

Minimum Wages and Black-White Employment Differences: Is It About Skills Gaps?

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February 2011

Abstract:

Using individual level data from Current Population Survey March Supplements for 1979-2006 period on males in 22-55 age group, this paper contributes the understanding of sources of racial employment gaps by analyzing whether variations in state effective minimum wages have differential employment effects for comparable low-skilled blacks and whites. By exploiting heterogeneous effect of federal minimum wages on state minimum wages as in Baskaya and Rubinstein (2011) to account for potential endogeneity of minimum wages and by using predicted hourly wages as a composite skill measure, this paper shows that minimum wage increases lead to higher decline in employment probabilities for blacks than comparable whites. In particular, the blacks not working full-time/full-year in the previous year face higher declines in employment relative to comparable whites. For full-time/full-year workers, the racial gaps are again significant but weaker than racial gaps corresponding not full-time/full-year workers. By documenting the concrete link between the variations in racial employment gaps and minimum wages, which are mostly adjusted and announced much earlier than they become effective, this paper suggests that the effectiveness of policies targeting racial equality can be improved by intensifying the Equal Employment Opportunity enforcement and monitoring during periods of minimum wage increases.

Key Words: Employment, Minimum Wages, Racial Inequality.

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1 Introduction

The racial disparities in labor market outcomes, such as earnings and employment status, is one of the stylized characteristics of the U.S. labor market². Almost half a century after the introduction of the Civil Rights Act, the sources of racial disparities, and policies aiming at eliminating them still constitute an important agenda for public policy and academic research.

A particular observation in the U.S. labor market concerning the racial employment gaps is the higher sensitivity of employment of blacks to the minimum wage variations, relative to employment of whites. For example, Ragan (1977), Deere et al. (1995) or Burkhauser et al. (2000), using data on average employment rates, show that the employment of blacks show a larger decline following minimum wage increases. The main explanation for this phenomenon offered by the earlier studies is relatively higher proportion of low-skilled blacks at the margin of minimum wages than whites. A similar explanation is put forward also by Milton Friedman in a number of occasions, such as during Richard Heffner's "Open Mind" broadcast on December 7th, 1975, where he describes the minimum wage laws as most harmful laws for the blacks, at it states that "employers must discriminate against people who have low skills". In other words, Milton Friedman also argues that the minimum wage laws are harmful for blacks, because blacks constitute an important fraction of low-skilled people at the margin of minimum wage adjustments.

However, none of the papers in the literature addressed the question of whether blacks face a higher decline in their employment relative to "comparable" whites, following an increase in the minimum wages. By using individual level data for the employment of blacks and whites between 22 and 55 years of age from Current Population Survey March Supplements (CPS-March hereafter) for the 1979-2006 period, this study aims at filling this important gap in the literature. Identification of sources of racial differences in sensitivity of employment outcomes to minimum wages has important implications for the design of policies aiming at closing the racial gaps in employment outcomes in low-wage labor markets. If blacks and whites have

²For example, see Bound and Freeman (1992), Altonji and Blank (1999) and Neal (2006).

differences in sensitivity of their employment to minimum wage increases, then closing racial gaps in employment outcomes require policies aiming at closing racial skill gaps. However, if the minimum wages affect the employment of comparable blacks and whites differentially, then additional policies, such as enforcement of Equal Employment Opportunity laws may be required for closing the racial employment gaps.

However, answering this question requires us to address two different challenges faced by studies on employment effects of minimum wage and studies on the sources of racial employment gaps. First one is the endogeneity of the state effective minimum wages to the states' economy and labor market outlook. The second on the possibility of unobserved skill gaps between the blacks and whites. Considering the first one, this paper identifies the effect of effective minimum wages on employment of blacks and whites by exploiting the heterogeneous effect of federal minimum wages on state effective minimum wages with respect to states' minimum wage history and political and economic characteristics, as in Baskaya and Rubinstein (2011). In addition, the unobserved skills, of individuals are proxied by Mincerian wages, based on hourly wages which presumably reflect how employers view individuals' productive skills and therefore have an advantage over the standard skill measures like education or years of experience in terms of controlling the unobserved racial skill gaps.

The findings of this paper show that racial differences in individual and job-related characteristics related to employment outcome do not entirely account for the differential effect of minimum wages on the employment of blacks and whites. This suggests that the differences between employment outcomes of blacks and whites during periods of minimum wage adjustments may have other sources in addition to the fact that there are a large proportion of low-skilled blacks at the margin of minimum wage adjustments. We also consider the possibility that the effect of minimum wages on employment is not uniform across different skills and demographic groups, thereby providing an answer for how minimum wages affect the racial employment gaps within skill groups. Our results suggest that the higher minimum wages lead to wider racial employment gaps mostly among high-school drop-outs and college drop-outs who are not working

full-time and full-year.

The key contributions of this study to the literature can be summarized as follows: First, the paper shows that the black-white differences in the sensitivity of employment to minimum wage variations is not only an outcome observed on the average as the previous studies suggest, but also it is observed among individuals with comparable skills and characteristics. The findings indicate that the employment of blacks falls following minimum wage hikes, whereas the employment of comparable whites either remain unaffected or slightly increase with the minimum wage increases. Second, the increasing racial employment gaps due to minimum wages are robust to the control for predicted hourly wages of individuals as a proxy for skills observable to the employer but unobservable in the data. Third, the paper documents a concrete link between a policy variable, i.e. minimum wages, and changes in racial employment gaps between comparable blacks and whites, which deserves attention for its implications for public policy directed toward decreasing racial inequalities in United States. Under the assumption that unobserved factors affecting the employment over the course of minimum wage variations, such as labor supply, are same across blacks and whites, the results conditional on skill levels may be interpreted as an evidence for discrimination against blacks. In such a case, these results suggest that a more monitoring effort on the employment practices may be necessary during periods of minimum wage hikes in order to avoid violations of Equal Employment Opportunity Laws.

The rest of the analysis in this study is structured as follows. Section 2 presents the links between this study and the studies on racial gaps in labor markets and the employment effects of minimum wages. Section 3 briefly summarizes the key issues regarding the implementation of the minimum wage laws in the United States. Section 4 describes the data and the empirical methodology of the paper. Section 5 present the empirical results obtained by using alternative specifications considering how individual characteristics affect the employment outcomes. Section 6 discusses the implications of these findings. Section 7 presents concluding remarks.

2 Existing Studies

The persistent racial disparities in employment outcomes, earnings and the skill levels is one of the characteristics of the United States labor market. An important aspect of these disparities is that they display variations with the changes in economic environment³. A particular observation for the racial employment gaps is their sensitivity to minimum wage variations. For example, earlier studies by Moore(1971), Mincer (1976), Ragan (1977) and Linneman (1982) document that higher minimum wages are associated with lower employment and labor force participation rates of the black teenagers compared to white, using time series variations in the level and coverage of federal minimum wages and averages for race groups. The sensitivity of the racial gaps to minimum wage variations has been documented also by the recent studies, some of which exploit the cross-state variations in the minimum wages.⁴ For example, Deere et al. (1995) analyses the effects of the raise in the hourly federal minimum wages in 1991 and 1992 on the employment of different age-race-sex-groups. Their results are consistent with the earlier literature, as they find that the employment rate of black teenagers and the black highschool dropouts in 20-54 age groups decreases at a higher rate than whites. Burkhauser et al. (2000) use monthly data on the average employment rates for black and non-blacks between 16-24 years of age, and show that the employment of blacks is three times more sensitive to variations in states's effective minimum wage than the employment of non-blacks in the same age group. . Finally, a recent paper by Neumark and Nizalova (2007) analyze whether the individuals who were exposed to higher minimum wages for a longer period in their teenager years have less favorable labor market outcomes in their late twenties, compared to those who were exposed to higher minimum wages for a shorter period. Using state-level averages for blacks and whites

³For example, see Baskaya and Mbiti (2011) for how racial employment gaps among comparable blacks and whites increase over the economic downturns. Levine, Levkov and Rubinstein (2008) show that increase in the product market competition can decrease the wage gap between whites and blacks, in line with the predictions of Becker (1957).

⁴See Card and Krueger (1995), Brown (1999) and Neumark and Wascher (2008) provide comprehensive surveys on employment effects of minimum wages.

aged between 16-19, 20-24 and 25-29 years of age, they show that the minimum wages have long-lasting negative effect on the earnings and employment of teenagers, with a stronger effect for the blacks.

One of the common features of these studies is their reliance on the average data by race groups rather than the individual data⁵. Although these analysis provide evidence on the evolution of racial gaps observed with minimum wage variations, they do not provide evidence about whether these variations reflect the skill gaps and differences in other job-related characteristics between blacks and white or factors beyond the observed skill gaps play a role. Therefore, the existing studies provide an incomplete picture of employment variations in the low-wage labor markets in United States, and an insufficient guidance for public policy. In addition, a secondary, but still important, set of shortcomings of the existing studies is the use of improper minimum wage measures such as Kaitz index, the lack of controls for time fixed effects and the potential endogeneity of the state effective minimum wage adjustments with respect to local labor market conditions and the political preferences.⁶

In summary, the analysis of this paper has three advantages over the existing studies for the sources of racial employment gaps. First, with the use of rich structure of the Current

⁵A notable exception is Linneman(1982), who focuses on the effect of a Fair Labor Standards Act Amendment of 1974 on the expected changes in the earnings of blacks and whites and on the on the employment of low-skilled workers, *without* focusing on whether the minimum wages would have differential employment effect on comparable blacks and white. In addition, he shows that the expected earning gains from 1974 Amendment is same for black and white males, whereas the expected gains for white females are significantly lower than males but higher than black females. Regarding the employment effects of minimum wages, he finds that the employment of the low-skilled individuals fall both in the extensive and the intensive margin, with the higher minimum wages.

⁶For example, early studies relying on time series variations in federal minimum wages and the coverage rates, as well as more recent studies by Deere et al (1995) and Burkhauser et al (2000) do not control for year fixed effects. The early time series studies use Kaitz index as the minimum wage variation, which is the minimum wage divided by the average adult wages. However, Card et al (1994) show that the negative relation between this measure and employment observed in the data is mostly due to variations in adult wages correlated with the dependent variable, rather than the variations in the minimum wages.

Population Survey March Supplements on the individual characteristics, we provide a better analysis for the role of observed skill differences between blacks and whites. Second, using the predicted Mincerian hourly wages for the previous year as in Baskaya and Mbiti(2011), we also provide an indirect control for the unobserved skills of the individuals, and provide a better link between the racial employment and skill gaps. Second, we specify the empirical analysis by taking the earlier criticisms into account, such as the appropriate minimum wage measures, the potential endogeneity of minimum wage adjustments to states' labor market outlook and the lack of year effects, which may causal omitted variable bias for the role of minimum wages on racial employment gaps. In particular, we use state effective minimum wages instrumented by federal minimum wages and the degree of bindingness of the federal minimum wages in different states and time period, which allows us to introduce year fixed effects in our specification and to address the potential problems due to endogeneity of state minimum wages. Finally, we focus only on the sample of males between 22 and 55 years of age, whose labor supply behavior over time is more stable compared to women or the teenagers, for whom the minimum wages may have more pronounced labor supply effects.⁷

Under the assumption that unobserved differences between blacks and whites do not change with the minimum wage variations and wages in the previous year do not overestimate the productivity of blacks relative to whites, the results in this paper can be viewed as providing some evidence on racial discrimination. Finally, with an extra assumption, our analysis provides some suggestive evidence for the validity of "Taste For Discrimination" argument due to Becker (1957). Under the assumption that the employer learning for the unobserved characteristics of low-skilled workers in low-wage labor markets entails small costs such that individuals' productivity in such jobs can be observed more directly and easily, we can speculate that the disutility associated with employing blacks may be the source of variations racial employment gaps with minimum wages. From this perspective, this study provides a complementary evidence to the recent empirical

⁷For example Neumark and Wascher (1995a) and Card et al (1994) argue that the minimum wages can also affect the labor supply of teenagers via its effect on their school-work decisions.

studies providing support for Becker's explanation for how discrimination emerges⁸.

3 Empirical Analysis

3.1 Data

3.1.1 Sample of Individual Observations from CPS March

This study uses individual data from U.S. Current Population Survey March Supplements on white males and black males with non-Hispanic origin in the 22-55 age group⁹. In contrast with most of the studies in minimum wage literature which focus on the employment outcomes of teenagers, as they constitute a large proportion of individuals affected by minimum wages, this study focuses on individuals who are above 22. This is because minimum wage variations may affect both demand for teenagers and supply of teenagers by making school enrollment less attractive and giving incentives to teenagers to increase their labor force participation¹⁰. As suggested by a number of studies, as early as Ben-Porath (1967), the employment decision of teenagers are not independent of their school enrollment decisions. This complicates the analysis of identifying whether individuals with comparable skills but different racial profiles face differences in the changes in their employment status, when demand for labor is disturbed by an exogenous policy change. Finally, following a common practice in the literature, self-employed individuals, the unpaid family workers and the workers in the agriculture sector are excluded¹¹. The sample period covers years between 1979 and 2006. In CPS March Supplements, the exact state of residence of the individuals is provided in the period after 1977. However,

⁸Another recent study providing evidence consistent with predictions of Becker (1957) is Levine, Levkov and Rubinstein (2008), who show that the black-white wage gap decreased between mid-1970 and mid-1990s following the increased competition level in nonfinancial sector, following deregulation in the financial markets.

⁹The CPS March Supplements are available at www.ipums.org.

¹⁰Neumark and Wascher (1995 a,b) find that the higher minimum wages have a bigger negative effect on the school enrollment of black teenagers compared to white teenagers whereas the employment of the blacks do not increase following the minimum wage increases.

¹¹See Neumark and Wascher (1992).

for the sake of comparability of our results with some influential studies in the literature, such as Deere et al. (1995) and Burkhauser et al. (2000), the initial year of the sample is chosen as 1979.

For the analysis of this paper, it is important to define the group of individuals whose employment is potentially affected by the minimum wages. Therefore, the sample focuses on individuals whose predicted wages in the previous year, measured in year 2000 dollars, lie at the margin of minimum wage variations. Since not every individual has an observed hourly wage in the previous year, they are obtained by estimating a standard Mincerian wage regression estimated separately for each year and for blacks and whites. In doing so, we consider the possibility that the price of skills differ across the racial groups and through time. In the analysis, the wages in each year have been assumed to be a function of potential experience (up to quartic term), the education (used as 6 categorical variables between high school drop-outs with at most 8 years of education to individuals with advanced degrees), marital status and the state fixed effects. The sample used for the employment regressions consists of the individuals whose predicted wages in the March of the previous year were less than the effective minimum wage in the March of the current year, considering the possibilities of non-compliance with the minimum wage laws as well as the practices of subminimum wages. This leaves us with a sample of 68,757 observations.

3.1.2 Minimum Wage Data

Except for District of Columbia, all the minimum wage data used in this study has been collected from U.S. Department of Labor, the various issues of reports by Bureau of Labor Statistics (BLS) on the state labor legislations enacted in the preceding year and the labor departments of individual states. For District of Columbia, where there are multiple minimum wages for different occupations and experience before 1993, we used the weighted average rates as used by Neumark and Wascher (1992), Card et al. (1994, 1995) and Burkhauser et al. (2000) for January of each year. For 1994 and onwards, i.e. the period in which District of Columbia implemented

uniform rate for all occupations, the data has been obtained from BLS and Department of Labor. We use state and federal minimum wages by each March and May for the regressions using CPS March and CPS May data, respectively.

A particular practice observed in some states is the multiple-track minimum wage system, where the lower rate applied to the newly covered persons or learners. For such cases, we strictly follow the earlier practices the literature, such as Neumark and Wascher (1992) and Card et al. (1994, 1995) and took the higher rate as the state minimum wage.

A particular criticism raised by Card et al. (1994) and Card and Krueger (1995) on earlier literature is that use of minimum wage measures, calculated as state effective minimum wage deflated with average wages, may lead to misleading conclusions about employment effects of minimum wages. This is because such a minimum wage measure may have a negative correlation with employment not because of the minimum wage variations, but rather simultaneous positive correlation between average adult wages and employment due to economic activity in the state. As a result, we avoid deflating the states' effective minimum wages with the average adult wages of the state, and instead use the federal and state effective minimum wages deflated to year 2000 dollars with Consumer Price Index for Urban Wage Earners and Clerical Workers provided by BLS. Finally, following the practice by Card et al. (1994) and Card and Krueger (1995) and Burkhauser et al. (2000), we also ignore the issues about coverage adjustment of minimum wages, which is also consistent with the fact that the coverage of the minimum wages has been fairly stable since mid-1970s, as shown by Brown (1999).

3.2 The Statistical Model

Let E_{it} denote the employment status of an individual such that:

$$E_{it} = \begin{cases} 1 & \text{if } i \text{ is employed at time } t \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

Let $X_{i,t}$ denote the vector of observed job-related characteristics, such as education, experience, marital status etc, and $S_{i,t}$ denote the unobserved characteristics relevant for employment.

For simplicity, the employment is assumed to be a linear function of individual characteristics, the policy variable $MW_{i,t}$, which is the real effective minimum wage at time t faced by individual i in the state he lives. Allowing for the blacks and whites to have differences in returns to skills, we can write the employment relation as:

$$E_{i,t}^b = \beta_0^b + \beta_1^b X_{i,t} + \beta_2^b S_{i,t} + \beta_3^b MW_{i,t} + \beta_4^b MW_{i,t} X_{i,t} + \beta_5^b MW_{i,t} S_{i,t} + u_{i,t}^b \quad (2.a)$$

$$E_{i,t}^w = \beta_0^w + \beta_1^w X_{i,t} + \beta_2^w S_{i,t} + \beta_3^w MW_{i,t} + \beta_4^w MW_{i,t} X_{i,t} + \beta_5^w MW_{i,t} S_{i,t} + u_{i,t}^w \quad (2.b)$$

where the superscripts “ b ” and “ w ” are used to distinguish the parameters associated with blacks and whites. A particular point concerning Equations (2.a) and (2.b) is that the effect of minimum wages on employment is allowed to vary across different skill levels and demographic groups. Denoting race of an individual with a binary variable R_i , which is equal to one for blacks and zero for whites, the employment outcome of any individual as a function of his race is equal to:

$$\begin{aligned} E_{i,t} &= R_i E_{i,t}^b + (1 - R_i) E_{i,t}^w \\ &= \gamma_0 + \gamma_1 X_{i,t} + \gamma_2 S_{i,t} + \gamma_3 MW_{i,t} + \gamma_4 X_{i,t} MW_{i,t} + \gamma_5 S_{i,t} MW_{i,t} + \gamma_6 R_i \\ &\quad + \gamma_7 X_{i,t} R_i + \gamma_8 S_{i,t} R_i + \gamma_9 MW_{i,t} R_i + \gamma_{10} X_{i,t} MW_{i,t} R_i + \gamma_{11} S_{i,t} MW_{i,t} R_i + u_{i,t} \end{aligned} \quad (3)$$

Equation (3) implies that the effect of minimum wage variations on employment of whites and blacks having same characteristics can be written respectively as:

$$\frac{\partial E_{i,t}}{\partial MW_{i,t}} = \gamma_3 + \gamma_4 X_{i,t} + \gamma_5 S_{i,t}, \quad \text{if } i \text{ is white.} \quad (4.a)$$

$$\frac{\partial E_{i,t}}{\partial MW_{i,t}} = \gamma_3 + \gamma_9 + (\gamma_4 + \gamma_{10}) X_{i,t} + (\gamma_5 + \gamma_{11}) S_{i,t}, \quad \text{if } i \text{ is black.} \quad (4.b)$$

The sensitivity of black-white employment gaps in this specification depend on three parameters: γ_9 , γ_{10} and γ_{11} . In particular, we would observe a higher employment gap between blacks and whites with individual characteristics \bar{X} and skill levels \bar{S} following minimum wage increases, if $\gamma_9 + \gamma_{10}\bar{X} + \gamma_{11}\bar{S} < 0$. In particular, γ_{10} and γ_{11} gives us the differential changes in the returns to skills across blacks and whites when the minimum wages vary. Allowing for such a difference in the model partly controls for the racial differences in returns to observable skills due to different factors, such as unobserved aspects of the skills and individual characteristics, or markets' different evaluation of black and white skills.

The parameter that deserves special attention in Equation 3 is γ_9 , which gives the racial differences in the sensitivity of employment to minimum wages unexplained by the skills and individual characteristics. In particular, $\gamma_9 < 0$ suggests that the black-white employment gaps widen with higher minimum wages, even after controlling for individual characteristics and allowing for racial differences in returns to skills and individual characteristics.

A particular advantage of our strategy for the estimation of racial employment gaps compared to static employment regressions is that we can difference out the effect of unobserved skills on employment differences under certain circumstances. In particular, as suggested by a large number of studies, race is correlated with both observed and unobserved skills, where unobservability of some skills correlated with race may lead to large biases on the effect of race on employment status. However, since our analysis focuses on how racial gaps between blacks and whites evolve with an exogenous change in minimum wages, we can still make inference about the effect of race on employment gaps, as long as changes in returns to unobserved skills due to minimum wage variations do not differ between races, i.e. $\gamma_{11} = 0$. In other words, the analysis of changes in racial differences in employment due to an exogenous policy change requires weaker identifying assumptions about unobserved skills than the analysis of sources of racial employment gaps itself.

Instead of assuming $\gamma_{11} = 0$, one can also use a proxy for the unobserved skills. In our framework, a particular candidate for skills observed to employer but not to the econometrician

is the hourly wages in the previous year. Since they are determined by employers who presumably assess the productive skills of individuals, the wages are potentially correlated with the unobserved skills. However, the question of whether it is a racially unbiased measure of skills is directly relevant for this study. Let W_{it} denote hourly wages of individual i :

$$W_{it} = S_{it} + \phi_1 S_{it} R_i + \phi_2 X_{it} + \phi_3 X_{it} R_i + \varepsilon_{it} \quad (5)$$

where ε_{it} is uncorrelated with R_i , X_{it} and S_{it} . Conditional on X_{it} , wages are assumed to be an unbiased measure of unobserved skills for whites. In contrast, if $-1 < \phi_1 < 0$, the wages will underestimate the skill level of blacks relative to whites, in which case the racial differences in the effect of minimum wages on employment for a given \bar{W} is given by

$$\gamma_3 + \gamma_9 + (\gamma_4 + \gamma_{10})\bar{X} + (1 + \phi_1)(\gamma_5 + \gamma_{11})\bar{S} \quad (6)$$

which is biased towards zero if the blacks get lower returns to their unobserved skills than whites.

4 Empirical Results

4.1 A First Pass for the Sensitivity of Employment of Blacks and Whites to Minimum Wages

First, we look at the sensitivity of employment of blacks and whites to the minimum wage variations, without controlling for individual skills by estimating:

$$E_{it} = \beta_o + \beta_1 R_i + \beta_2 MW_{it} + \beta_3 MW_{it} R_i + \beta_4 D_t + \beta_5 D_S + \beta_6 M_{it} + \varepsilon_{it} \quad (7)$$

where MW_{it} is the logarithm of states' effective minimum wage deflated to year 2000 dollars and R_i indicates the race of the individual i , which is equal to 1 for blacks and 0 for whites. M_{it} denotes the controls for macroeconomic factors affecting employment. As in Card and Krueger (1995), these include the aggregate state unemployment rate, and the average adult wages. Finally, D_t and D_S denote year and state fixed effects, respectively.

The first column of Table 1 provides estimates for Equation 7. The results indicate that the employment of white males in our sample are not sensitive to the minimum wage variations measured with logarithm of states' effective minimum wage, whereas the blacks in the same category face significant decreases in employment as the minimum wages increase. In particular, the results show that the employment of blacks will fall by 15 percentage points on average when the minimum wage is doubled.

As a first pass to controlling skills, the second column of Table 1 present the results for the specification with controls for the individual skills and demographic characteristics, such as education categories, experience levels, marital status categories and full-time/full-year status of the individuals. Compared to the Equation 3, this is a restricted specification, corresponding to $\gamma_4 = \gamma_5 = \gamma_{10} = \gamma_{11} = 0$, which does not allow for the effect of minimum wages on employment to differ across skill groups.

The results associated with this extension also suggest that employment of blacks decline significantly with minimum wages, whereas there is no effect for the whites. However, as mentioned above, a particular concern which may give biased results for the effect on whites and blacks is the possible endogeneity of logarithm of states' effective minimum wage to the local labor market conditions. In response to this concern, two alternatives for the analysis in Column 2 are proposed. First, as Column 3 shows, the federal minimum wage interacted with race is used to assess the racial differences. In particular, the analysis makes use of the observation that the federal minimum wages are set with little degree of consideration for the labor market conditions or the political preferences in each individual state. As a result, one would expect that the federal minimum wages would not be correlated state-specific employment shocks, unlike the minimum wages set by the states' themselves. The use of such a minimum wage measure in the analysis also yields that the employment of the blacks are more negatively affected from higher minimum wages.

4.2 Controlling for Potential Endogeneity of State Minimum Wages With Respect to Employment

A particular feature of the minimum wages is that the timing and the magnitude of the state effective minimum wages may reflect the changes in local labor market conditions or the political preferences. For example, the state legislators and the governors, who play key role in state minimum wage adjustments, may increase minimum wages during periods in which the new minimum wages will have the smallest potential negative effect on employment. As shown by Baskaya and Rubinstein(2011), this may bias the estimates on the employment effects of minimum wages towards zero. Moreover, if these periods are associated also with smaller racial employment gaps, especially when the minimum wage hikes take place during expansionary periods of the states, the differential effect of minimum wages on the employment of blacks and whites may also be biased towards zero.

In order to overcome this problem, I follow Baskaya and Rubinstein (2011), and instrument the states' own effective minimum wages with the federal minimum wages and the federal minimum wages interacted with the fraction of years up to previous year in which the federal minimum wages were binding. In a similar manner, two additional instruments, i.e. the interaction of instruments for the states' effective minimum wages with the indicator for race, has been used for the interaction between states' effective minimum wages and the indicator for the race of the individual, for which the standard OLS may give biased results if minimum wages are adjusted in periods of smaller employment gaps.

Column 4 of Table 1 presents the results where logarithm of states' effective minimum wage and its interaction with race indicator is instrumented with logarithm of real federal minimum wages, its interaction with indicator whether the federal minimum wages have been binding in entire history of the state (denoted with $Fstates_i$ hereafter), interaction of logarithm of federal minimum wage with race and interaction of logarithm of federal minimum wage with race and with the indicator $Fstates_i$ ¹².

¹²As mentioned above, the states for which $Fstates_i = 1$ are Alabama, Arizona, Arkansas, Colorado, Georgia,

The analysis presented in Column 4 of Table makes use of the strong correlation between the state minimum wages and its interaction with race indicator with their "federal" counterparts. The rationale for such a practice is that the federal minimum wages are less sensitive to level of employment as well as the relative employment of blacks to whites at the state level.

The results presented in Column 4 of Table 1 show that the higher minimum wages do not have a significant effect on the employment of whites. In contrast, the effect for the blacks, given by $\beta_2 + \beta_3$, is negative and significant for black male adults. In particular, the employment probability of blacks fall by -10.2 percentage points when the minimum wages are doubled. In addition, this corresponds to an increase in employment gap between blacks and whites by -26.3 percentage points.

4.3 Allowing for the Effect of Minimum Wages to Differ With Observed Skills

In practice, one may expect that the individuals with lower skill levels would have higher probability of becoming non-employed following minimum wage increases. For example, a high-school graduate may have a lower chance of losing his job compared to a high school drop-out if extra education is associated with higher productivity. However, considering the fact that the blacks have less favorable outcomes than whites in terms of the skill levels, such as the average years of educations, the assumption that the minimum wages will affect everybody in the same way regardless of their skill level, i.e. $\gamma_5 = 0$ in terms of the notation of Equation 7, may lead to bigger racial gaps.

The first column of Table 2 again uses the logarithm of states' effective minimum wage as the minimum wage measure. Again, these results suggest that the employment of whites are not affected from minimum wages regardless of their education or experience level. For example, the employment probability of an unexperienced white high-school drop-out for 9-11 years of schooling increases by 0.47 percentage points. In contrast, the same effect observed for the black

Idaho, Indiana, Kansas, Kentucky, Louisiana, Michigan, Mississippi, Missouri, Montana, Nebraska, Nevada, New Mexico, North Carolina, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Texas, Utah, Virginia, West Virginia and Wyoming.

counterpart is -17.5 percentage points, which is significantly different from zero.

Considering the possibility that the states' minimum wages may be endogenous to the local labor market conditions, the alternative specifications entails use of federal minimum wages and its interaction with race as an instrument for the states' effective minimum wages and its interaction with states' minimum wages in two different ways. The specification for Column 2 directly uses the federal minimum wage increase of states' minimum wages. The specification in Column 3 uses logarithm of federal minimum wage and its interaction with $Fstates_i$ as an instrument for the logarithm of states' minimum wage, and the interaction of these two instruments with race indicator as an instrument for the interaction between race and effective minimum wages. As observed in Columns 2 and 3 of Table 2, we again find that higher minimum wages lead to higher employment gaps between blacks and whites with same skill levels and same degree of returns to skills from variations in minimum wages. In particular, Column 2 implies that the employment gap between blacks and whites for similar observable characteristics increases by 15.7 percentage points when the federal minimum wages are doubled. The estimates presented in Column 3, obtained with instrumenting the state effective minimum wages and its interaction with race with federal minimum wages interacted with whether federal minimum wages were binding in entire period and interaction of this measure with race, show that the black-white employment gap increases by 24 percentage points.

The instrument variable estimates presented in Columns 2 and 3 of Table 2 actually suggests that the results presented in Column 1 might have been contaminated by the endogeneity of the states' minimum wage adjustments to states' employment outcomes. Even though the analysis presented in Column 1 suggests negative employment effects of minimum wages only for blacks, when proper instruments are used for the states' effective minimum wages, employment of both whites and blacks with low skill levels are shown to be affected negatively from minimum wage hikes. For example, the results indicate that the minimum wages have a negative effect on the employment of whites and black high-school drop-outs or college drop-outs, who have not worked full-time or full-year in the previously. On the other hand, the results suggest that the

employment of the individuals who worked as full-time/full-year workers in the previous year are not affected with the minimum wages. However, the increases in racial employment gaps unexplained by skill differences are also observed in this specification.

4.4 Allowing for the Effect of Minimum Wages to Differ With Skills Across Blacks and Whites

Finally, for the differential effect of minimum wages on the employment of blacks and white, we use a specification which also includes the interaction terms between each individual characteristics with both minimum wage measure and race. In practice, it is possible that the changes in returns to skills due to minimum wage variations may differ across blacks and whites. For example, blacks and whites with a given education level may be affected differently from minimum wage adjustments if they differ from each other in quality of schooling or other unobserved racial differences affecting employment.

The results corresponding to this specification is presented in Table 3. In particular, the first and second columns differ from each other with the inclusion of predicted hourly wages and its interaction with minimum wages, race and both race and minimum wages as extra control variables. In both specifications, the significant and negative estimates for the interaction between the minimum wage measure and the race indicator suggests that the blacks are affected from minimum wage increases more negatively compared to whites for a given skill level. In particular, different from results presented in Table 1 and Table 2, each of the regressions presented in Table 3 allows for the effect of minimum wages for blacks and whites to differ within skill groups. These differential terms accounts for various unobserved differences to some extent, such as differences in quality of schooling or discrimination.

The results presented in Column 2 controls for the predicted hourly wages as a proxy for unobserved skill differences. In principle, the unobserved skill differences between blacks and whites may be important for the racial differences in the employment response to minimum wages. However, the typical problem in analyzing sources of racial differences is the lack of

measures controlling for the unobserved skills of the individuals. Therefore, it is important to find an appropriate skill proxy, which is also available in CPS-March dataset. A candidate for such a proxy is the hourly wages, which is observed by the employer, who presumably observes the productive skills of the employees. However, focusing on the individuals with positive hourly wages in the previous year gives a sample, where the individuals who were not employed in the previous year is excluded. Therefore, we use the predicted wages of individuals obtained from separate Mincerian regressions for blacks and whites for each different year. Estimating different Mincerian wage regressions for each year and racial group is important for accounting for two issues. First, the returns to observed skills may change over time. Second, and more importantly, the returns to observed skills for blacks and whites may differ from each other, either due to quality of these skills or for other factors such as discrimination.

The results presented in the second column of Table 3 also shows that there is differential negative effect of minimum wages on blacks unexplained by skill gaps even after controlling for individual's predicted wages in the previous year. In other words, the skill differences do not entirely account for the observed racial differences in the effect of minimum wages on employment. It is important to emphasize that the estimate for the racial differences presented in the Column 2 of Table 3 will not be an overestimate of the actual racial differences, as long as blacks are not overpaid relative to whites for a given level of productive skills. Worth noting, there is no study in the literature which claims that the blacks are overpaid relative to whites given their skill level.

Finally, Figures 1 and 2 present the employment effects of minimum wages on 60 different categories of individual characteristics calculated by using results in Table 3. These figures are give the employment effects for blacks and whites, for five different education categories (from high-school drop-out with up to 8 years of education to college graduates), 3 experience categories (individuals with 0 years, 5 years and 10 years of experience) and for categories depending on whether the individual was a full-time/full-year worker in the previous year or not¹³. The only

¹³An individual with a usual weeks of work in the previous year is more than 50 weeks is regarded as a full-year worker (denoted as FY). A worker with a usual hours of work per week in the previous year higher than 35 hours

difference between Figure 1 and Figure 2 is that the specification used for Figure 1 does not control for the logarithm of hourly predicted wages, whereas specification used for Figure 2 controls for it.

In sum, these figures show that blacks have a less favorable employment outcomes relative to whites following minimum wage increases. For the individuals who were not full-time/full-year workers in the previous year, the employment falls significantly with an increase in the minimum wages. This negative effect is more pronounced and robust to control variables for the group of high-school drop-outs and college drop-outs. In addition, the experience appears to have a negligible effect for the magnitude of the employment effects of the minimum wages. In contrast, the results concerning the employment effects of minimum wages for individuals, who worked as a full-time/full-year worker in the previous year, is sensitive to the regression specification.

Finally, the Figure 3 presents the estimates of the racial differences by the education groups, years of experience and full-time/full-year status. The negative numbers in these figures suggest that the employment of blacks relative to whites decrease with higher minimum wages, after controlling for differences in skills levels, returns to skills due to minimum wage variations and the differential effect of minimum wages on skill-race categories. The figures suggest that the employment gap between blacks and whites widens approximately by 30 percentage points when the minimum wages double. These results also suggest that the estimates for the racial differences in changes in employment are not sensitive to the skill groups or the use of predicted hourly wages as a proxy for unobserved skills.

4.5 Some Observations on the Effect of Minimum Wages on Employment and Black-White Employment Gaps

The preceding section yields a couple of interesting findings about the racial differences in employment effects of minimum wages. First, this paper extends the findings in the existing literature which states that the blacks on the average are disproportionately affected by the

is regarded as a full-time worker (denoted as FT). A individual who is both full-year and full-time worker in the previous year is denoted as FTFY.

minimum wages relative to whites without conditioning on individual characteristics. The results of this study simply suggest that there are racial differences in employment effect of minimum wages regardless of the differences in skills and individual characteristics.

Second, the paper shows that the negative employment effect of the minimum wages are observed for those who were not full-time/full-year (NFTFY) workers in the previous year, which constitute approximately 70 percent of the entire sample. Among the individuals whose employment is negatively affected from minimum wage increases, blacks face higher decline in employment with higher minimum wages. Moreover, considering the specification which controls for logarithm of hourly wages in the previous year, the NFTFY blacks face employment declines regardless of their education level, whereas NFTFY whites with high-school or college diploma do not face such declines. In contrast, employment of individuals who worked full-time/full-year in the previous year do not fall with the minimum wages regardless of their race. Depending on the specification and the education level of such individuals, the employment in this group may even show an increase.

Third, the results suggest that the negative employment effect of minimum wages is more pronounced for high-school drop-outs and college drop-outs than for high-school graduates and college graduates. The comparison between high-school graduates and college drop-outs suggests that the market gives negative returns to years spent at college without obtaining a degree. Although such a finding may initially appear unconventional, this may be due to the negative signal value of having not obtained an academic degree about unobserved characteristics of the workers, such as non-cognitive skills that are acquired outside of school.

Finally, the results indicate that the employment effect of minimum wages for individuals at the margin of minimum wage adjustments is not very sensitive to the potential experience level of the individuals. A possible explanation of this observation is that the extra years of experience in the market for low-skilled workers do not constitute a positive signal for individual's skills. This may also reflect the low skill requirement of the minimum wage jobs, which usually do not require high year of experience.

4.6 Implications of the Results for the Sources of Racial Employment Gaps

The factors leading to the observed racial differences in different labor market outcomes is one of active debates in academics and public policy. A particular question at the center of these debates is whether skill differences between blacks and whites explain the gaps in labor market outcomes. The racial gaps in employment outcomes are observed also conditional on standard skill measures, such as education and experience. On one side, some studies in the literature argue that the racial differences in employment gaps observed conditional on these standard skill measures can be attributed to the skill gaps stemming from differences in school quality, family background, which are not readily observed¹⁴. For example, Neal and Johnson (1996) shows that the racial gaps in wages disappear, once they control for Armed Forces Qualifying Test scores as a proxy for pre-market factors affecting individual skills, besides standard skill measures. On the other side of the debate, the degree to which the alternative skill measures in the recent literature account for the differences in productive skills rather than the discrimination or other race-related differences is yet not clear¹⁵. This still leaves the search for proper measures controlling for unobserved skills and pre-market factors as an important research agenda.

The empirical strategy in this paper provides 2 advantages for the control of unobserved skills. First, we mainly focus on how employment gaps between blacks and whites with comparable observable characteristics evolve with an exogenous change in the labor market due to minimum wages. This differs substantially from many earlier studies, which tries to estimate the degree of racial gaps with a the coefficient on the race indicator on a static wage and/or employment regression. However, as argued above, any unobserved factor that is correlated with race and the labor market outcomes may bias the measures of racial gaps. In contrast, since we take the level differences as given and look at how differences evolve with changes in the minimum wages,

¹⁴Also, see Altonji and Blank (1999) for other findings in the literature.

¹⁵For example, Heckman, Stixrud and Urzua (2006) argue that the reliability of test scores used as a proxy for skill differences may be contaminated due to racial discrimination. Alternatively, Cascio and Lewis (2006) argues that the racial skill gaps in test scores observed at the time of the measurement may be a biased measure of productive skill gaps relevant for individuals' labor market outcomes.

we can difference out any time-invariant unobserved characteristic that would have an effect on the employment outcomes. Moreover, if the returns to these characteristics are invariant across races, we can conclude that the employment gaps vary over time for reasons uncorrelated with skill levels.

In addition, focusing on the effect of an exogenous change in the labor market on racial employment gaps is that we can use the predicted wages of individuals before the minimum wage increase as a control for unobserved factors affecting individual skills. As observed in Column 2 of Table 3, there are no differences across blacks and whites in terms of differential effect of minimum wages on employment with respect to the hourly wage levels. These results simply suggest that the skill gaps between blacks and whites and differences in demographic characteristics do not entirely account for the observed racial differences.

Then a natural question is what can derive such differences. One alternative explanation for the widening racial employment gaps with higher minimum wages would be differential labor supply responses of blacks and whites to minimum wage variations. For example, higher minimum wages would lead to a higher labor supply increase by whites, who would substitute for black and whites who were employed before the minimum wage increase and non-employed after the minimum wage increase. However, there is no study in the literature showing that the minimum wage elasticity of labor supply for blacks and whites differ from each. Moreover, the sample used in this study focuses on the males between 22 and 55, whose labor supply behavior is less responsive to minimum wages and other economic factors compared to females, or teenagers for whom the minimum wages may be important also for the schooling decisions.

An alternative explanation to the labor supply differences may be discrimination against blacks. From the perspective of an individual firm, an increase in the minimum wages is an exogenous shock to the firm's cost function, which may require a reduction in the number of employees. If the employers are already facing a psychic cost of employing blacks, then higher minimum wages may make it optimal for the employer to fire blacks with productive skills comparable to whites.

The disproportional disemployment of blacks following minimum wage increases may also be driven by the employers' taste for discrimination embedded in the wages not observable in the data. For example, suppose that a discriminating employer pays minimum wage w_t^m to a white worker with productivity w_t^m and a black worker with productivity $w_t^m(1 + d)$, because of the disutility of hiring a black. In such a case, when the minimum wages are increased by Δ percent, the new productivity threshold to remain employed becomes $w_t^m(1 + \Delta)$ for the whites, whereas it increases to $w_t^m(1 + \Delta)(1 + d)$. This means that the threshold productivity level for whites increases by $w_t^m \times \Delta$, whereas the level for the blacks increases with an extra $w_t^m \times \Delta \times d$. In other words, due to employer's disutility to hire a black, the blacks may have to face an even more stringent productivity standards to remain employed following a minimum wage increase, which may lead to extra reduction of employment of blacks.

Finally, with an extra assumption, our analysis provides some suggestive evidence on the theoretical foundations of the mechanism leading to discrimination in low wage markets. Economic theory offers two alternative mechanisms for the explanation of racial discrimination. On one side, Becker(1957) argues that the employers, fellow workers or costumers deriving disutility from interacting with a worker from particular racial group may lead to racial wage gaps and employment differences, conditional on same characteristics. On the other side, Arrow (1972, 1973) argues that the discrimination may arise, if the employers facing uncertainty about individuals' productive characteristics use a readily available measure correlated with productivity, such as race, in their hiring-firing decisions or in the wage-determination process. Under the assumption that the employer learning for the unobserved characteristics of low-skilled workers in low-wage labor markets entails small costs such that individuals' productivity in such jobs can be observed more directly and quickly, we can speculate that the racial profile of an individual will not have a large signal value in employer's problem. In such a case, we can speculate that the disutility associated with employing blacks may be the source of variations racial employment gaps with minimum wages, in line with the "Taste For Discrimination" argument due to Becker (1957).

5 Conclusion

In the United States, minimum wage laws are actively used with an objective of decreasing earnings inequality and poverty. It also has a special social appeal, as the public opinion polls suggest. For example, according to the polls conducted by NBC News and Wall Street Journal in 1996, approximately 60 percent of all correspondents strongly support a minimum wage increase and an additional 20 percent somewhat support minimum wage increases, whereas the ratio of strong opponents is less than 10 percent. In terms of responses by racial groups, the ratio of blacks and whites favoring minimum wage increases are 95 percent and 75 percent, respectively¹⁶. Despite its importance as well as its popular support which varies between racial groups, the economics literature needs to explore further the effects of minimum wages, including whether and why the employment of blacks and whites respond differentially to minimum wage increases.

Being motivated by these points, this paper attempted to answer whether the skill differences account for the disproportionate decline in the employment of blacks relative to whites in response to minimum wage increases. The findings indicate that minimum wage laws not only have important implications for economic efficiency through its negative effect on employment, but also for racial inequality in labor market outcomes due to the fact that blacks face significantly higher decreases in employment probabilities following minimum wage increases than comparable whites. The findings presented in this paper pose a high degree of scepticism about the potential of the minimum wage laws to alleviate the racial gaps. Moreover, the skill gaps do not appear to be entirely responsible for the disproportional employment effects of minimum wages on blacks relative to whites. These findings suggest that policies directed towards eliminating racial skill gaps may not yield the desired outcomes in terms of entirely eliminating racial employment gaps. Under the assumption that the labor supply of blacks and whites respond similarly to the minimum wage variations, discrimination appears to be one of the possible explanations for these results.

The findings presented in this paper are highly relevant for the public policy for closing racial

¹⁶For a more detailed analysis, see Waltman (2000).

gaps in employment outcomes. This paper documents a significant link between the timing of policy related changes in labor markets and potential increases in the employment gap across comparable individuals with different racial profiles. This suggests that there is a potential to be exploited for the improvement in the current practices of the anti-discriminatory policies. In particular, the minimum wage increases are usually preannounced and prescheduled policy outcomes. Therefore, the paper suggests that the increases in racial gaps among comparable individuals may also be predictable. Considering the possibility of noncompliance in the firms' equal opportunity employment practices, the efficiency of existing policies may be enhanced by intensifying the monitoring of the hiring/firing practices of the firms during of times of minimum wage increases.

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Table 1:
The Minimum Wages and Employment of Blacks and Whites

	(1)	(2)	(3)	(4)
Logarithm of States' Effective Minimum Wage	-.048 (0.205)	-.007 (0.908)	- -	.161 (0.562)
Black x Logarithm of States' Effective Minimum Wage	-.103 (0.009)***	-.173 (0.000)***	- -	-.263 (0.000)***
Logarithm of Federal Minimum Wage	- -	- -	- -	- -
Black x Logarithm of Federal Minimum Wage	- -	- -	-.167 (0.000)***	- -
Black	.123 (0.083)*	.352 (0.001)***	.333 (0.000)***	.423 (0.000)***
State Unemployment Rate	-.010 (0.000)***	-.010 (0.000)***	-.010 (0.000)***	-.014 (0.002)
Year Fixed Effects	Yes	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes	Yes
Education Control	-	Yes	Yes	Yes
Experience Control	-	Yes	Yes	Yes
Marital Status Control	-	Yes	Yes	Yes
Full-Year/Full-Time Status Control	-	Yes	Yes	Yes
R-Squared	68757 0.102	68757 0.3537	68757 0.3536	68757 0.3643

Notes: (a) Coefficients in columns 1 to 3 give the probit marginal effects of the corresponding variables on employment. Column 4 provides IV estimates. The values in parenthesis are the p-values for the hypothesis that the corresponding parameter is zero. (b) Sample includes black and white males between 22 and 55 from CPS March for 1979-2006 period, whose predicted hourly earnings in year t-1 were below the minimum wages in year t. (c) In Column 1 and 2, the logarithm of states' effective minimum wage deflated to 2000 dollars is used, whereas the logarithm of federal minimum wages deflated to year 2000 dollars is used in column 3. Column 4 presents IV estimates where the states' effective minimum wage and its interaction with "black" are instrumented with logarithm of federal minimum wage, logarithm of federal minimum wage interacted with an indicator whether the federal minimum wages have always been binding in that state. (d) *: Significant at 10%, **: Significant at 5%, ***: Significant at 1%.

Table 2:
The Minimum Wages and Employment of Blacks and Whites

	(1)	(2)	(3)
Logarithm of States's Effective Minimum Wage	.347 (0.015)**	-	.241 (0.300)
Black x Logarithm of Minimum Wage	-.180 (0.000)***	-	-.235 (0.000)***
Logarithm of Federal Minimum Wage	-	-	-
Black x Logarithm of Federal Minimum Wage	-	-.157 (0.000)***	-
Black	.369 (0.001)***	.308 (0.000)***	.377 (0.000)***
HSD08 x Logarithm of Minimum Wage	-.258 (0.029)**	-.342 (0.003)***	-.603 (0.000)***
HSD911 x Logarithm of Minimum Wage	-.300 (0.001)***	-.343 (0.001)***	-.665 (0.000)***
HSG x Logarithm of Minimum Wage	-.015 (0.820)	-.096 (0.212)	-.283 (0.007)***
SC x Logarithm of Minimum Wage	-.124 (0.051)**	-.187 (0.023)**	-.397 (0.000)***
CG x Logarithm of Minimum Wage	-.034 (0.602)	-.041 (0.487)	-.132 (0.106)
Experience x Logarithm of Minimum Wage	-.010 (0.045)**	-.0108 (0.022)**	-.034 (0.000)***
Experience ² x Logarithm of Minimum Wage	-.001 (0.000)***	-.001 (0.000)***	-.002 (0.000)***
Experience ³ x Logarithm of Minimum Wage	.000 (0.172)	.000 (0.135)	.000 (0.000)***
Experience ⁴ x Logarithm of Minimum Wage	.000 (0.303)	.000 (0.129)	.000 (.174)
Full-Time/Full-Year x Logarithm of Minimum Wage	-.013 (0.217)	1.330 (0.000)***	.991 (0.000)***
Year Fixed Effects	Yes	Yes	Yes
State Fixed Effects	Yes	Yes	Yes
State Unemployment Rate	Yes	Yes	Yes
Education Control	Yes	Yes	Yes
Experience Control	Yes	Yes	Yes
Marital Status Control	Yes	Yes	Yes
Full-Year/Full-Time Status Control	Yes	Yes	Yes
Number of Observations	68757	68757	68757
R-Squared	0.3551	0.3578	0.3722

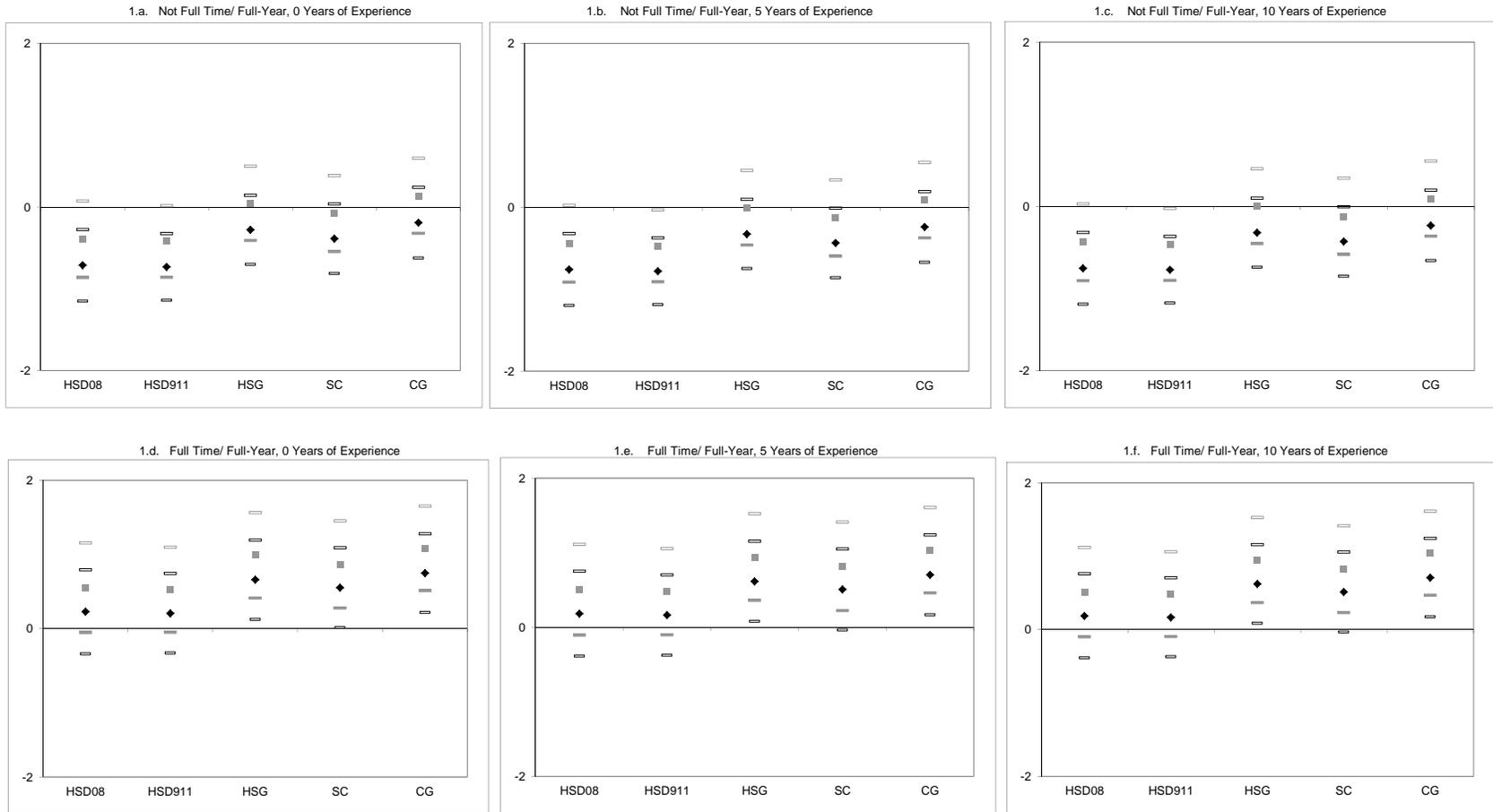
Notes: (a) Coefficients in columns 1-2 give the probit marginal effects of the corresponding variables on employment. Column 3 provides IV estimates. The values in parenthesis are the p-values for the hypothesis that the corresponding parameter is zero. (b) Sample includes black and white males between 22 and 55 from CPS March for 1979-2006 period, whose predicted hourly earnings in year t-1 were below the minimum wages in year t. (c) The minimum wage variable in columns 1 and 2 are the logarithms of state's effective minimum wage and federal minimum wages deflated to year 2000 dollars, respectively. In Column 3, the states' effective minimum wage and its interaction with "black" are instrumented with logarithm of federal minimum wage, logarithm of federal minimum wage interacted with an indicator whether the federal minimum wages have always been binding in that state, and interactions of these two variables with variable "black". In the third column, the individual skill characteristics are interacted with logarithm of federal minimum wage, considering potential endogeneity of states' minimum wages to own labor market conditions and political preferences. (d) *: Significant at 10%, **: Significant at 5%, ***: Significant at 1%.

Table 3:
The Minimum Wages and Employment of Blacks and Whites

	(1)	(2)
Logarithm of States' Effective Minimum Wage	.276 (0.223)	.267 (0.230)
Black x Logarithm of Federal Minimum Wage	-.345 (0.000)***	-.353 (0.000)***
HSD08 x Logarithm of Federal Minimum Wage	-.660 (0.000)***	-.670 (0.000)***
HSD911 x Logarithm of Federal Minimum Wage	-.699 (0.000)***	-.717 (0.000)***
HSG x Logarithm of Federal Minimum Wage	-.252 (0.000)***	-.260 (0.000)***
SC x Logarithm of Federal Minimum Wage	-.365 (0.000)***	-.371 (0.000)***
CG x Logarithm of Federal Minimum Wage	-.143 (0.000)***	-.138 (0.035)**
Experience x Logarithm of Federal Minimum Wage	-.038 (0.000)***	-.038 (0.000)***
Experience ² x Logarithm of Federal Minimum Wage	-.002 (0.000)***	-.002 (0.000)***
Experience ³ x Logarithm of Federal Minimum Wage	.000 (0.000)***	.000 (0.000)***
Experience ⁴ x Logarithm of Federal Minimum Wage	.000 (0.259)	.000 (0.204)
Full-Time/Full-Year x Logarithm of Federal Minimum Wage	.964 (0.000)***	.932 (0.000)***
Logarithm of Predicted Hourly Wage x Logarithm of Federal Minimum Wage	- (0.022)**	-.497 (0.022)**
Black x HSD08 x Logarithm of Federal Minimum Wage	.029 (0.148)	.025 (0.207)
Black x HSD911 x Logarithm of Federal Minimum Wage	.034 (0.082)*	.029 (0.122)
Black x HSG x Logarithm of Federal Minimum Wage	.024 (0.234)	.021 (0.293)
Black x SC x Logarithm of Federal Minimum Wage	.040 (0.058)*	.038 (0.067)*
Black x CG x Logarithm of Federal Minimum Wage	.020 (0.241)	.020 (0.252)
Black x Experience x Logarithm of Federal Minimum Wage	.003 (0.000)***	.003 (0.000)***
Black x Experience ² x Logarithm of Federal Minimum Wage	.000 (0.124)	.000 (0.244)
Black x Experience ³ x Logarithm of Federal Minimum Wage	-0.000 (0.021)**	-0.000 (0.038)**
Black x Experience ⁴ x Logarithm of Federal Minimum Wage	0.000 (0.391)	0.000 (0.482)
Black x Full-Time/Full-Year x Logarithm of Federal Minimum Wage	-.004 (0.526)	-.008 (0.312)
Black x Logarithm of Predicted Hourly Wage x Logarithm of Federal Minimum Wage	- (0.218)	-.041 (0.218)
Year Fixed Effects	Yes	Yes
State Fixed Effects	Yes	Yes
State Unemployment Rate	Yes	Yes
Education Control	Yes	Yes
Experience Control	Yes	Yes
Marital Status Control	Yes	Yes
Full-Year/Full-Time Status Control	Yes	Yes
Number of Observations	68757	68757
R-Squared	0.4176	0.4191

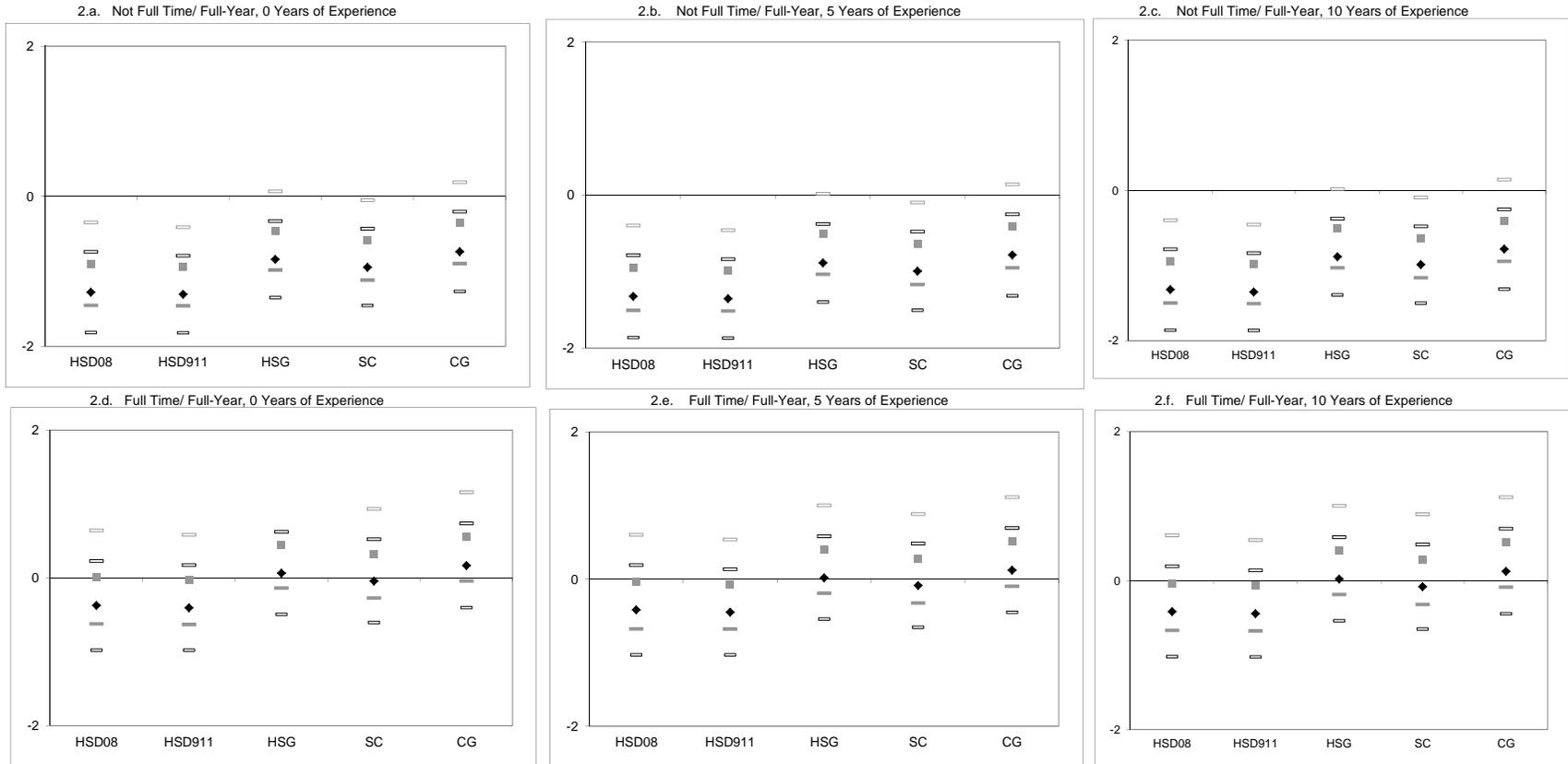
Notes: (a) Coefficients give the IV estimates of the effects of corresponding variables on employment. The values in paranthesis are the p-values for the hypothesis that the corresponding parameter is zero. (b) Sample includes black and white males between 22 and 55 from CPS March for 1979-2006 period, whose predicted hourly earnings in year t-1 were below the minimum wages in year t. (c) The states' effective minimum wage and its interaction with "black" are instrumented with logarithm of federal minimum wage, logarithm of federal minimum wage interacted with an indicator whether the federal minimum wages have always been binding in that state, as well as interactions of these two variables with variable "black". In the third column, the individual skill characteristics are interacted with logarithm of federal minimum wage, considering potential endogeneity of states' minimum wages to own labor market conditions and political preferences. (d) *: Significant at 10%, **: Significant at 5%, ***: Significant at 1%.

Figure 1: Effect of Minimum Wages on the Employment of Blacks and Whites Not Controlling for the Predicted Hourly Wages for the Previous Year



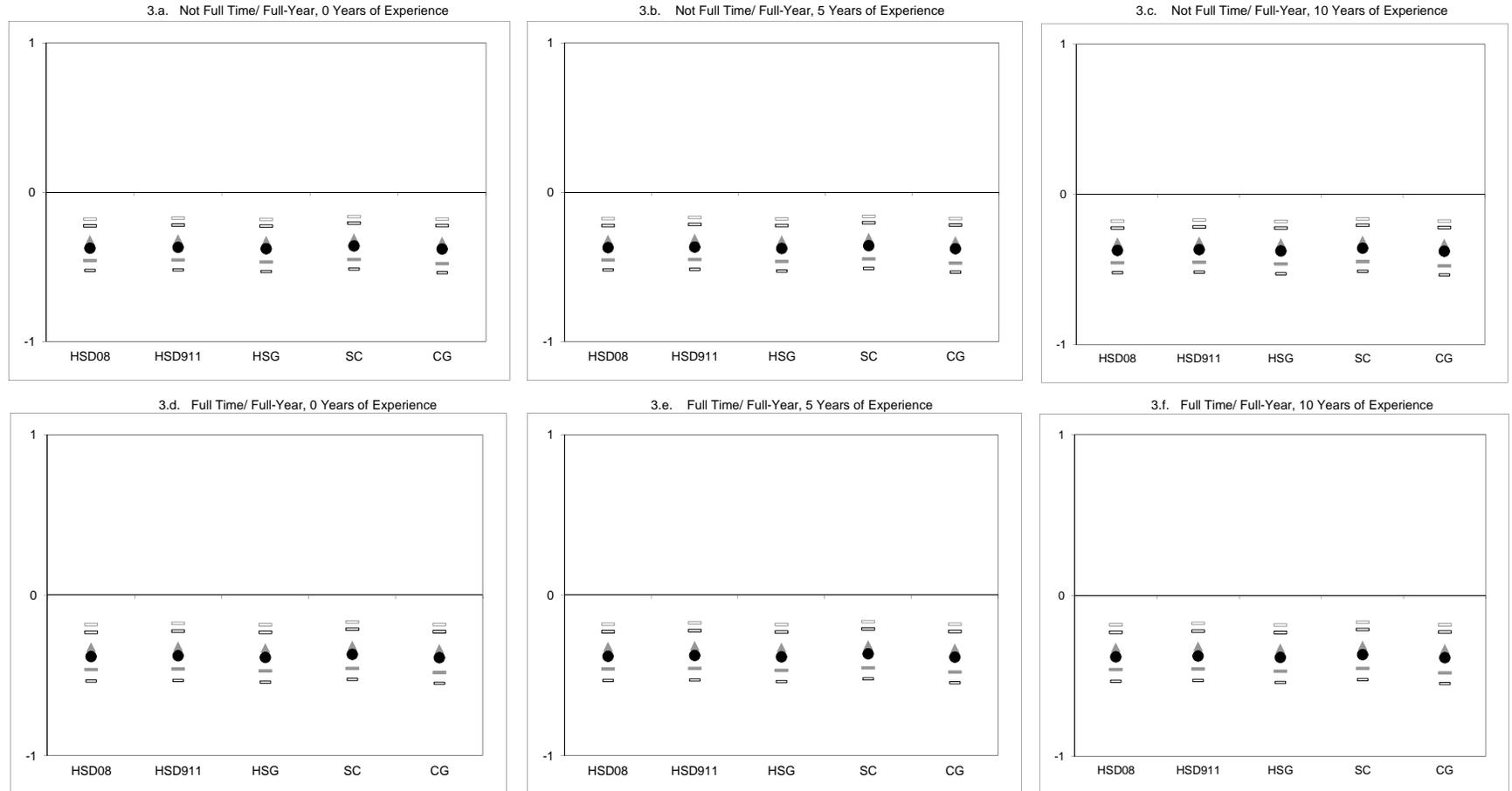
Notes: The figures show the estimates (and corresponding 95 percent confidence intervals) of how differences in employment of blacks and white vary with a unit increase in logarithm of real minimum wage measures in year 2000 dollars, for given individual characteristics and skills, obtained from regression presented in Column 1 of Table 3. Black and gray colors indicate estimates and confidence intervals for blacks and whites, respectively. The specification generating these figures control for race, logarithm of minimum wage and race indicator interacted with logarithm of minimum wage, the skills and individual characteristics (education, experience up to quartic term, full-time/full-year status), the interaction of skill and individual characteristics with logarithm of minimum wage and the interaction of skill and individual characteristics with "both" logarithm of minimum wage measure and the race. The regressions also control for predicted hourly wages in the previous year, its interaction with race, with logarithm of minimum wage and with "both" logarithm of minimum wage measure and the race.

Figure 2: Effect of Minimum Wages on the Employment of Blacks and Whites Controlling for the Predicted Hourly Wages for the Previous Year



Notes: The figures show the estimates (and corresponding 95 percent confidence intervals) of how differences in employment of blacks and white vary with a unit increase in logarithm of real minimum wage measures in year 2000 dollars, for given individual characteristics and skills, obtained from regression presented in Column 2 of Table 3. Black and gray colors indicate estimates and confidence intervals for blacks and whites, respectively. The specification generating these figures control for race, logarithm of minimum wage and race indicator interacted with logarithm of minimum wage, the skills and individual characteristics (education, experience up to quartic term, full-time/full-year status), the interaction of skill and individual characteristics with logarithm of minimum wage and the interaction of skill and individual characteristics with "both" logarithm of minimum wage measure and the race. The regressions also control for predicted hourly wages in the previous year, its interaction with race, with logarithm of minimum wage and with "both" logarithm of minimum wage measure and the race.

Figure 3: Racial Differences In Response of Employment to Minimum Wages



Notes: The figures show the estimates (and corresponding 95 percent confidence intervals) of how racial differences in employment vary with a unit increase in logarithm of real minimum wage measures in year 2000 dollars, for given individual characteristics and skills, obtained from regressions presented Columns 1 and 2 of Table 3. The estimated racial differences in the response of employment blacks and whites with and without controls for predicted hourly wages in the previous year are shown with circle and triangle signs, respectively. The negative estimates for racial differences imply that employment of whites decline at a smaller rate than employment of blacks, or employment of whites increase at a higher rate than employment of blacks.