ownership ties include time spent on household repairs, time spent on exterior cleaning improvements, time spent on the garden, and lawn care. Time spent obtaining goods and services includes all time spent acquiring any goods or services (excluding medical care, education and restaurant meals). Care of other adults includes supervising and caring for other adults, preparing meals and shopping for adults, helping other adults around the house with cleaning and maintenance, transporting other adults to doctors offices and grocery stores.

- We distinguish between five different categories of leisure, which covers most of the remaining time individuals spend that is not market work, nonmarket work, job search or child care. The first category of leisure includes TV watching, the second socializing, the third category sleeping, the forth personal care and the fifth includes sport and other leisure not included

[7] We do not use any wage data that may be present for self-employed workers.

in the previous subcategories.

- The ATUS database also allows us to know if the respondent's spouse or partner was present when the individual implemented each of the activities. We then define a variable including the number of minutes spent with the spouse or partner during standard hours (8 am to 4 pm), "Together standard", and another including the number of minutes spent during atypical hours, "Together atypical".

3.2 Descriptive statistics

3.2.1 Economic prospects and marriage

People, traditionally women, are not willing to enter in a marriage from which little is expected in terms of economic well-being. Poor economic prospects discourage marriage. As revealed by the left hand side panel of Figure B.1 in Appendix B, the proportion of married individuals is larger among those employed in positions located in the three upper deciles of the wage distribution (*i.e.* high paid occupations) than among those employed in bottom paid positions. This applies for both, blacks and whites. While the racial gap in marriage still persists independently of the considered type of occupation, better economic prospects promote marriage. Moreover, this effect is not driven by age composition issues. As shown by the right hand side panel in Figure B.1, even when considering only people below 30 years old (among whom divorce rates are lower), findings still hold.

The role of economic prospects on the marriage is analyzed in Table 1. This table exploits data from the CPS Labor Extracts 2002-2019. It displays the estimation results of a linear probability model where the dependent variable in the two first columns is equal to unity if the individual is married. In columns (3) and (4) the dependent variable equals unity for never married people and in columns (5) and (6) the dependent variable is equal to one for separated or divorced individuals. Columns (1), (3) and (5) introduce as explanatory variables the hourly real wage. Columns (2), (4) and (6) include instead the dummy *Bottom paid* which equals to unity if the individual is employed in a position whose wage is located in the first three deciles of the wage distribution. The variable *High paid* equals to 1 if the individual is employed in a position located in the top 3 deciles of the wage distribution. In all columns we control for demographic controls (age, age square, gender, education, being black), year fixed effects, state fixed effects and the interaction between both of them. This set of fixed effect allows to control for both time invariant and time variant state characteristics (such as the sex ratio within the black community or within the white community).

Columns (1), (3) and (5) reveal that a higher hourly wage is significantly associated with a higher likelihood of being married and a lower likelihood of being never married or divorced/separated.

From columns (2), (4) and (6) we also conclude that individuals employed in bottom paid positions are less likely to be married and more likely to be never married or divorced/separated with respect to the reference group (*i.e.* white people employed in positions located between the 4th and the 7th decile of the wage distribution). In contrast, individuals employed in positions located in the three upper deciles of the wage distribution are more likely to be married and less likely to be never married or divorced/separated than this reference group. These findings confirm both that better economic prospects are associated with a higher probability of being married and a lower probability of being never married or divorced/separated.

Table 1: Economic prospects and marriage

	(1)	(2)	(3)	(4)	(5)	(6)
	Married	Married	Never married	Never married	Divorced/separated	Divorced/separated
Hourly wage	0.002***		-0.001***		-0.000***	
	(0.000)		(0.000)		(0.000)	
Bottom paid		-0.051***		0.047***		0.004***
		(0.003)		(0.002)		(0.001)
High paid		0.048***		-0.032***		-0.013***
		(0.002)		(0.001)		(0.001)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample	All	All	All	All	All	All
Observations	2 440 494	2 440 494	2 440 494	2 440 494	2 440 494	2 440 494
R-squared	0.192	0.194	0.371	0.372	0.051	0.051

Source: CPS Labor Extracts 2002-2019. Notes: Weighted linear probability model with robust standard errors clustered at the state level in parentheses. Demographic controls include gender, age, age square, education level, being black. Statistical significance: $***p < 0.01$, $**p < 0.05$, $*p < 0.1$.

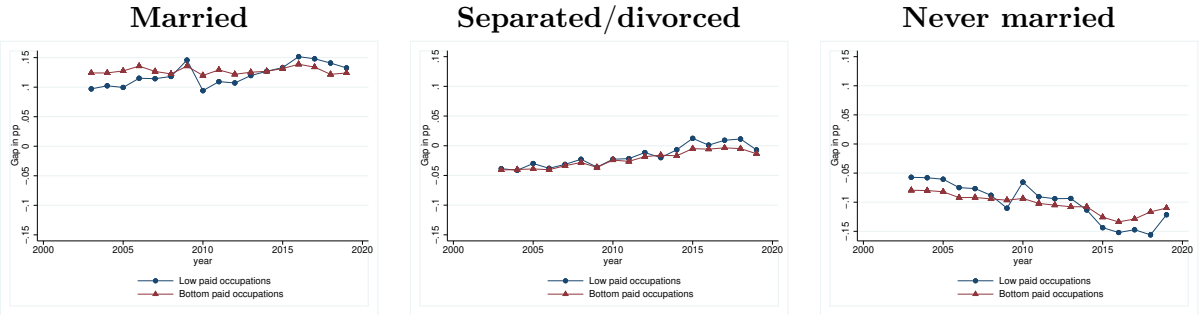
3.2.2 The racial gap in marriage and in economic prospects

While most of the literature has only focused on the sex-ratio as a main explanatory factor of the racial gap in marriage in the US, this paper seeks to analyze a less studied factor: differential economic prospects. Our guess is that black people have worse economic prospects than whites, so any policy measure relatively improving the economic prospects of blacks with respect to whites, should lead to a reduction on the racial gap.

Figure 1 represents the gap between the proportion of white people (among the white population) and the proportion of black people (among black population) that is married (left-hand side panel), separated or divorced (middle panel) or that has never been married (right-hand side panel). There are three major conclusions that can be drawn. First, while the racial gap in marriage is always positive, when considering divorce/separations and never married it becomes negative. Second,

between 2003 and 2015 the racial gap in marriage and in never married was larger among people employed in bottom paid occupations but from 2015 the situation is reversed and the gap becomes larger for people in low paid occupations. Third, the racial gap in separations and divorces has decreased progressively and it essentially vanishes from 2015. Moreover, no difference is observed between people employed in low paid and bottom paid occupations. In conclusion, racial gaps remain a relevant issue when considering marriage and never married, while the gap vanishes when focusing on divorce and separations.

Figure 1: Racial gap in the share of people married, separated/divorced and never married in low paid and bottom paid occupations

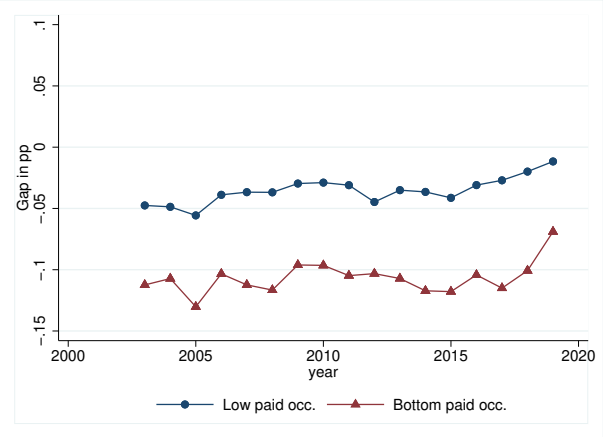


Source: CPS Labor Extracts 2002-2019

Figure 2 illustrates the fact that black people have worse economic prospects than whites. The figure represents the racial gap in the proportion of whites versus blacks occupying positions located in the first decile of the wage distribution (*i.e.* low paid occupations) or located in the first three deciles of the wage distribution (*i.e.* bottom paid occupations). We can draw two major conclusions. First, the proportion of black people (among all the black population) employed in low or bottom paid occupations is larger than the proportion of white people (among all whites) employed in these occupations. Second, while when we consider low paid positions we find a progressive reduction in the racial gap (from 5 pp to 1pp) between 2002 and 2019, the situation is modified when considering bottom paid occupations. In this case, the gap remains fairly constant at around 10pp between 2002 and 2018, and it falls to 7pp in 2019. These findings suggest that black people are trapped in bottom paid positions distribution.[8]

[8]The analysis by age is presented in Figure B.2 in Appendix B.

Figure 2: Gap in the share of black vs white people employed in low paid and bottom paid occupations



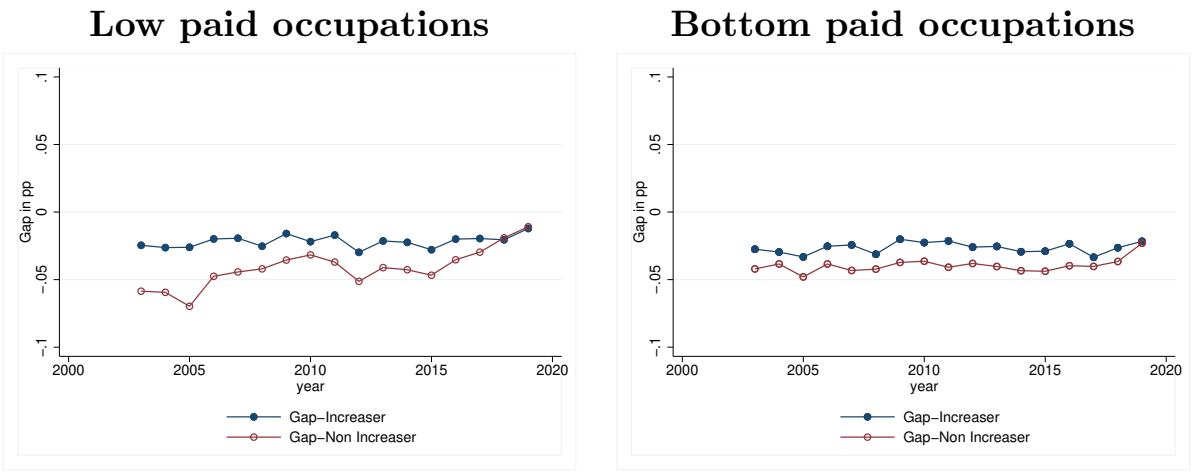
Source: CPS Labor Extracts 2002-2019

3.2.3 Minimum wage, economic prospects and racial gap in marriage

Because black people are over-represented in positions located at the bottom of the wage distribution, our guess is that minimum wage increases should have relatively improved the economic prospects of black people with respect to whites and this should tend to reduce the racial gap in marriage. The population of interest in this paper is then composed by people employed in positions whose wage is likely to be affected by minimum wage changes, that is people in low and bottom paid positions.

Figure 3 represents the same descriptive statistics as in Figure 2, but distinguishing between states implementing government legislated minimum wage increases between 2014 and 2015 (*i.e.* "increaser" states) and states that did not implement these increases. When referring to "increaser states" we use the solid pattern and for "non-increaser" states the hollow pattern. The figure reveals several patterns. First, consistently with previous findings the proportion of black people in low paid and bottom paid occupations overcomes that of white people, leading to a negative gap. Second, the racial gap is larger in non-increaser states than in increaser states, particularly when considering low paid occupations. Third, the racial gap for both types of occupations follows a decreasing trend and, by 2019, we find similar racial gap between low paid and bottom paid as well as between increaser and non-increaser states. While not displayed in Figure 3, it is interesting to note that, the proportion of blacks and whites employed in these occupations is more important in non-increaser states than in increaser states.

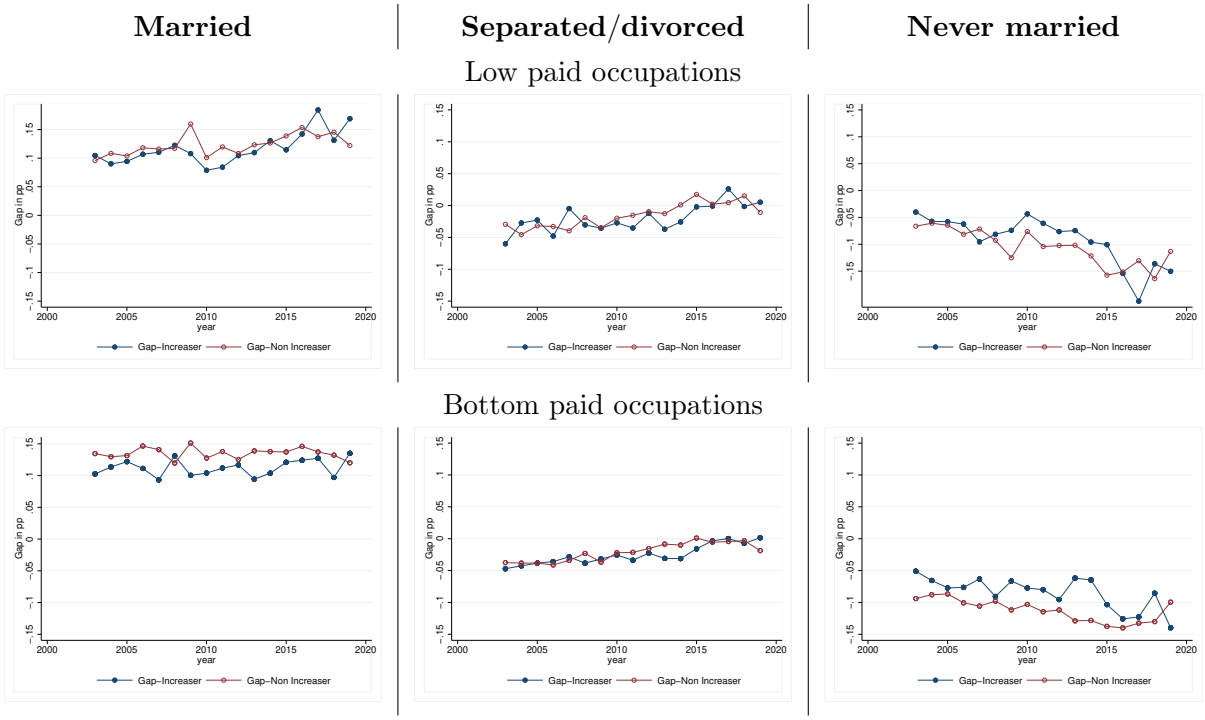
Figure 3: Share of black vs white people in low paid and bottom paid occupations: increaser vs. non increaser



Source: CPS Labor Extracts 2002-2019

Figure 4 focuses on the racial gap in the proportion of married, divorced/separated and never married, distinguishing between increaser states and non increaser states as well as by occupation (low paid versus bottom paid). Again, the solid pattern corresponds to increaser states and the hollow pattern to non-increaser states. Let us first focus on married people. The left-hand side panels of both rows in the figure, reveal that the racial gap in marriage is systematically positive, confirming that white people marry more than black people. This marriage gap has been a bit larger in non increaser states over the past decades. Note though that in bottom paid occupations the situation is reversed since 2017. When considering the gap in the proportion of divorced or separated, we conclude that black people divorce more often than whites. Whatever the considered occupation, the racial gap is slightly higher in non-increaser states. Moreover, the gap has almost vanished over the past years. The right-hand side panels of both rows of the figure consider the proportion of never married people. Again the proportion of blacks that never gets married systematically overcomes the proportion of whites leading to a negative gap. The racial gap in the proportion of never married people has become more important along time (*i.e.* it is more negative) and it is larger in increaser states.

Figure 4: Share of people married, separated/divorced and never married in low paid and bottom paid occupations by race: increaser vs. non increaser



Source: CPS Labor Extracts 2002-2019

4 Econometric approach

We follow the same estimation strategy as Clemens et al. (2021). We consider data from 2011 to 2016, which falls cleanly after the Great Recession and the federal minimum wage increases of 2007–2009. Moreover, this time period is characterized by substantial state variation in minimum wage policies. Data from 2011 to 2013 provide a base period after which states' minimum wage policies diverged substantially. As displayed by Table 1 in Clemens et al. (2021), states with minimum wage changes through statutory legislation during 2011–2016 are:

- California, Connecticut, Delaware, District of Columbia, New Jersey, New York, West Virginia introduced the first minimum wage change in 2014.
- Alaska, Arkansas, Hawaii, Maryland, Massachusetts, Michigan, Minnesota, Nebraska, Rhode Island, South Dakota, Vermont introduced the first minimum wage change in 2015

All these states had multiple increases over our analysis period.[9] Because the second (and in some cases third[10]) increase was typically enacted through the same piece of legislation as the first, it would generally have been forecastable by firms. This leads Clemens et al. (2021) to pursue a difference-in-differences analysis centered on the first minimum wage change for each state. Their DiD estimator is provided by:

$$\alpha_{DiD} = [Y_{I,A} - Y_{I,B}] - [Y_{NI,A} - Y_{NI,B}]$$

where Y is the average outcome variable, subindexes I and NI indicate if the state is an increaser or a non increaser, and subindexes B and A stand, respectively, for before and after the first minimum wage change in the state.

Because in our case we are interested in the racial gap, we augment the previous DiD estimation presented in Clemens et al. (2021) and propose a triple difference over a sample of people that is uniquely composed by black (non-mixed) and white (non-mixed) people:

$$Y_{ist} = \beta_s + \beta_{black(i)s} + \beta_{st} + \beta_{black(i)t} + \beta_1 Black_i \cdot Increaser_s \cdot After_{st} + \beta_2 X_{it} + \beta_3 X_{st} + \varepsilon_{ist}$$

The variable Y_{ist} includes several outcomes. It may refer to marital status of the individual i, living in state s in year t or to time use (market work, non market work, leisure, togetherness) of the individual i, living in state s in year t . $Increaser_s$ is an indicator equaling 1 if the state has a minimum wage change through new legislation at some point between 2011 and 2016. State categories ($Increaser$ vs. $Nonincreaser$) are time invariant throughout our sample period. The indicator $After_{st}$ equals 1 if the time period, t, is on or after the date of the first minimum wage change in the state, s. $Black_i$ is a dummy equal to unity if the individual i declares to be black. β_s stand for state fixed effects captured by white people (the omitted group in the regression) while $\beta_{black(i)s}$ refer to black-by-state fixed effects relative to whites. Similarly, β_{st} refer to state-time fixed effects captured by whites. $\beta_{black(i)t}$ stands for black-by-time fixed effects relative to whites that are common across states. X_{it} is a vector including controls for individual characteristics (gender, age range, education) and X_{st} includes time changing state characteristics (housing price index, log of the median household income). Robust standard errors are clustered by state.

In this regression, the triple difference estimator β_1 will be as follows:

$$\begin{aligned}
\beta_1 &= \{[Y_{I,A}^{Black} - Y_{I,B}^{Black}] - [Y_{NI,A}^{Black} - Y_{NI,B}^{Black}]\} - \{[Y_{I,A}^{White} - Y_{I,B}^{White}] - [Y_{NI,A}^{White} - Y_{NI,B}^{White}]\} \\
&= \{[Y_{I,A}^{Black} - Y_{I,A}^{white}] - [Y_{I,B}^{Black} - Y_{I,B}^{White}]\} - \{[Y_{NI,A}^{Black} - Y_{NI,A}^{White}] - [Y_{NI,B}^{Black} - Y_{NI,B}^{White}]\}
\end{aligned}$$

The triple difference estimator relies[11] on a parallel trend assumption to have a causal interpreta-

[9] Arizona, Colorado, Florida, Missouri, Montana, Ohio, Oregon, and Washington. Rhode Island and Vermont switched from indexed to statutory increases over the time period we study. Increases fostered by inflation-indexing are small and forecastable, so we focus rather on the statutory increases only for these states.

[10] In Connecticut, District of Columbia and New York.

[11] Olden and Møen (2022)

tion. In the absence of the minimum wage increase, the gap in average outcomes between black people and white people must trend in a similar manner in increaser and non-increaser states[12]. As shown by figure C.1 in appendix C we find no evidence of differential pre-trends in the gap of marital status between increaser and non-increaser states prior to the first minimum wage increase. Overall, figures of section C (appendix), relate to various event studies where we test for parallel-trends.

5 Results

5.1 Minimum wage increases and marital status

Table 2 presents estimation results from our baseline equation (6) when considering the individual's marital status. In the first column the outcome variable is being married, in the following column the outcome variable is never married while in the last column, we consider as outcome being divorced or separated. Our coefficient of interest is the one associated with the variable $Increaser * After * Black$, which provides the difference between increaser and non-increaser states in the differential outcomes of blacks and whites before and after the minimum wage increase.

We do not detect any significant effect of the minimum wage increase on the racial gap in both the proportions of married individuals and never-married individuals. Specifically, the impacts estimated are quite low compared to the 10-percentage-point gaps observed in figure 4.

We thus estimate various impacts on different age groups to explore the potential heterogeneity in the effects of minimum wage increases. Young individuals, earning less on average (there will be descriptive statistics supporting this claim in the upcoming version), may be particularly affected, potentially benefiting more from the minimum wage increase in terms of their economic prospects. Additionally, individuals may not marry below a certain age, regardless of improved economic prospects. This tendency may be especially notable among black individuals.

Specifically, we aggregate ages into 5 bins where we observe relatively homogeneous effects : $[18, 23]$ $[24, 29]$ $[30, 39]$ $[40, 49]$ and $[50, 65]$. The results for all groups are available in section D of the appendix. The results displayed in Table 3 relate to the two age groups for which we detect significant impacts of the minimum wage on the racial gap in marriages. Specifically, these groups refer to individuals aged 24 to 29, and individuals aged 50 or more.

In line with the expectation that young aged individuals are particularly exposed, we find that as a result of a minimum wage increase, the gap (in absolute value) in marriages between black and white is reduced by 2.2 percentage points among individuals aged between 24 and 29. This effect is notable when compared to the -10-percentage-point gap estimated in increaser states prior

[12]The identifying strategy would also be threatened if the sample composition had been modified after the minimum wage increase.

to minimum wage increases, as depicted in Figure 4. Although not statistically significant, this impact appears to be driven by a decrease of 1.5 percentage points in the population of never-married black individuals relative to whites. It should be noted that the parallel-trend assumption is tested separately for this sub-population. All pre-event coefficients are not statistically different from 0[13].
Further decomposition of this effect by sex reveals (table 4]) a larger estimated impact for men (2.9 percentage points) than for women (1.8 percentage points). In both cases, the primary driver appears to come from a reduction of the share of black and never-married individuals relative to the share of white and never-married individuals, but the coefficients are not significant.
Overall, the results suggest that the improvement in economic prospects induced by the rise in the minimum wage encourages young black individuals to marry more relative to whites.

In contrast, we estimate an increase (in absolute value) on the marital gap among individuals aged between 50 or more, due to the minimum wage hikes. This effect seemingly stems from an increase in divorces of black individuals relative to white. Additionally, the detection of a significant pre-event coefficients[14] led us to fit (and remove in post-periods) pre-event differential trends in the racial gaps for states with minimum wage increases relative to non-increaser states. The coefficients reported in table 3 reflect this adjustment.
When broken down by sex, the estimations, as reported in Table 5, suggest different patterns for men and women. While the impact of divorces is quite similar for both sexes, there appears to be an increase of the population of never married for men, whereas the opposite is estimated for women. However, none of the estimated coefficients are significant.

The rationale behind this effect is currently under investigation.

[13]See Appendix C.2
[14]See AppendixC.2

Table 2: Racial differences in marital status and minimum wages: low paid

	(1)	(2)	(3)
	married	nevermarried	separatedivorce
	b/se	b/se	b/se
Increaser*After*Black	-0.005	-0.002	0.005*
	(0.004)	(0.005)	(0.003)
State FE	Yes	Yes	Yes
Black-State FE	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes
Black-Year FE	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
Sample	Low	Low	Low
Observations	1 587 429	1 587 429	1 587 429
R-squared	0.417	0.723	0.223

Table 3: Racial differences in marital status and minimum wages: low paid by age group

	(1)	(2)	(3)	(4)	(5)	(6)
	married	nevermarried	separatedivorce	married	nevermarried	separatedivorce
	b/se	b/se	b/se	b/se	b/se	b/se
Increaser*After*Black	0.022***	-0.015	-0.005	-0.020*	0.001	0.015
	(0.007)	(0.010)	(0.005)	(0.010)	(0.013)	(0.011)
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Black-State FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Black-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pre−event trend	No	No	No	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Low	Low	Low	Low	Low	Low
Sex	24 – 29	24 – 29	24 – 29	50 or more	50 or more	50 or more
Observations	214 250	214 250	214 250	389 770	389 770	389 770
R-squared	0.258	0.734	0.086	0.534	0.188	0.279

Table 4: Racial differences in marital status and minimum wages: low paid aged between 24 and 29 (males /females)

	(1)	(2)	(3)	(4)	(5)	(6)
	married	nevermarried	separatedivorce	married	nevermarried	separatedivorce
	b/se	b/se	b/se	b/se	b/se	b/se
Increaser*After*Black	0.018**	-0.009	-0.005	0.029*	-0.025	-0.004
	(0.008)	(0.012)	(0.007)	(0.015)	(0.020)	(0.008)
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Black-State FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Black-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Low	Low	Low	Low	Low	Low
Age group	$24-29$	$24-29$	$24-29$	$24-29$	$24-29$	$24-29$
Sex	Females	Females	Females	Males	Males	Males
Observations	121 157	121 157	121 157	93 093	93 093	93 093
R-squared	0.298	0.676	0.105	0.534	0.188	0.279

Table 5: Racial differences in marital status and minimum wages: low paid aged 50 or more (males /females)

	(1)	(2)	(3)	(4)	(5)	(6)
	married	nevermarried	separatedivorce	married	nevermarried	separatedivorce
	b/se	b/se	b/se	b/se	b/se	b/se
Increaser*After*Black	0.003	-0.019**	0.014	-0.063**	0.040	0.015
	(0.011)	(0.008)	(0.012)	(0.025)	(0.028)	(0.016)
State FE	Yes	Yes	Yes	Yes	Yes	Yes
Black-State FE	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Black-Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pre−event trend	Yes	Yes	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Low	Low	Low	Low	Low	Low
Age group	50 or more	50 or more	50 or more	50 or more	50 or more	50 or more
Sex	Females	Females	Females	Males	Males	Males
Observations	252 024	252 024	252 024	137 746	137 746	137 746
R-squared	0.525	0.172	0.297	0.556	0.215	0.245

5.2 Improvement in economic prospects and time use

Estimation results in Table 3 suggest that enhanced economic prospects encouraged young black individuals to marry more. To confirm this hypothesis, this subsection analyzes how labor supply decisions and time use of individuals in low-paid occupations are modified by the increase in the minimum wage. As for the following results, equation (6) is estimated using weekly hours worked reported in ACS as outcome variable.

As shown in Table 6, following minimum wage hikes, we do not detect any effect on the gap of usual weekly hours worked between black and white individuals in the population of low-paid individuals aged 50 or more[15]. However, we estimate a positive but not significant impact on the usual hours worked per week of young black individuals (aged 24-29) relative to white individuals. This effect is primarily driven by a significant impact for women amounting to 1.7 hours. Overall, these estimations suggest that in response to the minimum wage hikes, black women in the age group 24-29 increase their labor supply relative to white women.

We further complement these estimations with those obtained using time-use variables. Indeed, the design of the time-use survey should enhance the precision of time devoted to work and non-work activities compared to the hours worked reported in the American Community Survey. Additionally, it may be of interest to examine how the improvement in economic prospects initially promoted by the minimum wage increase, which translates into a higher relative labor supply of black versus non-black people, results in significant changes in time use.

Table 7 examines both the total time (in minutes) devoted to market work (columns (1) and (3)) and the total time (in minutes) worked outside standard hours (between 8 am and 4 pm). Specifically, we estimate two separate difference-in-difference models between states with minimum wage increases and those without, for both black and white individuals. The equation is as follows :

$$Y_{ist} = \beta_s + \beta_t + \beta_1 \cdot Increaser_s \cdot After_{st} + \beta_2 X_{it} + \beta_3 X_{st} + \varepsilon_{ist}$$

Due to the low sample size, these two estimators are implemented as they are less demanding than the triple difference. Additionally, we focus on individuals employed in bottom occupations to raise the sample size. For the same reason, we are unable to break down the effects by age groups.

Overall, time devoted to work by black people has significantly increased in bottom paid positions following the minimum wage hikes. Indeed, among people reporting atypical hours, we estimate that the increase in atypical minutes of work among black individuals is more pronounced in increaser states than in non-increaser states. This increase in hours worked is done at the expense

[15] As shown in figure C.3 (appendix C), we detect a significant pre-event coefficient for the regression on the population of individuals aged 50 or more. We thus fit (and remove in post-periods) pre-event differential trends. In contrast, we do not detect significant pre-event coefficients for the age group 24-29

of devoting less time to non-market activities. Indeed, we do not detect significant impacts for other activities.

In contrast, we estimate that white individuals significantly work less as a result of the minimum-wage increases.

Thus, the increase in the minimum wage seems to push up the labor supply of black individuals while we observe the opposite for whites. These results are in line with the results estimated using ACS (for young individuals). However, using time-use variables leads to a much higher effect. This may be due to a better precision of the survey design or to the difference of sample size. Further, we are not able to decompose the effects for different age bins and look at the contribution of each category.

Table 6: Racial differences in usual weekly hours worked and minimum wages: low paid occupations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Usual hours work	Usual hours work	Usual hours work	Usual hours work	Usual hours work	Usual hours work	Usual hours work
	b/se	b/se	b/se	b/se	b/se	b/se	b/se
Increaser*After*Black	0.024	0.933	1.719**	-0.231	0.511	0.373	0.443
	(0.242)	(0.575)	(0.765)	(0.603)	(0.603)	(0.893)	(0.662)
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Black-State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Black-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pre−event trend	No	No	No	No	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Low	Low	Low	Low	Low	Low	Low
Population	All age groups	24-29	24-29 Females	24-29 Males	50 or more	50 or more Females	50 or more Males
Observations	1 587 429	214 250	121 157	93 093	389 770	252 024	137 746
R-squared	0.752	0.766	0.744	0.741	0.746	0.722	0.782

Table 7: Racial differences in time use of never married people in Market work and minimum wages: bottom paid occupations

	(1)	(2)	(3)	(4)
	Market Work	Atypical Mrkt Wrk	Market Work	Atypical Mrkt Wrk
	b/se	b/se	b/se	b/se
Increaser*After	21.138	77.669***	-21.786*	5.316
	(34.986)	(27.980)	(11.672)	(9.938)
Year FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes	Yes
State controls	Yes	Yes	Yes	Yes
Sample	Bottom	Bottom	Bottom	Bottom
Race	Black	Black	White	White
Observations	2000	1059	8617	4578
R-squared	0.031	0.088	0.022	0.032

Table 8: Racial differences in time use of never married people in Non-Market work and minimum wages: bottom paid occupations

	(1)	(2)
	Non Market Act.	Non Market Act.
	b/se	b/se
Increaser*After	-25.524**	9.204
	(16.686)	(5.717)
Year FE	Yes	Yes
State FE	Yes	Yes
Demographic controls	Yes	Yes
State controls	Yes	Yes
Sample	Bottom	Bottom
Race	Black	White
Observations	2000	8617
R-squared	0.054	0.062

6 Conclusion

Previous research has primarily focused on the lower male-female ratio as an explanatory factor for the disparity in marriage rates between black and white individuals. In contrast, our study investigates the less explored role of economic prospects in understanding this racial disparity. Specifically, we examine the impact of minimum-wage increases on this gap.

Our analysis indicates that in states where minimum wage increases have been implemented, the relative improvement of economic prospects for young black individuals has contributed to a reduction in the racial gap in marriages.

However, it is important to acknowledge that our research is ongoing. We are currently working on understanding the observed increase in the marital gap among individuals aged 50 or older following minimum wage hikes. Additionally, we plan to conduct robustness checks to further validate our findings.

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A Equilibrium flows and match quality distribution

The aggregate rate at which single individuals meet single members of the opposite sex is $\lambda u^2 n$, where $\lambda = \lambda_f + \lambda_m$. The match takes place if and only if $x \geq x^*$, which occurs with probability $Pr(x \geq x^*) = (1 - F(x^*))$. So, at the aggregate level, the total number of matches equals $\lambda u^2 n(1 - F(x^*))$. The number of separations is given by $\delta(1-u)n$. Because at the steady state inflows should equal outflows we find:

$$\begin{aligned} \lambda u^2 n(1 - F(x^*)) &= \delta(1-u)n \\ u &= \frac{-\delta + \sqrt{\delta^2 + 4\lambda(1 - F(x^*))\delta}}{2\lambda(1 - F(x^*))} \end{aligned} \tag{A.1}$$

The common fraction of unmatched males and females (*i.e.* $u_f = u_m = u$) is greater than zero but below unity; it converges to zero when δ converges to zero (*i.e.* no exogenous separations); it increases with the threshold match quality required by singles for a partnership to take place, x^*. The number of matches of quality x or less, $(1-u)G(x)$, is a stock. Its steady-state value is that which equates the flows in and out. The rate at which new matches of this quality form is the product of the rate at which singles meet and the probability that realized match quality is both acceptable and less than or equal to x, which is $\lambda u^2 n[F(x) - F(x*)]$. Matches of quality x or less separate at the exogenous rate $\delta[1-u]G(x)n$. Equalizing inflows and outflows leads to:

$$G(x) = \frac{\lambda u^2 [F(x) - F(x*)]}{\delta[1-u]} \tag{A.2}$$

B Descriptive statistics

Figure B.1: Share of black vs white people married in bottom paid and highly paid occupations

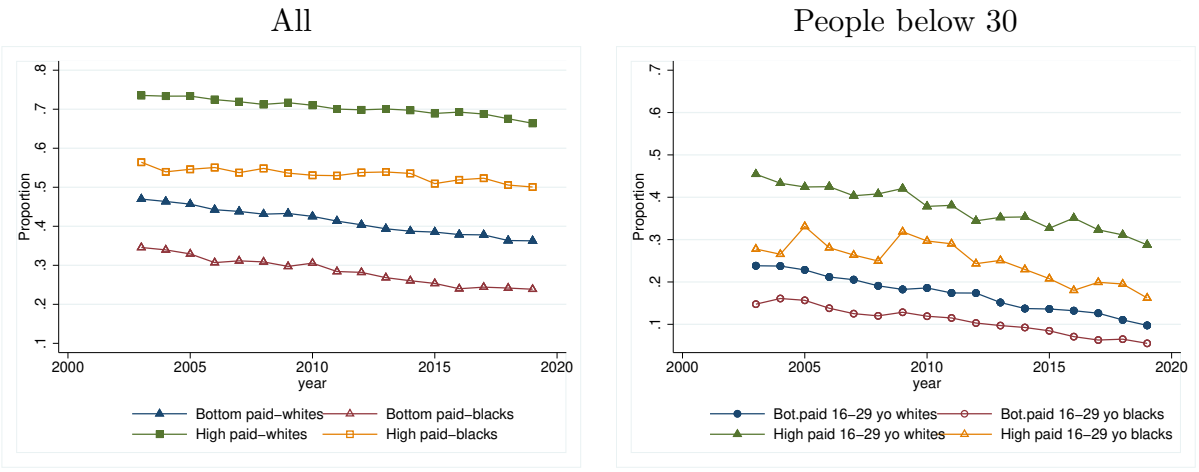
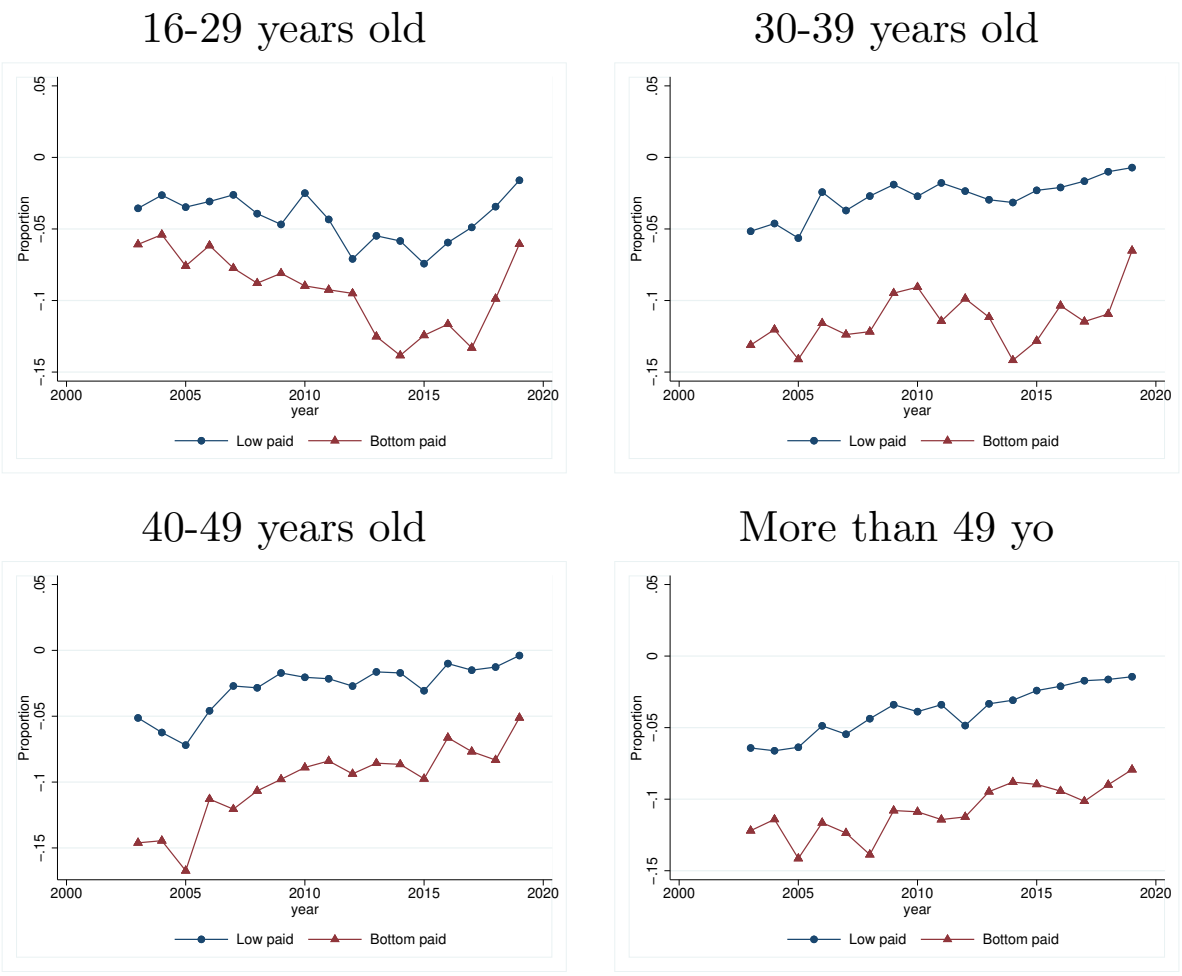


Figure B.2: Share of black vs white people in low paid and bottom paid occupations by age



C Parallel trends

Figure C.1: Parallel trend analysis between increaser and non increaser states: marital status

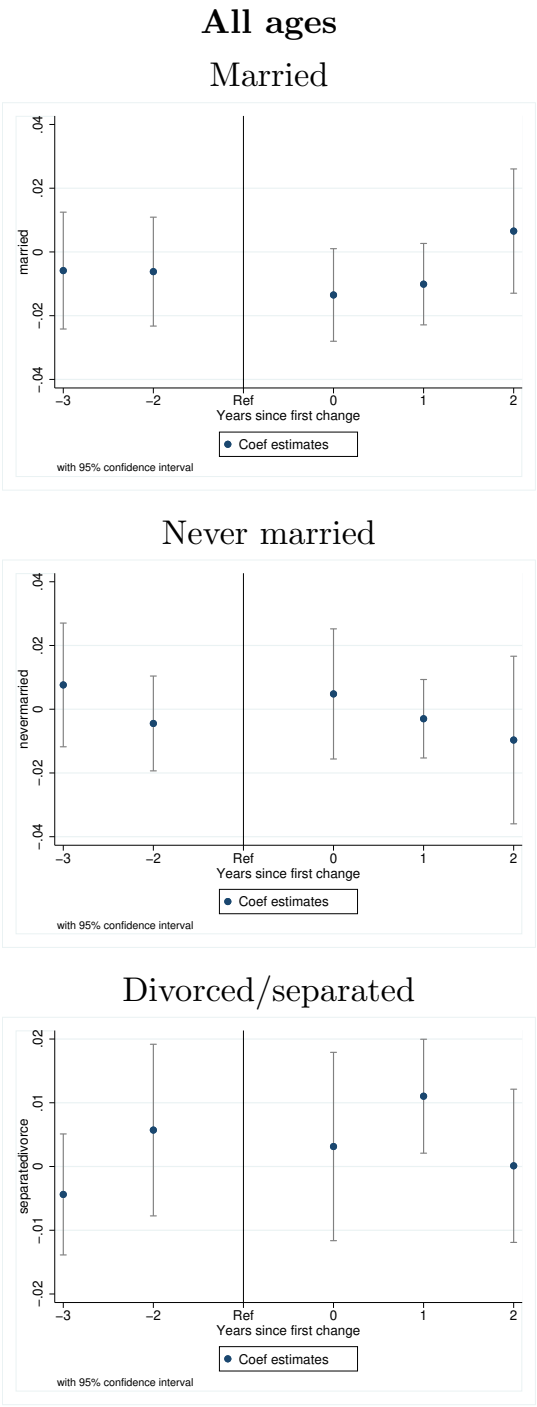


Figure C.2: Parallel trend analysis between blacks in increaser and non increaser states: marital status by age group

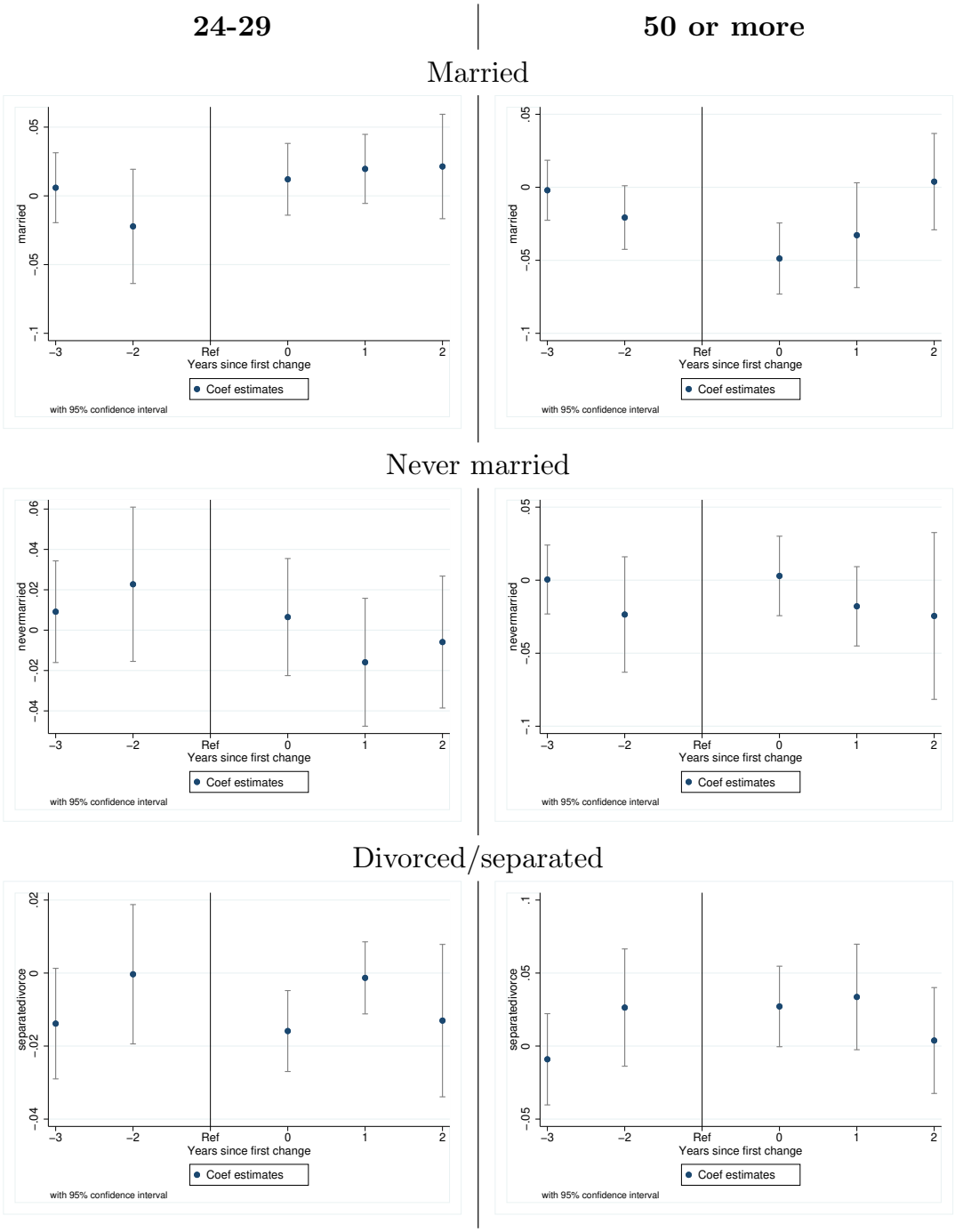
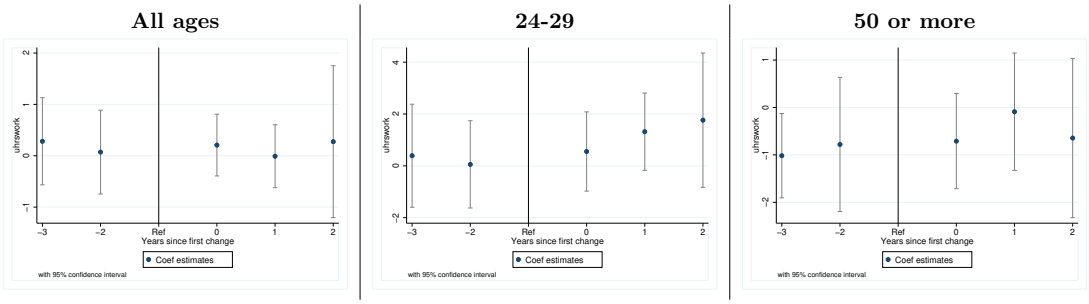


Figure C.3: Parallel trend analysis between blacks in increaser and non increaser states: Usual hours worked per week



D Appendix: Additional estimation results

Table D.1: Racial differences in marital status and minimum wages: low paid 18-23

	(1)	(2)	(3)
	married	nevermarried	separatedivorce
	b/se	b/se	b/se
Increaser*After*Black	-0.006	0.006	-0.001
	(0.006)	(0.006)	(0.002)
State FE	Yes	Yes	Yes
Black-State FE	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes
Black-Year FE	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
Sample	Low	Low	Low
Age group	$18-23$	$18-23$	$18-23$
Observations	411 536	411 536	411 536
R-squared	0.078	0.938	0.016

Table D.2: Racial differences in marital status and minimum wages: low paid 30-39

	(1)	(2)	(3)
	married	nevermarried	separatedivorce
	b/se	b/se	b/se
Increaser*After*Black	-0.013	0.006	0.005
	(0.014)	(0.015)	(0.009)
State FE	Yes	Yes	Yes
Black-State FE	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes
Black-Year FE	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
Sample	Low	Low	Low
Age group	$30-39$	$30-39$	$30-39$
Observations	247 435	247 435	247435
R-squared	0.424	0.468	0.186

Table D.3: Racial differences in marital status and minimum wages: low paid 40-49

	(1)	(2)	(3)
	married	nevermarried	separatedivorce
	b/se	b/se	b/se
Increaser*After*Black	0.007	-0.012	0.009
	(0.017)	(0.019)	(0.010)
State FE	Yes	Yes	Yes
Black-State FE	Yes	Yes	Yes
State-Year FE	Yes	Yes	Yes
Black-Year FE	Yes	Yes	Yes
Demographic controls	Yes	Yes	Yes
State controls	Yes	Yes	Yes
Sample	Low	Low	Low
Age group	$40-49$	$40-49$	$40-49$
Observations	212 926	212 926	212 926
R-squared	0.509	0.296	0.261